BOARD MEETING DATE: November 2, 2018 AGENDA NO. 27

PROPOSAL: Certify Final Mitigated Subsequent Environmental Assessment and Amend Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities

SYNOPSIS: The adoption Resolution of the 2016 AQMP directed staff to achieve additional NOx emission reductions and to transition the RECLAIM program to a command-and-control regulatory structure as soon as practicable. Proposed Amended Rule 1135 applies to RECLAIM and non-RECLAIM electricity generating facilities and is being amended to update NOx emission limits to reflect current BARCT, establish an ammonia emission limit, and provide implementation timeframes to facilitate the transition of the NOx RECLAIM program to a command-and-control regulatory structure. The provisions in the proposed amended rule apply to RECLAIM and non-RECLAIM electricity generating facilities. Other provisions are incorporated to remove obsolete provisions, update provisions for monitoring, reporting, and recordkeeping, and provide clarifications.

COMMITTEE: Stationary Source, August 17, 2018, Reviewed

RECOMMENDED ACTIONS:
Adopt the attached Resolution:
1. Certifying the Final Mitigated Subsequent Environmental Assessment for Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities; and
2. Amending Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities.

Wayne Nastri
Executive Officer

PMF:SN:MM:UV

Background

Rule 1135 – Emissions of Oxides of Nitrogen from Electric Power Generating Systems was adopted in 1989 and currently applies to electric power generating steam boiler systems, repowered units, and alternative electricity generating sources. When RECLAIM program was adopted in 1993, electricity generating facilities were included in the NOx RECLAIM with the exception of electricity generating facilities that were owned and operated by the City of Burbank, City of Glendale, or the City of Pasadena that were allowed to opt-in to the program. The cities of Burbank and Pasadena opted-in to RECLAIM, while the City of Glendale remained regulated by command-and-control rules.

In response to an increased demand for power generation and delayed installation of controls by electricity generating facilities, in May 2001, the Board adopted Rule 2009 – Compliance Plan for Power Producing Facilities, which required installation of Best Available Retrofit Control Technology (BARCT) through compliance plans at electricity generating facilities. As a result, much of the equipment at electricity generating facilities has been retrofitted or replaced to meet lower NOx emission limits. Diesel internal combustion engines providing power to Santa Catalina Island were not subject to Rule 2009 because the facility did not qualify as a Power Producing Facility because its capacity was less than 50 Megawatts.

Proposed Amended Rule (PAR) 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities, is an industry-specific rule and applies to boilers, turbines, and engines at RECLAIM and non-RECLAIM electricity generating facilities that are investor-owned electric utilities, publicly owned electric utilities, or have a generation capacity of at least 50 megawatts of electrical power. PAR 1135 is being amended to facilitate the transition of the NOx RECLAIM program to a command-and-control regulatory structure and to implement Control Measure CMB-05 – Further NOx Reductions from RECLAIM Assessment.

Public Process

Development of PAR 1135 was conducted through a public process. Staff has held five working group meetings to discuss the provisions of the proposed amended rule: January 24, 2018, April 26, 2018, June 13, 2018, July 5, 2018, and September 25, 2018. A Public Workshop was held at the SCAQMD Headquarters in Diamond Bar on August 2, 2018. In addition, staff has also met individually with numerous facility operators.

Proposed Amendments

The proposed amended rule updates NOx emission limits to reflect current BARCT and provides implementation timeframes. As summarized in Tables 1 and 2 below, the provisions in PAR 1135 establish the following emissions limits: NOx and ammonia emission limits for boilers and gas turbines; and NOx, ammonia, carbon monoxide, volatile organic compounds, and particulate matter emission limits for internal combustion engines located on Santa Catalina Island. The compliance date for electric generating units is January 1, 2024.

Table 1
PAR 1135 Emissions Limits for Boilers and Gas Turbines

Equipment Type	NO_x (ppmv)	Ammonia (ppmv)	Oxygen Correction (%, dry)
Boiler	5	5	3
Combined Cycle Gas Turbine and Associated Duct Burner	2	5	15
Simple Cycle Gas Turbine	2.5	5	15

Table 2
PAR 1135 Emissions Limits for Diesel Internal Combustion Engines

NO_x (ppmv)[1]	Ammonia (ppmv)[1]	Carbon Monoxide (ppmv)[1]	Volatile Organic Compounds (ppmv)[1]	Particulate Matter (lbs/mmbtu)
45	5	250	30	0.0076

[1] – 15% oxygen, dry

PAR 1135 includes an alternative compliance approach to incentivize more reductions from diesel internal combustion engines located on Santa Catalina Island. The rule includes an additional two years for compliance if NOx emissions are reduced by an additional 67%, with an extension of up to three years for compliance. The three-year time extension includes a mitigation fee of $100,000 per year.

Regarding monitoring, reporting, and recordkeeping requirements, PAR 1135 will continue to implement Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions for RECLAIM facilities and non-RECLAIM facilities will continue complying with either Rule 218 – Continuous Emission Monitoring or 40 CFR Part 75 – Continuous Emission Monitoring. PAR 1135 includes an exemption from the NOx emission limits for low-use equipment that is permitted below a specified capacity factor and units that are permitted near the proposed NOx concentration limits as these two scenarios far exceeded the cost-effectiveness threshold of $50,000 per ton of NOx reduced.

Key Issues

Through the rulemaking process, staff has worked with stakeholders to address comments and resolve a number of key issues. Three key issues remain: 1) Implementation schedule for diesel internal combustion engines located on Santa Catalina Island; 2) SCAQMD's authority to base a BARCT emission limit based on equipment replacement; and 3) New Source Review (NSR) resolution before BARCT rules are adopted or amended.

Implementation Schedule for Diesel Engines on Santa Catalina Island

Southern California Edison (SCE) is concerned that the implementation schedule under PAR 1135 may prevent them from investing in lower-emission power generating technology and force them to replace their diesel internal combustion engines. PAR 1135 allows an alternative compliance approach with an additional two years for compliance in order to accommodate potential plans for less emissive electricity generating equipment than diesel internal combustion engines. To further incentivize lower emitting electricity generating technologies, PAR 1135 allows an extension of up to three years for Santa Catalina Island. Depending on the compliance option selected, SCE would have either eight or ten years to meet the emission limits of PAR 1135.

SCAQMD's Authority to Base a BARCT Emission Limit on Equipment Replacement

Industry stakeholders have commented that the SCAQMD does not have the authority base a BARCT emission limit on equipment replacement, and that SCAQMD's authority for establishing BARCT is limited to retrofits only. Staff disagrees with this interpretation of BARCT. The statutory definition of BARCT supports a broad interpretation, including replacement. Applicable dictionary definitions do not preclude the view that BARCT can include equipment replacement. Finally, even if a court were to conclude that BARCT cannot encompass equipment replacement, BARCT is not a limitation on SCAQMD authority. The SCAQMD retains broad statutory authority to adopt emission-control requirements for stationary sources, and that authority may require equipment replacement, as long as the requirement is not arbitrary and capricious.

Resolve New Source Review Issues Before Adopting or Amending BARCT Rules

Some industry stakeholders have commented that the adoption and amendment of landing rules that affect RECLAIM facilities should not proceed until NSR issues associated with the transition of RECLAIM facilities to a command-and-control regulatory structure are resolved. Staff has committed to not requiring RECLAIM facilities to exit the program until NSR issues are resolved. In addition, Rule 2002 - Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx) allows a facility to stay in RECLAIM if they receive a Final Determination to exit RECLAIM. Facilities can begin implementation of provisions in PAR 1135 while in RECLAIM, and if there is an NSR event, the facility would be subject to RECLAIM NSR provisions under Rule 2005 – New Source Review for RECLAIM.

Emission Reductions and Cost Effectiveness Determination

In 1989, electricity generating facilities emitted more than 26 tons per day of NOx and were one of the largest industry source categories of NOx emissions. Emissions decreased to less than 10 tons per day of NOx emissions by 2005. Since then, with equipment replacement and increased reliance on renewable energy sources, NOx emissions have further decreased to less than 4 tons per day in 2016. As proposed, for diesel internal combustion engines, the rule would reduce NOx by 0.1 tons per day with average cost-effectiveness of approximately $23,000 per ton of NOx reduced. For natural gas boilers, the proposed amended rule would reduce NOx by 1.6 tons per day with average cost-effectiveness of approximately $5,630 per ton of NOx reduced. Upon full implementation, PAR 1135 will reduce 1.7 tons per day of NOx emissions with a remaining NOx inventory of 1.8 tons per day.

California Environmental Quality Act

PAR 1135 is considered a "project" as defined by the California Environmental Quality Act (CEQA) and the SCAQMD is the designated lead agency. Pursuant to CEQA Guidelines Sections 15252, 15162(b), and 15251(l) (codified in SCAQMD Rule 110), the SCAQMD has prepared a Mitigated Subsequent Environmental Assessment (SEA) for PAR 1135 which relies on the March 2017 Final Program Environmental Impact Report (EIR) for the 2016 AQMP.

Socioeconomic Analysis

There are 31 electricity generating facilities subject to PAR 1135, all within the utility sector. Only three of the 31 facilities would have to modify their existing equipment in order to comply with PAR 1135. Twenty-seven electric generating units would qualify for the low-use provisions. However, three of these facilities will forego use of the low-use provision and instead retrofit their turbines to come into compliance with the PAR 1135 emission limits. Two cost scenarios were run for this rule proposal. The average annual cost of PAR 1135 is estimated to be $7.4 - $10 million between 2019 and 2045, for the low and high cost scenarios, respectively. The low cost scenario assumes a real interest rate of 1%, while the high cost scenario assumes a 4% real interest rate. Under the high cost scenario, the majority of the annual compliance costs of PAR 1135, $7.2 million (72%), stem from installation of three natural gas turbines at a single facility.

PAR 1135 is expected to result in approximately 104 - 154 jobs on average forgone annually between 2019 and 2045, depending on the real interest rate assumed (1% - 4%). The projected job loss impacts represent about 0.0009% - 0.0014% of the total employment in the four-county region.

The 26 RECLAIM facilities that would be under PAR 1135 currently account for 9.1% of annual NOx emissions and 19.5% of NOx RECLAIM Trading Credit (RTC) holdings in the NOx RECLAIM universe. The simultaneous transition of the 26 electricity generating facilities out of the NOx RECLAIM program could potentially assert upward pressure on discrete-year NOx RTC prices. However, many facilities will likely opt to temporarily remain in RECLAIM until NSR provisions for RECLAIM are resolved.

AQMP and Legal Mandates
Pursuant to Health & Safety Code Section 40460 (a), the SCAQMD is required to adopt an Air Quality Management Plan (AQMP) demonstrating compliance with all federal regulations and standards. The SCAQMD is required to adopt rules and regulations that carry out the objectives of the AQMP. PAR 1135 is part of a control measure (CMB-05) in the 2016 AQMP and will reduce NOx emissions and facilitate the transition the NOx RECLAIM program to a command-and-control regulatory structure.

Resource Impacts
Existing staff resources are adequate to implement the proposed amendments.

Attachments
A. Summary of Proposal
B. Key Issues and Responses
C. Rule Development Process
D. Key Contacts List
E. Resolution
F. Attachment 1 to the Resolution (Findings, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Plan)
G. Proposed Amended Rule 1135
H. Final Staff Report
I. Final Socioeconomic Impact Assessment
J. Final Mitigated Subsequent Environmental Assessment
K. Board Meeting Presentation

ATTACHMENT A

SUMMARY OF PROPOSAL

Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities
<u>Applicability</u> • Applies to electric generating units such as internal combustion engines located on Santa Catalina Island, boilers, combined cycle gas turbines, and simple cycle gas turbines at an investor-owned electric utility, publicly owned electric utility, or a facility with 50 megawatts or more of combined generation capacity, excluding landfills, petroleum refineries, and publicly owned treatment works • Applies to RECLAIM and non-RECLAIM facilities <u>Emissions Limits (effective January 1, 2024)</u> • Establishes NOx and ammonia emission limits for diesel internal combustion engines located on Santa Catalina Island, boilers, combined cycle gas turbines and associated duct burners, and simple cycle gas turbines • Includes an alternative compliance date for lower emitting electricity generating technologies on Santa Catalina Island and provision for up to a three-year extension and mitigation fee option <u>Monitoring, Recordkeeping, and Reporting</u> • RECLAIM sources will continue to comply with SCAQMD Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NO_x) Emissions • Former RECLAIM sources will comply with SCAQMD Rule 2012, excluding reporting requirements • Non-RECLAIM sources will comply with 40 CFR Part 75 – Continuous Emission Monitoring or SCAQMD Rule 218 – Continuous Emission Monitoring <u>Exemptions</u> • Provisions included for low-use electric generating units where it is not cost-effective to retrofit or replace • Provisions included for electric generating units that are near the proposed NOx emission limit where it is not cost-effective to retrofit or replace • Once-through-cooling electric generating units subject to the Clean Water Act Section 316(b) must shutdown or meet emission limits by the compliance dates established by State Water Resource Control Board

ATTACHMENT B

KEY ISSUES AND RESPONSES

Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities

Southern California Edison has commented that the compliance dates for diesel internal combustion engines located on Santa Catalina Island will prevent Southern California Edison from investing in lower-emission power generating and force them to replace their diesel internal combustion engines.

- PAR 1135 allows an alternative compliance approach with an additional two years for compliance in order to accommodate potential plans for less emissive electricity generating equipment than diesel internal combustion engines
- To further incentivize lower emitting electricity generating technologies, PAR 1135 allows an extension of up to three years for Santa Catalina Island providing 8 to 10 years to meet emissions limits

Some industry stakeholders have commented that the SCAQMD does not have the authority to require replacements when establishing a BARCT emission limit.

- Staff disagrees with this interpretation; the statutory definition of BARCT supports a broad interpretation including replacement
- Applicable dictionary definitions do not preclude that BARCT can include equipment replacement
- BARCT is not a limitation on SCAQMD authority
    - The SCAQMD retains broad statutory authority to adopt emission-control requirements for stationary sources, and that authority may require equipment replacement, as long as the requirement is not arbitrary and capricious

Some industry stakeholders have commented that facilities should not exit RECLAIM and staff should not move forward with BARCT rule amendments until New Source Review (NSR) issues are resolved.

- Development and implementation of BARCT landing rules can occur while the SCAQMD continues to resolve NSR issues for the transition of RECLAIM to a command-and-control regulatory structure
- Staff has committed to not exiting facilities from RECLAIM until NSR issues are resolved
- Recent amendments to Rule 2002 allow facilities to remain in RECLAIM until NSR is resolved
- Facilities can remain in RECLAIM to offset new and modified sources under RECLAIM NSR

ATTACHMENT C

RULE DEVELOPMENT PROCESS

Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities

Initiated Rule Development: December 2017

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Working Group Meetings (5)
January 24, 2018, April 26, 2018, June 13, 2018, July 5, 2018, September 25, 2018

↓

75-Day Public Notice: July 20, 2018

↓

Public Workshop: August 2, 2018

↓

Stationary Source Committee Briefing: August 17, 2018

↓

Draft Mitigated Subsequent Environmental Assessment: September 19, 2018

↓

30-Day Notice of Public Hearing: October 2, 2018

↓

Set Public Hearing: October 5, 2018

↓

Public Hearing: November 2, 2018

Eleven (11) months spent in rule development.

One (1) Public Workshop.

One (1) Stationary Source Committee Meeting.

Five (5) Working Group Meetings.

ATTACHMENT D

KEY CONTACTS LIST

Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities

AECOM
AES Corporation
Andeavor
Bicent (California) Malburg
Bloom Energy
Burbank Water and Power
California Air Resources Board
California Council for Environmental and Economic Balance
California Energy Commission
California Independent System Operator
California State Water Resources Control Board
Cemtek KVB-Enertec
City of Anaheim
City of Colton
City of Glendale
City of Riverside
Colton Power
Diamond Generating Corporation
Environmental Management Professionals
GE Power
Heorot Power Management
Los Angeles Department of Water & Power
M&C TechGroup North America
Miratech
Montrose Air Quality Services
New Indy Containerboard
NRG Energy
OLS Energy
Pasadena Water and Power
Pod Technologies
Public Solar Power Coalition
Ramboll
Sanitation Districts of Los Angeles County
Signal Hill Petroleum
Southern California Air Quality Alliance
Southern California Edison
Southern California Gas Company
Southwest Generation Operating Company
U.S. Environmental Protection Agency
Van Ness Feldman
Vernon Public Utilities
Western States Petroleum Association
Yorke Engineering

ATTACHMENT E

RESOLUTION NO. 18-____

A Resolution of the Governing Board of the South Coast Air Quality Management District (SCAQMD) certifying the Final Mitigated Subsequent Environmental Assessment (SEA) for Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities.

A Resolution of the SCAQMD Governing Board amending Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities.

WHEREAS, the SCAQMD Governing Board finds and determines with certainty that Proposed Amended Rule 1135 is considered a "project" as defined by the California Environmental Quality Act (CEQA); and

WHEREAS, the SCAQMD has had its regulatory program certified pursuant to Public Resources Code Section 21080.5 and CEQA Guidelines Section 15251(l), and has conducted a CEQA review and analysis of Proposed Amended Rule 1135 pursuant to such program (SCAQMD Rule 110); and

WHEREAS, the SCAQMD staff has prepared a Draft Mitigated SEA pursuant to its certified regulatory program and CEQA Guidelines Sections 15251, 15252, 15162, and 15070 setting forth the potential environmental consequences of Proposed Amended Rule 1135 and determined that the proposed project would not have the potential to generate significant adverse environmental impacts after mitigation measures are applied; and

WHEREAS, the Draft Mitigated SEA was circulated for a 30-day public review and comment period, from September 18, 2018 to October 18, 2018, and one comment letter was received; and

WHEREAS, the Draft Mitigated SEA has been revised to include the comment received on the Draft Mitigated SEA and the response, so that it is now a Final Mitigated SEA; and

WHEREAS, it is necessary that the SCAQMD Governing Board review the Final Mitigated SEA prior to its certification, to determine that it provides adequate information on the potential adverse environmental impacts that may occur as a result of adopting Proposed Amended Rule 1135, including the response to the comment received relative to the Draft Mitigated SEA; and

WHEREAS, pursuant to CEQA Guidelines Section 15252 (a)(2)(A), significant adverse impacts were identified but mitigation measures are proposed which would reduce the potentially significant effects to less than significant levels; thus, mitigation measures are required for project approval and thus, a Mitigation Monitoring and Reporting Plan pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097, has been prepared; and

WHEREAS, Proposed Amended Rule 1135 and supporting documentation, including but not limited to, the Final Mitigated SEA, the Mitigating Monitoring and Reporting Plan, the Final Staff Report, and the Socioeconomic Impact Assessment, were presented to the SCAQMD Governing Board and the SCAQMD Governing Board has reviewed and considered this information, as well as has taken and considered staff testimony and public comment prior to approving the project; and

WHEREAS, the Final Mitigated SEA reflects the independent judgment of the SCAQMD; and

WHEREAS, the SCAQMD Governing Board finds and determines that all changes made in the Final Mitigated SEA after the public notice of availability of the Draft Mitigated SEA, were not substantial revisions and do not constitute significant new information within the meaning of CEQA Guidelines Section 15073.5 or 15088.5, because no new significant effects were identified, and no new project conditions or mitigation measures were added, and all changes merely clarify, amplify, or make insignificant modifications to the Draft Mitigated SEA, and recirculation is therefore not required; and

WHEREAS, the SCAQMD Governing Board finds and determines, taking into consideration the factors in Section (d)(4)(D) of the Governing Board Procedures (codified as Section 30.5(4)(D)(i) of the Administrative Code), that the modifications to paragraphs (d)(1), (d)(2), (e)(2), (e)(7), and (f)(2) of Proposed Amended Rule 1135 since the notice of public hearing was published add clarity that meet the same air quality objective as the rule proposed with the 30-day notice and are not so substantial as to significantly affect the meaning of the proposed amended rule within the meaning of Health and Safety Code Section 40726 because: (a) the changes do not impact emission reductions, (b) the changes do not affect the number or type of sources regulated by the rules, (c) the changes are consistent with the information contained in the notice of public hearing, and (d) the consideration of the range of CEQA alternatives is not applicable because the effects of Proposed Amended Rule 1135 do not cause significant impacts after the mitigation measures are applied and therefore, alternatives are not required; and

WHEREAS, Proposed Amended Rule 1135 will be submitted for inclusion into the State Implementation Plan; and

WHEREAS, the SCAQMD staff conducted a Public Workshop regarding Proposed Amended Rule 1135 on August 2, 2018; and

WHEREAS, Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the SCAQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report; and

WHEREAS, the SCAQMD Governing Board has determined that Proposed Amended Rule 1135 is needed to transition electricity generating facilities in the RECLAIM program to a command-and-control regulatory structure requiring Best Available Retrofit Control Technologies to reduce NOx emissions as directed by Control Measure CMB-05 of the Final 2016 Air Quality Management Plan; and

WHEREAS, the SCAQMD Governing Board obtains its authority to adopt, amend or repeal rules and regulations from Sections 39002, 40000, 40001, 40440, 40441, 40702, 40725 through 40728, 41508, and 41511 of the Health and Safety Code; and

WHEREAS, the SCAQMD Governing Board has determined that Proposed Amended Rule 1135 is written or displayed so that the meaning can be easily understood by the persons directly affected by it; and

WHEREAS, the SCAQMD Governing Board has determined that Proposed Amended Rule 1135 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations; and

WHEREAS, the SCAQMD Governing Board has determined that Proposed Amended Rule 1135 will not impose the same requirements as any existing state or federal regulations. The amendments are necessary and proper to execute the powers and duties granted to, and imposed upon, SCAQMD; and

WHEREAS, the SCAQMD Governing Board, in amending Rule 1135, references the following statutes which the SCAQMD hereby implements, interprets, or makes specific: Health and Safety Code Sections 39002, 40000, 40001, 40702, 40440(a), and 40725 through 40728.5; and

WHEREAS, the SCAQMD Governing Board has determined that the Socioeconomic Impact Assessment of Proposed Amended Rule 1135 is consistent with the March 17, 1989 Governing Board Socioeconomic Resolution for rule adoption; and

WHEREAS, the SCAQMD Governing Board has determined that the Socioeconomic Impact Assessment is consistent with the provisions of California Health and Safety Code Sections 40440.8, 40728.5, and 40920.6; and

WHEREAS, the SCAQMD Governing Board has determined that Proposed Amended Rule 1135 will result in increased costs to the affected industries, yet are considered to be reasonable, with a total annualized cost as specified in the Socioeconomic Impact Assessment; and

WHEREAS, the SCAQMD Governing Board has actively considered the Socioeconomic Impact Assessment and has made a good faith effort to minimize such impacts; and

WHEREAS, SCAQMD Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx) provides an option for facilities to remain in RECLAIM if they receive a Final Determination to exit RECLAIM; and

WHEREAS, the SCAQMD Governing Board directs staff to resolve NSR issues prior to forcing any facilities to exit out of RECLAIM; and

WHEREAS, the SCAQMD specifies that the Planning and Rules Manager of Rule 1135 is the custodian of the documents or other materials which constitute the record of proceedings upon which the adoption of these proposed amendments is based, which are located at the South Coast Air Quality Management District, 21865 Copley Drive, Diamond Bar, California; and

WHEREAS, a public hearing has been properly noticed in accordance with the provisions of Health and Safety Code Section 40725 and 40440.5; and

WHEREAS, the SCAQMD Governing Board has held a public hearing in accordance with all applicable provisions of state and federal law; and

NOW, THEREFORE BE IT RESOLVED, that the SCAQMD Governing Board has considered the Final Mitigated SEA for Proposed Amended Rule 1135 together will all comments received during the public review period, and, on the basis of the whole record before it, the SCAQMD Governing Board finds that the Final Mitigated SEA was completed in compliance with CEQA and the SCAQMD's Certified Regulatory Program, and that it is presented to the SCAQMD Governing Board, whose members exercised their independent judgment and reviewed, considered and approved the information therein prior to acting on Proposed Amended Rule 1135; and

BE IT FURTHER RESOLVED, that the SCAQMD Governing Board adopts a Mitigation Monitoring and Reporting Plan pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097 that will mitigate potentially significant adverse environmental impacts to a level below significance so that Proposed Amended Rule 1135 will have no significant effects on the environment, and which is included as Attachment F (Attachment 1 to the Resolution) and incorporated herein by reference; and

BE IT FURTHER RESOLVED, that the SCAQMD Governing Board does hereby adopt, pursuant to the authority granted by law, Proposed Amended Rule 1135 as set forth in the attached, and incorporated herein by reference; and

BE IT FURTHER RESOLVED, that the SCAQMD Governing Board requests that Proposed Amended Rule 1135 be submitted into the State Implementation Plan; and

BE IT FURTHER RESOLVED, that the Executive Officer is hereby directed to forward a copy of this Resolution and Proposed Amended Rule 1135 to the California Air Resources Board for approval and subsequent submittal to the U.S. Environmental Protection Agency for inclusion into the State Implementation Plan.

DATE: _______________ ______________________________

CLERK OF THE BOARDS

ATTACHMENT F

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Attachment 1 to the Governing Board Resolution for:
Final Mitigated Subsequent Environmental Assessment for Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities

Mitigation Monitoring and Reporting Plan

SCAQMD No. 09142018RB
State Clearinghouse No: 2016071006

October 2018

Executive Officer
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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD

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INTRODUCTION

As a result of control measure CMB-05 - Further NOx Reductions from RECLAIM Assessment, from the 2016 Air Quality Management Plan (AQMP), the South Coast Air Quality Management District (SCAQMD) Governing Board directed staff to begin the process of transitioning the current regulatory structure for emissions of oxides of nitrogen (NOx) from facilities subject to SCAQMD Regulation XX – Regional Clean Air Incentives Market (RECLAIM) to an equipment-based command-and-control regulatory structure per SCAQMD Regulation XI – Source Specific Standards. SCAQMD staff conducted a programmatic analysis of the NOx 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 RECLAIM unless their NOx emitting equipment is subject to an adopted BARCT rule.

As such, SCAQMD staff has proposed amendments to Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities. Rule 1135 applies to electric generating units (e.g., diesel internal combustion engines located on Santa Catalina Island, boilers, and turbines that generate electric power for distribution, with the exception of cogeneration turbines and emergency internal combustion engines) at electricity generating facilities that are owned electric utilities, publicly owned electric utilities, or have a generation capacity of at least 50 megawatts of electrical power. Proposed Amended Rule (PAR) 1135 will update the NOx emissions limits for electric generating units to reflect current BARCT and provide implementation timeframes to achieve compliance. PAR 1135 also proposes monitoring, reporting, and recordkeeping requirements. Additionally, PAR 1135 establishes exemptions from specific provisions.

In particular, PAR 1135 applies to RECLAIM and non-RECLAIM electricity generating facilities that are investor-owned electric utilities, publicly owned electric utilities, or have a generation capacity of at least 50 megawatts of electrical power. If adopted, PAR 1135 would:

1) Expand applicability to include units at RECLAIM electricity generating facilities and units at electricity generating facilities that were not at electric power generating systems subject to Rule 1135;
2) Update the NOx and ammonia emission limits for boilers and gas turbines;
3) Establish NOx emission limits and add new emission limits for ammonia, carbon monoxide, volatile organic compounds, and particulate matter for internal combustion engines;
4) Revise monitoring, reporting, and recordkeeping requirements; and
5) Revise exemptions.

Implementation of PAR 1135 is estimated to reduce NOx emissions by 1.7 tons per by retrofitting or repowering of existing electric generating units with BARCT units that can achieve the revised NOx emission limits, or the retiring of existing electric power generating units.

PAR 1135 is considered a "project" as defined by the California Environmental Quality Act (CEQA) (California Public Resources Code Sections 21000 et seq.). The SCAQMD as Lead Agency for the proposed project, prepared a Draft Mitigated Subsequent Environmental Assessment (SEA) which analyzed 17 environmental topic areas and the potential adverse environmental impacts that could be generated as a result of the proposed project. Analysis of PAR 1135 in the Draft Mitigated SEA indicated that while the project will reduce NOx emissions, complying with PAR 1135 may cause some facility operators to make physical modifications to their equipment in order to achieve compliance, and these activities may create secondary adverse environmental impacts. For example, in order to comply with the emission limits proposed in PAR 1135, owners/operators of some affected facilities may need to retrofit existing equipment by: 1) installing new or modifying existing air pollution control systems; 2) repowering existing equipment by replacing an electric generating unit such as a boiler with a new, different electric generating unit such as a turbine while generating an equivalent or greater net power output; or 3) replacing an electric generating unit with a new unit of the same type (e.g., replacing an old turbine with a new, more efficient turbine). As such, the Mitigated SEA identified and analyzed activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric generating units as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric generating units. Thus, the analysis in the Draft Mitigated SEA concluded that only the topic of hazards and hazardous materials due to the storage and use of aqueous and was identified has having potentially significant adverse impacts if PAR 1135 is implemented. However, pursuant to CEQA Guidelines Section 15252, mitigation measures are required to avoid or reduce any potential significant adverse impacts that a project might have on the environment. As such, mitigation measures were crafted that would reduce the potentially significant adverse hazards and hazardous materials impacts to less than significant levels. No other environmental topic areas were identified in the Draft Mitigated SEA as having potentially significant adverse impacts. Thus, the analysis in the Draft Mitigated SEA concluded that there are no environmental topic areas that would be significantly adversely affected by PAR 1135 after mitigation measures are applied. In addition, because there are no remaining significant impacts after mitigation measures are applied, no project alternatives are required

The Draft Mitigated SEA was released for a 30-day public review and comment period from Tuesday, September 18, 2018 to Thursday, October 18, 2018. Subsequent to the release of the Draft Mitigated SEA, modifications were made to PAR 1135. Staff has reviewed the modifications to PAR 1135 and concluded that none of the revisions: 1) constitute significant new information; 2) constitute a substantial increase in the severity of an environmental impact; or, 3) provide new information of substantial importance relative to the draft document. In addition, revisions to the proposed project in response to verbal or written comments would not create new, avoidable significant effects. As a result, these revisions do not require recirculation of the draft document pursuant to CEQA Guidelines Sections 15073.5 and 15088.5. The Draft Mitigated SEA has been revised to include the aforementioned modifications such that it is now the Final Mitigated SEA. Also, during the public comment period, the SCAQMD received one comment letter relative to the Draft Mitigated SEA. The comment received relative to the CEQA analysis in the Draft Mitigated SEA has been responded to and is included in Appendix F of the Final Mitigated SEA.

NO POTENTIAL SIGNIFICANT ADVERSE IMPACTS THAT CANNOT BE REDUCED BELOW A SIGNIFICANT LEVEL

Analysis in the Final Mitigated SEA did not identify any environmental topic areas that cannot be reduced below a significant level. Therefore, there are no potentially significant adverse impacts as a result of the proposed project.

FINDINGS NOT REQUIRED

Public Resources Code Section 21081 and CEQA Guidelines Section 15091(a) state that no public agency shall approve or carry out a project for which a CEQA document has been completed which identifies one or more significant adverse environmental effects of the project unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding. Additionally, the findings must be supported by substantial evidence in the record. [CEQA Guidelines Section 15091(b)]. As stated in the Final Mitigated SEA and summarized above, analysis of the proposed project did not result in the identification of any environmental topic areas that would be significantly adversely affected after mitigation; therefore, findings are not required and have not been prepared.

STATEMENT OF OVERRIDING CONSIDERATIONS NOT REQUIRED

If significant adverse impacts of a proposed project remain after incorporating mitigation measures, or no measures or alternatives to mitigate the adverse impacts are identified, the lead agency must make a determination that the benefits of the project outweigh the unavoidable adverse environmental effects if it is to approve the project. CEQA requires the decision-making agency to balance, as applicable, the economic, legal, social, technological, or other benefits of a proposed project against its unavoidable environmental risks when determining whether to approve the project. [CEQA Guidelines Section 15093(a)]. If the specific economic, legal, social, technological, or other benefits of a proposed project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered “acceptable.” [CEQA Guidelines Section 15093(a)]. Because the Final Mitigated SEA did not identify any environmental topic areas that would be significantly adversely affected after mitigation, a Statement of Overriding Considerations is not required and was not prepared.

MITIGATION MONITORING AND REPORTING PLAN

Of the 17 environmental topic areas analyzed in the Final Mitigated SEA, only the topic of hazards and hazardous materials due to the storage and use of aqueous ammonia was identified as having potentially significant adverse impacts. Pursuant to CEQA Guidelines Section 15252, mitigation measures are required to avoid or reduce any potential significant adverse impacts that a project might have on the environment. As such, mitigation measures were crafted that would reduce the potentially significant adverse hazards and hazardous materials impacts to less than significant levels. In accordance with CEQA Guidelines Section 15097(a), the lead agency shall adopt a program for monitoring or reporting for the revisions to the project which it has required and the measures it has imposed to mitigate or avoid significant environmental effects. To fulfill this requirement, the SCAQMD has developed this Mitigation Monitoring and Reporting Plan to address the mitigation measures required for the otherwise potentially significant adverse hazards and hazardous materials impacts that may result from implementing PAR 1135. Each operator of any facility required to comply with this Mitigation Monitoring and Reporting Plan shall keep records onsite of applicable compliance activities to demonstrate the steps taken to assure compliance with all of the mitigation measures, as applicable.

Hazards and Hazardous Materials Impacts Due to Storage and Use of Aqueous Ammonia

Impacts Summary: The ongoing storage and handling of aqueous ammonia at facilities affected by PAR 1135 could create a significant adverse hazards impact to the public due to the existing possibility for an accidental spill and release of aqueous ammonia, which could create a potential risk for an offsite public and sensitive receptor exposure.

Ammonia, though not a carcinogen, is a chronic and acutely hazardous material. Located on the MSDS for aqueous ammonia (19 percent by weight), the hazards ratings are as follows: health is rated 3 (highly hazardous), flammability is rated 1 (slight), and reactivity is rated 0 (none). Therefore, an increase in the use of ammonia in response to the proposed project may increase the current existing risk setting associated with deliveries (i.e., truck and road accidents) and onsite or offsite spills for each facility that currently uses, will begin to use, or will increase the use of 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 and migrate 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. Possible sources of potential aqueous ammonia releases include aqueous ammonia delivery trucks and aqueous ammonia storage tanks.

In addition, the shipping, handling, storage, and disposal of hazardous materials inherently poses a certain risk of a release to the environment. Thus, the routine transport of hazardous materials, use, and disposal of hazardous materials may increase as a result of implementing the proposed project. Further, if a facility installs air pollution control technology that utilizes ammonia, such as selective catalytic reduction (SCR) units, PAR 1135 may alter the transportation modes for feedstock and products to/from the existing facilities such as aqueous ammonia and catalyst. It is important to note, however, that the Final Mitigated SEA only identified the storage and use of aqueous ammonia has having potentially significant hazards and hazardous materials impacts requiring mitigation measures. Further, the Final Mitigated SEA also concluded that the routine transport and disposal of hazardous materials would have less than significant hazards and hazardous materials impacts, such that mitigation measures were not required.

To the extent that a facility would need to install a new aqueous ammonia storage tank as part of the proposed project, the implementation of mitigation measures HZ-1 through HZ-6 would be expected to prevent a catastrophic release of aqueous ammonia from leaving a facility's property and exposing offsite sensitive receptors, thus, reducing a potentially significant hazards and hazardous materials impact due to storage and use of aqueous ammonia to less than significant levels.

Current SCAQMD practice typically does not allow the use of anhydrous ammonia for air pollution control equipment. Further, to minimize the hazards associated with using ammonia for air pollution control technology, it is the permitting practice of the SCAQMD to typically 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 material lists unlike anhydrous ammonia or aqueous ammonia at higher percentages. As such, SCAQMD staff does not typically 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 impact summary focuses on the use of 19 percent by volume aqueous ammonia. Thus, because aqueous ammonia (at 19 percent by weight) would be typically required for any permits issued for the installation of air pollution control equipment that utilize ammonia and because MMHZ-1 requires the use of aqueous ammonia at a concentration less than or equal to 19 percent by volume, hazards from toxic clouds are expected to be lessened when compared to higher concentrations of ammonia. As a practical matter, the actual concentration that is typically utilized is a solution of 19% aqueous ammonia, which contains approximately 81% water. Due to the high water content, aqueous ammonia is not considered to be flammable. Thus, heat-related hazard impacts such as fires, explosions, and boiling liquid-expanding vapor explosion (BLEVE) are not expected to occur from the increased delivery, storage and use of aqueous ammonia as part of implementing PAR 1135.

Further, the accidental release of ammonia from a delivery and use is a localized event (i.e., the release of ammonia would only affect the receptors that are within the zone of the toxic endpoint). The accidental release from offloading aqueous ammonia during a delivery would also be temporally limited in the fact that deliveries are not likely to be made at the same time in the same area and the safety devices required as part of MMHZ-2 further reduce the likelihood of an accidental release. Based on these limitations, it is assumed that an accidental release would be limited to a single delivery at a single facility at a time. In addition, it is unlikely that an accidental release from both a delivery truck and the stationary storage tank would result in more than the amount evaluated in the catastrophic release of the storage tank because the level of ammonia in the storage tanks would be low or else the delivery trip would not be necessary. In addition, implementation of MMHZ-4 (grating covered trench) and MMHZ-5 (underground gravity drain) would further reduce the impact from an accidental release during the delivery and transfer of aqueous ammonia to the storage tank.

The analysis of hazard impacts can rely on information from past similar projects (i.e., installing new, or retrofitting existing equipment with NOx control technology that utilizes ammonia 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 NOx control technology that utilizes aqueous ammonia and associated aqueous ammonia storage equipment conform to the hazard analysis in the Final Mitigated SEA, no further hazard analysis may be necessary. If site-specific characteristics are involved with future projects to install NOx control equipment that utilize aqueous ammonia that are outside the scope of this analysis, a further hazards analysis for aqueous ammonia may be warranted.

A hazard analysis is dependent on several parameters about the potential hazard such as the capacity of the aqueous ammonia storage tank, the concentration of the aqueous ammonia, meteorological conditions, location of nearest receptor, and the dimensions of secondary containment, if any. If a facility were to install a new aqueous ammonia tank to supply additional aqueous ammonia to air pollution control equipment (e.g., SCR technology) and the effects of an offsite consequence from an accidental release of aqueous ammonia due to a tank rupture was analyzed using the EPA RMP*Comp (Version 1.07) model resulted in a significant hazards impact to sensitive receptors, the facility operator would be required to implement the following feasible mitigation measures to reduce the impacts to less than significant levels and prevent a catastrophic release of aqueous ammonia from leaving a facility's property.

Mitigation Measures: 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. SCAQMD staff will conduct a CEQA evaluation of each facility-specific project proposed in response to the proposed project and determine if the project is covered by the analysis in this Mitigated SEA. 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. The mitigation measures will be enforceable by SCAQMD personnel.

<u>Hazards and Hazardous Materials</u>

HZ-1 Require the use of aqueous ammonia at concentrations less than or equal to 19 percent by volume for all facilities regulated by Rule1135.

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 or more 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 or more of the storage tank volume from the secondary containment area.

Implementing Parties: The SCAQMD's Governing Board finds that implementing the mitigation measures HZ-1 through HZ-6 is the responsibility of the owner, operator, or agent of each affected facility who submits a permit application to comply with the proposed project.

Implementation Mechanism: Mitigation measures HZ-1 through HZ-6 shall be included as a condition in the SCAQMD Permit to Construct and Permit to Operate. Further, all information required as part of this Mitigation Monitoring and Reporting Plan shall be provided by the owner, operator or agent of the affected facility at the time when an applicant submits a permit application.

Monitoring Agency: The SCAQMD's Governing Board finds that through its discretionary authority to issue and enforce permits for this project and to implement conditions to prevent an air pollution nuisance, the SCAQMD will ensure compliance with mitigation measures HZ-1 through HZ-6. Mitigation monitoring and reporting (MMR) will be accomplished as follows:

MMRHZ-1 All aqueous ammonia used and stored onsite shall be at a concentration of less than 19 percent by volume.

Each facility operator shall ensure the concentration of aqueous ammonia used and stored onsite is less than 19 percent by volume. The percent by volume of aqueous ammonia shall be posted on the aqueous ammonia tank at all times. The SCAQMD may conduct inspections of the site to verify compliance.

MMRHZ-2: Safety devices shall be installed on all equipment associated with the use and storage of aqueous ammonia, to the extent feasible.

At the time of submitting an application for a Permit to Construct for an aqueous ammonia storage tank each facility operator shall submit a list of all safety devices installed. Safety devices may include, but are 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. Once the aqueous ammonia storage tank becomes operational, each facility operator shall ensure all safety devices are maintained and are functioning properly. All maintenance records shall be kept onsite from the initiation of operations.

MMRHZ-3: All facility operators shall install a secondary containment system such as a dike or berm to capture 110 percent or more of the aqueous ammonia storage tank volume in the event of a spill.

At the time of submitting an application for a Permit to Construct for an aqueous ammonia storage tank each facility operator shall submit plans for a secondary containment system to capture 110 percent or more of the aqueous ammonia storage tank volume in the event of a spill. Secondary containment systems may include, but are not limited to: a dike or berm. Once the aqueous ammonia storage tank becomes operational, each facility operator shall ensure all secondary containment systems are maintained, free of detritus, and are functioning properly. All maintenance records shall be kept onsite from the initiation of operations.

MMRHZ-4: All facility operators shall install a grating-covered trench around the perimeter of the aqueous ammonia 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.

At the time of submitting an application for a Permit to Construct for an aqueous ammonia storage tank each facility operator shall submit plans for installation of a grating covered trench around the perimeter of the delivery bay to passively contain spills from the tanker truck during the transfer of aqueous ammonia from the delivery truck to the aqueous ammonia storage tank. Once the aqueous ammonia storage tank becomes operational, each facility operator shall ensure the grating-covered trench is maintained, free of detritus, and is functioning properly. All maintenance records shall be kept onsite from the initiation of operations.

MMRHZ-5: All facility operators shall 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.

At the time of submitting an application for a Permit to Construct for an aqueous ammonia storage tank each facility operator shall submit plans for installation of a 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.. Once the aqueous ammonia storage tank becomes operational, each facility operator shall ensure the underground gravity drain is maintained, free of detritus, and is functioning properly. All maintenance records shall be kept onsite from the initiation of operations.

MMRHZ-6: All facility operators shall install a tertiary containment system capable of evacuating 110 percent or more of the aqueous ammonia storage tank volume from the secondary containment area.

At the time of submitting an application for a Permit to Construct for an aqueous ammonia storage tank each facility operator shall submit plans for a tertiary containment system to capture 110 percent or more of the aqueous ammonia storage tank volume from the secondary containment area in the event of a spill. Once the aqueous ammonia storage tank becomes operational, each facility operator shall ensure all tertiary containment systems are maintained, free of detritus, and are functioning properly. All maintenance records shall be kept onsite from the initiation of operations.

CONCLUSION

Mitigation measures were crafted after the analysis in the Final Mitigated SEA indicated that the topic of hazards and hazardous materials could create potentially significant adverse impacts for the storage and use of aqueous ammonia prior to mitigation. Therefore, mitigation measures were included in the Final Mitigated SEA to reduce the potentially significant adverse hazards and hazardous materials impacts to less than significant levels after mitigation measures are applied. Further, based on a "worst-case" analysis, any potentially significant adverse hazards and hazardous materials impacts due to the storage and use of aqueous ammonia from implementing PAR 1135 would be reduced to less than significant levels after mitigation measures HZ-1 through HZ-6 are applied. In addition, because there are no remaining significant impacts after mitigation measures are applied, no project alternatives are required.

ATTACHMENT G

(Adopted August 4, 1989)(Amended December 21, 1990)(Amended July 19, 1991)
(PAR 1135 November 2, 2018)

PROPOSED AMENDED RULE 1135. EMISSIONS OF OXIDES OF NITROGEN FROM ~~ELECTRIC POWER GENERATING SYSTEMS~~ ELECTRICITY GENERATING FACILITIES

(a) Purpose

The purpose of this rule is to reduce emissions of oxides of nitrogen (NO_x) from electric generating units at electricity generating facilities.

(~~a~~b) Applicability

This rule shall ~~applies~~ apply to electric ~~power~~ generating ~~systems~~units at electricity generating facilities.

(~~b~~c) Definitions

~~(1) ADVANCED COMBUSTION RESOURCE means a combustion resource, within or outside the District, irrespective of ownership, capable of generating electricity using cogeneration; combined cycle gas turbines; intercooled, chemically recuperated, or other advanced gas turbines; and other advanced combustion processes.~~

~~(2) ALTERNATIVE RESOURCE means a resource, within or outside the District, irrespective of ownership, capable of generating electricity in a non-conventional manner, including, but not limited to: solar; geothermal; wind; fuel cells; electricity conservation; and electricity demand-side management measures.~~

~~(3) APPROVED ALTERNATIVE OR ADVANCED COMBUSTION RESOURCE means an alternative resource or advanced combustion resource which is approved by the Executive Officer. The Executive Officer shall disapprove an alternative resource or an advanced combustion resource unless and until it:~~

~~(A) Displaces boiler capacity existing in the District on or after July 19, 1991; and~~

~~(B) Emits~~ ~~NO_x~~ ~~at no more than 0.10 pound per net megawatt-hours (MWH) on a daily average basis if the resource is located within the District, or no more than 0.05 pound per net MWH on a daily average basis if the resource is located outside the District; for cogeneration facilities, the daily~~ ~~NO_x~~ ~~emission per MWH shall be calculated after deducting 0.013 pound of~~ ~~NO_x~~

~~for each million BTU of useful thermal energy produced which is not used for electric power generation; and~~

~~(C) Commences operation on or after July 19, 1991; and~~

~~(D) Is proven to the satisfaction of the Executive Officer that the net megawatt-hours obtained or conserved are real, quantifiable, and enforceable.~~

~~(4) ALTERNATIVE RESOURCE OR ADVANCED COMBUSTION RESOURCE BREAKDOWN means an unscheduled condition during which no net electric power is obtained from an approved alternative or advanced combustion resource for 24 continuous hours or more.~~

(1) ANNUAL CAPACITY FACTOR means the ratio between the measured heat input (in MMBTU) from fuel consumption to an electric generating unit during a calendar year and the potential heat input (in MMBTU) to the electric generating unit had it been operated for 8,760 hours during a calendar year at the permitted heat input rating, expressed as a percent. Annual capacity factor does not include heat input of the electric generating unit during the Emergency Phase of the California Energy Commission Energy Emergency Response Plan or a Governor-declared State of Emergency or Energy Emergency.

(~~5~~2) BOILER means any combustion equipment ~~in the District~~ fired with liquid and/or gaseous fuel, which is primarily used to produce steam that is expanded in a turbine generator used for electric power generation. ~~This includes only units existing on July 19, 1991, which are owned or operated by any one of the following: Southern California Edison, Los Angeles Department of Water and Power, City of Burbank, City of Glendale, and City of Pasadena, or any of their successors.~~

~~(6) COGENERATION FACILITY means equipment used to produce electricity and other forms of useful thermal energy through the sequential use of energy, as specified in Public Resources Code Section 25134.~~

(3) COGENERATION TURBINE means any gas turbine which is designed to generate electricity and useful heat energy at the same time (combined heat and power).

(4) COMBINED CYCLE GAS TURBINE means any gas turbine that recovers heat from the gas turbine exhaust gases for use in a heat recovery steam generator to generate additional electricity.

(~~7~~5) DAILY means a calendar day starting at 12 midnight and continuing through ~~to the following 12 midnight hour~~ 11:59 p.m.

~~(8) DISPLACE means either of the following:~~

~~(A) The concurrent and enforceable reduction of equivalent boiler capacity from one or more designated boilers in the District, such that the combined electric power obtained from approved alternative or advanced combustion resources and designated boilers does not exceed the maximum permitted capacity of the designated boilers, on an hourly average basis; or~~

~~(B) The reduction of boiler capacity, equivalent to the maximum electric power obtained from the approved alternative or advanced combustion resource, from one or more boilers in the District for not less than six months as specified in the Permit to Operate. The owner or operator of the boilers may apply to the Executive Officer for restoration of the displaced capacity in the Permit to Operate, which shall be approved upon:~~

~~(i) Disapproval of the previously approved alternative or advanced combustion resource which was based on such displaced capacity; and~~

~~(ii) Evidence of compliance with all provisions of this rule after the restoration of the displaced capacity.~~

~~During an alternative or advanced combustion resource breakdown, the associated displaced boiler capacity may be utilized up to a maximum of 120 hours in any calendar month, provided the Executive Officer is notified prior to such utilization.~~

(6) DUCT BURNER means 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.

~~(9) DISTRICT-WIDE DAILY LIMITS means the daily emissions limits applicable to any electric power generating system, consisting of an emissions cap and/or an emissions rate.~~

~~(A) EMISSIONS CAP is expressed in pounds of~~ ~~NO_x~~ ~~and calculated as the total daily~~ ~~NO_x~~ ~~emissions in pounds from all boilers, replacement units, and approved alternative or advanced combustion resources in the District.~~

~~(B) EMISSIONS RATE is expressed in pounds of~~ ~~NO_x~~ ~~per Megawatt-Hour and calculated as the total daily~~ ~~NO_x~~ ~~emissions in pounds from all boilers, replacement units, and approved alternative or advanced combustion resources in the District, divided by the total daily net electric power generated and/or obtained in Megawatt-Hours from all boilers and replacement units in the District and approved alternative or advanced~~

~~combustion resources within or outside the District. For the purposes of this calculation, 70 percent, or higher if proven to the satisfaction of the Executive Officer, of the net Megawatt-Hours obtained from an approved alternative or advanced combustion resource outside the District shall be used. NO_x emissions during start-ups and shutdowns, up to a maximum of 12 hours for each event, shall not be included in the determination of the emissions rate for an electric power generating system if five or fewer boilers are in operation during this period.~~

~~NO_x emissions from approved cogeneration facilities shall be calculated after deducting 0.013 pound of NO_x for each million BTU of useful thermal energy produced which is not used for electric power generation.~~

(7) ELECTRIC GENERATING UNIT means a boiler that generates electric power, gas turbine that generates electric power with the exception of cogeneration turbines, or diesel internal combustion engine that generates electric power and is located on Santa Catalina Island with the exception of emergency internal combustion engines.

(8) ELECTRICITY GENERATING FACILITY means a facility that is owned or operated by an investor-owned electric utility; is owned or operated by a publicly owned electric utility; or has electric generating units with a combined generation capacity of 50 megawatts or more of electrical power for distribution in the state or local electrical grid system. Electricity generating facility does not include landfills, petroleum refineries, or publicly owned treatment works.

~~(10) ELECTRIC POWER GENERATING SYSTEM means all boilers, replacement units and approved alternative or advanced combustion resources owned or operated by, and approved alternative or advanced combustion resources and replacement units under contract to sell power to, any one of the following: Southern California Edison, Los Angeles Department of Water and Power, City of Burbank, City of Glendale, City of Pasadena, or any of their successors.~~

(~~11~~9) FORCE MAJEURE NATURAL GAS CURTAILMENT means an interruption in natural gas service due to unavoidable or unforeseeable failure, malfunction, or natural disaster, not resulting from an intentional or negligent act or omission on the part of the owner or operator of an ~~boiler or a replacement unit~~ electric generating unit, or a supply restriction resulting from the application of a California Public Utilities Commission (CPUC) priority allocation system of ~~CPUC~~ Southern California Gas Company Tariff Rule 23, such that the daily fuel needs of an ~~boiler~~

~~or a replacement unit~~electric generating unit cannot be met with the natural gas available.

(10) FORMER RECLAIM NO_x SOURCE for the purpose of this rule means an electric generating unit located at an electricity generating facility or its successor 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 from the Executive Officer or the owner or operator opts-out of RECLAIM, and is no longer in the RECLAIM program.

(11) INTERNAL COMBUSTION ENGINE means a reciprocating type engine in which the combustion of a fuel occurs with an oxidizer (usually air) in a combustion chamber to produce mechanical energy.

(12) INVESTOR-OWNED ELECTRIC UTILITY means a business organization managed as a private enterprise that operates electric generating unit(s) for electric power distribution primarily in the grid system overseen by the California Public Utilities Commission.

(13) LANDFILL means an entire disposal facility in a contiguous geographical space where solid waste is placed in or on land.

(14) NON-RECLAIM NO_x SOURCE for the purpose of this rule means an electric generating unit located at an electricity generating facility or its successor that was not in the RECLAIM as of January 5, 2018, as established in Regulation XX.

(~~12~~15) OXIDES OF NITROGEN (NO_x) EMISSIONS means the sum of nitric oxides and nitrogen dioxides emitted, collectively expressed as nitrogen dioxide emissions.

~~(13) REPLACEMENT UNIT for the purpose of this rule means equipment within an electric power generating system, irrespective of ownership, which permanently replaces boiler capacity existing on July 19, 1991 in the same system in the District, and meets the requirements of Best Available Control Technology (BACT), as determined by the Executive Officer. If the replacement unit's electric power output in net megawatts exceeds the permitted net megawatt capacity of the boiler(s) replaced, only the electric power generation and NOx emissions prorated to the permitted net megawatt capacity of the boiler(s) replaced shall be subject to the provisions of this rule.~~

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

(17) PUBLICLY OWNED ELECTRIC UTILITY means a special-purpose district or other jurisdiction, including municipal districts or municipalities, that operates

electric generating unit(s) for electric power distribution, either partially or totally, to residents of that district or jurisdiction.

(18) PUBLICLY OWNED TREATMENT WORKS means 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.

(19) RECLAIM NO_x SOURCE for the purpose of this rule means an electric generating unit located at an electricity generating facility or its successor that is in the RECLAIM as of January 5, 2018, as established in Regulation XX and is still in RECLAIM on the relevant date.

(20) SCAQMD-WIDE DAILY LIMITS means the daily emissions limits applicable to any electricity generating facility consisting of an emissions cap and/or an emissions rate.

(A) EMISSIONS CAP is expressed in pounds of NO_x and calculated as the total daily NO_x emissions in pounds from all boilers at an electricity generating facility.

(B) EMISSIONS RATE is expressed in pounds of NO_x per Megawatt-Hour and calculated as the total daily NO_x emissions in pounds from all boilers at an electricity generating facility, divided by the total daily net electric power generated and/or obtained in Megawatt-Hours from all boilers at an electricity generating facility. NO_x emissions during start-ups and shutdowns, up to a maximum of 12 hours for each event, shall not be included in the determination of the emissions rate for an electricity generating facility if five or fewer boilers are in operation during this period.

(21) SHUTDOWN means the time period during which an electric generating unit begins reducing load and ending in a period of zero fuel flow or as otherwise defined in the SCAQMD permit.

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

(~~14~~23) START-UP~~ OR SHUTDOWN is any one of the following events:~~

~~(A) START-UP is~~ means the time period ~~during which~~ that begins when an~~ boiler~~ electric generating unit~~ is heated to its normal operating temperature range from a cold or ambient temperature, or from a hot standby condition where no net electric power is produced for at least 8 hours~~ begins combusting fuel after a period of zero fuel flow and ends when the electric generating unit generates electricity for sale over the grid for power distribution, or as otherwise defined in the SCAQMD permit.

~~(B) SHUTDOWN is the time period during which a boiler is allowed to cool from its normal operating temperature range to a cold or ambient temperature, or to a hot standby condition where no net electric power is produced for at least 8 hours.~~

(24) TUNING means adjusting, optimizing, rebalancing, or other similar operations to an electric generating unit or an associated control device or as otherwise defined in the SCAQMD permit. Tuning does not include normal operations to meet load fluctuations.

~~(15) USEFUL THERMAL ENERGY means thermal energy used in any industrial or commercial process, or used in any heating or cooling application. This shall not include the thermal energy of any condensate returned from the process or application to the cogeneration facility, or any thermal energy used to produce electric power.~~

(~~c~~d) Emissions ~~Limitations~~ Limits

(1) Emissions Limits for Boilers and Gas Turbines

Notwithstanding the exemptions contained in Rule 2001 – Applicability, subdivision (j) – Rule Applicability and its accompanying Table 1: Existing 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 issued to effectuate the requirements in this rule, whichever occurs first, the owner or operator of an electricity generating facility shall not operate, a boiler or gas turbine in a manner that exceeds the NO_x and ammonia emissions limits listed in Table 1: Emissions Limits for Boilers and Gas Turbines, where:

(A) Boilers and gas turbines ~~installed~~ for which the owner or operator has applied for permits to construct after [*Date of Adoption*] shall average the NO_x and ammonia emissions limits in Table 1 over a 60 minute rolling average.~~; or~~

(B) Boilers and gas turbines installed or for which the owner or operator has applied for permits to construct prior to [*Date of Adoption*] ~~may~~ shall:

(i) Average the NO_x and ammonia emissions limits in Table 1 over a 60 minute rolling average; or

(ii) Retain the averaging time requirements specified on the SCAQMD permit as of [*Date of Adoption*].

Table 1: Emissions Limits for Boilers and Gas Turbines

Equipment Type	NO_x (ppmv)[1]	Ammonia (ppmv)	Oxygen Correction (%, dry)
Boiler	5	5	3
Combined Cycle Gas Turbine and Associated Duct Burner	2	5	15
Simple Cycle Gas Turbine	2.5	5	15

[1] – The NO_x emission limits in Table 1 shall not apply during start-up, shutdown, and tuning.

(2) Emissions Limits for Diesel Internal Combustion Engines

(A) Notwithstanding the exemptions contained in Rule 2001 – Applicability, subdivision (j) – Rule Applicability and its accompanying Table 1: Existing 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 issued to effectuate the requirements in this rule, whichever occurs first, the owner or operator of an electricity generating facility located on Santa Catalina Island shall not operate a diesel internal combustion engine in a manner that exceeds the NO_x, ammonia, carbon monoxide, volatile organic compounds, and particulate matter emissions limits listed in Table 2: Emissions Limits for Diesel Internal Combustion Engines.

(B) Diesel internal combustion engines installed prior to [*Date of Adoption*] may retain the averaging time requirements specified on the SCAQMD permit as of [*Date of Adoption*].

Table 2: Emissions Limits for Diesel Internal Combustion Engines

NO_x ~~[1,4]~~ (ppmv)[1,4]	Ammonia~~[1]~~ (ppmv)[1]	Carbon Monoxide~~[2]~~ (ppmv)[2,4]	Volatile Organic Compounds~~[3]~~ (ppmv)[3,4]	Particulate Matter (lbs/mmbtu)
45	5	250	30	0.0076

[1] – Corrected to 15% oxygen on a dry basis and averaged over a 60 minute rolling average

[2] – Corrected to 15% oxygen on a dry basis and averaged over 15 minutes

[3] – Measured as carbon, corrected to 15% oxygen on a dry basis, and averaged over sampling time required by the test method

[4] – The NO_x, carbon monoxide, and volatile organic compounds emissions limits in Table 2 shall not apply during start-up~~,~~ and shutdown~~, and tuning.~~

(3) Start-up, Shutdown, and Tuning Requirements

The owner or operator of an electricity generating facility shall meet start-up, shutdown, and tuning requirements in the SCAQMD permit for each electric generating unit. On and after January 1, 2024, t~~T~~he SCAQMD permit shall include limitations for duration, mass emissions, and number of start-ups, shutdowns, and, if applicable, tunings.

(4) Alternative Compliance Approach for Electric Generating Units Located on Santa Catalina Island

The owner or operator of an electricity generating facility located on Santa Catalina Island with diesel internal combustion engines that elects to meet a mass emission limit of 13 tons of NO_x annually by January 1, 2026 in lieu of complying with paragraph (d)(2)(A) shall:

(A) On or before January 1, 2022, submit a written notification to the Executive Officer that specifies the decision to meet a mass emission limit of 13 tons of NO_x annually by January 1, 2026; provides a description of the technologies that will be implemented to meet the emission limits; and provides a schedule of submittal of permits to the SCAQMD and any other approving agency, the timeframe to order equipment, and the timeframe for installation of equipment that will demonstrate the facility can meet a mass emission limit of 13 tons of NO_x annually by January 1, 2026; and

(B) On or before January 1, 2022, submit an application for a permit condition that limits total annual emissions from the facility to no more than 13 tons of NO_x emissions annually after December 31, 2025.

(5) Time Extensions

(A) The owner or operator of an electricity generating facility on Santa Catalina Island may submit a request to the Executive Officer for approval of an extension of up to three years to meet the emissions limits specified in paragraphs (d)(2) or (d)(4).

(i) If electing to comply with paragraph (d)(2), a minimum of two units, excluding units exempt under paragraph (g)(3), shall meet the emissions limits in Table 2 by January 1, 2023; or

(ii) If electing to comply with paragraph (d)(4), the facility shall meet a mass emission limit of 50 tons of NO_x annually for compliance year 2022, and meet a mass emission limit of 40 tons of NO_x annually for compliance year 2023.

(B) The owner or operator that elects to submit a request for a time extension shall submit the request at least 365 days before the compliance deadline specified in subparagraph (d)(2)(A) or paragraph (d)(4).

(C) The owner or operator that submits a request for a time extension request shall provide the following information to the Executive Officer:

(i) Identification of the units for which a time extension is needed;

(ii) The reason(s) a time extension is needed;

(iii) Progress of replacing or retrofitting the electric generating units; and

(iv) The length of time requested.

(D) The Executive Officer will approve or disapprove the request for a time extension. Approval or disapproval will be based on the following criteria:

(i) The owner or operator prepared the request for a time extension in compliance with subparagraphs (d)(5)(A) through (d)(5)(C); and

(ii) The owner or operator provided sufficient details identifying the reason(s) a time extension is needed that demonstrates to the Executive Officer that there are extenuating circumstances that necessitate additional time to complete implementation. Such a demonstration may include, but is not limited to, providing detailed schedules, engineering designs, construction plans, land acquisition contracts, permit applications, and purchase orders.

(E) If the Executive Officer approves the request for a time extension, the owner or operator shall:

(i) Submit an application at least 18 months before the new compliance deadline for a permit condition that limits total annual emission from the facility to no more than 13 tons of NO_x emission annually on and after the new compliance deadline, if electing to comply with paragraph (d)(4); and

(ii) Pay a mitigation fee within 30 days of the date of approval. The mitigation fee shall be \$100,000/year, or any portion of a year, after the compliance date specified in subparagraph (d)(2)(A) or paragraph (d)(4).

~~(1) Southern California Edison, or its successor, shall not operate its electric power generating system unless the following District-wide daily limits on emissions rate and emissions cap are met during the applicable time period:~~

	~~District-Wide Daily Limits Lb NOx/Net Megawatt (MW) Hr~~	~~Lb NOx Per Day~~
~~Beginning December 31, 1989~~	~~1.10~~	
~~Beginning December 31, 1990~~	~~1.01~~	
~~Beginning December 31, 1991~~	~~0.91~~	
~~Beginning December 31, 1992~~	~~0.82~~	
~~Beginning December 31, 1993~~	~~0.72~~	
~~Beginning December 31, 1994~~	~~0.63~~	
~~Beginning December 31, 1995~~	~~0.53~~	
~~Beginning December 31, 1996~~	~~0.44~~	
~~Beginning December 31, 1997~~	~~0.34~~	
~~Beginning December 31, 1998~~	~~0.25~~	
~~Beginning December 31, 1999~~	~~0.15~~	~~13,400~~

~~(2) Los Angeles Department of Water and Power, or its successor, shall not operate its electric power generating system unless the following District-wide daily limits on emissions rate and emissions cap are met during the applicable time period:~~

	~~District-Wide Daily Limits Lb NOx/Net Megawatt (MW) Hr~~	~~Lb NOx Per Day~~
~~Beginning December 31, 1989~~	~~1.60~~	
~~Beginning December 31, 1990~~	~~1.41~~	
~~Beginning December 31, 1991~~	~~1.21~~	
~~Beginning December 31, 1992~~	~~1.02~~	

~~Beginning December 31, 1993~~	~~0.82~~	
~~Beginning December 31, 1994~~	~~0.73~~	
~~Beginning December 31, 1995~~	~~0.63~~	
~~Beginning December 31, 1996~~	~~0.54~~	
~~Beginning December 31, 1997~~	~~0.43~~	
~~Beginning December 31, 1998~~	~~0.29~~	
~~Beginning December 31, 1999~~	~~0.15~~	~~5,400~~
~~Beginning December 31, 2004~~	~~0.15~~	~~6,400~~
~~Beginning December 31, 2009~~	~~0.15~~	~~7,400~~

(~~3~~6) City of Glendale

(A) Until compliance with the provisions pursuant to paragraph (d)(1) is achieved, ~~The City of Burbank,~~ the City of Glendale~~, and the City of Pasadena,~~ or any of ~~their~~ its successors, shall not operate ~~their~~ its boilers ~~electric power generating system~~ unless at least one of the following ~~District~~SCAQMD-wide daily limits on emissions rate or emissions cap is met ~~during the applicable time period~~:

~~(A) For the City of Burbank:~~

~~Date~~	~~District-Wide Daily Limits~~	
	~~Lb NO_x/Net Megawatt (MW) Hr~~	~~Lb NO_x Per Day~~
~~Beginning December 31, 1989~~	~~2.47~~	~~3,870~~
~~Beginning December 31, 1993~~	~~1.73~~	~~2,763~~
~~Beginning December 31, 1996~~	~~0.99~~	~~1,657~~
~~Beginning December 31, 1999~~	~~0.20~~	~~580~~

~~(B) For the City of Glendale:~~

~~Date~~	~~District-Wide Daily Limits~~	
	~~Lb NO_x/Net Megawatt (MW) Hr~~	~~Lb NO_x Per Day~~
~~Beginning December 31, 1989~~	~~2.52~~	~~2,940~~
~~Beginning December 31, 1993~~	~~1.76~~	~~2,050~~
~~Beginning December 31, 1996~~	~~1.00~~	~~1,170~~

~~Beginning December 31, 1999~~	~~0.20~~	~~390~~

(i) Emissions rate of 0.20 pounds of NO_x per net Megawatt-Hour; or

(ii) Emissions cap of 390 pounds of NO_x per day.

~~(C) For the City of Pasadena:~~

~~Date~~	~~District-Wide Daily Limits~~	
	~~Lb NO_x/Net Megawatt (MW) Hr~~	~~Lb NO_x Per Day~~
~~Beginning December 31, 1989~~	~~3.05~~	~~5,230~~
~~Beginning December 31, 1993~~	~~2.12~~	~~3,680~~
~~Beginning December 31, 1996~~	~~1.18~~	~~2,130~~
~~Beginning December 31, 1999~~	~~0.20~~	~~900~~

(~~4~~B) ~~Electric power generating systems~~ Until compliance with paragraph (d)(1) is achieved, the City of Glendale shall not emit total quantities of NO_x from all boilers~~, replacement units and approved alternative resources or advanced combustion resources in the District, for any calendar year beginning with 2000,~~ in excess of ~~the following limits:~~

~~(A) 1,640 tons per year for Southern California Edison Co.;~~

~~(B) 960 tons per year for Los Angeles Department of Water and Power;~~

~~(C) 56 tons per year for the City of Burbank;~~

~~(D)~~ 35 tons of NO_x per calendar year ~~for the City of Glendale;~~. ~~i~~If Grayson combined cycle gas turbine Unit 8BC cannot produce electricity because of a breakdown for 30 continuous days or more, the annual NO_x emissions limit shall be increased by 65 pounds per day, up to a maximum of 41 tons per year.

~~(E) 80 tons per year for the City of Pasadena.~~

(~~5~~C) A violation of any requirement specified in subparagraphs ~~(c)(1), or (c)(2), or (c)(3), or (c)(4)~~ (d)(6)(A) or (d)(6)(B) shall constitute a violation of this rule for every ~~permitted~~ applicable unit operating during the exceedance period ~~in the applicable electric power generating system~~. ~~This provision shall not be applicable to approved alternative or advanced combustion resources, and compliance shall be determined assuming that NO_x emissions from approved alternative or advanced combustion resources occur at actual or permitted levels, whichever is lower.~~

~~(6) All retrofit emission control devices required to meet the provisions of this rule for the year 2000 shall be installed and be operative on each boiler by December 31,~~

~~1997, except for the three cities of Glendale, Pasadena and Burbank for whom the deadline shall be December 31, 1999. All replacement units and approved alternative or advanced combustion resources required by the approved compliance plan for all the electric power generating systems shall be installed and be operative by December 31, 1999.~~

(7) On or before July 1, 2022, ~~The~~ the owner or operator of ~~each boiler and approved alternative or advanced combustion resource in the District~~ an electricity generating facility shall submit an application for a change of permit conditions to reconcile their permit(s) with Rule 1135. ~~include NO_x emission limits for each boiler and approved alternative or advanced combustion resource, as specified in the compliance plan requirements in subparagraph (d)(1)(C). Such applications shall be submitted no later than January 1, 1992, to the Executive Officer for approval.~~

~~(8) A violation of any unit-specific NO_x emissions limits established in a District Permit to Operate or approved compliance plan shall constitute a violation of this rule for that unit of the electric power generating system.~~

~~(d) Compliance Plans~~

~~(1) Compliance Plan (Plan) approval and disapproval:~~

~~(A) Each owner or operator of a boiler shall submit a Plan by January 1, 1992 to the Executive Officer for approval. The Plan shall propose actions and alternatives which will be taken to meet or exceed the requirements of this rule.~~

~~(B) The Executive Officer shall seek input from the Air Resources Board (ARB), the California Energy Commission (CEC), and the California Public Utilities Commission (CPUC) prior to approval of the Plan. All written comments received from the ARB, the CEC, and the CPUC for a CPUC regulated utility, within 30 days of the receipt of the Plan, shall be considered by the Executive Officer for Plan approval.~~

~~(C) The Executive Officer shall disapprove the Plan unless the applicant proves to the satisfaction of the Executive Officer that the implementation of the Plan will result in timely compliance with all provisions of this rule. The approved Plan shall specify a NO_x emission limit for each unit of the electric power generating system in Lb NO_x per net Megawatt Hour on an hourly average basis; such emission limit shall not be applicable when the unit is not producing any net electric power, or during a start-up, a shutdown, or 12 hours for each start-up or shutdown, whichever is less.~~

~~(D) On and after July 1, 1992, failure to have an approved Plan or failure to implement the provisions of an approved Plan shall constitute a violation of this rule.~~

~~(2) The Plan shall contain, at a minimum:~~

~~(A) A list of all boilers subject to this rule with the maximum rated net and gross generating capacity for each unit.~~

~~(B) A schedule of equipment to be controlled, displaced, or replaced, indicating the type of control to be applied to each existing boiler and the emissions reductions for each compliance increment, and identifying each unit to be displaced with an alternative or advanced combustion resource.~~

~~(C) Detailed schedules for submittal of permit applications, construction activities, and planned operation phases.~~

~~(D) A detailed list of all assumptions and calculations used to determine compliance with the District-wide daily limits.~~

~~(E) A list of the control devices and methods which are being proposed for each boiler specified in subparagraph (d)(2)(A), along with the percent~~ $\cancel{NO_x}$ ~~reduction efficiency assumed for each.~~

~~(F) Historical power generating data for each boiler and future resource plans used to support power generation mix assumptions.~~

~~(G) For each year, beginning with 1992, a graph of the~~ $\cancel{NO_x}$ ~~emission in Lb~~ $\cancel{NO_x}$~~/hour versus net Megawatts generated on an hourly average basis for the full load range of each unit of the electric power generating system burning natural gas that will result in compliance with the District-wide daily limits as specified in subsection (c), Emissions Limitations, for the following cases:~~

~~(i) Under a projected peak generation day for each future year of compliance, based on District guidelines, and~~

~~(ii) Individually for each unit, under maximum power generation for that unit on a projected peak generation day for each future year of compliance.~~

~~(H) Identification of conditions that may require an exemption under subsection (h) and the actions taken or to be taken to minimize or eliminate such conditions.~~

~~(3) The Plan shall also include proposed increments of progress for the following:~~

~~(A) Southern California Edison shall install and operate by December 31, 1993 a Selective Catalytic Reduction unit (SCR) on an existing 480 MW steam~~

~~boiler such that NO_x emissions from the facility do not exceed 0.25 pound of NO_x per net MWH; and~~

~~(B) Los Angeles Department of Water and Power shall replace at least 240 megawatts of existing steam boiler capacity by December 31, 1993 such that NO_x emissions from the replacement unit do not exceed applicable Best Available Control Technology standards, as determined by the Executive Officer.~~

~~(4) Not earlier than July 1 of any year following 1992, amendments to a previously approved Plan may be proposed to the Executive Officer as necessary to reflect energy regulatory agency resource or municipal authority planning determinations, adjustments to unit specific emissions limits required in subparagraph (d)(1)(C) in view of emissions control performance test data, and advancements in emissions control technology. The Executive Officer shall disapprove such amendments unless the applicant proves to the satisfaction of the Executive Officer that the implementation of the amended Plan will result in timely compliance with all provisions of this rule.~~

~~(5) All approved Plans and approved amendments to Plans shall be submitted by the District to the Air Resources Board and the Environmental Protection Agency as source-specific revisions to the State Implementation Plan.~~

(e) ~~Measurements~~Monitoring, Recordkeeping, and Reporting

~~(1) The owner or operator of each boiler, replacement unit and approved alternative or advanced combustion resource in the District power shall install, operate, and maintain in calibration an continuous emission monitoring system (CEMS) and a Remote Terminal Unit (RTU) to demonstrate compliance with the provisions of this rule.~~

~~(2) Each CEMS shall meet all applicable federal, state and District requirements for certification, calibration, performance, measurement, maintenance, notification, recordkeeping, and reporting, including, but not limited to, the requirements set forth in the District's "CEMS Requirements Document for Utility Boilers," dated July 19, 1991. Prior to the installation of a CEMS, the owner or operator of each boiler, replacement unit and approved alternative or advanced combustion resource in the District shall submit a revised detailed CEM Plan by October 19, 1991 for the approval of the Executive Officer. The CEM Plan shall contain all information required in the District's "CEMS Requirements Document for Utility Boilers," dated July 19, 1991.~~

~~(3) Each RTU shall meet specifications set forth by the Executive Officer to ensure that emissions and other data necessary to determine compliance are reliably and accurately telecommunicated from each unit to the District in a format compatible with District equipment. Each RTU shall be installed with the prior approval of the Executive Officer by January 1, 1993.~~

~~(4) Starting December 21, 1990 until January 1, 1993, the owner or operator of each boiler, replacement unit and approved alternative or advanced combustion resource in the District shall submit a monthly compliance report to the Executive Officer, and shall make all data available to the District staff on a daily basis according to the interim reporting requirements specified in the "CEMS Requirements Document for Utility Boilers," dated July 19, 1991.~~

~~(5) The owner or operator of each boiler, replacement unit and approved alternative or advanced combustion resource in the District shall install testing facilities as specified in the "CEMS Requirements Document for Electric Generating Units," dated July 19, 1991, by January 1, 1993.~~

~~(6) The owner or operator of each boiler, replacement unit and approved alternative or advanced combustion resource in the District shall install, maintain and operate a backup data gathering and storage system after each associated RTU is installed, but not later than January 1, 1993, as specified in the "CEMS Requirements Document for Utility Boilers," dated July 19, 1991.~~

~~(7) CEMS data shall be gathered and recorded at least once per minute at each boiler, replacement unit and approved alternative or advanced combustion resource in the District, and valid data, as specified in the "CEMS Requirements Document for Utility Boilers," dated July 19, 1991, shall be obtained for at least 90 percent of the data points in any calendar day.~~

~~(8) If valid data is not obtained by a CEMS for any boiler, replacement unit or approved alternative or advanced combustion resource in the District, the following alternative means of~~ $\cancel{NO_x}$ ~~emissions data generation may be used for not more than 72 hours in any one calendar month:~~

~~(A) Reference test methods as specified in the "CEMS Requirements Document for Utility Boilers," dated July 19, 1991; or~~

~~(B) Load curves provided approval is obtained as specified in the "CEMS Requirements Document for Utility Boilers," dated July 19, 1991. New load curves shall be submitted for the approval of the Executive Officer if the basic equipment is modified.~~

(1) RECLAIM NO_x Source

The owner or operator of each RECLAIM NO_x source subject to Rule 1135 shall comply with SCAQMD Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NO_x) Emissions to demonstrate compliance with the NO_x emissions limits of this rule.

(2) Former RECLAIM NO_x Source

The owner or operator of each former RECLAIM NO_x source subject to Rule 1135 shall comply with SCAQMD Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NO_x) Emissions to demonstrate compliance with the NO_x emissions limits of this rule, excluding the following:

(A) Paragraphs (c)(3) through (c)(8), reporting and Super Compliant facilities;

(B) Subparagraphs (d)(2)(B) through (d)(2)(E), reporting and emission factors;

(C) Subdivisions (e), NO_x Process Units;

(D) Paragraphs (g)(5) through (g)(8), reporting;

(E) Paragraphs (h)(1), (h)(2), and (h)(4) through (h)(6), reporting and mass emissions;

(F) Subdivisions (i), (k) and (l), Recordkeeping, Exemptions, and Appeals; and

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

(3) Non-RECLAIM NO_x Source

The owner or operator of a non-RECLAIM NO_x source subject to Rule 1135 shall comply with the following provisions to demonstrate compliance with the NOx emissions limits of this rule:

(A) 40 CFR Part 75 and calculating NO_x in ppmv pursuant to SCAQMD Rule 218 – Continuous Emission Monitoring; or

(B) SCAQMD Rule 218 – Continuous Emission Monitoring.

(4) City of Glendale

The City of Glendale or any of its successors shall demonstrate compliance with paragraph (d)(6) and calculate NO_x emissions rate in pounds per net Megawatt-Hour or NO_x emissions cap in pounds of NO_x per day and tons of NO_x per calendar year as established in their approved Continuous Emission Monitoring System (CEMS) Plan.

(5) Diesel Internal Combustion Engines

The owner or operator of each diesel internal combustion engine electric generating unit shall comply with the following provisions:

(A) Demonstrate compliance with the carbon monoxide and volatile organic compound emissions limits of this rule pursuant to Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines subdivisions (f) – Monitoring, Testing, Recordkeeping and Reporting and (g) – Test Methods; and

(B) Conduct yearly source test for particulate matter emissions according to SCAQMD Method 5.1 – Determination of Particulate Matter Emissions from Stationary Sources Using a Wet Impingement Train or SCAQMD Method 5.2 – Determination of Particulate Matter Emissions from Stationary Sources using Heated Probe and Filter to demonstrate compliance with the particulate matter emission limit. The yearly emission limit shall be defined as a period of twelve consecutive months determined on a rolling basis with a new twelve month period beginning on the first day of each calendar month.

(6) Ammonia Emissions Limits

(A) The owner or operator of each electric generating unit with catalytic control devices shall conduct quarterly source tests to demonstrate compliance with the ammonia emission limit according to SCAQMD Method 207.1 – Determination of Ammonia Emissions from Stationary Sources during the first twelve months of operation of the catalytic control device and annually thereafter when four consecutive quarterly source tests demonstrate compliance with the ammonia emission limit. If an annual test is failed, four consecutive quarterly source tests must demonstrate compliance with the ammonia emissions limits prior to resuming annual source tests.

(B) In lieu of complying with paragraph (e)(6)(A), the owner or operator of each electric generating unit may utilize ammonia CEMS certified under an approved SCAQMD protocol to demonstrate compliance with the ammonia emission limit.

(7) The owner or operator of each former RECLAIM NO_x source and non-RECLAIM NO_x source shall maintain information pursuant to this subdivision at the facility for a period of five years, except that all data gathered or computed for intervals of less than 15 minutes shall be maintained for a minimum of 48 hours, and make available to SCAQMD upon request.

(8) Operating Log

The owner or operator of each former RECLAIM NO_x source and non-RECLAIM NO_x source shall maintain records, in a manner approved by the SCAQMD, in an operating log on a daily basis, for the following parameter(s) or item(s):

(A) Time and duration of start-ups and shutdowns;

(B) Total hours of operation;

(C) Quantity of fuel;

(D) Cumulative hours of operation to date for the calendar year;

(E) Megawatt hours of electricity produced; and

(F) Net megawatt hours electricity produced.

(f) Use of Liquid Petroleum Fuel

(1) Force Majeure Natural Gas Curtailment

The ~~District-wide daily limits on emissions rate and emissions cap specified in paragraphs (c)(1), (c)(2), and (c)(3)~~ NO_x emissions limits specified in subdivision (d) shall not apply to an electric ~~power~~ generating ~~system~~ unit ~~on days of~~ during force majeure natural gas curtailment when the use of liquid petroleum fuel is required, provided that:

(A) Within 15 days of each occurrence, the owner or operator of each ~~boiler~~ electricity generating facility submits an affidavit signed by a corporate officer affirming that liquid petroleum fuel was burned due to force majeure natural gas curtailment; and

~~(B) Each boiler, when it burns natural gas exclusively, meets the applicable unit-specific NOx emission limit specified in subparagraph (d)(1)(C); and~~

(~~C~~B) Each ~~boiler~~ electric generating unit, when it burns liquid petroleum fuel ~~exclusively~~, emits ~~oxides of nitrogen~~NO_x at no more than ~~2 times~~ the applicable unit-specific liquid petroleum fuel NO_x emission limit specified in ~~subparagraph (d)(1)(C)~~ the SCAQMD permit.~~; and~~

~~(D) Each boiler, when it burns a combination of liquid petroleum fuel and natural gas, emits oxides of nitrogen at no more than the prorated limit for that unit, obtained from the requirements specified in subparagraphs (f)(1)(B) and (f)(1)(C), and weighted by the flow rate and gross heating value of natural gas and liquid petroleum fuel, respectively. The calculation procedure in the "CEMS Requirement Document for Utility Boilers", dated July 19, 1991 shall be followed.~~

(2) Fuel Readiness Testing

~~A boiler may burn liquid petroleum fuel for up to 24 hours in any calendar year for fuel readiness testing provided that the emission limitation specified in subparagraph (f)(1)(C) is met. The unit specific NOx emission limit specified in subparagraph (d)(1)(C) shall not apply during this period.~~The NO_x emissions limits specified in subdivision (d) shall not apply to an electric generating unit during fuel readiness testing, and the electric generating unit may burn liquid petroleum fuel, provided that:

(A) Fuel readiness testing does not exceed sixty minutes ~~on one day~~ per week;

(B) Each electric generating unit, when it burns liquid petroleum fuel, emits NO_x at no more than the applicable unit-specific liquid petroleum NO_x emission limit specified in the SCAQMD permit;

(C) Fuel readiness testing shall only occur after the equipment has reached the emissions limits specified in paragraph (d)(1) while firing on natural gas and shall commence no later than sixty minutes after achieving emissions limits specified in paragraph (d)(1) while firing on natural gas; and

(D) Each readiness test shall commence with the equipment switching from natural gas to liquid petroleum fuel and conclude with the equipment switching from liquid petroleum fuel to natural gas.

(3) Source Testing

The NO_x emissions limits specified in subdivision (d) shall not apply to an electric generating unit when it burns liquid petroleum fuel during emissions source testing, and the electric generating unit may burn liquid petroleum fuel for emissions source testing specified by SCAQMD rules, including initial certifications of Continuous Emissions Monitoring Systems (CEMS) and semi-annual Relative Accuracy Test Audits (RATAs). RATA tests shall only be conducted concurrently with weekly readiness testing.

~~(g) Municipal Bubble Options~~

~~(1) Any electric power generating system may form a municipal bubble by linking with one or more electric power generating system(s), for the purposes of this rule, provided all of the following conditions are met:~~

~~(A) The municipal bubble does not include Southern California Edison; and~~

~~(B) The municipal bubble is formed for at least one year, or more; and~~

~~(C) An application for approval of the municipal bubble is submitted jointly by all affected municipal utilities to the Executive Officer, at least six months in advance; and~~

~~(D) Written approval of the application for the municipal bubble is obtained from the Executive Officer prior to utilization of any provision contained in subsection (g), Municipal Bubble Options.~~

~~(2) The application for a municipal bubble required in subparagraph (g)(1)(C) shall include, without being limited to:~~

~~(A) Proposed amendments to the compliance plans of all affected municipal utilities, as required to meet or exceed the municipal bubble emissions limitations specified in paragraph (g)(3); and~~

~~(B) Applications for change of permit conditions to adjust NO_x emissions limits for each boiler, replacement unit and approved alternative or advanced combustion resource in the District, as required by the proposed amendments to the compliance plans; and~~

~~(C) Any other information required by the Executive Officer to evaluate compliance with the provisions of this rule.~~

~~The Executive Officer shall not approve the application for a municipal bubble unless it is demonstrated to the satisfaction of the Executive Officer that such action(s) will result in compliance with the municipal bubble emissions limitations specified in paragraph (g)(3) in an enforceable manner.~~

~~(3) Municipal bubble emissions limitations shall be derived from the District-wide daily limits on emissions rate and emissions cap specified in paragraphs (c)(2) and (c)(3), for each municipal utility, as follows:~~

~~(A) The District-wide daily limits on emissions rate in pounds of NO_x per net megawatt-hours shall be the sum of the emissions rates of each participating utility, weighted by the maximum permitted capacity of each utility as a fraction of the total permitted capacity in the municipal bubble, for the applicable time period; and~~

~~(B) The District-wide daily limits on emissions cap in pounds of NO_x per day shall be the sum of the emissions cap of all participating utilities, for the applicable time period, and beginning December 31, 1999, if Los Angeles Department of Water and Power is included in the municipal bubble; and~~

~~(4) An electric power generating system subject to a municipal bubble approved by the Executive Officer shall be exempt from the utility-specific requirements of paragraphs (c)(2) and (c)(3); and be subject to the municipal bubble emissions limitations specified in paragraph (g)(3) for the applicable time period.~~

~~(5) A violation of any municipal bubble emissions limitations required in paragraph (g)(4) shall constitute a violation for each permitted boiler and replacement unit, operating during the exceedance period, in the municipal bubble. This provision shall not apply to approved alternative or advanced combustion resources.~~

(~~h~~g) Exemptions

(1) 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)(1) for that combined cycle gas turbine, provided that:

(A) The SCAQMD permit as of [*Date of Adoption*] includes a condition limiting the NO_x concentration to 2.5 ppmv NO_x or less averaged over 60 minutes at 15% oxygen on a dry basis; and

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

(2) Once-Through-Cooling Electric Generating Units

The owner or operator of an electric generating unit subject to the Clean Water Act Section 316(b) shall not be subject to paragraph (d)(1) for that electric generating unit, provided that:

(A) The NO_x and ammonia limits, averaging times, and start-up, shutdown, and tuning requirements specified on the SCAQMD permit as of [*Date of* Adoption] are retained;

(B) On or before January 1, 2023, the owner or operator notifies SCAQMD of the compliance dates set forth in Table 1 of Section 2(B) of the State Water Resources Control Board's Statewide Water Quality Control Policy on the Use of Coastal Estuarine Waters for Power Plant Cooling (Once-Through-Cooling Policy) implementing Section 316(b) of the Clean Water Act;

(C) Within 3 months of approval of an extension of the compliance date set forth in Table 1 of Section 2(B) of the Once-Through-Cooling Policy, the owner or operator notifies SCAQMD of the extension. This extension is not applicable to facilities that have utilized the Modeling and Offset Exemptions in Rule 1304 (a)(2) and the associated replacement electric generating unit is in operation; and

(D) The owner or operator complies with the compliance date set forth in Table 1 of Section 2(B) of the Once-Through-Cooling Policy.

(3) Diesel Internal Combustion Engines

The owner or operator of a diesel internal combustion engine installed prior to [*Date of Adoption*] shall not be subject to paragraph (d)(2) for that diesel internal combustion engine provided that:

(A) The SCAQMD permit as of [*Date of Adoption*] includes a condition limiting the NO_x concentration to 51 ppmv NO_x or less averaged over 60 minutes at 15% oxygen on a dry basis; and

(B) The NO_x, ammonia, carbon monoxide, volatile organic compounds, and particulate matter limits, averaging times, and start-up~~,~~ and shutdown~~, and tuning~~ requirements specified on the SCAQMD permit as of [*Date of Adoption*] are retained.

(4) Low-Use

(A) Gas Turbines

The owner or operator of a gas turbine installed prior to [*Date of Adoption*] shall not be subject to emissions limits specified under paragraph (d)(1) for that gas turbine, provided that the gas turbine:

(i) Maintains an annual capacity factor of less than twenty-five percent each calendar year;

(ii) Maintains an annual capacity factor of less than ten percent averaged over three consecutive calendar years on a rolling basis; and

(iii) Retains the NO_x and ammonia limits, averaging times, and start-up, shutdown, and tuning requirements specified on the SCAQMD permit as of [*Date of Adoption*].

(B) Boilers

The owner or operator of a boiler installed prior to [*Date of Adoption*] shall not be subject to paragraph (d)(1) for that boiler, provided that the boiler:

(i) Maintains an annual capacity factor of less than two and one half percent each calendar year;

(ii) Maintains an annual capacity factor of less than one percent averaged over three consecutive calendar years on a rolling basis; and

(iii) Retains the NO_x and ammonia limits, averaging times, and start-up~~,~~ and shutdown~~, and tuning~~ requirements specified on the SCAQMD permit as of [*Date of Adoption*].

(C) Initial Requirement for Low-Use Exemption

The owner or operator of an electricity generating facility that elects the low-use exemption pursuant to subparagraph (g)(4)(A) or (g)(4)(B) for a gas turbine or boiler shall submit permit applications by July 1, 2022 for each electric generating unit requesting the change of SCAQMD permit conditions to incorporate the low-use exemption.

(D) Eligibility for Low-Use Exemption

Eligibility of the low-use exemption shall be determined annually for each electric generating unit and reported to the Executive Officer no later than March 1 following each reporting year.

(E) Exceedance of Low-Use Exemption

(i) If an electric generating unit with a low-use exemption pursuant to subparagraph (g)(4)(A) or (g)(4)(B) exceeds the annual or three year average annual capacity factor limit, such exceed shall be a violation of this rule and the owner or operator of that electric generating unit is subject to issuance of a notice of violation each year there is an exceedance for each annual and/or three-year exceedance.

(ii) If an electric generating unit with a low-use exemption pursuant to subparagraph (g)(4)(A) or (g)(4)(B) exceeds the annual or three year average annual capacity factor limit, the owner or operator of that electric generating unit shall:

(A) Within six months of the date of reported exceedance of subparagraph (g)(4)(A) or (g)(4)(B), submit complete SCAQMD permit applications to repower, retrofit, or retire that electric generating unit;

(B) Submit a CEMS Plan within six months from the date of complete SCAQMD permit application submittal pursuant to subclause (g)(4)(E)(ii)(A); and

(C) Not operate that electric generating unit in a manner that exceeds the emissions limits listed in Table I after two years from the date of the reported exceedance of subparagraph (g)(4)(A) or (g)(4)(B).

(5) Internal combustion engines located on Santa Catalina Island are exempt from subdivision (f).

~~(1) Notwithstanding the provisions of paragraphs (c)(1) or (c)(2), Southern California Edison or Los Angeles Department of Water and Power may operate its electric~~

~~power generating system if both the following District-wide daily limits on emissions rate and emissions cap are met:~~

	~~District-Wide Daily Limits Lb NOx/Net Megawatt (MW) Hr~~	~~Lb NOx Per Day~~
~~Southern California Edison~~	~~0.25~~	~~5,360~~
~~Los Angeles Department of Water and Power~~	~~0.25~~	~~2,960~~

~~(2)~~ ~~Notwithstanding the provisions of paragraphs (c)(1), (c)(2), or (c)(3), an electric power generating system may be operated for no more than 10 calendar days in any calendar year if all the following conditions are met:~~

~~(A)~~ ~~Both the following District-wide daily limits on emissions rate and emissions cap are met:~~

	~~District-Wide Daily Limits Lb NOx/Net Megawatt (MW) Hr~~	~~Lb NOx Per Day~~
~~Southern California Edison~~	~~0.25~~	~~20,100~~
~~Los Angeles Department of Water and Power~~	~~0.25~~	~~11,100~~
~~Burbank~~	~~0.25~~	~~870~~
~~Glendale~~	~~0.25~~	~~580~~
~~Pasadena~~	~~0.25~~	~~1,350;~~

~~and~~

~~(B)~~ ~~The electric generating system owner/operator has taken all possible steps to comply with paragraphs (c)(1), (c)(2) and (c)(3), including the interruption of non-firm load.~~

~~(C)~~ ~~The exemption is not required as a result of operator error, neglect, or improper operating or maintenance procedures;~~

~~(D)~~ ~~Steps are immediately taken to correct the condition;~~

~~(E)~~ ~~The electric power generating system owner/operator reports to the District the need for the exemption within one hour of the occurrence or within one hour of the time said operator knew or reasonably should have known of the occurrence;~~

~~(F)~~ ~~No later than one week after each event the owner/operator submits a written report to the District including but not limited to:~~

~~(i)~~ ~~A statement that the situation has been corrected, together with the date of correction and proof of compliance;~~

~~(ii) A specific statement of the reason(s) or cause(s) for the exemption sufficient to enable the Executive Officer to determine whether the occurrence was in accordance with the criteria set forth in subparagraphs (h)(2)(B) and (h)(2)(C) of this rule;~~

~~(iii) A description of the corrective measures undertaken and/or to be undertaken to avoid such an occurrence in the future.~~

~~CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) REQUIREMENTS DOCUMENT FOR UTILITY BOILERS~~

~~This document specifies requirements under Rule 1135 for continuous emission monitoring systems. Other District rules and permit conditions may require measurements, calculations, and reporting in addition to those indicated in this document.~~

~~1. REQUIREMENTS~~

~~1.1 The owner or operator of each boiler, unit, and approved alternative or advanced combustion resourceshall install, calibrate, maintain, and operate an approved CEMS, and record the output of the system, for measuring the following:~~

~~a. Nitrogen oxides emissions (in units of ppmv) discharged to the atmosphere from each boiler, unit, and approved alternative or advanced combustion resource.~~

~~b. Oxygen concentration, at each location where nitrogen oxides are monitored.~~

~~c. Stack gas volumetric flow rate. An in-stack flow meter may be used to determine mass emission rates to the atmosphere from each boiler, unit, and approved alternative or advanced combustion resource, except:~~

~~(i) when more than one boiler or resource vents to the atmosphere through a single stack, or~~

~~(ii) during periods of low flow rates when the flow rate is no longer within the applicable range of the in-stack flow meter.~~

~~d. Heat input rate when needed by the CEMS to determine the stack gas volumetric flow rate, or to determine applicable prorated emission limits during periods when the boiler, unit, or approved alternative or advanced combustion resource is firing on both gaseous and liquid fuels. The owner or operator shall include in the CEMS calculations the F_d factors listed in 40 CFR Part 60, Appendix A, Method 19, Table 19-1. The owner or operator shall submit data to develop F_d factors when alternative fuels are fired and obtain the approval of the Executive Officer for use of the F_d factors before firing any alternative fuels.~~

~~e. Net MWH of electricity produced at each affected boiler, unit, or approved alternative or advanced combustion resource.~~

~~The owner or operator shall also provide any other data necessary for calculating air contaminant emission rates as determined by the Executive Officer.~~

~~2. MONITORING SYSTEMS~~

~~2.1~~ ~~All CEMS at each affected boiler, unit, or approved alternative or advanced combustion resource shall, at a minimum, generate and record the following data points once per minute:~~

~~a.~~ ~~Nitrogen oxide concentration in the stack in units of ppmv.~~

~~b.~~ ~~Oxygen concentration in the stack in units of percent.~~

~~c.~~ ~~Volumetric flow rate of stack gases in units of dry standard cubic feet per minute (DSCFM). For Rule 1135 standard gas conditions are defined as temperature at 68°F and one atmosphere of pressure.~~

~~d.~~ ~~Fuel flow rates in units of standard cubic feet per minute (SCFM) for gaseous fuels or pounds per minute (lb/min) for liquid fuels if EPA Method 19 is used to calculate the stack gas volumetric flow rate.~~

~~e.~~ ~~Nitrogen oxide emission rate in units of lb/minute. The nitrogen oxide emission rate is calculated according to the following:~~

$$\cancel{e_i = a_i \times c_i \times 1.195 \times 10^{-7}}$$

~~where~~ $\cancel{e_i =}$ ~~The emission rate of nitrogen oxides in pounds per minute measured every minute,~~

$\cancel{a_i =}$ ~~The stack gas concentration of nitrogen oxides measured each minute (ppmv),~~

$\cancel{c_i =}$ ~~The stack gas volumetric flow rate measured each minute (DSCFM).~~

~~When the CEMS uses the heat input rate to determine the nitrogen oxides emission rates, the CEMS will use the following equation to calculate the emission rate of nitrogen oxides:~~

$$\cancel{e_i = a_i \times [20.9/(20.9 - b_i)] \times 1.195 \times 10^{-7} \times \sum_{i=1}^{r} (F_{di} \times d_i \times V_i)}$$

~~where~~ $\cancel{e_i =}$ ~~The emission rate of nitrogen oxides in pounds per minute measured every minute,~~

$\cancel{a_i =}$ ~~The stack gas concentration of nitrogen oxides measured each minute (ppmv) on a dry basis,~~

$\cancel{b_i =}$ ~~The stack gas concentrations of oxygen measured every minute~~

$\cancel{r =}$ ~~The number of different types of fuel,~~

~~F_{di} =~~ ~~The dry F factor for each type of fuel, the ratio of the dry gas volume of the products of combustion to the heat content of the fuel ($DSCF/10^6$ BTU),~~

~~d_i =~~ ~~The fuel flow rate for each type of fuel measured every minute,~~

~~V_i =~~ ~~The higher heating value of the fuel for each type of fuel.~~

~~The product (d_i x V_i) must have units of millions of BTU per minute (10^6 BTU/min).~~

~~f.~~ ~~During any one minute period when the net MW output of the replacement unit exceeds the permitted net MW capacity of the replaced boiler, the data points e_i and f_i (defined in Paragraph 2.2) must be recalculated by multiplying by the following factor:~~

$$\cancel{(MW_p/MW_r)}$$

~~where MW_p = Net MW output capacity of the replaced boiler,~~

~~and MW_r = Net MW output during the one minute period~~

~~= f_i x 60~~

~~Record the uncorrected and corrected values of e_i and f_i. Calculate and record the data points E, F, G, and H, the hourly lb NO_x/net MWH of electricity produced, and the daily lb NO_x/net MWH of electricity produced using first the uncorrected and corrected e_i and f_i values and using then the corrected e_i and f_i values.~~

~~g.~~ ~~Net MWH of electricity produced. The net MWH are defined as:~~

$$\cancel{\text{net MWH} = VIt \cos \varnothing /10^6}$$

~~where V =~~ ~~Voltage to the power grid (Volt),~~
~~I =~~ ~~Current to the power grid (Ampere),~~
~~cos ø =~~ ~~Power factor,~~
~~and ø =~~ ~~Phase angle.~~
~~t =~~ ~~Time (hr) = 1/60 hr,~~

~~The above equation is only a definition of MWH and a meter which measures MWH directly may be used. The voltage, current, power factor, and time do not need to be measured separately.~~

~~net MWH = Gross MWH - Auxiliary MWH~~

~~h.~~ ~~CEMS status. The following codes shall be used to report the CEMS status:~~

~~0 - Collecting valid data,~~
~~1 - In calibration,~~
~~2 - Off line,~~
~~3 - Tamper/security,~~
~~4 - Alternative data acquisition (see Paragraphs 2.7 and 2.8),~~
~~5 - Hot Standby,~~
~~6 - Out-of-control,~~
~~7 - Startup/shutdown.~~

~~2.2~~ ~~The hourly average stack gas concentrations of nitrogen oxides and oxygen, the stack gas volumetric flow rate, the fuel flow rate, emissions of nitrogen oxides, the net MWH of electricity produced, and the emissions rate of nitrogen oxides shall be calculated and recorded for each affected boiler, unit, or approved alternative or advanced combustion resource:~~

$$\cancel{A = \frac{\sum_{i=1}^{n} a_i}{n}}$$ ~~(for NO_x concentration)~~

$$\cancel{B = \frac{\sum_{i=1}^{n} b_i}{n}}$$ ~~(for O_2 concentration)~~

$$\cancel{C = \frac{\sum_{i=1}^{n} c_i}{n} \times 60}$$ ~~(for stack gas volumetric flow rate)~~

$$\cancel{D = \frac{\sum_{i=1}^{n} d_i}{n} \times 60}$$ ~~(for fuel flow rates)~~

~~Calculate D for each type of fuel firing separately.~~

$$\cancel{E = \frac{\sum_{i=1}^{n} e_i}{n} \times 60}$$ ~~(for NO_x emissions)~~

~~n~~

$\cancel{\sum f_i}$

~~i=1~~
~~F = ______ x 60~~ ~~(for net MWH)~~
~~n~~

~~P = E/F (for NO_x emissions rate)~~

~~All concentrations and stack gas flow rates shall be made on a consistent wet or dry basis.~~

~~where A =~~ ~~The hourly average stack gas concentration of nitrogen oxides,~~

~~a_i =~~ ~~The stack gas concentrations of nitrogen oxides measured every minute,~~

~~B =~~ ~~The hourly average oxygen stack concentration,~~

~~b_i =~~ ~~The stack gas concentrations of oxygen measured every minute,~~

~~C =~~ ~~The hourly average stack gas flow rate,~~

~~c_i =~~ ~~The stack gas volumetric flow rates measured every minute,~~

~~D_i =~~ ~~The hourly average fuel flow rates, for each type of fuel,~~

~~d_i =~~ ~~The fuel flow rate for each type of fuel measured every minute,~~

~~E =~~ ~~The hourly average emission rates of nitrogen oxides,~~

~~e_i =~~ ~~The emissions of nitrogen oxides in pounds per minute measured every minute,~~

~~F =~~ ~~The hourly net MWH of electricity produced,~~

~~f_i =~~ ~~The net MWH of electricity produced measured every minute,~~

~~P =~~ ~~The emissions rate of nitrogen oxides in pounds per net MWH of electricity produced~~

~~n =~~ ~~Number of valid data points during the hour.~~

~~Indicate any hourly data where n <45.~~

~~2.3~~ ~~The average daily emissions of nitrogen oxides shall be calculated and recorded for each affected boiler, unit, or approved alternative or advanced combustion resource:~~

~~N~~
~~Σ e_i~~
~~i=1~~
~~G = ________ x M~~
~~N~~

~~where~~ ~~G =~~ ~~The daily emissions of nitrogen oxides in units of lb/day,~~

~~M =Number of operating minutes during the day,~~

~~and N =Number of valid data points during the day.~~

~~Indicate any daily data where N <90 percent of M.~~

~~2.4 The average daily net MWH of electricity produced shall be calculated and recorded for each affected boiler, unit, or approved alternative or advanced combustion resource~~:

$$H = \frac{\sum_{i=1}^{N} f_i}{N} \times M$$

~~where H = The daily net MWH of electricity produced during the day,~~

~~Indicate any daily data where N <90 percent of M.~~

~~2.5 The hourly unit-specific emission limit shall be calculated and recorded when more than one fuel is burned during the hour:~~

$$J = \frac{\sum_{i=1}^{t} (L_i \times D_i \times V_i)}{\sum_{i=1}^{t} (D_i \times V_i)}$$

~~where J = Hourly unit-specific emission limit when more than one type of fuel is fired (lb NO_x/net MWH of electricity produced)~~

~~L_i = Unit-specific emission limit for each type of fuel fired (lb NO_x/net MWH of electricity produced)~~

~~V_i = Higher heating value of each type of fuel~~

~~The product (D_i x V_i) must have units of millions of BTU per hour (10^6 BTU/hour)~~

~~2.6 The CEMS shall be operated and data recorded during all periods of operation of the affected boilers, units, and approved alternative or advanced combustion resources including periods of start-up, shutdown, malfunction or emergency conditions, except for CEMS breakdowns and repairs. Calibration data shall be recorded during zero and span calibration checks, and zero and span adjustments. For periods of hot standby the utilities may enter a default value for NO_x emissions. Before using any default values the utilities must obtain the approval of the Executive Officer and must include in the CEMS applications or CEMS plans the estimates of NO_x emissions, the NO_x concentrations, the oxygen concentrations, and the fuel input rate or the stack gas volumetric flow rate during~~

~~hot standby conditions. The Executive Officer will approve only those emission values which he finds to correspond to hot standby conditions.~~

~~2.7~~ ~~When less than 90% of valid nitrogen oxides emission data are collected by the CEMS, emission rate data shall be obtained using District Methods 7.1 or 100.1 (for~~ ~~NO_x~~ ~~concentration in the stack gas) in conjunction with District Methods 1.1, 2.1, 3.1, and 4.1 or by using District Methods 7.1 or 100.1 in conjunction with District Method 3.1 and EPA Method 19. If the~~ ~~NO_x~~ ~~concentrations are less than 20 ppm, use Special District Method 7.1 (IC Alternative) or Modified District Method 100.1 for Low~~ ~~NO_x~~ ~~Concentrations. Descriptions of the last two methods can be found in Paragraphs 3.3.1 and 3.3.2 of the Relative Accuracy Test Procedure. For District Method 7.1 or Special District Method 7.1 (IC Alternative), a minimum of 12 samples, equally spaced over a one-hour period, shall be taken. Each sample shall represent the five-minute period in which it was taken.~~

~~2.8~~ ~~Load curves of~~ ~~NO_x~~ ~~emission rates or other alternative means of~~ ~~NO_x~~ ~~emission rate data generation may be used to obtain nitrogen oxides emission data, provided the utility has obtained the approval of the Executive Officer prior to using alternate means of~~ ~~NO_x~~ ~~emission rate data generation. The load curves and the alternate means of~~ ~~NO_x~~ ~~emission rate data generation mentioned in this paragraph shall not be used more than 72 hours per calendar month and may only be used if no CEMS data or reference method data gathered under paragraph 2.7 is available. Load curves may be used on units which have air pollution control devices for the control of nitrogen oxides emissions provided the utilities submit a complete list of operating conditions that characterize the permitted operation. The conditions must be specified in the compliance plans and permits which the rule requires. The process parameters specified in the conditions must be monitored by the CEMS.~~

~~2.9~~ ~~At each affected boiler, unit, or approved alternative or advanced combustion resource the number of valid data points (N) during the day shall be greater than 90 percent of the number operating minutes during the day in order to obtain a valid daily emission rate for nitrogen oxides and the daily net MWH of electricity produced. Valid data points are data points from the CEMS which meet the requirements of Paragraphs 2.18, 2.19, 2.19.1, 2.19.2, 2.19.2, 2.19.4, 2.19.5, 2.19.6, 2.19.7, 2.19.8, and 2.20 or which are obtained by the methods indicated in Paragraphs 2.7 and 2.8. The utility is deemed to be out of compliance with rule 1135 on a systemwide basis if one or more boilers, units, or approved alternative or advanced combustion resources do not comply with the 90 percent valid data requirement.~~

~~2.10~~ ~~Full scale span ranges for the~~ ~~NO_x~~ ~~analyzers at each unit shall be set on a unit-by-unit basis. The full scale span range of the~~ ~~NO_x~~ ~~analyzers shall be set so that all the data points gathered by the CEMS lie within 20-95 percent of the full-scale span range.~~

~~2.11~~ ~~The CEMS design shall allow determination of calibration drift at zero and high-level (90 to 100 percent of full scale) values. Alternative low-level and high-level span values may be allowed with the prior written approval of the Executive Officer.~~

~~2.12~~ ~~The volumetric flow measurement system shall meet a relative accuracy requirement of being less than or equal to 10 percent of the mean value of the reference method test data in units of DSCFM. Relative accuracy is calculated by the equations in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification 2.~~

~~2.13 The emission rate measurement shall meet a relative accuracy requirement of being less than or equal to 20 percent of the mean value of the reference method test data in units of lb/hr. Relative accuracy is calculated by the equations in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification 2.~~

~~2.14 The portion of the CEMS which samples, conditions, analyzes, and records the nitrogen oxides and oxygen concentrations in the stack gas shall be certified according to the specifications in District Rule 218.~~

~~2.15 Each boiler, unit, and approved alternative or advanced combustion resource shall have test facilities which meet the "Guidelines for Construction of Sampling and Testing Facilities" in the District Source Test Manual. If an alternate location (not conforming to the criteria of eight duct diameters downstream and two diameters upstream from a flow disturbance) is used, the absence of flow disturbance and stratification shall be demonstrated using District Source Test Methods.~~

~~2.16 The CEMS sample line from the CEMS probe to the sample conditioning system shall be heated to maintain the sample temperature above the dew point of the sample.~~

~~2.17 The District shall reevaluate the monitoring systems at any affected boiler, unit, or approved alternative or advanced combustion resource, where changes to the basic process equipment or air pollution control equipment occur, to determine the proper full span range of the monitors. Any monitor system requiring change to its full span range in order to meet the criteria in Paragraph 2.10 shall be recertified according to all the specifications in Rule 218 including the relative accuracy tests, the calibration drift tests, and the calibration error tests. A new CEMS plan shall be submitted for each CEMS which is reevaluated~~.

~~2.18 Procedure 1 of 40 CFR Part 60, Appendix F is incorporated by reference for the nitrogen oxides and oxygen monitors. The quality assurance plans required by 40 CFR Part 60, Appendix F shall be submitted to the District for the approval of the Executive Officer before the CEMS is certified. The reference method tests are those methods in Section 3 (RELATIVE ACCURACY TEST METHODS) of this guideline. Any CEMS which is deemed out-of-control by 40 CFR Part 60, Appendix F shall be corrected, retested by the appropriate audit procedure, and restored to in-control within 24 hours after being deemed out-of-control. If the CEMS is not in-control at the end of the 24-hour period, the CEMS data shall be gathered using the methods in paragraphs 2.7 and 2.8 of these requirements. All data which is gathered in order to comply with 40 CFR Part 60, Appendix F shall be maintained for two years and be made available to the Executive Officer upon request. Any such data which is invalidated shall be identified and reasons provided for any data invalidation.~~

~~2.19 Each volumetric flow measurement system shall be audited at least once each calendar quarter. Successive audits shall occur no closer than two months. The audits shall be conducted as follows:~~

~~2.19.1 The Relative Accuracy Test Audit (RATA) shall be conducted at least once every four quarters. Conduct the RATA as described in Section 3 (RELATIVE ACCURACY TEST METHODS).~~

~~2.19.2~~ ~~The Relative Accuracy Audit may be conducted three of four calendar quarters, but no more than three quarters in succession. To conduct an RAA, follow the procedure described in Section 3 (RELATIVE ACCURACY TEST METHODS) for the relative accuracy test, except that only three sets of measurement data are required.~~

~~2.19.3~~ ~~Follow the equations described in Section 8 of 40 CFR Part 60, Appendix B, Performance Specification 2 to calculate the relative accuracy for the RATA. The RATA shall be calculated in units of dry standard cubic feet per minute (DSCFM).~~

~~2.19.4~~ ~~Follow this equation to calculate the accuracy for the RAA:~~

$$\cancel{A = \frac{F_m - F_a}{F_a} \times 100}$$

~~where A = Accuracy of the volumetric flow measurement system.~~

~~F_m = Average response of the volumetric flow measurement system in units of DSCFM.~~

~~F_a = Average reference method audit value in units of DSCFM.~~

~~2.19.5~~ ~~If the relative accuracy using the RATA exceeds 20 percent of the mean reference method value, the CEMS shall be considered out-of-control. If the relative accuracy exceeds ±15 percent using the RAA, the CEMS shall be considered out-of-control. If the CEMS is out-of-control, take necessary corrective action to eliminate the problem. Following corrective action, audit the CEMS accuracy with an RAA or an RATA to determine if the CEMS is operating properly. An RATA shall be used following an out-of-control period resulting from an RATA. If the audit shows the CEMS to be out-of-control, the CEMS operator shall report the results of the audit showing the CEMS to be out-of-control, any subsequent audit showing the CEMS to remain out-of-control following corrective action, and the audit showing the CEMS to be operating within specifications following corrective action.~~

~~2.19.6~~ ~~The beginning of the out-of-control period shall be the time corresponding to the completion of the sampling of the RAA or RATA. The end of the out-of-control period shall be the time corresponding to the completion of the sampling of the subsequent successful RAA or RATA.~~

~~2.19.7~~ ~~During the period the CEMS is out-of-control, the CEMS data shall not be used in calculating emission compliance nor be counted towards meeting minimum data availability.~~

~~2.19.8~~ ~~Whenever out-of-control periods occur for two consecutive quarters, the owner or operator shall revise the quality control procedures contained in the quality~~

~~assurance plans, or modify and replace the CEMS. If the CEMS is modified or replaced, the new CEMS shall be recertified by the Executive Officer.~~

~~2.20~~ ~~The nitrogen oxides emission rate (lb NO_x/hr) portion of the CEMS at each boiler, unit or approved alternative or advanced combustion resource shall have a relative accuracy of no greater than 20 percent of the mean value of the reference method test data in terms of lb NO_x/hr. This relative accuracy test shall be conducted during the certification test of each CEMS, and shall be conducted at least once every four quarters as an RATA for each CEMS. An RAA may be conducted three of four calendar quarters as described in Paragraph 2.19.1. The definition of an out-of-control CEMS is the same as Paragraph 2.19.5, except that the RAA shall exceed ±20 percent before the CEMS is considered out-of control. The definition of out-of-control period is the same as Paragraph 2.19.6. The CEMS status during an out-of-control period is the same as Paragraph 2.19.7. The criteria for acceptable procedures is the same as Paragraph 2.19.8.~~

~~3. RELATIVE ACCURACY TEST METHODS~~

~~3.1~~ ~~Conduct the reference method (RM) tests in such a way that they will yield results representative of the emissions from the source and can be correlated to the CEMS data.~~

~~3.2~~ ~~Conduct a minimum of nine sets of all necessary reference method (RM) tests. Conduct each set within a period of 30 to 60 minutes.~~

~~3.3~~ ~~Unless the expected concentrations of NO_x are less than 20 ppm, District Methods 7.1 or 100.1 are the reference methods for NO_x concentrations.~~

~~3.4~~ ~~Use the Special District Method 7.1 (IC Alternative) or the Modified District Method 100.1 to determine NO_x stack gas concentrations of less than 20 ppm.~~

~~3.4.1~~ ~~Modified District Method 100.1 for Low NO_x Concentrations~~

~~District Method 100.1 may be used to measure low NO_x concentrations if the following additional quality control measures are taken on the reference method monitor:~~

~~a.~~ ~~Perform NO_2 system bias checks in addition to the regular system bias check in District Method 100.1. Use approximately 10 ppm NO_2 span gas for this system bias check. Perform these checks at the beginning, the middle, and the end of each test day. The checks made in the middle and the end of the test day must be made before emptying the condensate from the sampling system (if applicable).~~

~~b.~~ ~~Determine the NO_x to NO concentration readings during at least one test run.~~

~~c.~~ ~~Determine the NO_2 to NO conversion efficiency by running a known NO_2 calibration gas (about 10 ppm) through the NO_2 convertor and comparing the calibrated monitor response to the NO_2 concentration.~~

~~d.~~ ~~The calibration error limits and the calibration gas specifications are the same as those in District Method 100.1. However, the tester may use calibration gas certified to an analytical accuracy of ±2 percent if calibration gases with analytical accuracies of ±1 percent are not available.~~

~~e.~~ ~~Conduct an NH_3 interference test if NH_3 is present. Use NH_3 calibration gas at 80-100 percent of the allowed NH_3 concentration.~~

~~f.~~ ~~Conduct Special District Method 7.1 (IC Alternative) tests simultaneously with the Modified District 100.1 tests during at least two runs. Collect at least six NO_x bulbs during each run. Take at least two field blanks each testing day.~~

~~3.5~~ ~~District Method 2.1 shall be used to determine the stack gas volumetric flow rate.~~

~~3.6~~ ~~For District Method 2.1, District Method 1.1 shall be used to select the sampling site and the number of traverse points.~~

~~3.7~~ ~~District Method 3.1 shall be used for diluent gas (O_2 or CO_2) concentration and stack gas density determination.~~

~~3.8~~ ~~District Method 4.1 shall be used for moisture determination of the stack gas.~~

~~3.9~~ ~~The NO_x emissions shall be determined by using the results of paragraph 3.3 or 3.4 along with the results of paragraphs 3.5, 3.6, 3.7, and 3.8.~~

~~3.10~~ ~~Suitable methods may be used to measure the net MWH produced at each boiler, unit, or approved alternative or advanced combustion resource provided the following conditions are met:~~

~~a.~~ ~~The owner or operator of each affected boiler, unit, or approved alternative or advanced combustion resource shall submit details of suitable methods to measure the net MWH of electricity produced of each boiler, unit, or approved alternative or advanced combustion resource. At a minimum, these details shall include a description of the principle of measurement and calculations used to calculate the net MWH of electricity produced, and the technique and procedures used to calibrate each net MWH measurement device. Each net MWH meter shall be calibrated against standards which are traceable to National Institute of Standards and Technology (NIST) standards or to a higher authority if no NIST standards exist. The calibration accuracy tolerance of each net MWH measurement device shall be ±0.5 percent of all measured values. The methods submitted to the District shall be subject to the approval of the Executive Officer before they are used to determine the net MWH of electricity produced.~~

~~b.~~ ~~Each net MWH measurement device shall be calibrated a minimum of once every six months.~~

~~4. REPORTING PROCEDURES~~

~~4.1 Interim Reporting Procedures~~

~~4.1.1 From July 19, 1991 until December 31, 1992, the owner or operator will be allowed to use an interim procedure for data reporting and storage. The owner or operator shall submit as part of the required CEMS plan, a plan for interim data reporting and storage. The plan shall be subject to the approval of the Executive Officer and shall, at a minimum, meet the requirements of Paragraphs 4.1.2, 4.1.3, and 4.1.4.~~

~~4.1.2 All the data required in Paragraphs 4.1.3 and 4.1.4 shall be available at an identified location to the Executive Officer, upon request. This location shall be subject to the approval of the Executive Officer.~~

~~4.1.3 For each affected boiler, unit, or approved alternative or advanced combustion resource the following information shall be provided to the Executive Officer:~~

~~a. Calendar dates covered in the reporting period.~~

~~b. Each daily emission rate (lb NO_x/day) and each hourly emission rate (lb NO_x/hour).~~

~~c. Identification of the boiler, unit, or approved alternative or advanced combustion resource operating days for which a sufficient number of valid data points has not been taken; reasons for not taking sufficient data; and a description of corrective action taken.~~

~~d. Identification of F_d factor for each type of fuel used for calculations and the type of fuel burned.~~

~~e. Identification of times when daily averages have been obtained by manual sampling methods.~~

~~f. Identification of times when daily averages have been obtained by alternate means of NO_x emission rate data generation.~~

~~g. Description of any modifications to the CEMS that could affect the ability of the CEMS to comply with the performance specifications in Rule 218.~~

~~h. Results of daily CEMS drift tests and quarterly accuracy assessments, as required under 40 CFR Part 60, Appendix F, Procedure 1.~~

~~i. Identification of the times when the pollutant concentration exceeded full span of the CEMS.~~

~~j. The daily net MWH of electricity produced.~~

~~k. The hourly unit-specific emission limit (lb NO_x/net MWH of electricity produced.~~

~~l. The hourly lb NO_x/net MWH of electricity produced.~~

~~4.1.4 The following information for the entire utility system shall be provided to the Executive officer on a monthly basis:~~

~~a. Calendar dates covered in the reporting period.~~

~~b. The sum of the daily emission rates (lb NO_x/day) from all affected boilers, units, and approved alternative or advanced combustion resources.~~

~~c. The sum of the net MWH of electricity produced from all affected boilers, units, and approved alternative or advanced combustion resources.~~

~~d. The systemwide daily NO_x emission rate (lb NO_x per net MWH of electricity produced) expressed as a ratio of the sum of the daily emission rates from all boilers, units, and approved alternative or advanced combustion resources divided by the sum of the net MWH produced from all affected boilers, units, and approved alternative or advanced combustion resources.~~

~~4.1.5 All data required by Paragraphs 2.1, 2.2, 2.3, 2.4, 2.5, 4.1.3, and 4.1.4 shall be recorded and transmitted to the District in a format specified by the Executive Officer.~~

~~4.2 Final Reporting Procedures~~

~~4.2.1 On and after January 1, 1993, the RTU installed at each location shall constitute the reporting requirements.~~

~~4.2.2 On and after January 1, 1993, all or part of the interim data storage systems shall remain as continuous backup systems.~~

~~4.2.3 An alternate backup data storage system may be implemented, upon request. The owner or operator shall submit an Alternate Backup Data Storage Plan for the approval of the Executive Officer.~~

~~5. INTERIM MEASUREMENT PROCEDURES~~

~~5.1 Until December 31, 1992, the requirements of Paragraphs 2.19, 2.19.1, 2.19.2, 2.19.3, 2.19.4, 2.19.5, 2.19.6, 2.19.7, 2.19.8,(volumetric flow rate audit methods) 3.5, 3.6, 3.7, 3.8, and 3.9 (relative accuracy test methods) will be waived until such time as the required source testing facilities meeting the requirements of Paragraph 2.14 have been installed. The owner or operator shall submit as a part of the required CEMS plan, construction plans and a schedule for the installation of each new testing facility. The plan shall be submitted for the approval of the Executive Officer prior to installation. Prior to the completion of the testing facility for each emission source, the owner or operator shall submit a test plan for flow rate relative accuracy testing. Within 30 days after completion of the testing facilities (or 30 days of initial start-up thereafter), the required relative accuracy tests shall be completed. Sixty days thereafter, the owner or operator shall meet the requirements of Paragraphs 2.19, 2.19.1, 2.19.2, 2.19.3, 2.19.4, 2.19.5, 2.19.6, 2.19.7, and 2.19.8 using the reference methods in Paragraphs 3.5, 3.6, 3.7, 3.8, and 3.9 for relative accuracy test methods.~~

~~5.2 From July 19, 1991 to December 31, 1992, the data recorded by the system approved for Paragraph 4.1 shall be the data of record to determine if the CEMS meets the required performance specifications.~~

~~5.3 After December 31, 1992, the backup data system shall be the data of record to determine if the CEMS meets the required performance specifications. The backup system and the RTU system shall produce identical data.~~

~~5.4 Each orifice used to measure the fuel gas flow rate shall be removed from the gas supply line for an inspection once every 15 months. The following items shall be subject to inspection:~~

~~a. Each orifice shall be visually inspected for any nicks, dents, corrosion, erosion, or any other signs of damage according to the orifice manufacturer's specifications.~~

~~b. The diameter of each orifice shall be measured using the method recommended by the orifice manufacturer.~~

~~c. The flatness of the orifice shall be checked according to the orifice manufacturer's instructions. The departure from flatness of an orifice plate shall not exceed 0.010 inch per inch of dam height (D-d/2) along any diameter. Here D is the inside pipe diameter and d is the orifice diameter at its narrowest constriction.~~

~~d. The pressure gauge or other device measuring pressure drop across the orifice shall be calibrated against a manometer, and shall be replaced if it deviates more than ±2 percent across the range.~~

~~e. The surface roughness shall be measured using the method recommended by the orifice manufacturer. The surface roughness of an orifice plate shall not exceed 50 microinches.~~

~~f. The upstream edge of the measuring orifice shall be square and sharp so that it will not show a beam of light when checked with an orifice gauge.~~

~~g. In centering orifice plates, the orifice shall be concentric with the inside of the meter tube or fitting. The concentricity shall be maintained within 3 percent of the inside diameter of the tube or fitting along all diameters.~~

~~h. Any other calibration tests specified by the orifice manufacturer shall be conducted at this time.~~

~~5.5 If an orifice fails to meet any of the manufacturer's specifications, it shall be replaced within two weeks.~~

~~6. ALTERNATIVE PROCEDURES~~

~~6.1 **Emission Stack Flow Rate Determination**~~

~~In the event that more than one boiler vents to a common stack, the alternative reference method for determining individual boiler flow rates shall be EPA Method 19. This method may be used for applicable boilers before and after the interim period mentioned in Section 4.1. The orifice plates used in every boiler vented to a common stack shall meet the requirements in Paragraph 5.4.~~

~~7. COGENERATION SYSTEMS~~

~~7.1 Cogeneration units must also measure and record the useful thermal energy along with the other measurements required in previous sections of this document. The measurements must meet the following conditions:~~

~~a.~~ ~~The owner or operator of each affected cogeneration unit must submit details of suitable methods to measure the useful thermal energy. At a minimum, these details shall include a description of all the measurement devices, including but not limited to flow meters, pressure measurement devices, and temperature measurement devices, the calculations used to calculate the useful thermal energy, and the technique and procedures used to calibrate each measurement device. Each measurement device shall be calibrated against standards which are traceable to NIST standards or to a higher authority if no NIST standards exist. The calibration accuracy tolerance of each measurement device shall be ± 1 per cent of all measured values. All measurement devices shall measure and record one data point each minute. The methods submitted to the District shall be subject to the approval of the Executive Officer before they are used for~~ ~~NO_x~~ ~~emission deductions mentioned in (b)(2)(B).~~

~~b.~~ ~~Each measurement device shall be calibrated a minimum of once every six months.~~

ATTACHMENT H

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Staff Report
Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities

November 2018

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CHAPTER 1: BACKGROUND

INTRODUCTION

In March 2017, the SCAQMD adopted the Final 2016 Air Quality Management Plan (2016 AQMP) which includes a series of control measures to achieve the National Ambient Air Quality Standards for ozone. The adoption resolution of the 2016 AQMP directed staff to achieve additional NOx emission reductions and to transition the Regional Clean Air Incentives Market (RECLAIM) program to a command-and-control regulatory structure requiring Best Available Retrofit Control Technology (BARCT) as soon as practicable. ~~Additionally, California State Assembly Bill (AB) 617, approved by the Governor on July 26, 2017, requires air districts to develop, by January 1, 2019, an expedited schedule for the implementation of BARCT no later than December 31, 2023 for facilities that are in the state greenhouse gas cap-and-trade program.~~

Rule 1135 – Emissions of Oxides of Nitrogen from Electric Power Generating Systems (Rule 1135) was adopted in 1989 and currently applies to electric power generating steam boiler systems, repowered units, and alternative electricity generating sources. Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities (PAR 1135) is being amended to facilitate the transition of the NOx RECLAIM program to a command-and-control regulatory structure and to implement Control Measure CMB-05 – Further NOx Reductions from RECLAIM Assessment (Control Measure CMB-05) of the 2016 AQMP. PAR 1135 applies to RECLAIM and non-RECLAIM electricity generating facilities that are investor-owned electric utilities, publicly owned electric utilities, or have a generation capacity of at least 50 megawatts of electrical power.

BACKGROUND

The SCAQMD Governing Board adopted the RECLAIM program in October 1993. The purpose of RECLAIM is to reduce NOx and SOx emissions through a market-based approach. The program replaced a series of existing and future command-and-control rules and was designed to provide facilities with the flexibility to seek the most cost-effective solution to reduce their emissions. It also was designed to provide equivalent emission reductions, in the aggregate, for the facilities in the program compared to what would occur under a command-and-control approach. Regulation XX – Regional Clean Air Incentives Market (RECLAIM) (Regulation XX) includes a series of rules that specify the applicability and procedures for determining NOx and SOx facility emissions allocations, program requirements, as well as monitoring, reporting, and recordkeeping requirements for RECLAIM facilities.

Various rules within Regulation XX have been amended throughout the years. On December 4, 2015, Regulation XX was amended to achieve programmatic NOx emission reductions through an overall reduction in RECLAIM trading credits (RTC) of 12 tons per day from compliance years 2016 through 2022. Regulation XX was amended on October 7, 2016 to incorporate provisions that limited use of RTCs from facility shutdowns. The most recent amendments to Regulation XX ~~on January 5, 2018 was~~were to amend Rules 2001 – Applicability and 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx) to commence the initial steps to transition RECLAIM facilities to a command-and-control regulatory approach and to allow facilities to opt-out if certain criteria are met or to stay in RECLAIM for a limited time while complying with applicable command-and-control requirements.

In response to concerns regarding actual emission reductions and implementation of BARCT under RECLAIM, Control Measure CMB-05 of the 2016 AQMP committed to an assessment of the RECLAIM program in order to achieve further NOx emission reductions of five tons per day, including actions to sunset the program and ensure future equivalency to command-and-control regulations. During the adoption of the 2016 AQMP, the Resolution directed staff to modify Control Measure CMB-05 to achieve the five tons per day NOx emission reduction as soon as feasible but no later than 2025, and to transition the RECLAIM program to a command-and-control regulatory structure requiring BARCT-level controls as soon as practicable. Staff provided a report on transitioning the NOx RECLAIM program to a command-and-control regulatory structure at the May 5, 2017 Governing Board meeting and provides quarterly updates to the Stationary Source Committee, with the first quarterly report provided on October 20, 2017.

~~On July 26, 2017, AB 617 was approved by the Governor, which addresses non-vehicular air pollution (criteria pollutants and toxic air contaminants). It is a companion legislation to AB 398, which was also approved, and extends California's cap-and-trade program for reducing greenhouse gas emissions from stationary industrial sources. Electricity generating facilities are not classified as stationary industrial sources. RECLAIM facilities that are in the cap-and-trade program are subject to the requirements of AB 617. Among the requirements of this bill is an expedited schedule for implementing BARCT for cap-and-trade facilities. Air Ddistricts are to develop by January 1, 2019, an expedited schedule for the implementation of BARCT no later than December 31, 2023. The highest priority would be given to older, higher polluting units that will need to install retrofit controls.~~

In 2015, 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. It was determined that command-and-control rules would need to be adopted and/or amended to update emission limits to reflect current BARCT and to provide implementation timeframes for achieving BARCT compliance limits for certain RECLAIM equipment.

Rule 1135 is being amended to facilitate the transition of the NOx RECLAIM program to a command-and-control regulatory structure and to implement Control Measure CMB-05, of the 2016 AQMP. PAR 1135 applies to RECLAIM and non-RECLAIM electricity generating facilities that are investor-owned electric utilities, publicly owned electric utilities, or have a generation capacity of at least 50 megawatts of electrical power. The proposed amended rule will update emission limits to reflect current BARCT and to provide implementation timeframes. The provisions in PAR 1135 establish NOx and ammonia (NH3) emission limits for boilers and gas turbines and NOx, ammonia, carbon monoxide, volatile organic compounds, and particulate matter for internal combustion engines located on Santa Catalina Island. Additionally, PAR 1135 establishes provisions for monitoring, reporting, and recordkeeping, and establishes exemptions from specific provisions.

REGULATORY BACKGROUND

Rule 1135 was adopted in 1989 and applied to electric power generating steam boiler systems, repowered units, and alternative electricity generating sources. Rule 1135 set a NOx system-wide average emission limit of 0.25 lb/MW-hr and a daily NOx emissions cap for each utility system. Rule 1135 established interim emissions performance levels with a 1996 final compliance date.

Additionally, Rule 1135 required Emission Control Plans and continuous emissions monitoring systems.

Rule 1135 was submitted to the California Air Resources Board (CARB) for review, prior to submittal to the Environmental Protection Agency (EPA), Region IX, for revision to the State Implementation Plan (SIP). In March 1990, CARB staff informed SCAQMD that the adopted rule was lacking specificity in critical areas of implementation and enforcement, and was therefore, considered incomplete for submission to EPA as a SIP revision.

The December 21, 1990 amendment of Rule 1135 was principally developed to resolve many of the implementation and enforceability issues. This amendment included accelerated retrofit dates for emission controls, unit-by-unit emission limits, modified compliance plan and monitoring requirements, computerized telemetering, and an amended definition of alternative resources.

Furthermore, in order to consider additional staff recommendations regarding system-wide emission rates, daily emission caps, annual emission caps, oil burning, and cogeneration, the Board continued the public hearing. The July 19, 1991 amendment addressed all of these outstanding issues, including those related to modeling and BARCT analysis. EPA approved Rule 1135 into the SIP on August 11, 1998.

Electricity Generating Facilities and RECLAIM

Throughout the RECLAIM program, there have been specific provisions for electricity generating facilities. When RECLAIM was adopted in 1993, pursuant to Rule 2001 electricity generating facilities were initially included in NOx RECLAIM and could opt-in to SOx RECLAIM. Electricity generating facilities that were owned and operated by the City of Burbank, City of Glendale, or the City of Pasadena were not initially included in NOx and SOx RECLAIM program, but were allowed to opt-in to the program. The cities of Burbank and Pasadena opted-in to RECLAIM, while the City of Glendale remained regulated by command-and-control rules.

In June 2000, RECLAIM program participants experienced a sharp and sudden increase in NOx RECLAIM trading credit (RTC) prices for both the 1999 and 2000 compliance years. Based on the 2000 RECLAIM Annual Report, electricity generating facilities had an initial allocation of 2,302 tons of NOx per year. In compliance year 2000, these facilities reported NOx emissions of 6,788 tons per year, approximately 4,400 tons per year over their initial allocation. This was primarily due to an increased demand for power generation and delayed installation of controls by electricity generating facilities. The electric power generating industry purchased a large quantity of RTCs, which depleted the available RTCs. This situation was compounded because few RECLAIM facilities added control equipment. As a result, in May 2001, the Board adopted Rule 2009 – Compliance Plan for Power Producing Facilities (Rule 2009). To facilitate emission reduction projects at the facilities with the majority of the emissions in RECLAIM, Rule 2009 required installation of BARCT through compliance plans at electricity generating facilities. Diesel internal combustion engines providing power to Santa Catalina Island were not subject to Rule 2009 because the facility only generates 9 megawatts of energy and did not qualify as a Power Producing Facility in RECLAIM.

A case-by-case technical and cost-effectiveness evaluation was performed to determine BARCT for electric generating units at electricity generating facilities. At that time BARCT for utility boilers was determined to be 9 ppmv NOx at 3% oxygen on a dry basis and for gas turbines was determined to be 9 ppmv NOx at 15% oxygen on a dry basis. Where technically feasible and cost-effective, RECLAIM electric generating units were retrofitted, repowered, or retired. There were electric generating units that could not cost-effectively control emissions and were given permit limits with higher NOx concentrations. Between 2001 and 2005, more than 35 simple and combined cycle gas turbines were repowered to BARCT levels or below. Despite the increase in NOx RTC demand, emissions from electricity generating facilities fell from 26 tons per day of NOx emissions in 1989 to less than 10 tons per day of NOx emissions by 2005. Since then, with equipment replacement and increased reliance on renewable sources, NOx emissions have further decreased to less than 4 tons per day.

PUBLIC PROCESS

Development of Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities was conducted through a public process. SCAQMD has held five working group meetings at the SCAQMD Headquarters in Diamond Bar on January 24, 2018, April 26, 2018, June 13, 2018, July 5, 2018, and September 25, 2018. The Working Group is composed of representatives from businesses, environmental groups, public agencies, and consultants. The purpose of the working group meetings is to discuss proposed concepts and work through the details of staff's proposal. Additionally, a Public Workshop was held at the SCAQMD Headquarters in Diamond Bar on August 2, 2018.

CHAPTER 2: BARCT ASSESSMENT

INTRODUCTION

Staff conducted an assessment of Best Available Retrofit Control Technology (BARCT) for electric generating units including diesel internal combustion engines located on Santa Catalina Island, natural gas boilers, and natural gas turbines and associated duct burners. BARCT is defined in the California Health and Safety Code section 40406 as "an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source." Consistent with state law, BARCT emissions limits take into consideration environmental impacts, energy impacts, and economic impacts. In addition to NOx reductions sought in the proposed amended rule, SCAQMD, through the California Environmental Quality Act (CEQA) process, identified potential environmental and energy effects of the proposed rule. Economic impacts are assessed at the equipment category level by a review of cost-effectiveness and incremental cost-effectives contained in this report and at the macro level as part of the socio-economic assessment contained in a separate report.

BARCT – RETROFIT VERSUS REPLACEMENT

A question was raised in the Regional Clean Air Incentives Market (RECLAIM) Working Group concerning the scope of "best available retrofit control technology," which the SCAQMD must impose for all existing stationary sources, including sources that exit RECLAIM or that exist after RECLAIM has ended pursuant to Health & Safety Code section 40440(b)(1). A commenter stated that the use of the word "retrofit" precludes the SCAQMD from requiring emissions limits that can only be cost-effectively met by replacing the basic equipment with new equipment. Staff believes that the use of the term "retrofit" does not preclude replacement technology. A review of on-line dictionaries supports this view.

The on-line Merriam-Webster Dictionary defines "retrofit" in a manner that does not preclude replacing equipment. That dictionary establishes the following definition for retrofit: "1: to furnish (something, such as a computer, airplane, or building) with new or modified parts or equipment not available or considered necessary at the time of manufacture, 2: to install (new or modified parts or equipment) in something previously manufactured or constructed, 3: to adapt to a new purpose or need: modify." https://www.merriam-webster.com/dictionary/retrofit. This definition does not preclude the use of replacement parts as a retrofit.

The on-line Dictionary.com is more explicit in allowing replacement parts. It includes the following definitions for retrofit as a verb: "1. to modify equipment (in airplanes, automobiles, a factory, etc.) that is already in service using parts developed or made available after the time of original manufacture, 2. to install, fit, or adapt (a device or system) or use with something older; to retrofit solar heating to a poorly insulated house, 3. (of new or modified parts, equipment, etc.) to fit into or onto existing equipment, 4. to replace existing parts, equipment, etc., with updated parts or systems." http://www.dictionary.com/browse/retrofit. This definition clearly includes replacement of existing equipment within the concept of "retrofit." Accordingly, the use of the term "retrofit" can include the concept of replacing existing equipment.

Moreover, the statutory definition of "best available retrofit control technology" does not preclude replacing existing equipment with new cleaner equipment. Health & Safety Code section 40406 provides: "As used in this chapter, 'best available retrofit control technology' means an emission limitation that is based on the maximum degree of emission reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source." Thus, it is clear that BARCT is an emissions limitation, and is not limited to a particular technology, whether add-on or replacement. Certainly this definition does not preclude replacement technologies.

Staff also notes that the argument precluding replacement equipment would have an effect contrary to the purposes of BARCT. For example, staff has proposed a BARCT that may be more cost-effectively be met for diesel-fueled engines by replacing the engine with a new Tier IV diesel engine rather than installing additional add-on controls on the current engine which may be many decades old. If the SCAQMD were precluded from setting BARCT for these sources, the oldest and dirtiest equipment could continue operating for possibly many more years, even though it would be cost-effective and otherwise reasonable to replace those engines. There is no policy reason for insisting that replacement equipment cannot be an element of BARCT as long as it meets the requirements of the statute including cost-effectiveness.

The case law supports an expansive reading of BARCT. In explaining the meaning of BARCT, the California Supreme Court held that BARCT is a "technology-forcing standard designed to compel the development of new technologies to meet public health goals." *American Coatings Ass'n. v. South Coast Air Quality Mgt. Dist.,* 54 Cal. 4th 446, 465 (2012). In fact, the BARCT requirement was placed in state law for the SCAQMD in order to "encourage more aggressive improvements in air quality" and was designed to augment rather than restrain the SCAQMD's regulatory power. *American Coatings, supra*, 54 Cal. 4th 446, 466. Accordingly, BARCT may actually be more stringent than Best Available Control Technology (BACT), because BACT must be implemented today by a source receiving a permit today, whereas BARCT may, if so specified by the SCAQMD, be implemented a number of years in the future after technology has been further developed. *American Coatings, supra,* 54 Cal. 4th 446, 467.

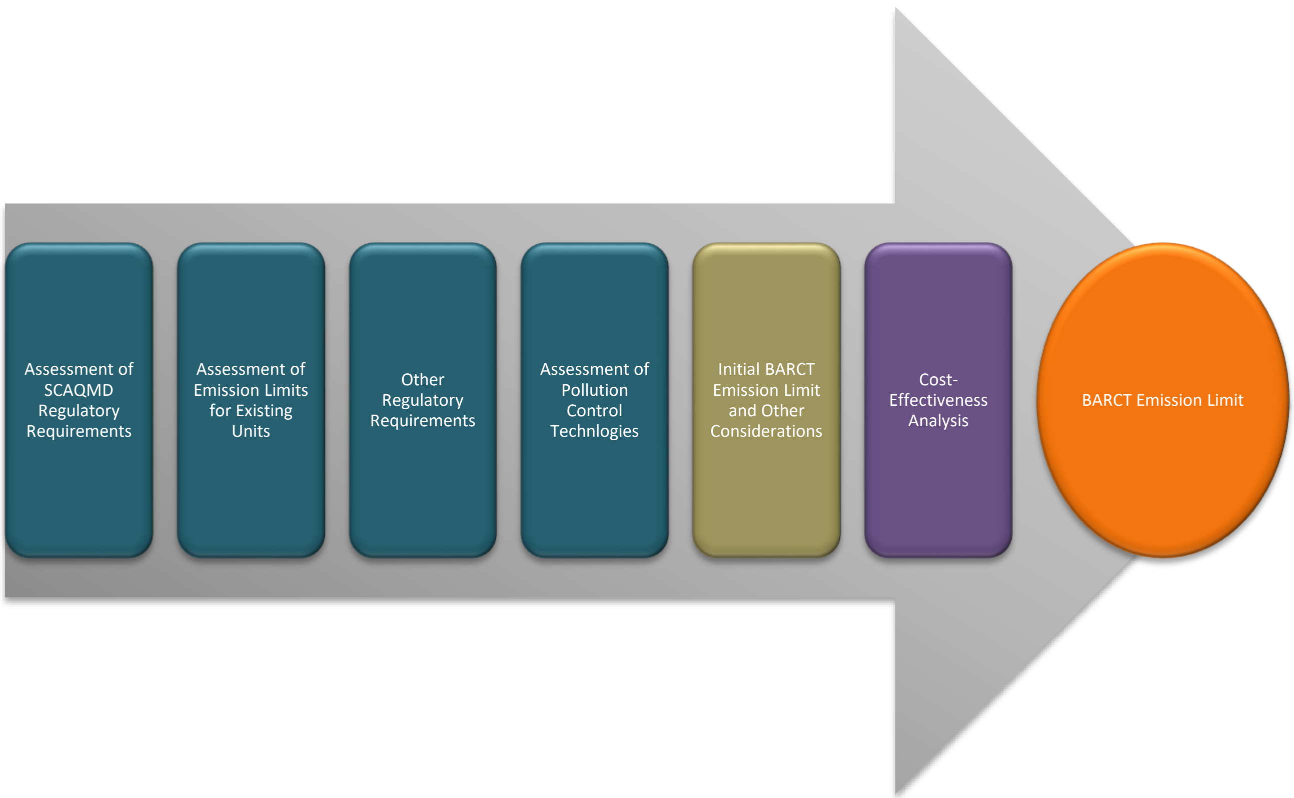
The Supreme Court further held that when challenging the SCAQMD's determination of the scope of a "class or category of source" to which a BARCT standard applies, the challenger must show that the SCAQMD's determination is "arbitrary, capricious, or irrational." *American Coatings, supra,* 54 Cal. 4th 446, 474. Therefore, the SCAQMD may consider a variety of factors in determining which sources must meet any particular BARCT emissions level. If, for example, some sources could not cost-effectively reduce their emissions further because their emissions are already low, these sources can be excluded from the category of sources that must meet a particular BACT. Therefore, the SCAQMD may establish a BARCT emissions level that can cost-effectively be met by replacing existing equipment rather than installing add-on controls, and the SCAQMD's definition of the category of sources which must meet a particular BARCT is within the SCAQMD's discretion as long as it is not arbitrary or irrational.

BARCT ANALYSIS APPROACH

The BARCT analysis approach follows a series of steps conducted for each equipment category and fuel type. For Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities (PAR 1135), liquid petroleum (diesel) fueled internal combustion engines and natural gas fired boilers and turbines were analyzed. Liquid petroleum fuels are only allowable during force majeure natural gas curtailment periods for boiler and turbines and for internal combustion engines on Santa Catalina Island where natural gas is unavailable. Natural gas fuel burning is required in all other situations.

The steps for BARCT analysis consist of:

- Assessment of SCAQMD Regulatory Requirements
- Assessment of Emissions Limits for Existing Units
- Other Regulatory Requirements
- Assessment of Pollution Control Technologies
- Initial BARCT Emission Limit and Other Considerations
- Cost-Effectiveness Analysis
- Final BARCT Emission Limit



Assessment of SCAQMD Regulatory Requirements

As part of the BARCT assessment, staff reviewed existing SCAQMD regulatory requirements that affect NOx emissions for equipment at electricity generating facilities. NOx emissions from electricity generating facilities are regulated under Rule 1135 – Emissions of Oxides of Nitrogen from Electric Power Generating Systems (Rule 1135), Regulation XX – Regional Clean Air Incentives Market (RECLAIM) (Regulation XX), and Rule 2009 – Compliance Plan for Power Producing Facilities (Rule 2009) within RECLAIM. Under Rule 1135, the NOx emission standard is a system-wide standard and does not include equipment-specific NOx emissions standards. The current NOx system-wide standard is as follows in Table 2-1 below.

Table 2-1 – Current Rule 1135 System-Wide NOx Limits

Electric Power Generating System	NOx Limit (tons per year)
Southern California Edison	1,640
Los Angeles Department of Water and Power	960
City of Burbank	56
City of Glendale	35
City of Pasadena	80

Similarly, the RECLAIM program limits NOx emissions from electricity generating facilities, but does not limit emissions or establish concentration limits by equipment category or fuel type. However, emissions limits are established at the time of permitting, and permits include concentration limits for NOx and emissions limits for non-RECLAIM pollutants such as particulate matter. A facility's NOx allocations are diminished over time, requiring facilities to lower emissions or to purchase credits from other facilities that have lowered emissions below their allocations.

In 2001, Rule 2009 was adopted in response to California energy issues. The rule required RECLAIM electricity generating facilities to install pollution controls to help stabilize RECLAIM Trading Credit (RTC) prices. Electricity generating facilities submitted compliance plans demonstrating that all RECLAIM NOx emitting equipment achieved BARCT emission levels. A case-by-case technical and cost-effectiveness evaluation was performed to determine BARCT. At that time BARCT for natural gas utility boilers was determined to be 9 ppmv NOx at 3% oxygen on a dry basis and natural gas turbines was determined to be 9 ppmv NOx at 15% oxygen on a dry basis. Where technically feasible and cost-effective, RECLAIM electric generating units were retrofitted, replaced, or retired. There were electric generating units that could not cost-effectively control emissions and were given permit limits with higher NOx concentrations. The proposed amendments to Rule 1135 do not obviate implementation ~~or~~ of compliance plans under Rule 2009. The assessment of SCAQMD regulatory requirements found a BARCT emission limit of 9 ppmv at 15% ~~O2~~ oxygen on a dry basis for ~~both~~ natural gas turbines and 9 ppmv at 3% oxygen on a dry basis for natural gas boilers. No assessment was made for diesel internal combustion engines as they were not subject to Rule 2009 due to low output.

Assessment of Emission Limit for Existing Units

Staff examined all of the current electric generating units to assess the emission rate of equipment located in SCAQMD. Permit limits for NOx concentrations were identified for all equipment to identify what is already being done in practice. Currently, there are approximately ~~124~~ 122 pieces of equipment at 31 facilities: six diesel internal combustion engines at one facility; 23 natural gas boilers at 8 facilities; ~~59~~60 natural gas simple cycle gas turbines at ~~20~~21 facilities; and ~~23~~22 natural gas combined cycle gas turbines and 11 associated duct burners at ~~12~~11 facilities.

Diesel Internal Combustion Engines

Six diesel internal combustion engines are located on Santa Catalina Island. Five of these engines were installed more than 33 years ago and one was installed 23 years ago. All units are controlled with selective catalytic reduction. The permitted NOx emission limits range between 51 ppmv to 140 ppmv at 15% oxygen on a dry basis. The permitted ammonia emission limit for all six units is 10 ppmv at 15% oxygen on a dry basis. In 2003, the higher emitting units were retrofitted, while the lowest emitting unit was a new installation in 1995. The lowest permitted NOx limit for a diesel engine used for electricity generation in SCAQMD is 51 ppmv at 15% oxygen on a dry basis. The details of the diesel internal combustion engines subject to PAR 1135 are listed below in Table 2-2 below.

Table 2-2 – Diesel Internal Combustion Engines

Unit	Size (HP)	Output (MW)	Install Year	Retrofit Date	Control[3]	NOx Permit Limit[1]	Ammonia Permit Limit (ppmv at 15% oxygen, dry)	2016 NOx Emissions (tons)
ICE1	1575	1.125	1968	2003	SCR	6.5 lbs/MWh[2]	10	16
ICE3	1950	1.4	1985	2003	SCR	6.5 lbs/MWh[2]	10	5.3
ICE6	2150	1.5	1964	2003	SCR	6.5 lbs/MWh[2]	10	8.2
ICE5	1500	1	1967	2003	SCR	6.5 lbs/MWh[2]	10	12
ICE2	2200	1.5	1976	2003	SCR	6.5 lbs/MWh[2]	10	22
ICE4	3900	2.8	1995	None	SCR	51 ppmv at 15% oxygen, dry; 6.5 lbs/MWh[2]	10	5.9

[1] – Actual NOx concentrations emitted are generally lower than the NOx permit limits

[2] – Averaged over one calendar year, limit is based on total mass NOx emitted from Units 1 – 6 and micro turbines

[3] – SCR: Selective Catalytic Reduction

Natural Gas Boilers

Of the 23 natural gas boilers used to generate electricity, 16 of them are subject to the Clean Water Act's once-through-cooling (OTC) provisions and are scheduled for shutdown. Eight of the ~~17~~16 units were retrofitted between 1990 and 2002 to meet a NOx limit of 5 ppmv at 3% oxygen on a dry basis. Ammonia limits range~~s~~ between 10 ppmv and 20 ppmv at 3%- oxygen on a dry basis. Information regarding natural gas boilers subject to the Clean Water Act's once-through-cooling regulation is provided in Table 2-3 below.

There are seven natural gas boilers that are not subject to the Clean Water Act's OTC provisions. Two of the natural gas boilers are scheduled for shut-down and retirement by 2019. Three natural gas boilers, ~~all~~ with NOx permit limits between 38 and 82 ppmv ~~NOx~~ at 3% oxygen on a dry basis, are operated by a municipality. The operator has informed their city council of plans to shut-down the natural gas boilers and replace them with one or more natural gas turbines and the project is pending city council approval. The remaining two natural gas boilers have not been in operation since 2012. For these remaining seven natural gas boilers, the lowest permitted NOx ~~concentration~~ limit is 5 ppmv at 3% oxygen on a dry basis, which was retrofitted in 2002. The lowest permitted NOx limit for a natural gas boiler used for electricity generation in SCAQMD is also 5 ppmv at 3% oxygen on a dry basis. The details of the natural gas boilers subject to PAR 1135 are listed below in Table 2-3 below.

Table 2-3 – Natural Gas Boilers

Unit	Size (MMBTU/HR)	Output (MW)	Install Year	Retrofit Year	Control[2]	NOx Permit Limit[1] (ppmv @ 3% oxygen, dry)	Ammonia Permit Limit (ppmv @ 3% oxygen, dry)	2016 NOx Emissions (tons)	Shut ~~D~~down Date
B15	492	44	1959	None	LNB/FGR	82	N/A	177.5	Pending
B12	260	20	1953	None	LNB/FGR	40	N/A	39.7	Pending
B18	527.25	44	1969	2002	FGR/SNCR	38	10	133.6	Pending
B2	2021	215	1958	2001	SCR	7	10	8.2	OTC 11/1/19
B17	1785	175	1954	2001	SCR/~~staged~~ Staged ~~comb~~Comb	7	10	1.3	OTC 11/1/19
B20	1785	175	1957	2001	SCR/~~staged~~ Staged ~~comb~~Comb	7	10	3.3	OTC 11/1/19
B1	1785	175	1956	2001	SCR/FGR/~~staged~~ Staged ~~comb~~Comb	7	10	2.0	OTC 12/29/19
B6	1785	175	1957	2001	SCR/FGR/~~staged~~ Staged ~~comb~~Comb	7	10	3.8	OTC 12/29/19
B10	3350	320	1961	2001	SCR/FGR	7	10	14	OTC 12/31/20
B13	3350	320	1962	2001	SCR/FGR	7	10	8.6	OTC 12/31/20
B7	2021	215	1958	2001	SCR	7	10	7.6	OTC 12/31/20
B11	2900	320	1963	2001	FGR/Staged Comb/SCR	7	10	3.6	12/31/2018
B14	2900	320	1963	2001	FGR/Staged Comb/SCR	7	10	4.1	12/31/2018
B9	1750	179	1959	2002	SCR	5	10	1.8	OTC 12/31/24
B4	1750	179	1958	2002	SCR	5	10	6.9	OTC 12/31/24
B23	551.84	44	1959	2002	SCR/LNB	5	10	0.0	None
B24	604.7	55	1964	2002	SCR	5	10	0.0	None
B3	2240	230	1962	1993	SCR	5	20	5.3	OTC 12/31/29
B8	2240	230	1963	1993	SCR	5	20	5.5	OTC 12/31/29
B21	4752.2	480	1968	1994	SCR/FGR/~~staged~~ Staged ~~comb~~Comb	5	20	5.4	OTC 11/1/19
B22	4752.2	480	1968	1994	SCR/FGR/~~staged~~ Staged ~~comb~~Comb	5	20	3.3	OTC 11/1/19
B19	4752.2	480	1966	1994	SCR/FGR	5	20	2.3	OTC 12/29/19
B16	4750	480	1969	1994	SCR/LNB/FGR	5	20	2.1	OTC 12/31/20

1 – Actual NOx concentrations emitted are generally lower than the NOx permit limit

2 – FGR: Flue Gas Recirculation, LNB: Low NOx Burner, SCR: Selective Catalytic Reduction, ~~SNRC~~SNCR: ~~selective~~ Selective ~~non~~Non-~~catalytic~~ Catalytic ~~reduction~~Reduction, ~~staged~~ Staged ~~comb~~Comb: ~~staged~~ Staged ~~combustion~~Combustion

Natural Gas Combined Cycle Gas Turbines

For natural gas combined cycle gas turbines, 15 of 22~~23~~ units are permitted at 2 ppmv NOx at 15% oxygen on a dry basis. All units were replacement units installed in 2005 or later. Two units were installed as late as 2015, still with a permitted NOx limit of 2 ppmv at 15% oxygen on a dry basis. Units that were permitted at 2 ppmv NOx at 15% oxygen on a dry basis also had ammonia permit limits of 5 ppmv at 15% oxygen on a dry basis. The lowest permitted NOx limit for a natural gas combined cycle gas turbines used for electricity generation in SCAQMD is 2 ppmv at 15% oxygen on a dry basis. Table 2-4 lists the information regarding natural gas combined cycle gas turbines.

Table 2-4 – Natural Gas Combined Cycle Gas Turbines

Unit	Size (MMBTU/HR)	MW Rating	Install	Control	NOx Permit Limit[1] (ppmv @ 15% oxygen, dry)	Ammonia Permit Limit (ppmv @ 15% oxygen, dry)	2016 NOx Emissions (tons)
~~T-CC-1~~	~~442~~	~~48~~	~~1993~~	~~SCR~~	~~9 and 7.6~~	~~20~~	~~4.3~~
T-CC-26	350	30	1976	SCR	9	5	0.75
T-CC-27	350	60	1976	SCR	9	5	0.51
T-CC-28	350	60	1976	SCR	9	5	0.51
T-CC-22	1088	182	1993	SCR/water injection	7	20	12
T-CC-23	1088	182	1993	SCR/water injection	7	20	8.9
T-CC-24[4]	1944	290	2002	SCR/DLN	2.5	5	33
T-CC-25[4]	1944	290	2002	SCR/DLN	2.5	5	36
T-CC-10	2597	405	2008	SCR/DLN	2	5	1.8
T-CC-11[4]	535	71.7	2005	SCR	2	5	20
T-CC-12[4]	535	71.7	2005	SCR	2	5	20
T-CC-13[4]	2126	264	2005	SCR/DLN	2	5	24
T-CC-14[4]	2126	264	2005	SCR/DLN	2	5	23
T-CC-15[4]	2126	264	2005	SCR/DLN	2	5	23
T-CC-16[4]	2126	264	2005	SCR/DLN	2	5	25
T-CC-18[3,4]	2043.6	295	2008	SCR/DLN	2	5	22
T-CC-19[3,4]	2043.6	295	2008	SCR/DLN	2	5	39
T-CC-20	2205	321	2015	SCR/DLN	2	5	26
T-CC-21	547.5	71	2015	SCR/water injection	2	5	0.4
T-CC-6	2096	286.5	2013	SCR/DLN	2	5	11
T-CC-7	2096	386.5	2013	SCR/DLN	2	5	11
T-CC-8[4]	2370	328	2005	SCR/DLN	2	5	33
T-CC-9	2597	405	2008	SCR/DLN	2	5	6.2

[1] – Actual NOx concentrations emitted are generally lower than the NOx permit limit
[2] – DLN: Dry Low NOx, SCR: Selective Catalytic Reduction
[3] – Subject to the Clean Water Act's ~~once-through-cooling (~~OTC~~)~~ provisions and scheduled for shutdown 12/31/29
[4] – Natural Gas Combined Cycle Gas Turbine with Associated Duct Burner

Natural Gas Simple Cycle Gas Turbines

For natural gas simple cycle gas turbines, 37 of ~~59~~60 units are permitted at or below 2.5 ppmv NOx at 15% -oxygen on a dry basis. Two of the 37 units are permitted at 2.3 ppmv NOx at 15% oxygen on a dry basis. However, the operator of the two units is seeking permit changes to raise the limit to 2.5 ppmv NOx at 15% oxygen on a dry basis to avoid compliance issues. All of the low concentration natural gas simple cycle turbines were new installations commissioned after 2006. Units that were permitted at 2.5 ppmv NOx at 15% oxygen on a dry basis also have ammonia permit limits of 5 ppmv at 15% oxygen on a dry basis. Table 2-5 lists the information regarding natural gas simple cycle turbines.

Table 2-5 – Natural Gas Simple Cycle Gas Turbines

Unit	Size (MMBTU/HR)	Output (MW)	Install Year	Control[2]	NOx Permit Limit[1] (ppmv at 15% oxygen, dry)	Ammonia (ppmv at 15% oxygen, dry)	2016 NOx Emissions (tons)
T-SC-61	69.12	6	1989	Water Injection	24	NA	0.058
T-SC-63	69.12	6	1989	Water Injection	24	NA	0.13
T-SC-76	442	48	1993	SCR	9 and 7.6	20	4.3
T-SC-64	298	31	1975	SCR/water injection	9	5	0.088
T-SC-65	298	30	1975	SCR/water injection	9	5	0.0
T-SC-68	450	46	2002	SCR/water injection	5	5	1.2
T-SC-10	450	45	2001	SCR/water injection	5	5	1.9
T-SC-30	450	45	2001	SCR/water injection	5	5	1.5
T-SC-40	450	45	2001	SCR/water injection	5	5	1.6
T-SC-13	128.8	10.5	2001	SCR/DLN	5	5	0.030
T-SC-33	128.8	10.5	2001	SCR/DLN	5	5	0.037
T-SC-43	128.8	10.5	2001	SCR/DLN	5	5	0.036
T-SC-52	128.8	10.5	2001	SCR/DLN	5	5	0.026
T-SC-66	448	47.4	2003	SCR/water injection	5	5	2.4
T-SC-67	448	47.4	2003	SCR/water injection	5	5	8.9
T-SC-18	466.8	47.4	2001	SCR/water injection	5	5	2.0
T-SC-19	466.8	47.4	2001	SCR/water injection	5	5	1.6
T-SC-21	466.8	47.4	2001	SCR/water injection	5	5	1.1
T-SC-23	466.8	47.4	2001	SCR/water injection	5	5	1.0
T-SC-25	466.8	47.4	2001	SCR/water injection	5	5	2.0
T-SC-57	466.8	47.4	2001	SCR/water injection	5	5	1.5
T-SC-75	470	49.6	2003	SCR/water injection	5	5	3.6
T-SC-15	456.5	48	2003	SCR/water injection	3.5	5	0.49
T-SC-71	505	47	2007	SCR/water injection	2.5	5	1.5
T-SC-70	511.5	47	2007	SCR/water injection	2.5	5	2.0
T-SC-72	522	47	2007	SCR/water injection	2.5	5	1.7
T-SC-29	871.3	65	2007	SCR/water injection	2.5	5	1.2
T-SC-39	871.3	65	2007	SCR/water injection	2.5	5	1.2
T-SC-49	871.3	65	2007	SCR/water injection	2.5	5	1.2
T-SC-9	871.3	65	2007	SCR/water injection	2.5	5	0.91
T-SC-14	490	50	2006	SCR/water injection	2.5	5	1.3
T-SC-34	490	50	2006	SCR/water injection	2.5	5	1.3
T-SC-16	891.7	100	2013	SCR/water injection	2.5	5	9.7
T-SC-35	891.7	100	2013	SCR/water injection	2.5	5	10.2
T-SC-45	891.7	100	2013	SCR/water injection	2.5	5	9.7
T-SC-54	891.7	100	2013	SCR/water injection	2.5	5	8.0
T-SC-58	891.7	100	2013	SCR/water injection	2.5	5	7.7
T-SC-69	505.7	47	2007	SCR/water injection	2.5	5	1.9
T-SC-1	891.7	100	2013	SCR/water injection	2.5	5	2.7
T-SC-2	891.7	100	2013	SCR/water injection	2.5	5	2.7
T-SC-3	891.7	100	2013	SCR/water injection	2.5	5	2.5

Unit	Size (MMBTU/HR)	Output (MW)	Install Year	Control[2]	NOx Permit Limit[1] (ppmv at 15% oxygen, dry)	Ammonia (ppmv at 15% oxygen, dry)	2016 NOx Emissions (tons)
T-SC-4	891.7	100	2013	SCR/water injection	2.5	5	2.7
T-SC-5	891.7	100	2013	SCR/water injection	2.5	5	2.6
T-SC-6	891.7	100	2013	SCR/water injection	2.5	5	2.6
T-SC-7	891.7	100	2013	SCR/water injection	2.5	5	2.6
T-SC-8	891.7	100	2013	SCR/water injection	2.5	5	2.0
T-SC-17	479	50	2011	SCR/water injection	2.5	5	1.5
T-SC-36	479	50	2011	SCR/water injection	2.5	5	1.3
T-SC-46	479	50	2011	SCR/water injection	2.5	5	1.4
T-SC-55	479	50	2011	SCR/water injection	2.5	5	1.5
T-SC-20	906.6	103	2013	SCR/water injection	2.5	5	4.9
T-SC-22	906.6	103	2013	SCR/water injection	2.5	5	0.9
T-SC-24	906.6	103	2013	SCR/water injection	2.5	5	4.6
T-SC-26	906.6	103	2013	SCR/water injection	2.5	5	1.1
T-SC-27	906.6	103	2013	SCR/water injection	2.5	5	4.4
T-SC-28	906.6	103	2013	SCR/water injection	2.5	5	3.8
T-SC-60	959	106	2015	SCR/water injection	2.5	5	7.0
T-SC-62	959	106	2015	SCR/water injection	2.5	5	8.2
T-SC-44	490	50	2009	SCR/water injection	2.3	5	0.7
T-SC-53	490	50	2009	SCR/water injection	2.3	5	0.9

[1] – Actual NOx concentration emitted are generally lower than the NOx permit limit
[2] – DLN: Dry Low NOx, SCR: Selective Catalytic Reduction

Summary

A summary of permitted limits in SCAQMD for the four types of electric~~al~~ ~~power~~ generating units is provided in Table 2-6. While previous SCAQMD regulatory requirements established BARCT at 9 ppmv at 15% oxygen on a dry basis for natural gas boilers and natural gas turbines, existing equipment in SCAQMD in all categories have been found at lower NOx concentration limits as seen in the Table 2-6.

Table 2-6 – Assessment of NOx Concentration Levels for Existing Units

Equipment	Initial Recommendation for NOx Concentration Limit Based on Existing Units	Number of Units Meeting Retrofit Concentration Limit	Pollution Control Technology
Diesel Internal Combustion Engine	45 ppmv at 15% oxygen, dry	0 units	Selective Catalytic Reduction (Replacement)
Natural Gas Boiler	5 ppmv at 3% oxygen, dry	10 units	Selective Catalytic Reduction, Low-NOx Burners, Flue Gas Recirculation, Staged Combustion (Retrofit)
Natural Gas Combined Cycle Gas Turbine	2 ppmv at 15% oxygen, dry	15 units	Selective Catalytic Reduction, Water Injection, Dry Low NOx (Replacement)
Natural Gas Simple Cycle Gas Turbine	2.5 ppmv at 15% oxygen, dry	37 units	Selective Catalytic Reduction, Water Injection, Dry Low NOx (Replacement)

Other Regulatory Requirements

As part of the BARCT assessment, staff examined NOx limits for electric generating units promulgated by Bay Area Air Quality Management District (BAAQMD) and San Joaquin Valley Air Pollution Control District (SJVAPCD). BAAQMD Regulation 9, Rule 8 – Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines; Regulation 9, Rule 9 – Nitrogen Oxides and Carbon Monoxide from Stationary Gas Turbines; and Regulation 9, Rule 11 – Nitrogen Oxides and Carbon Monoxide from Utility Electric Power Generating Boilers were reviewed. Similarly, SJVAPCD Rule 4306 – Boilers, Steam Generators, and Process Heaters – Phase 3, Rule 4702 – Internal Combustion Engines, and Rule 4703 – Stationary Gas Turbines were reviewed. Finally, U.S. EPA Final ~~r~~Rule for Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel was reviewed. Tables 2-7 through 2-9 below note the NOx limits in the two air districts and U.S. EPA's diesel engine NOx limit for Tier IV Final engines. The applicable equipment sizes differ by regulation. All limits except the Tier IV Final limits are applicable to new units and retrofitted units.

Table 2-7 – Non-Emergency Internal Combustion Engines (Diesel)

Agency	Rule Adoption Date	Rule Effective Date	NOx Limit (ppmv @ 15% oxygen, dry)
BAAQMD – Rich Burn	July 2007	January 2012	56
BAAQMD – Lean Burn	July 2007	January 2012	140
SJVAPCD	September 2003	June 2007	80
U.S. EPA	May 2004	2008 - 2015	45 (0.67 g/kWh)[1]

[1] – EPA Tier IV limit is 0.67 g/kWh, 45 ppmv is assuming 40% efficiency

Table 2-8 – Boilers (Natural Gas)

Agency	Rule Adoption Date	Rule Effective Date	Boiler Capacity (MMBTU/HR)	NOx Limit (ppmv @ 3% oxygen, dry)
BAAQMD	February 1994	May 1995	> 1,750	10
			> 1,500 to < 1,750	25
			< 1,500	30
SJVAPCD	October 2008	December 2008	> 20	6

Table 2-9 – Turbines (Natural Gas)

Agency	Rule Adoption Date	Rule Effective Date	Capacity (MMBTU/HR)	Output (MW)	NOx Limit (ppmv @ 15% oxygen, dry)
BAAQMD[1]	December 2006	January 2010	5 - 50	N/A	42
			> 50 - 150	N/A	25 - 42
			> 150 - 250	N/A	15
			> 250 - 500	N/A	9
			> 500	N/A	5
SJVAPCD	September 2007	January 2012	< 35[2]	< 3	25
			> 35 - 130[2]	> 3 – 10	25
			> 130[2]	> 10	25 - 42

[1] – Currently under review
[2] – Non-regulatory, converted for comparison purposes only

For natural gas boilers, natural gas combined cycle gas turbines, and natural gas simple cycle gas turbines, the NOx concentration limits in other Air District regulations was higher than existing units located in SCAQMD. For diesel internal combustion engines, the NOx concentration limits in U.S. EPA Final ~~rule~~ Rule for Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel ~~NOx concentration limits~~ were lower than existing units located in SCAQMD.

Assessment of Pollution Control Technologies

As part of the BARCT assessment, staff conducted a technology assessment to evaluate NOx pollution control technologies for electric generating units. Staff reviewed scientific literature, vendor information, and strategies utilized in practice. The technologies are presented below and the applicability for use with various electric ~~power~~ generating units is noted. In most cases, post-combustion technologies may be utilized in conjunction with pre-combustion technologies.

Pre-Combustion Technologies

Dry Low-NOx or Lean Premix Emission Combustors (Natural 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~~,~~ on a dry basis). 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 (Natural 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 have increased maintenance due to erosion and wear.

Catalytic Combustion (Natural 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 reduces NOx emissions. In its first commercial installation, NOx concentrations were lowered from approximately 20 ppmv to below 3 ppmv at 15% oxygen on a dry basis without post-combustion controls. Several turbine manufacturers are in the development stage to incorporate this technology.

Low-NOx Burners (Natural Gas Boilers)

Controlled fuel and air mixing at the burner reduces the peak flame temperature resulting in reduced NOx formation. Lean pre-mixed combustion gases and low turbulence flow of combustion gases combine to achieve NOx reductions of 80 to 90%. Ultra-Low-NOx Burners are able to reduce NOx concentration to 5 to 7 ppmv at 3% oxygen on a dry basis. The burners are scalable for various sizes of boilers and heating units. The burners can be designed for retrofit or new installations. However, retrofits to existing boilers may require complex engineering and re-design.

Post-Combustion Technologies

Selective Catalytic Reduction (Diesel Internal Combustion Engines/Natural Gas Boilers/Natural Gas Turbines)

Selective Catalytic Reduction is the primary post-combustion technology for NOx reduction and is widely used in turbines, boilers, and engines including stationary engines and heavy duty trucks. It is the primary control for engines that meet U.S. EPA's Tier IV Final standards. The technology can reduce NOx emissions by 95% 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. Nearly all electric generating units 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% solution.

To perform optimally, the gas temperature in the control device should be between 400°F and 800°F. 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 electric generating units 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. Poisoned catalysts require cleaning or replacement resulting in additional costs and extended periods of non-operation for the electric~~al~~ ~~power~~ generating ~~equipment~~unit. In those cases, filtering may be used to reduce the impacts on the catalyst.

Catalytic Absorption Systems (Natural Gas 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, then the nitrogen dioxide molecules are absorbed onto the catalyst. The catalyst is a platinum-based substrate with a potassium carbonate coating. The catalyst appears to be very sensitive to sulfur, 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, they have determined that emission levels are best met when all three layers of catalyst are washed about every four months. During the wash process, the turbine is non-operational for about three days.

The NOx concentration levels achieved by the various technologies assessed were consistent with the NOx concentration levels found in existing natural gas boilers, natural gas combined cycle gas turbines, and natural gas simple cycle gas turbines located in SCAQMD. Additionally, the NOx concentration levels from the technology assessment were consistent with the NOx concentration levels found in diesel internal combustion engines compliant with U.S. EPA's Final ~~r~~Rule for Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel.

Initial BARCT Emission Limit and Other Considerations

The recommendation for the NOx BARCT emission limits are established using information gathered from existing SCAQMD regulations, existing units permitted in SCAQMD, regulatory requirements for other air districts, and the technology assessment. Both retrofit and new installations are considered. Once the initial limits are established, a cost-effectiveness determination is made at that initial limit. If the initial limit is not cost-effective, an alternative limit may be recommended. Unique circumstances are taken under consideration to distinguish alternative limits or to create provisions in the rule to address equipment that would otherwise not be cost-effective.

Diesel Internal Combustion Engines

Existing diesel internal combustion engines have been found in SCAQMD to be retrofitted to 82 ppmv NOx at 15% oxygen on a dry basis. In other air districts, regulations require retrofit on existing engines to meet a NOx concentration limit between 56 and 140 ppmv at 15% oxygen on a dry basis. For new diesel internal combustion engines, SCAQMD has an engine permitted at 51 ppmv NOx at 15% oxygen on a dry basis. Stationary diesel internal combustion engines installed after 2015 must meet U.S. EPA's Regulation for Emissions from Heavy Equipment with Compression-Ignition (Diesel) Engines Tier IV Final standard of 0.67 g/kWh NOx concentration limit (approximately 45 ppmv NOx at 15% oxygen on a dry basis, assuming 40% efficiency). Replacing existing engines with new engines that meet the Tier IV Final standard were initially used to determine cost-effectiveness.

Table 2-10 – Initial BARCT Recommendation for Diesel Internal Combustion Engines

	Existing Units (ppmv @ 15% oxygen, dry)	**Other Regulatory Requirements**	**Technology Assessment**	**Initial BARCT Recommendation**
Retrofit	82 ppmv	56-140 ppmv @ 15% oxygen dry	290 -420 ppmv @ 15% oxygen dry	56-140 ppmv @ 15% oxygen dry
New Install	51 ppmv	0.67 g/kWh	0.67 g/kWh	0.67 g/kWh

Natural Gas Boilers

Both new installations and retrofits of natural gas boilers have been found in the SCAQMD that meet a 5 ppmv NOx at 3% oxygen on a dry basis concentration limit. Other air districts require retrofit of existing boilers to meet a concentration limit of 6 ppmv NOx at 3% oxygen on a dry basis and new boilers to meet a concentration limit of 5 ppmv NOx at 3% oxygen on a dry basis. The technology assessment has shown that selective catalytic reduction, in conjunction with ultra-low NOx burners can meet a limit of 5 ppmv NOx at 3% oxygen on a dry basis. Therefore, the initial BARCT recommendation for new installations and retrofitted natural gas boilers will be 5~~.0~~ ppmv NOx at 3% oxygen on a dry basis.

Table 2-11 – Initial BARCT Recommendation for Natural Gas Boilers

	Existing Units (ppmv @ 3% oxygen, dry)	**Other Regulatory Requirements (ppmv @ 3% oxygen, dry)**	**Technology Assessment (ppmv @ 3% oxygen, dry)**	**Initial BARCT Recommendation (ppmv @ 3% oxygen, dry)**
Retrofit	5	6	5	5
New Install	5	5 - 6	5	5

Natural Gas Combined Cycle Gas Turbines

In all but one case, natural gas combined cycle gas turbines at electricity generating facilities have been new installations. In the single retrofit instance, the natural gas combined cycle gas turbine was retrofitted to meet a limit of 5 ppmv NOx at 15% oxygen on a dry basis. Otherwise, the lowest NOx concentration limit for new installations in SCAQMD is 2 ppmv at 15% oxygen on a dry basis. Other air districts limit NOx emissions to between 5-25 ppmv at 15% oxygen on a dry basis for existing units and 2-25 ppmv at 15% oxygen on a dry basis for new installations. The technology assessment found that ~~a~~ for natural gas combined cycle turbines, a combination of pre-combustion technology and post-combustion control can meet a concentration of 2 ppmv NOx at 15% oxygen on a dry basis. The initial BARCT recommendation for both new installations and retrofits of natural gas combined cycle gas turbines is 2 ppmv NOx at 15% oxygen on a dry basis.

Table 2-12 – Initial BARCT Recommendation for Natural Gas Combined Cycle Gas Turbines

	Existing Units (ppmv @ 15% oxygen, dry)	Other Regulatory Requirements (ppmv @ 15% oxygen, dry)	Technology Assessment (ppmv @ 15% oxygen, dry)	Initial BARCT Recommendation (ppmv @ 15% oxygen,dry)
Retrofit	5	5-25	2	2
New Install	2	2-25	2	2

Natural Gas Simple Cycle Gas Turbines

The lowest NOx concentration for a retrofitted natural gas simple cycle gas turbine is 9 ppmv at 15% oxygen on a dry basis. For new installations, numerous natural gas simple cycle gas turbines have a NOx concentration limit of 2.5 ppmv at 15% oxygen on a dry basis. Other air districts limit NOx emissions to between 5 and 25 ppmv at 15% oxygen on a dry basis for existing units and 2.5-25 ppmv at 15% oxygen on a dry basis for new installations. The technology assessment found that a combination of pre-combustion technology and post-combustion control can meet a concentration of 2.5 ppmv NOx at 15% oxygen on a dry basis for natural gas simple cycle gas turbines. The initial BARCT recommendation for both new installations and retrofits of natural gas simple cycle gas turbines is 2.5 ppmv NOx at 15% oxygen on a dry basis.

Table 2-13 – Initial BARCT Recommendation for Natural Gas Simple Cycle Gas Turbines

	Existing Units (ppmv @ 15% oxygen, dry)	Other Regulatory Requirements (ppmv @ 15% oxygen, dry)	Technology Assessment (ppmv @ 15% oxygen, dry)	Initial BARCT Recommendation (ppmv @ 15% oxygen, dry)
Retrofit	9	5-25	2.5	2.5
New Install	2.5	2.5-25	2.5	2.5

In summary, the initial BARCT recommendations are presented in Table 2-14 below:

Table 2-14 – Summary of Initial BARCT Recommendation

Equipment	Initial BARCT Recommendation
Diesel Internal Combustion Engine	0.67 g/kWh @ 15% oxygen, dry
Natural Gas Boiler	5 ppmv @ 3% oxygen, dry
Natural Gas Combined Cycle Gas Turbine	2 ppmv @ 15% oxygen, dry
Natural Gas Simple Cycle Gas Turbine	2.5 ppmv @ 15% oxygen, dry

Cost-Effectiveness Analysis

Cost-effectiveness is examined for each equipment category type. Cost-effectiveness is measured in terms of control costs (dollars) per air emissions reduced (tons). If the cost per ton of emissions reduced is less than the maximum required cost-effectiveness, then the control method is considered to be cost-effective. The 2016 Air Quality Management Plan (AQMP) establishes a cost-effectiveness threshold of $50,000 per ton of NOx reduced.

The discounted cash flow method (DCF) is used in to determine cost-effectiveness. The DCF method calculates the present value of the control costs over the life of the equipment by adding the capital cost to the present value of all annual costs and other periodic costs over the life of the equipment. A real interest rate of four per-cent and a 25-year equipment life is used. The cost-effectiveness is determined by dividing the total present value of the control costs by the total emission reductions in tons over the same 25-year equipment life.

Baseline emissions are determined by using reported fuel consumption and the permit NOx concentration limit corrected to 15% oxygen on a dry basis except for natural gas boilers where it is corrected to 3% oxygen on a dry basis. Proposed Amended 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities (PAR 1135) emissions are determined by using reported fuel consumption and the proposed emission limit. Emission reductions are the difference between baseline emissions and PAR 1135 emissions.

Costs for retrofitting natural gas boilers, natural gas combined cycle gas turbines, and natural gas simple cycle gas turbines were determined using U.S. EPA's Air Pollution Control Cost Estimation Spreadsheet for Selective Catalytic Reduction. The methodology used in the spreadsheet is based on U.S. EPA Clean Air Markets Division Integrated Planning Model. Size and costs of selective catalytic reduction control equipment and operational costs are based on size, fuel burned, NOx removal efficiency, reagent consumption rate, and catalyst costs. Fuel consumption is based on 2016 reported fuel usage. Values are reported in 2015 dollars.

Diesel Internal Combustion Engines

Replacement cost for a 2.8 MW (4,000 brake horsepower) U.S. EPA Tier 4 Final diesel internal combustion engine is approximately $3.9 million based on a vendor quote to the electricity generating facility using the diesel internal combustion engines. No change is expected for operating costs. Infrastructure costs are included because the replacement engines are larger requiring some facility modifications. The vendor quote includes:

Engine replacement and exhaust after treatment:	$2.1 million
Generator set refurbishment and testing:	$0.3 million
Removal and transportation:	$0.5 million
Infrastructure:	$1.0 million
Total Cost:	$3.9 million

Using the $3.9 cost estimate for all six engines, the cost-effectiveness is provided below in Table 2-15.

Table 2-15 – Diesel Internal Combustion Engine Cost-Effectiveness

Unit	Size (BHP)	2016 Annual NOx Emissions (tons)	NOx Permit Limit (ppmv @ 15% oxygen dry)	Proposed BARCT NOx Emission Limit (ppmv @ 15% oxygen, dry)	Capital Cost (million)	Annual Emission Reductions (tons)	Cost-Effectiveness ($/ton NOx)
ICE1	1,575	16	6.5 lbs/MWh[2]	45	$3.9	9.9	$14,826
ICE3	1,950	5.3	6.5 lbs/MWh[2]	45	$3.9	2.7	$52,034
ICE6	2,150	8.2	6.5 lbs/MWh[2]	45	$3.9	3.9	$35,414
ICE5	1,500	12	6.5 lbs/MWh[2]	45	$3.9	5.6	$24,768
ICE2	2,200	22	6.5 lbs/MWh[2]	45	$3.9	8.4	$15,520
ICE4	3,900	5.9	51	45	$3.9	0.7	$224,221

Average Cost-Effectiveness: $27,000

The average cost-effectiveness for replacing all six units is approximately $27,000 per ton of NOx reduced. Total NOx reduced is 31.2 tons annually. The average cost-effectiveness for replacing five units and excluding the 3,900 brake horsepower engine with a 51 ppmv NOx limit is approximately $23,000 per ton of NOx reduced. In that scenario, total NOx reduced is 30.5 tons annually.

Natural Gas Boilers

Because of the Clean Water Act's once-through-cooling provisions and business decisions by electricity generating facilities, 18 of 23 natural gas boilers are planned to be shutdown. Of those 18 natural gas boilers, all but four of them will be shutdown by January 1, 2024. Due to the shutdowns, 273 tons of NOx will be reduced annually by 2024 from natural gas boilers at electricity generating facilities. Another 57 tons of NOx will be reduced annually from the two natural gas boilers scheduled for shutdown in 2025 and the two natural gas boilers scheduled for shutdown in 2029. Three natural gas boilers are expected to be repowered to natural gas turbines or renewable power sources. However, if they are not, they will be required to meet the proposed limit. Repowering or retrofitting those three boilers will result in another 318 tons of NOx reductions annually. The last two natural gas boilers have not been in operation since 2012, but the electricity generating facility intends to keep them as low-use units.

Table 2-16 – Natural Gas Boiler Cost-Effectiveness

Unit	Input (MM/BTU/HR)	Output (MW)	2016 Annual NOx Emissions (tons)	Average Annual Capacity Factor (%)	NOx Permit Limit (ppmv @ 3% oxygen dry)	Proposed BARCT NOx Emission Limit (ppmv @ 3% oxygen, dry)	Capital Cost (millions)	Operating Cost (millions)	Annual Emission Reductions (tons)	Cost-Effectiveness ($/ton reduced)	Annual Capacity Factor (%) at $50,000 per ton of NOx Reduced
B18	527	44	113.6	42.6	38	5	7.5	0.8	116.3	$6,922	5.9
B12	260	20	39.7	25.6	40	5	4.8	0.4	34.6	$13,262	6.8
B15	492	44	177.5	29.5	82	5	5.9	0.4	167.1	$3,149	1.9

Average Cost-Effectiveness: $5,630

The average cost-effectiveness is approximately $5,630 per ton of NOx reduced. Previous calculations only included natural gas fuel usage and did not include landfill gas that the boilers utilize as their primary fuel. PAR 1135 includes a low-use provision that would allow natural gas boilers to continue to operate at levels below an average annual capacity factor of 1 percent in any one year and 2.5% averaged over three consecutive years.

Natural Gas Combined Cycle Gas Turbines

Eight of 23 natural gas combined cycle gas turbines currently have NOx permit limits greater than the proposed NOx concentration limit of 2 ppmv at 15% oxygen on a dry basis. Two units are permitted at 2.5 ppmv NOx at 15% oxygen on a dry basis and the other six units are permitted between 7 - 9 ppmv NOx at 15% oxygen on a dry basis. The cost-effectiveness for natural gas combined cycle gas turbines is presented below in Table 2-17 below.

Table 2-17 – Natural Gas Combined Cycle Gas Turbine Cost-Effectiveness

Unit	Input (MMBTU/HR)	Output (MW)	2016 Annual NOx Emissions (tons)	Estimated MWh/yr	% Capacity	NOx Permit Limit (ppmv @ 15% oxygen, dry)	Capital Cost (Millions)	Operating Cost (millions)	Emission Reductions (tons)	Cost-Effectiveness ($/ton reduced)	Annual Capacity Factor (%) at $50,000 per ton of NOx Reduced
T-CC-24[1]	1944	290	33	900,000	35%	2.5	$20.1	$1.6	6.6	$282,898	198.0
T-CC-25[1]	1944	290	36	1,000,000	39%	2.5	$20.1	$1.6	7.2	$261,226	203.8
T-CC-22	1088	182	12.1	60,000	4%	7	$14.8	$1.1	7.8	$169,744	12.8
T-CC-23	1088	182	8.9	40,000	3%	7	$14.8	$1.1	5.2	$253,696	12.7
T-CC-1	442	48	4.3	35,000	8%	7.6	$6.2	$0.5	3.2	$174,447	29.0
T-CC-26	350	30	0.8	6,000	2%	9	$4.6	$0.3	0.6	$669,774	30.6
T-CC-27	350	60	0.5	4,000	1%	9	$7.2	$0.5	0.4	$1,579,869	24.0
T-CC-28	350	60	0.5	4,000	1%	9	$7.2	$0.5	0.4	$1,579,869	24.0

Average Cost-Effectiveness: > $100,000

1 – Natural Gas Combined Cycle Gas Turbine with Associated Duct Burner

In all cases, the cost-effectiveness exceeds $50,000 per ton of NOx reduced. For the natural gas combined cycle gas turbines permitted at 2.5 ppmv NOx at 15% oxygen on a dry basis, the cost-effectiveness threshold of $50,000 per ton reduced is never reached, even when used at 100% annual capacity factor. Those two units will not be required to retrofit to the proposed BARCT limit. For the remaining units, a low-use provision is included in the proposed rule allowing the units to operate at current permitted levels if their annual capacity factor remains below 25% in any one year and 10% averaged over three consecutive years.

Natural Gas Simple Cycle Gas Turbines

Twenty-two of 67 natural gas simple cycle gas turbines have permitted NOx limits greater than the proposed BARCT limit of 2.5 ppmv at 15% oxygen on a dry basis. One unit is permitted at 3.5 ppmv NOx at 15% oxygen on a dry basis, 17 units are permitted at 5 ppmv NOx at 15% oxygen on a dry basis, two units are permitted at 9 ppmv NOx at 15% oxygen on a dry basis, and two units are permitted at 24 ppmv NOx at 15% oxygen on a dry basis. The natural gas simple cycle gas turbines that are permitted at NOx concentration levels above the proposed limit are used sporadically to support renewable power generation. The cost-effectiveness for natural gas simple cycle gas turbines is presented below in Table 2-18 below.

Table 2-18 – Natural Gas Simple Cycle Gas Turbine Cost-Effectiveness

Unit	Input (MMBTU/HR)	Output (MW)	2016 Annual NOx Emissions (tons)	Estimated MWh/yr	%Capacity	NOx Permit Limit (ppmv @ 15% oxygen, dry)	Capital Cost (Millions)	Operating Cost (millions)	Emission Reductions (tons)	Cost-Effectiveness ($/ton reduced)	Annual Capacity Factor (%) at $50,000 per ton of NOx Reduced
T-SC-15	456.5	48	0.5	1500	0.36%	3.5	$6.2	$0.41	0.14	$3,679,674	26%
T-SC-68	450	46	1.2	4000	0.99%	5	$6.1	$0.41	0.62	$820,407	16%
T-SC-10	450	45	1.9	4000	1.01%	5	$6.0	$0.39	0.97	$513,404	10%
T-SC-30	450	45	1.5	4000	1.01%	5	$6.0	$0.39	0.75	$664,064	13%
T-SC-40	450	45	1.6	4000	1.01%	5	$6.0	$0.39	0.81	$613,190	12%
T-SC-13	128.8	10.5	0.0	120	0.13%	5	$2.3	$0.15	0.01	$12,993,169	34%
T-SC-33	128.8	10.5	0.0	120	0.13%	5	$2.3	$0.15	0.02	$10,320,468	27%
T-SC-43	128.8	10.5	0.0	120	0.13%	5	$2.3	$0.15	0.02	$10,624,725	28%
T-SC-52	128.8	10.5	0.0	120	0.13%	5	$2.3	$0.15	0.01	$14,756,563	39%
T-SC-66	448	47.4	2.4	8000	1.93%	5	$6.2	$0.41	1.20	$426,186	16%
T-SC-67	448	47.4	8.9	40000	9.63%	5	$6.2	$0.42	4.45	$116,440	22%
T-SC-18	466.8	47.4	2.0	6000	1.45%	5	$6.2	$0.41	1.00	$512,207	15%
T-SC-19	466.8	47.4	1.6	5000	1.20%	5	$6.2	$0.41	0.81	$636,213	15%
T-SC-21	466.8	47.4	1.1	4000	0.96%	5	$6.2	$0.41	0.53	$971,264	19%
T-SC-23	466.8	47.4	1.0	4000	0.96%	5	$6.2	$0.41	0.51	$1,004,867	19%
T-SC-25	466.8	47.4	2.0	5000	1.20%	5	$6.2	$0.41	0.99	$519,131	13%
T-SC-57	466.8	47.4	1.5	4000	0.96%	5	$6.2	$0.41	0.74	$693,129	13%
T-SC-75	470	49.6	3.6	12000	2.76%	5	$6.4	$0.42	1.79	$295,758	16%
T-SC-64	298	31	0.09	270	0.10%	9	$4.7	$0.34	0.06	$6,419,676	13%
T-SC-65	298	30	0.0	0		9	$0.0	$0.00	0.00		
T-SC-61	69.12	6	0.06	120	0.23%	24	$1.6	$0.12	0.05	$2,697,954	12%
T-SC-63	69.12	6	0.13	240	0.46%	24	$1.6	$0.12	0.11	$1,254,841	11%

The current average annual capacity factor is approximately 1%. A low-use provision is included in the proposed rule allowing the units to operate at current permitted levels if their annual capacity factor remains below 25% in any one year and 10% averaged over three consecutive years.

BARCT Emission Limit Recommendation

In all four categories, the technology is available to meet the Initial BARCT NOx concentration limits. For diesel internal combustion engines, the cost-effectiveness is approximately $27,000 per ton of NOx reduced. In all three remaining categories, the cost-effectiveness is high because the units are used far below their capacity. If these were to operate at higher annual capacity factors, NOx reductions would become cost-effective. To address these sporadically used electric generating units, a low-use provision is included in the rule. The provision allows low-use equipment to continue operating without retrofit provided that they do not exceed an annual capacity factor limit and that they include an annual capacity factor in their Permit to Operate. This ensures that electric generating units that increase use to the point where the cost-effectiveness threshold is reached, that they will be required to retrofit the units to meet the proposed BARCT concentration limits.

The BARCT emission limits for the proposed rule are listed below in Table 2-19.

Table 2-19 – Recommended BARCT Emission Limits

Equipment Type	NOx (ppmv)	Ammonia (ppmv)	Oxygen Correction (%, dry)
Diesel Internal Combustion Engine	45	5	3
Natural Gas Boiler	5	5	15
Natural Gas Combined Cycle Gas Turbine	2	5	15
Natural Gas Simple Cycle Gas Turbine	2.5	5	15

CHAPTER 3: SUMMARY OF PROPOSALS

INTRODUCTION

Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities (PAR 1135) establishes the following emission limits at electricity generating facilities: NOx and ammonia emission limits for boilers and gas turbines, and NOx, ammonia, carbon monoxide, volatile organic compounds, and particulate matter for internal combustion engines located on Santa Catalina Island. Additionally, PAR 1135 establishes provisions for monitoring, reporting, and recordkeeping, and establishes exemptions from specific provisions.

TITLE

The title for Rule 1135 is changed from “Emissions of Oxides of Nitrogen from Electric Power Generating Systems” to “Emissions of Oxides of Nitrogen from Electricity Generating Facilities”; the term “electric power generating system” is replaced with “electricity generating facilities” to reflect changes in definitions in the proposed amended rule.

PURPOSE (Subdivision (a))

Purpose (subdivision (a)) is added to PAR 1135 to be consistent with the structure of current SCAQMD rules. The purpose of PAR 1135 is to reduce emissions of oxides of nitrogen from electric generating units (diesel internal combustion engines located at Santa Catalina Island, boilers, combined cycle turbines, and simple cycle turbines) at electricity generating facilities.

APPLICABILITY (Subdivision (b))

While there is no specific language excluding RECLAIM facilities from current Rule 1135, only one facility is currently subject to Rule 1135. Rule 2001 – Allocations of Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx) allowed the municipal utilities the option to enter RECLAIM. Current Rule 1135 applies to electric power generating systems and establishes system-wide NOx emission limits; PAR 1135 will apply to electric generating units at electricity generating facilities. Electric power generating systems consists of boilers, turbines, other advanced combustion resources, and alternative equipment that are capable of producing power and owned by or under contract to sell power to an electric utility. PAR 1135 no longer uses the term “electric power generating system” and now refers to “electric generating units,” including diesel internal combustion engines located on Santa Catalina Island, boilers, combined cycle gas turbines, and simple ~~gas~~ cycle gas turbines at electricity generating facilities. An electricity generating facility is an investor-owned electric utility, publicly owned electric utility, or a facility with 50 megawatts or more of combined generation capacity. The rule will not apply to units located at landfills, petroleum refineries, or publicly owned treatment works. NOx generating equipment located at petroleum refineries and refinery associated facilities will be subject to forthcoming Proposed Rule 1109.1 – Refinery Equipment. Equipment at landfills and publicly owned treatment works will be subject to equipment specific regulations.

DEFINITIONS (Subdivision (c))

PAR 1135 adds and modifies definition to clarify and explain key concepts and removes obsolete definitions. Please refer to PAR 1135 for each definition.

Proposed Deleted Definitions:	Advanced Combustion Resource Alternative Resource Approved Alternative or Advanced Combustion Resource Alternative Resource or Advanced Combustion Resource Breakdown Cogeneration Facility Displace District-Wide Daily Limits Electric Power Generating System Replacement Unit Start-U~~u~~p or Shutdown Useful Thermal Energy
Proposed Modified Definitions:	Boiler Daily Force Majeure Natural Gas Curtailment NOx Emissions
Proposed Added Definitions:	Annual Capacity Factor Cogeneration Turbine Combined Cycle Gas Turbine Duct Burner Electric Generating Unit Electricity Generating Facility Former RECLAIM NOx Source Internal Combustion Engine Investor-Owned Electric Utility Landfill Non-RECLAIM NOx Source Petroleum Refinery Publicly Owned Electric Utility Publicly Owned Treatment Works RECLAIM NOx Source SCAQMD-Wide Daily Limits Shutdown Simple Cycle Gas Turbine Start-~~u~~Up Tuning

EMISSIONS LIMITS (Subdivision (d))

Throughout subdivision (d), due to the deletion of the term "electric power generating system," any reference to "electric power generating system" was changed to "electric generating unit" or "electricity generating facility."

The emissions limits in subdivision (d) will be applicable to all electricity generating facilities, including RECLAIM electricity generating facilities. PAR 1135 includes a provision which states RECLAIM facilities will still be applicable to the requirements of PAR 1135 despite Rule 2001 subdivision (j) – Rule Applicability and Table 1: Existing Rules Not Applicable to RECLAIM Facilities for Requirements Pertaining to NOx Emissions exempting them from Rule 1135 NOx emissions requirements. Staff is working on amendments to Rule 2001 to specify that NOx RECLAIM facilities are required to comply with all NOx provisions in rules contained in Table 1 that are adopted or amended after Proposed Amended Rule 2001 is adopted.

The emission limits in Tables 1 and 2 of PAR 1135 are based on the BARCT assessment presented in Chapter 2 – BARCT Assessment.

PAR 1135, Table 1: Emissions Limits for Boilers and Gas Turbines

Equipment Type	NO_x[1] (ppmv)	Ammonia (ppmv)	Oxygen Correction (%, dry)
Boiler	5	5	3
Combined Cycle Gas Turbine and Associated Duct Burner	2	5	15
Simple Cycle Gas Turbine	2.5	5	15

[1] – The NOx emission limits in Table 1 shall not apply during start-up, shutdown, and tuning.

PAR 1135, Table 2: Emissions Limits for Diesel Internal Combustion Engines ~~Located on Santa Catalina Island~~

NO_x ~~[1, 4]~~ (ppmv)[1, 4]	Ammonia ~~[1]~~ (ppmv)[1]	Carbon Monoxide[2] (ppmv)[2,4]	Volatile Organic Compounds[3] (ppmv)[3,4]	Particulate Matter (lbs/mmbtu)
45	5	250	30	0.0076

[1] – Corrected to 15% oxygen on a dry basis and averaged over a 60 minute rolling average
[2] – Corrected to 15% oxygen on a dry basis and averaged over 15 minutes
[3] – Measured as carbon, corrected to 15% oxygen on a dry basis, and averaged over sampling time required by the test method
[4] – The NOx, carbon monoxide, and volatile organic compounds emissions limits in Table ~~1~~2 shall not apply during start-up and~~,~~ shutdown~~, and tuning.~~

To help achieve the emission reduction goals of the 2016 AQMP ~~and AB 617 requirement of BARCT implementation,~~ PAR 1135 subparagraphs (d)(1) and (d)(2) set the compliance date for electric generating units as January 1, 2024.

Subparagraph (d)(1)(A) requires the emissions limits of boilers and turbines ~~that are installed after [*Date of Adoption*]~~ to be averaged over a 60 minute rolling average. Boilers and turbines that have been installed or issued permits to construct before [*Date of Adoption*] shall retain their averaging times on their current permit or be averaged over a 60 minute rolling average. The averaging times for these units were evaluated during the permitting process and should be maintained. For diesel internal combustion engines, Table 2 specifies that NOx and ammonia limits are averaged over a 60 minute rolling average and~~,~~ carbon monoxide is averaged over 15 minutes corrected to 15% oxygen on a dry basis, and volatile organic compounds are averaged according to the test method. For ~~electric generating units~~internal combustion engines installed before [*Date of Adoption*], subparagraph~~s (d)(1)(B) and~~ (d)(2)(B) allow the units to retain their current averaging time. The averaging times for these units were evaluated during the permitting process and should be maintained.

Subparagraph (d)(3) states that requirements for start-up, shutdown, and tuning periods will be put in each electric generating unit's permit;~~.~~ each electric generating unit must have these requirements incorporated into their permits by January 1, 2024. 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 1135 does not specify specific start-up, shutdown, and tuning requirements, but instead states that the requirements will be put in each electric generating unit's permit.

Under paragraph (d)(2)(A), the compliance date for diesel internal combustion engines located on Santa Catalina Island is January 1, 2024. However, paragraph (d)(4) includes an alternative compliance approach in order to accommodate potential plans for less emissive electricity generating equipment than diesel internal combustion engines. In 2016, the diesel internal combustion engines on Santa Catalina Island emitted 69 tons of NOx. Assuming the same throughput, but with diesel internal combustion engines with 45 ppmv NOx emission limits, the annual NOx emissions would be 39 tons. The alternative approach was designed to reduce NOx emissions by 67% from diesel internal combustion engines, and therefore under this approach the operator must reduce emissions to 13 tons of NOx annually. By January 1, 2022, the owner or operator of diesel internal combustion engines located on Santa Catalina Island must submit a notification that they are electing the alternative compliance approach. The notification must include a description of the proposed technologies, schedule of permit submittals, and timeframes for ordering and installing equipment. Additionally, the facility must take a permit condition limiting their total annual NOx emissions to 13 tons.

To further incentivize lower emitting electricity generating technologies, paragraph (d)(5) allows Santa Catalina Island an extension of up to three years for compliance with Table 2 or the alternative compliance approach as the facility. The extension is allowed for both compliance approaches as the facility may initially pursue lower emitting technologies later to discover that hurdles to permitting, land acquisition, or some other extenuating circumstance prevents the implementation of the lower emitting technology. The extension includes a mitigation fee of $100,000/year. The mitigation fee will be used to fund studies and projects to reduce criteria pollutants and toxic air contaminant emissions. The amount for the mitigation fee is approximately the amount they would have had to pay to go through the variance process, including excess emissions fees, notification fees, and other procedural fees. In order to qualify for the extension, the facility must reduce some NOx upfront. If the facility wants an extension for installing diesel internal combustion engines, two diesel internal combustion engines must be retrofitted or repowered to 45 ppmv NOx at 15% oxygen on a dry basis by January 1, 2023. If requesting an extension for the alternative compliance approach, Santa Catalina Island must reduce actual mass emissions to 50 tons of NOx for compliance year 2022 and 40 tons of NOx for compliance year 2023. The time extension must be submitted at least one year before the compliance deadlines and must include: which units need a time extension, the reason an extension is needed, and the progress to date of the project. To be approved for the time extension, the Executive Officer will determine if the facility followed the proper procedure for submitting a request for time extension and if the time extension was needed due to an extenuating circumstance. Examples of extenuating circumstances would include engineering designs, construction plans, land acquisition contracts, permit applications, and purchase orders that impact scheduling.

Current Rule 1135 paragraphs (d)(1) and (d)(2) have been deleted as the requirements are no longer applicable. Current Rule 1135 paragraph (d)(3), PAR 1135 paragraph (d)(6), maintains only provisions applicable to the City of Glendale. The District-wide daily limits on emissions rate and emissions cap and the annual emissions limits for Southern California Edison, Los Angeles Department of Water and Power, the City of Burbank, and the City of Pasadena, became obsolete once these facilities entered into RECLAIM. Since the City of Glendale is still a Rule 1135 facility, their current SCAQMD-wide daily limits on emissions rates and emissions cap and annual emissions limits will be maintained and references to older limits will be removed. The SCAQMD-wide daily limits on emissions rates and emissions caps and annual emissions limits need to be maintained for the City of Glendale in the interim period until the emissions limitations in paragraph (d)(1) ~~is~~ are achieved.

Paragraph (d)(7) requires that by July 1, 2022 facilities must submit applications to reconcile their permits with Rule 1135. As electricity generating facilities transition out of RECLAIM to Rule 1135, their permits will need to be revised to remove references to RECLAIM rules and include references to Rule 1135.

Several additional obsolete provisions will be deleted. Current Rule 1135 subparagraphs (d)(6) will be removed since those dates have passed. Current Rule 1135 subparagraph (d)(8), the provision stating that a violation of any unit specific NOx emission limit in a permit or a compliance plan constitutes a violation of Rule 1135 will be removed since permits and compliance plans are enforceable and it would be redundant to also make it a violation of the Rule.

Compliance Plans

Current Rule 1135 subdivision (d) – Compliance Plans, will be deleted, as those dates have passed and Compliance Plans will no longer be necessary with the emissions limits in PAR 1135 subdivision (d).

MONITORING, RECORDKEEPING, AND REPORTING (Subdivision (e))

Staff is currently working on adopting Rule 113 – Monitoring, Reporting, and Recordkeeping (MRR) Requirements for NOx and SOx Sources. Once Rule 113 is adopted, all Rule 1135 equipment will transition to Rule 113 for MRR. For the interim period, the intention of the PAR

1135 MRR is to maintain current MRR for all facilities and minimize the RECLAIM reporting requirements.

All the provisions in the current Rule 1135 subdivision (e) will be deleted. These provisions are no longer necessary because of the 125 units under PAR 1135, there are only three units that are required to follow the current Rule 1135 monitoring requirements. In addition to following current Rule 1135, these three units also conduct monitoring according to current Rule 218 – Continuous Emission Monitoring. Deleting Current Rule 1135 monitoring requirements will not affect these three units.

~~Paragraph (e)(1) requires that facilities maintain all their monitoring, recordkeeping, and reporting documents for five years and make it available to SCAQMD upon request.~~

Paragraph (e)(1~~2~~) applies to current ~~RECALIM~~ RECLAIM NOx sources and these sources will continue complying with SCAQMD Rule 2012 to demonstrate compliance with the NOX emissions limits.

Paragraph (e)(2~~3~~) 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 electric ~~power~~ generating units:

- (c)(3) – facility permit holder of a major NOx source
- (c)(4) – Super Compliant Facilities
- (c)(5) – facility Permit holder of a facility which is provisionally approved for NOx Super Compliant status
- (c)(6) – after final approval of Super Compliant status
- (c)(7) – facility designated as a NOx Super Compliant Facility
- (c)(8) – super Compliant Facility exceeds its adjusted allocations
- (d)(2)(B) – install, maintain and operate a modem
- (d)(2)(C) – equipment-specific emission rate or concentration limit
- (d)(2)(D) – monitor one or more measured variables as specified in Appendix A
- (d)(2)(E) – comply with all applicable provisions of subdivision (f)
- (e) – NOx Process Unit
- (g)(5) – system is inadequate to accurately determine mass emissions
- (g)(6) – sharing of totalizing fuel meters
- (g)(7) – equipment which is exempt from permit requirements pursuant to Rule 219 - Equipment Not Requiring A Written Permit Pursuant to Regulation II
- (g)(8) – rule 2012 and Appendix A
- (h)(1) – facilities with existing CEMS and fuel meters as of October 15, 1993
- (h)(2) – interim emission reports
- (h)(4) – installation of all required or elected monitoring and reporting systems
- (h)(5) – existing or new facility which elects to enter RECLAIM or a facility which is required to enter RECLAIM
- (h)(6) – new major NOx source at an existing facility
- (i) – Recordkeeping

- (k) – Exemption
- (l) – Appeals
- Reported Data and Transmitting/Reporting Frequency requirements from Appendix A – "Protocol for Monitoring, Reporting and Recordkeeping for Oxides of Nitrogen (NOx) Emissions"

Paragraph (e)(3~~4~~) applies to non-RECLAIM facilities. To demonstrate compliance with the NOx emissions limits, these facilities have the option to comply with 40 CFR Part 75 or Rule ~~2012~~ 218 – ~~Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions~~Continuous Emission Monitoring. If opting to comply with 40 CFR Part 75, the facility must calculate NOx in ppmv pursuant to Rule 218.

Paragraph (e)(4~~5~~) applies to the City of Glendale. To demonstrate compliance with the SCAQMD-wide daily limits on emissions rates and emissions caps and annual emissions limits, the City of Glendale must calculate these NOx emissions in accordance with their approved CEMS plan.

Paragraph (e)(5~~6~~) applies to the diesel internal combustion engines located on Santa Catalina Island. To demonstrate compliance with the carbon monoxide and volatile organic compound emissions limits, the facility must comply with Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines subdivisions (f) – Monitoring, Testing, Recordkeeping and Reporting and (g) – Test Methods. To demonstrate compliance with the particulate matter emission limit, the facility must conduct yearly source tests according to SCAQMD Method 5.1 – Determination of Particulate Matter Emissions from Stationary Sources Using a Wet Impingement Train or SCAQMD Method 5.2 – Determination of Particulate Matter Emissions from Stationary Sources using Heated Probe and Filter. Yearly is defined as a period of twelve consecutive months determined on a rolling basis with a new twelve month period beginning on the first day of each calendar month.

Paragraph (e)(~~7~~6) applies to electric generating units with catalytic control devices. To demonstrate compliance with the ammonia emission limit, subparagraph (e)(6)(A) requires facilities to conduct source testing according to SCAQMD Method 207.1 – Determination of Ammonia Emissions from Stationary Sources. Source testing will be quarterly for the first twelve months of operation and then annually thereafter if four consecutive quarterly source tests determines that the unit is in compliance with the ammonia limit. If there is a failed annual test, then the facility must conduct quarterly source tests until four consecutive tests pass before resuming annual source tests. In lieu of ammonia source testing, subparagraph (6)(B) allows facilities to utilize ammonia CEMS certified under an approved SCAQMD protocol. At this time, SCAQMD is in the process of finding a host site for an ammonia CEMS demonstration project. Upon successful demonstration, SCAQMD will develop an ammonia CEMS protocol. Once an ammonia CEMS protocol is developed then SCAQMD intends to require ammonia CEMS instead of source testing to demonstrate compliance with the ammonia limits. At this time, an ammonia CEMS is approximately $60,000. The provision that allows for ammonia CEMS instead of source testing allows facilities to transition to ammonia CEMS once a protocol is ready, but is not specifically required by Rule 1135.

Paragraph (e)(7) requires that former RECLAIM NOx sources and non-RECLAIM NOx sources facilities maintain all their monitoring, recordkeeping, and reporting documents for five years and make it available to SCAQMD upon request. The exception is data gathered and computed for 15 minute intervals or less, those records need to be maintained for a minimum of 48 hours.

In addition to demonstrating compliance with the emissions limits of the rule, paragraph (e)(8) requires ~~all facilities~~ former RECLAIM NOx sources and non-RECLAIM NOx sources to maintain an operating log for each electric~~ity~~ generating unit. The log must include: time and duration of start-ups and shutdowns; total hours of operation; quantity of fuel; cumulative hours of operation to date for the calendar year; megawatt hours of electricity produced; and net megawatt hours electricity produced.

USE OF LIQUID PETROLEUM FUEL (Subdivision (f))

Throughout subdivision (f), due to the deletion of the term electric power generating system, any reference to electric power generating system was changed to electric ~~power~~ generating unit or electricity generating facility. Also, to encompass all electric ~~power~~ generating units, the term boiler is replaced with the term electric ~~power~~ generating unit.

Current Rule 1135 paragraph (f)(1) allows the use of liquid petroleum fuel and an exemption from the District-wide daily limits on emissions rate and emissions cap during force majeure natural gas curtailment. Since District-wide daily limits on emissions rate and emissions cap have been removed for almost all facilities, PAR 1135 paragraph (f)(1) replaces the term with emissions limits from paragraph (d)(1). The requirement in current Rule 1135 subparagraph (f)(1)(B) will be deleted since all units will have to comply with the emissions limits specified in paragraph (d)(1). Current Rule 1135 subparagraph (f)(1)(D) will be deleted because it is a duplicative requirement to current Rule 1135 subparagraph (f)(1)(C) (proposed to be subparagraph (f)(1)(B)). If an electricity generating facility can meet the requirements of subparagraph (f)(1)(C), it would be able to meet the requirements of subparagraph (f)(1)(D); alternatively, if an electricity generating facility cannot meet the requirements of subparagraph (f)(1)(C), it would not be able to meet the requirements of subparagraph (f)(1)(D).

PAR 1135 subparagraph (f)(1)(B) states that during force majeure natural gas curtailment and when burning liquid petroleum fuel exclusively, the NOx emission limit for an electric ~~power~~ generating unit must comply with the limit in the permit for that unit. Not all permits for electric ~~power~~ generating units have a NOx emission limit when exclusively burning liquid petroleum fuel. But, the limit is unique to each unit and evaluated during the permitting process. Therefore, PAR 1135 does not specify a NOx emission limit for liquid petroleum fuel and instead states that this emissions limit in the permit must be complied with.

PAR 1135 paragraph (f)(2) increases the hours allowed for readiness testing from 24 hours in a calendar year to sixty minutes ~~per day on one day~~ per week; weekly readiness testing is necessary to assure reliability of the oil firing units in case of emergencies. To be consistent with subparagraph (f)(1)(B), subparagraph (f)(2)(B) states that during readiness testing and when burning liquid petroleum fuel exclusively, the NOx emission limit for an electric ~~power~~ generating unit must comply with the limit in the permit for that unit. Several requirements are being added to readiness testing. The first added requirement, subparagraph (f)(2)(C), states that readiness testing can only occur once the equipment has reached the emissions limitation in paragraph (d)(1) while running on natural gas and must start within 60 minutes of achieving that emissions limitation. For clarification purposes, subparagraph (f)(2)(D) defines readiness testing as the time from when the equipment is switched from natural gas to liquid petroleum fuel to the time the equipment is switched back to natural gas.

PAR 1135 will add a provision, paragraph (f)(3), that allows liquid petroleum fuel to be used during source testing, initial certification of Continuous Emissions Monitoring Systems (CEMS), and semi-annual Relative Accuracy Test Audits (RATAs). The RATA tests must be conducted at the same time as weekly readiness testing.

Municipal Bubble Options

The subdivision regarding Municipal Bubble Options, Current Rule 1135 subdivision (g), has been removed because PAR 1135 will establish emissions limits for each unit and will no longer have limits for electric generating systems.

EXEMPTIONS (Subdivision (g))

All of the current Rule 1135 exemptions will be removed. These exemptions were based on old technology and are no longer necessary.

Rule 1135 will be amended to include several exemptions. The first exemption, subparagraph (g)(1), exempts existing combined cycle gas turbines at 2.5 ppmv NOx concentration or less averaged over 60 minutes at 15% oxygen on a dry basis from the emissions limitations in paragraph (d)(1), 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. According to the BARCT assessment, it is not cost-effective for combined cycle gas turbines at 2.5 ppmv NOx at 15% oxygen on a dry basis to reduce their limits to 2 ppmv at 15% oxygen on a dry basis.

Paragraph (g)(2) exempts once-through-cooling electric generating units that are subject to the Clean Water Act Section 316(b) from the emissions limitations in paragraph (d)(1) under the conditions that the units keep their NOx and ammonia limits, start-up, shutdown, and tuning requirements, and averaging times on the current permit ~~and~~ Additionally, the units must comply with their current compliance dates established pursuant to Table 1 of Section 2(B) of the State Water Resources Control Board's Statewide Water Quality Control Policy on the Use of Coastal Estuarine Waters for Power Plant Cooling (Once-Through-Cooling Policy) implementing Section 316(b) of the Clean Water Act. Notifications of shutdown and retirement~~s~~ dates must be submitted for each once-through-cooling electric generating unit by January 1, 2023. This provision coordinates the compliance date for PAR 1135 NOx concentration limit and the compliance dates in Clean Water Act Section 316(b). Additionally, the provision avoids stranded assets of adding pollution controls for an interim period of time. If the once-through-cooling electric generating unit is granted an extension by the State Water Resources Control Board, the facility must notify SCAQMD of the extension within three months. This extension is not applicable to facilities that have utilized the Modeling and Offset Exemptions in Rule 1304 (a)(2) and the associated replacement electric generating unit is in operation as the emission credits transferred to the replacement unit are no longer available.

The BARCT assessment determined that it is not cost-effective for diesel internal combustion engines at 51 ppmv NOx at 15% oxygen on a dry basis to reduce their limits to 45 ppmv at 15% oxygen on a dry basis. Therefore, PAR 1135 paragraph (g)(3) exempts existing diesel internal combustion engines at 51 ppmv NOx averaged over 60 minutes at 15% oxygen on a dry basis from the emissions limitations in paragraph (d)(2), with the condition that the units keep their NOx, ammonia, carbon monoxide, volatile organic compounds, and particulate matter limits, start-up and ~~,~~ shutdown~~, and tuning~~ requirements, and averaging times on the current permit..

To address low-use electrical power generating units, a low-use provision, paragraph (g)(4) is included in PAR 1135. The provision allows 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 heat input and the annual maximum heat input if operated continuously over one year excluding usage during an Emergency Phase of the California Energy Commission Energy Emergency Response Plan or a Governor-declared State of Emergency or Energy Emergency. The annual capacity factor limits for gas turbines in subparagraph (g)(4)(A) is less than twenty-five percent in one calendar year and less than ten percent averaged over three years. For boilers, the low-use provision in subparagraph (g)(4)(B) establishes the annual capacity factor limit as less than two and one half percent in one calendar year and less than one percent averaged over three years. In order to obtain the low-use exemption, subparagraph (g)(4)(C) requires that an application for the low-use exemption be submitted by July 1, 2022. Subparagraph (g)(4)(D) requires the~~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, clause (g)(4)(E)(i) 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. Subclause (g)(4)(E)(ii)(C) requires that after two years of the date of reported exceedance, the unit must come into compliance with the emissions limits in paragraph (d)(1). There are also interim milestone requirements in subclauses (g)(4)(E)(ii)(A) and (g)(4)(E)(ii)(B): 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.

The last exemption, paragraph (g)(5) exempts internal combustion engines on Santa Catalina Island from the requirements in subdivision (f) – Use of Liquid Petroleum Fuel.

CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS) REQUIREMENTS DOCUMENT FOR ELECTRIC POWER GENERATING UNITS

The document specifying requirements under Rule 1135 for continuous emission monitoring systems has been removed. The MRR requirements have been updated and no longer reference the document.

CHAPTER 4: IMPACT ASSESSMENT

POTENTIALLY IMPACTED FACILITIES

There are 31 electricity generating facilities that are potentially impacted by Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities (PAR 1135). Of these 31 facilities, 26 are currently in the NOx RECLAIM program. The remaining five facilities are not in the RECLAIM program; one is currently subject to SCAQMD Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines and Rule 1135 – Emissions of Oxides of Nitrogen from Electric Power Generating Systems, and four are not subject to Rule 1134 or 1135 because of current applicability requirement in those rules.

There are approximately ~~123~~ 122 electric generating units at these 31 electricity generating facilities: 61 are at the proposed emissions limits, 5 are exempt, 27 qualify for the low-use provisions, and 21 are schedule for shutdown. The remaining 9 electric generating units at 3 facilities will need to be replaced, repowered, or retrofitted to come into compliance with PAR 1135.

Of the five exempt units, two are natural gas combined cycle turbines with associated duct burners and one is a diesel internal combustion engine located on Santa Catalina Island. The natural gas combined cycle gas turbines with associated duct burners are exempt from emissions limits in Table 1 because of the exemption in paragraph (g)(1). The diesel internal combustion engine located on Santa Catalina Island is exempt from the emissions limits in Table 2 because of the exemption in paragraph (g)(3). Table 4-1 summarizes equipment exempt due to paragraphs (g)(1) and (g)(3).

Table 4-1: Units Exempt Due to PAR 1135 Paragraphs (g)(1) and (g)(3)

Facility	Equipment	Current NOx Permit Limit (ppmv at 15% oxygen, dry)
Southern California Edison (Pebbly Beach)	ICE 12	51
LADWP Valley	Combined cycle turbine 6 and duct burner 6	2.5
LADWP Valley	Combined cycle turbine 7 and duct burner 7	2.5

Assuming similar usage as in 2016, 27 electric generating units would qualify for the low-use provisions. At this time, staff is aware of 12 electric generating units that will be retrofitting to come into compliance with PAR 1135 emissions limits. Staff believes the remaining 15 will be using the low-use provisions, as summarized in Table 4-2.

Table 4-2: Units Potentially Utilizing Low-Use Provisions in Paragraph (g)(4)

Facility	Equipment	Current NOx Permit Limit (ppmv at 15% oxygen, dry)
Vernon	Simple cycle turbine 6	24
Vernon	Simple cycle turbine 7	24
Glendale DWP	Combined cycle turbine 8A	9
Glendale DWP	Combined cycle turbine 8B/C	9
Glendale DWP	Combined cycle turbine 8B/C	9
Burbank DWP	Simple cycle turbine 1	5
Glendale DWP	Simple cycle turbine 9	5
Riverside DWP	Simple cycle turbine 1	5
Riverside DWP	Simple cycle turbine 2	5
Riverside DWP	Simple cycle turbine 3	5
Riverside DWP	Simple cycle turbine 4	5
Wildflower/Indigo	Simple cycle turbine 1	5
Wildflower/Indigo	Simple cycle turbine 2	5
Wildflower/Indigo	Simple cycle turbine 3	5
City of Colton	Simple cycle turbine 1	3.5

EMISSION INVENTORY AND EMISSION REDUCTIONS

The original NOx emission inventory for electricity generating facilities was 25.6 tons per day in 1986. After the adoption of Rule 1135 and Rule 2009 – Compliance Plan for Power Producing Facilities, the NOx inventory declined to under 10 tons NOx per day. With a greater reliance on renewable power sources and further replacement of equipment, the emission inventory fell to 3.5 tons NOx per day in 2016.

Table 4-~~2~~3 – NOx Emission Inventory and MWh Capacity

Equipment Type	2016 NOx Emission Inventory (tons per day)	MWh Capacity
Diesel Internal Combustion Engines	0.2	9
Boilers	1.9	5,355
Combined Cycle Turbine	1.0	6,082
Simple Cycle Turbine	0.4	4,458

Most of the emissions from combined cycle turbines and simple cycle turbines come from units that meet the proposed BARCT limits. Only 23 tons per year of NOx are emitted from turbines that do not meet the proposed BARCT limits.

Table 4-~~3~~4 – NOx Emission Inventory from BARCT and Non-BARCT Equipment

Equipment Type	2016 NOx Emission Inventory (tons per day)	2016 NOx Emissions from BARCT Equipment (tons per day)	2016 NOx Emissions from Equipment Not Meeting BARCT (tons per day)
Diesel Internal Combustion Engines	0.2	0.0	0.2
Boilers	1.9	0.2	1.7
Combined Cycle Turbine	1.0	0.~~9~~8	0.~~1~~2
Simple Cycle Turbine	0.4	0.~~4~~3	0.~~0~~1

After the implementation of the BARCT limits and the Clean Water Act once-through-cooling provision, ~~1.9~~1.7 tons per day of NOx emission reductions will be realized.

Table 4-45 – NOx Emission Reductions

Equipment Type	2016 NOx Emission Inventory (tons per year)	NOx Emissions from BARCT Equipment (tons per year)	NOx Emissions from non-BARCT Equipment (tons per year)	2016 NOx Emissions Reductions (tons per year)
Diesel Internal Combustion Engines	0.2	0.1	0.0	0.1
Boilers	1.9	0.1	0.0	~~1.8~~1.6[1]
Combined Cycle Turbine	1.0	0.9[1]	0.2	< 0.1
Simple Cycle Turbine	0.4	0.4[1]	0.1	0.0
Total	3.5	1.5~~[1]~~	0.3	1.~~9~~7~~[1]~~

[1] – Boilers will either shutdown or repower to turbines, therefore some boiler emissions will transfer to turbine emissions as they repower ~~Totals do not add correctly due to rounding~~

The use of ammonia in the selective catalytic reduction (SCR) process results in an increase of particulate matter emissions. There are 11 low-use turbines that already utilize SCR but will change catalysts and increase their ammonia usage by an estimated 27% to meet the proposed emissions limits. As these turbines are used rather infrequently, the particulate matter increase is 818.2 pounds annually or 0.001 tons per day. The three boilers are used considerably more and do not currently utilize SCR. The particulate increase from incorporating SCR into their process is expected to increase particulate matter emissions by 8,971.4 pounds annually or 0.01 tons per day.

INCREMENTAL COST-EFFECTIVENESS

Health and Safety Code section 40920.6 requires an incremental cost-effectiveness analysis for Best Available Retrofit Control Technology (BARCT) rules or emission reduction strategies when there is more than one control option which would achieve the emission reduction objective of the proposed amendments relative to ozone, carbon monoxide, sulphur oxides, oxides of nitrogen, and their precursors. Incremental cost-effectiveness is the difference in the dollar costs divided by the difference in the emission reduction potentials between each progressively more stringent potential control option as compared to the next less expensive control option.

Incremental cost-effectiveness is calculated as follows:

Incremental cost-effectiveness = $(C_{alt}–C_{proposed}) / (E_{alt}–E_{proposed})$

Where:

$C_{proposed}$ is the present worth value of the proposed control option;
$E_{proposed}$ are the emission reductions of the proposed control option;
C_{alt} is the present worth value of the alternative control option; and
E_{alt} are the emission reductions of the alternative control option

Diesel Internal Combustion Engines

PAR 1135 paragraph (g)(3) exempts diesel internal combustion engines meeting 51 ppmv NOx at 15% oxygen on a dry basis from the proposed NOx limit of 45 ppmv at 15% oxygen on a dry basis. The progressively more stringent potential control option would be to remove the exemption and require all engines to meet the 45 ppmv at 15% oxygen on a dry basis NOx limit. The present worth value of the proposed control option is $19,500,000 and the emission reductions of the proposed control option are 762.5 tons over the 25 year life of the equipment. The present worth value of the alternative control option is $23,400,000 and the emission reductions of the alternative control option is 780 tons. The incremental cost-effectiveness for removing the exemption for diesel internal combustion engines is $222,900 per ton of NOx reduced as calculated below.

Incremental cost-effectiveness = ($23,400,000 – $19,500,000) / (780 – 762.5) = $222,900 per ton of NOx reduced

Natural Gas Boilers

Removing subparagraph (g)(4)(B), the provision for low-use boilers allowing boilers operating below one percent annual capacity factor, would require boilers to install and operate SCR. Under the proposed rule, a low-use boiler could apply for a permit restriction at a cost of $24,119. This would result in no emission reductions. Under the alternative scenario, the boilers would be retrofitted at present worth value of $16,788,600 and realize 242.5 tons of NOx reductions over 25 years. The incremental cost-effectiveness for removing the low-use provisions for natural gas boilers is $759,400 per ton of NOx reduced as calculated below.

Incremental cost-effectiveness = ($16,788,600 – $72,400) / (242.5 – 0) = $68,900 per ton of NOx reduced

Natural Gas Combined Cycle Gas Turbines

Paragraph (g)(1) exempts natural gas combined cycle gas turbines meeting 2.5 ppmv NOx at 15% oxygen on a dry basis from the proposed NOx limit of 2 ppmv at 15% oxygen on a dry basis. The progressively more stringent potential control option would be to remove the exemption and require all natural gas combined cycle gas turbines to meet the 2 ppmv @ 15% oxygen on a dry basis NOx limit. The present worth value of the proposed control option is $57,066 and there are no emission reductions. The present worth value of the alternative control option is $39,062,000 and the emission reductions of the alternative control option is 362.5 tons over 25 years. The incremental cost-effectiveness for removing the exemption for natural gas combined cycle gas turbines meeting 2.5 ppmv NOx at 15% oxygen on a dry basis is $222,900 per ton of NOx reduced as calculated below.

Incremental cost-effectiveness = ($39,062,000 – $57,000) / (362 – 0) = $107,800 per ton of NOx reduced

The proposed rule also includes low-use provisions for combined cycle natural gas turbines that operate at less than ten percent of their annual capacity. The progressively more stringent proposal control option would be to remove the exemption. The present worth value of the proposed control option is $114,132 and there are no emission reductions. The present worth value of the alternative control option is $45,644,000 and the emission reductions of the alternative control option is 440 tons over 25 years. The incremental cost-effectiveness for removing the exemption for natural gas combined cycle gas turbines is $103,500 per ton of NOx reduced as calculated below.

Incremental cost-effectiveness = ($45,644,000 – $114,000) / (440 – 0) = $103,500 per ton of NOx reduced

Natural Gas Simple Cycle Gas Turbines

Subparagraph (g)(4)(A) is a low-use provision for natural gas simple cycle gas turbines that operate at less than ten percent of their annual capacity. The progressively more stringent proposal control option would be to remove the exemption. The present worth value of the proposed control option is $418,484 and there are no emission reductions. The present worth value of the alternative control option is $80,712,000 and the emission reductions of the alternative control option is 390.0 tons over 25 years. The incremental cost-effectiveness for removing the exemption for natural gas simple cycle gas turbines is $205,000 per ton of NOx reduced as calculated below.

Incremental cost-effectiveness = (80,712,000 – $418,000) / (390.0 – 0) = $205,900 per ton of NOx reduced

Overall Incremental Cost-Effectiveness

If the low-use provisions and provisions for equipment near the proposed limits were removed the overall incremental cost-effectiveness would be the sum of all of the alternative control options less the sum of the proposed control options divided by the sum of the alternative control option emission reductions less the sum of the proposed control option emission reductions.

Overall incremental cost-effectiveness =
(($23,400,000 + $16,788,600 + $39,062,000 + $80,712,000) – ($19,500,000 + $72,400 + $114,000 + $418,000)) / ((778 + 242.5 + 362 + 390.0) – 762.5) =
($159,962,600 - $20,104,400) / (1,772.5 – 762.5) = $138,473 per ton of NOx reduced

The incremental cost analyses presented above demonstrate that the provisions for low-use equipment and equipment already permitted near the proposed limit are necessary to avoid imposing costs that would exceed the cost-effectiveness threshold.

RULE ADOPTION RELATIVE TO COST-EFFECTIVENESS

On October 14, 1994, the Governing Board adopted a resolution that requires staff to address whether rules being proposed for amendment are considered in the order of cost-effectiveness. The 2016 Air Quality Management Plan (AQMP) ranked, in the order of cost-effectiveness, all of the control measures for which costs were quantified. It is generally recommended that the most cost-effective actions be taken first. Proposed Amended Rule 1135 implements Control Measure CMB-05. The 2016 AQMP ranked Control Measure CMB-05 sixth in cost-effectiveness.

SOCIOECONOMIC ASSESSMENT

A Draft Socioeconomic Impact Assessment has been prepared and is being released on October 2, 2018, 30 days prior to the SCAQMD Governing Board Hearing on PAR 1135, which is anticipated to be heard on November 2, 2018.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

PAR 1135 is considered a "project" as defined by the California Environmental Quality Act (CEQA), and the SCAQMD is the designated lead agency. Pursuant to CEQA and SCAQMD's Certified Regulatory Program (Rule 110), the SCAQMD, as lead agency for the proposed project, ~~has~~ prepared a Draft Mitigated Subsequent Environmental Assessment (SEA) that was released for a 30-day public review and comment period from September 18, 2018 to October 18, 2018. The Draft Mitigated SEA indicated that while the project reduces NOx emissions, complying with the proposed project may also create secondary adverse environmental impacts that would not result in significant adverse impacts to any environmental topic areas after mitigation. The proposed project will have no statewide, regional, or area-wide significance; therefore, no CEQA scoping meeting is required pursuant to Public Resources Code Section 21083.9(a)(2) or CEQA Guidelines Section 15162(d). One comment letter was received relative to the Draft Mitigated SEA and r~~R~~esponses to comments ~~will~~ have been prepared ~~for any comment letters that are received during the comment period relative to the Draft Mitigated SEA~~. Since the release of the Draft Mitigated SEA, modifications were made to the proposed project in response to verbal and written comments. SCAQMD staff has reviewed the modifications to the proposed project and concluded that none of the modifications constitute significant new information, or a substantial increase in the severity of an environmental impact, or provide new information of substantial importance regarding the Draft Mitigated SEA. In addition, revisions to the proposed project in response to verbal and written comments would not create new, avoidable significant effects. As a result, these revisions do not require recirculation of the Draft Mitigated SEA pursuant to CEQA Guidelines Section 15073.5 or 15088.5. After completion of the public review and comment period, the Draft Mitigated SEA ~~will be updated to reflect any modifications that are made to the proposed project~~ has been revised to reflect the aforementioned modifications and to include the comment letter and the responses to the comments such that it is now a Final Mitigated SEA (see Attachment J). ~~and the Draft Mitigated SEA will be converted to a Final Mitigated SEA. The comment letters and the individual responses to the comments will be included in an appendix to the Final Mitigated SEA.~~ The Final Mitigated SEA ~~will be~~is included as an attachment to the Governing Board package.

Prior to making a decision on the adoption of PAR 1135, the SCAQMD Governing Board must review and certify the Final Mitigated SEA, including the response~~s~~ to comment~~s~~, as providing adequate information on the potential adverse environmental impacts that may occur as a result of adopting PAR 1135.

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

Requirements to Make Findings

California Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the SCAQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing, and in the staff report.

Necessity

Proposed Amended Rule 1135 is needed to establish BARCT requirements for electricity generating facilities, including facilities that will be transitioning from RECLAIM to a command-and-control regulatory structure.

Authority

The SCAQMD Governing Board has authority to adopt amendments to Proposed Amended Rule 1135 pursuant to the California Health and Safety Code Sections 39002, 40000, 40001, 40440, 40702, 40725 through 40728, 41508, and 41508.

Clarity

Proposed Amended Rule 1135 is written or displayed so that its meaning can be easily understood by the persons directly affected by it.

Consistency

Proposed Amended Rule 1135 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations.

Non-Duplication

Proposed Amended Rule 1135 will not impose the same requirements as any existing state or federal regulations. The proposed amended rule is necessary and proper to execute the powers and duties granted to, and imposed upon, the SCAQMD.

Reference

In amending Rule 1135, the following statutes which the SCAQMD hereby implements, interprets or makes specific are referenced: Health and Safety Code sections 39002, 40000, 40001, 40702, 40440(a), and 40725 through 40728.5.

COMPARATIVE ANALYSIS

Health and Safety Code Section 40727.2 requires a comparative analysis of the proposed amended rule with any Federal or District rules and regulations applicable to the same source. A comparative analysis is presented below in Table 4-6~~5~~.

Table 4-~~5~~6: PAR 1135 Comparative Analysis

Rule Element	PAR 1135	Rule 1110.2	Rule 2009	RECLAIM	40 CFR Part 60 Da	40 CFR Part 60 GG	40 CFR Part 60 KKKK	40 CFR Part 72
Applicability	Boilers, internal combustion engines, and turbines located at investor-owned electric utilities, publicly owned electric utilities, facilities with combined generation capacity of ≥ 50 MW	Gaseous and liquid fueled engine over 50 rated brake horsepower	Facility generating ≥ 50MW and owned or operated by Southern California Edison, Los Angeles Dept. of Water and Power, City of Burbank, City of Glendale, City of Pasadena, or any their successors	Facilities regulated under the NOx RECLAIM program (SCAQMD Reg. XX)	Electric utility steam generating units at a facility generating > 73 MW and constructed or modified after 9/18/78	Gas turbines with heat input of ≥ 10 MMBtu/hr constructed or modified before 2/18/2005	Gas turbines with heat input of ≥ 10 MMBtu/hr constructed or modified after 2/18/2005	Facilities regulated under the national sulfur dioxide and nitrogen dioxide air pollution control and emission reductions program
Requirements	Emission limits: • Boiler: NOx 5 ppmv @ 3% O2; Ammonia 5 ppmv @ 3% O2 • Combined Cycle Gas Turbine and Associated Duct Burner: NOx 2 ppmv @ 15% O2; Ammonia 5 ppmv @ 15% O2 • Simple Cycle Gas Turbine: NOx 2.5 ppmv @ 15% O2; Ammonia 5 ppmv @ 15% O2 Internal Combustion Engine: NOx 45 ppmv @ 15% O2; Ammonia 5 ppmv @ 15% O2; CO 250 ppmv @ 15% O2; VOC 30 ppmv @ 15% O2; PM 0.0076 lbs/MMBtu @ 15% O2	Existing Internal Combustion Engine: NOx 11 ppmv @ 15% O2; CO 250 ppmv @ 15% O2; VOC 30 ppmv @ 15% O2;	Submit Compliance Plan to demonstrate BARCT by 2003/2004	As determined by Rule 2009	NOx limit: 0.15 lb/MMBtu	NOx limit @ 15% O2: 0.0075*(14.4/Y) +F where Y = manufacture's rated heat input and F = NOx emission allowance for fuel-bound nitrogen	NOx limit for electric generating units (@ 15% O2): • ≤ 50 MMBtu/hr – 42 ppm when firing natural gas • 50 MMBtu/hr and ≤ 850 MMBtu/hr – 15 ppm when firing natural gas • >850 MBtu/hr – 15 ppm when firing natural gas • ≤ 50 MMBtu/hr – 96 ppm when firing other fuel • 50 MMBtu/hr and ≤ 850 MMBtu/hr – 74 ppm when firing other fuel • >850 MBtu/hr – 42 ppm when firing natural gas	NOx limits for boilers = 0.40 lb/MMBtu
Reporting	Annual reporting of NOx emissions	Breakdowns, monthly portable engine logs,	None	• Daily electronic reporting for major sources • Quarterly Certification of Emissions Report and Annual Permit Emissions	Daily written reports or quarterly electronic reports	Excess emissions and CEMS downtime within 30 days	Excess emissions and CEMS downtime within 30 days; annual performance testing within 60 days	40 CFR 75 requirements for quarterly reports of information and hourly data from CEMS monitors, and calibration

Rule Element	PAR 1135	Rule 1110.2	Rule 2009	RECLAIM	40 CFR Part 60 Da	40 CFR Part 60 GG	40 CFR Part 60 KKKK	40 CFR Part 72
				Program for all units				
Monitoring	• A continuous in-stack NOx monitor	A continuous in-stack NOx monitor for engines ≥ 1,000 bhp and operating more than two million bhp-hr per calendar year	None	A continuous in-stack NOx monitor for major sources	A continuous in-stack NOx monitor	A continuous in-stack NOx monitor	A continuous in-stack NOx monitor	A continuous in-stack NOx monitor
Recordkeeping	Performance testing; emission rates; monitoring data; CEMS audits and checks maintained for five years	Source testing or Relative accuracy tests per 40 CFR 70 at least once every two years	None	• < 15-min. data = min. 48 hours; • ≥ 15-min. data = 3 years (5 years if Title V) • Maintenance & emission records, source test reports, RATA reports, audit reports and fuel meter calibration records for Annual Permit Emissions Program = 3 years (5 years if Title V)	Performance testing; emission rates; monitoring data; CEMS audits and checks	Performance testing; emission rates; monitoring data; CEMS audits and checks	Performance testing; emission rates; monitoring data; CEMS audits and checks	Performance testing; emission rates; monitoring data; CEMS audits and checks maintained for three years
Fuel Restrictions	Liquid petroleum fuel limited to Force Majeure natural gas curtailment, readiness testing, and source testing	None	None	None	None	None	None	None

APPENDIX A – COMMENTS AND RESPONSES

Comment Letter 1

Montrose Air Quality Services – July 31, 2018

MONTROSE
AIR QUALITY SERVICES

July 31, 2018

Ms. Uyen-Uyen Vo
Air Quality Specialist
South Coast Air Quality
Management District
21865 Copley Drive
Diamond Bar, California 91765

Subject: Proposed Amended Rule 1135

Dear Ms. Vo:

Montrose Air Quality Services (MAQS) is pleased to offer the following comments in response to SCAQMD Proposed Amended Rule 1135. Our comments reflect our many years of compliance management and permitting experience with local municipal utilities.

Sections (b), (d)(3), (d)(4) and (d)(5)– Change is Rule Applicability from Electric Power Generating Systems to Electric Power Generating Facilities

Presently, Rule 1135 is applied to power generating units defined as legacy boilers and their replacements. According to the proposed amendments, emission rate limits and mass emission caps that currently apply only to defined generating units would now be applied to all generating devices at a regulated facility.

The City of Glendale Grayson Power Plant includes three boilers (boilers 3, 4 and 5) that are currently defined as "electrical power generating systems" and are subject to the mass emission caps (or emission rate limits) and annual emission caps of Rule 1135. The facility also includes several turbines that are not boiler replacements and classified as "electric power generating systems". The proposed language would subject these additional devices to emission rate limits and mass emission caps. 1.1

Additionally, paragraph (d)(3) specifies that the daily and annual emission limits would remain in place until the new concentration limits specified in paragraph (d)(1) take 1.2

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South Coast AQMD

effect, even though modifications may be made to ensure compliance with paragraph (d)(1) prior to the effective date.

To ensure continuity in applicability until facility modifications are implemented, we suggest the following changes to paragraphs (d)(3) and (d)(4):

Until compliance with the emission limits pursuant to paragraph (d)(1) ~~becomes effective~~ is achieved, the City of Glendale shall not operate ~~its electric generating facility~~ electric generating units as defined on July 19, 1991 unless 1.2

Paragraph (d)(5) should also be modified to specify "a violation of any requirement specified in paragraph (d)(3) or (D)(4) shall constitute a violation of this rule for every ~~permitted~~ applicable unit 1.3

Paragraph (c)(20) – Startup Definition

The proposed definition is confusing because it reflects a time period with a defined start point but no end point.

MAQS recommends the following modification:
"Startup means the time period in which an electric power generating unit begins combusting fuel after a period of zero fuel flow, and ends when compliance with emission limits is sustained, or as otherwise defined in the SCAQMD permit." 1.4

Paragraph (d)(1), Table I – Emission Limits

The proposed rule language specifies an ammonia limit of 5.0 ppmv. While the proposed limit of 5.0 ppmv reflects BACT for new units based upon recent changes to BACT policy, existing permits for turbines that already comply with the proposed NOx limit may have a permitted limit of 5 ppmv. Existing emission control systems have been designed for the slightly more flexible permitted limit. 1.5

MAQS suggests that the 5.0 ppm ammonia limit apply only for new installations or in cases where turbines or emission control systems are modified to meet the proposed NOx emission concentration limits. 1.5

Paragraph (d)(1)(A) – Exclusions

The proposed rule language excludes startup, shutdown and tuning operations from Table I NOx limits. It makes sense that these operations, especially tuning operations, could also result in ammonia emissions in excess of Table I limits. Additionally, SCAQMD's reference to "tuning" is sometimes referenced as "maintenance operations" in existing permits. 1.6

MAQS suggests the following change to paragraph (d)(1)(a):

"The NOx and ammonia emission limits in Table I shall not apply during start-up, shutdown and tuning/maintenance."

Paragraph (d)(2)(A)(i) should also be accordingly modified.

Paragraphs (e)(2) and (e)(3) – Monitoring

MAQS continues to believe that RECLAIM facilities should have the flexibility to voluntarily transition away from RECLAIM CEMS and DAS requirements. The unique requirements of RECAIM subject local operators to a limited number of available vendors. RECLAIM facility operators are also subjected to increased software and maintenance costs and a higher risk of noncompliance due to software deficiencies. 1.7

The proposed rule language seems to reinstate the concept of former RECLAIM facilities continuing to be subject to RECLAIM monitoring provisions but gives no reference to the possibility of a future voluntary option to transition to more widely accepted DAS software. The adjoining CEMS requirements document, however, seems to carry on past Rule 1135 monitoring requirements without distinguishing between RECLAIM and non-RECLAIM facilities. Additional discussion regarding SCAQMD's intent for short-term, intermediate and long-term monitoring strategies is warranted.

Paragraph (f)(3) – Exclusions During Source Testing

It is not clear if SCAQMD intended to apply the proposed exclusion only to paragraphs (d)(3) and (d)(4), or if the intent is to also provide exclusions during source testing from paragraphs (d)(1) and (d)(2). 1.8

Paragraphs (g)(1) and (g)(2) - Exemptions

Paragraphs (g)(1) and (g)(2) include exemption provisions for tuning operations, but do not include "maintenance" as referenced in existing permits. 1.9

MAQS recommends that "tuning" be replaced with "tuning / maintenance".

Paragraph (g)(5)(C) – Low-Use Demonstration

The proposed language provides reasonable exemptions from Table I emission limits for low-use units. However, capacity factor is loosely defined and eligibility for the exemption is based upon 2016- 2018 operations, rather than future operations.

The concept of low-use exemptions from proposed emission limits has been proposed by the regulated community since the initial discussions about PAR 1135. However, SCAQMD has not been able to define its low use thresholds until the most recent working group meeting. It seems unreasonable to avoid defining what "low use" really means and now specify eligibility based upon historic operations. 1.10

By defining eligibility for low use exemptions based upon prior year operations, SCAQMD eliminates the ability for facility operators to incorporate low use concepts into their future compliance strategies. This is especially important in the electricity generating industry where low use assets can play a critical role in future peak power production to ensure reliability and grid stability without significantly adding to regional ozone formation.

Allowing facility operators to reduce operations by 2023 to meet low use exemption thresholds provides the same long-term air quality benefits that the proposed language provides, but also provides practical flexibility for facility operators.

MAQS suggests the following revision to proposed paragraph (g)(5)(C):

The owner or operator shall:
(i) Submit a compliance plan to SCAQMD by January 1, 2020 demonstrating that the low use exemption will be achieved by calendar year 2023. 1.10
(ii) Submit SCAQMD permit applications…….by January 1, 2021

Paragraph (g)(5)(D) – Emergencies

The proposed emergency exclusion provisions are limited to operations in response to a CEC emergency response plan or an energy emergency declared by the Governor. However, local municipalities can operate utilities and local transmission lines but may not control the point of connection to the CAISO grid. As such local emergencies can occur without necessarily being declared by the Governor, CEC or CAISO. Many municipal utility assets have been designed and installed to avert these local emergencies. 1.11

MAQS suggests that paragraph (g)(5)(D) be modified to state "When calculating the annual capacity factor to demonstrate eligibility for……during a phase of the California Energy Commission Energy Emergency Response Plan or a declared state of emergency or energy emergency declared by the Governor <u>or local official</u> shall not be included."

Ms. Uyen-Uyen Vo 6 July 31, 2018
South Coast AQMD

Again, MAQS appreciates the opportunity to submit these comments and welcomes the opportunity to discuss these concepts in more detail as we proceed through the rule development process. I am also available to discuss at your convenience and best reached at (714) 282-8240.

Sincerely,
Montrose Air Quality Services, LLC

Karl Lany, C.P.P.
District Manager
Regulatory Compliance Services

Par 1135 comments 7-31-18

Response to Comment 1-1

Staff has clarified the rule language in subparagraphs (d)(6)(A) and (d)(6)(B) to reflect that the SCAQMD-wide daily limits and annual emissions limits currently applicable to the City of Glendale boilers will remain applicable to the City of Glendale boilers only.

Response to Comment 1-2

Staff has revised the rule language in subparagraphs (d)(6)(A) and (d)(6)(B) to include provisions that remove the City of Glendale's SCAQMD-wide daily limits and annual emissions limits as soon as the City of Glendale complies with the BARCT emission limits in paragraph (d)(1).

Response to Comment 1-3

Staff has revised the rule language in subparagraph (d)(6)(C).

Response to Comment 1-4

Staff has revised the rule language in paragraph (c)(23) to reflect an endpoint for when startup concludes.

Response to Comment 1-5

Staff has revised the rule language in Tables 1 and 2 and elsewhere to provide consistency in the rules regarding emission limits.

Response to Comment 1-6

Ammonia does not need to be excluded during start-up, shutdown, and tuning operations because staff's understanding of the operation of the turbine during these time periods is that ammonia is either not being injected at all, or the rate of injection is limited to the extent that an exceedance is highly unlikely. Additionally, excluding "maintenance" periods is inappropriate as this term is too broad and can be interpreted to include many types of work performed on a turbine without regards to whether or not the work has the potential to affect emissions. Furthermore, maintenance activities should occur when the equipment is not operating to generate power. In the cases where existing permits refer to "maintenance" rather than "tuning," the facility may consider requesting a permit condition change.

Response to Comment 1-7

At this time, Rule 1135 will require each facility to maintain their current monitoring and recordkeeping practices. SCAQMD will be adopting a new rule, Proposed Rule 113 – Monitoring, Reporting, and Recordkeeping (MRR) Requirements for NOx and SOx Sources. Once Rule 113 is adopted, then all facilities will transition to Rule 113 which should address concerns regarding RECLAIM CEMS and DAS requirements. Staff is reluctant to allow transitions in the interim as Proposed Rule 113 will likely impose different requirements for CEMS and DAS resulting in lost or stranded assets if the facility made changes during the interim period.

Response to Comment 1-8

Paragraph (f)(3) applies to all emissions limits in subdivision (d).

Response to Comment 1-9

Please refer to Response to Comment 1-6.

Response to Comment 1-10

The low-use demonstration provisions have been revised to require that permit applications requesting low-use status be submitted by July 1, 2022, and low-use thresholds be achieved beginning calendar year 2024. The historical demonstration has been removed as many potential low-use electric generating units will be needed to bridge power generation gaps as more emissive units are retrofitted, replaced, or repowered in the years leading up to the January 1, 2024 compliance date.

Response to Comment 1-11

Staff does not believe that local emergencies should be excluded from the calculation for annual capacity factor. The low-use provision has a higher one year average to take into account local emergencies. If a local emergency required electric generating units to operate greater than 25% of its annual capacity in a year, then the equipment should be retrofitted or repowered within the two years provided pursuant to subparagraph (g)(4)(E).

Comment Letter 2

Los Angeles Department of Water & Power, July 25, 2018

LA DWP Los Angeles Department of Water & Power

CUSTOMERS FIRST

July 25, 2018

Ms. Uyen-Uyen Vo
South Coast Air Quality
Management District
Planning, Rule Development and Area Sources
21865 Copley Drive
Diamond Bar, CA 91765

Dear Ms. Vo:

Subject: Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electric Power Generating Systems

The Los Angeles Department of Water Power (LADWP) appreciates the opportunity to provide comments on Proposed Amended Rule (PAR) 1135. LADWP remains committed to working with the South Coast Air Quality Management District (SCAQMD) to transition electric generating facilities (EGFs) from the current RECLAIM program to Rule 1135 in an efficient and effective manner. LADWP strongly believes that SCAQMD should strive to complete that transition in a manner that will achieve the air quality goals of the federal Clean Air Act (CAA), while taking into account energy and economic impacts – including the minimization of any potential adverse impacts on the electric power grid and the economy. To that end, LADWP respectfully submits the following comments on the July 20, 2018, version of PAR 1135.

Municipal or Public Electric Utility Definition

PAR 1135 (c)(7) defines "Electricity Generating Facility" as "a facility that generates electrical power and is owned or operated by or under contract to sell power to California Independent System Operator Corporation, a municipal or public electric utility, or an electric utility on Santa Catalina Island..." This approach of differentiating between the segments of the electric generating sector is potentially confusing. It seems to conflict with SCAQMD's stated intent to establish only one regulation that applies to all affected EGFs. 2.1
For these reasons, LADWP recommends that SCAQMD establish one set of applicability criteria for determining whether a facility is subject to the PAR 1135 requirements. We suggest SCAQMD consider using the following language for the definition of "Electric Generating Facility:"

> ELECTRIC GENERATING FACILITY (EGF) means a facility with electric power generating unit(s) that generates electricity for distribution in a local or state grid system, regardless of

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> whether it also generates electricity for its own use or for use pursuant to a contract, with the exception of landfills, petroleum refineries, or publicly owned treatment works.

If SCAQMD decides to retain the current definition of EGF, LADWP has concerns with SCAQMD's proposed definition of "Municipal or Public Electric Utility" in PAR 1135 (c)(11). SCAQMD proposes to define this term as "a special-purpose district or other jurisdiction that provides electricity to residents of that district or jurisdiction." However, PAR 1135 does not further define "a special-purpose district" and, for that reason, is not clear if it includes EGFs under the jurisdiction of LADWP. As an alternative, in lieu of introducing a new definition for "a special-purpose district," LADWP recommends clarifying the definition of EGF as shown below in underline/strikeout format: 2.1

> ELECTRIC GENERATING FACILITY means a facility that generates electrical power and is owned or operated by or under contract to sell power to California Independent System Operator Corporation, ~~municipal or public electric utility,~~ a local publicly owned electric utility (as defined in the California Public Utilities Code Section 224.3), or an electric utility on Santa Catalina Island.

Force Majeure Natural Gas Curtailment Definition

According to the SCAQMD Staff Report to the original Rule 1135,[1] the intent of the force majeure natural gas curtailment definition is to provide a relief mechanism for natural gas curtailments and, as part of the definition, include as an eligible force majeure event supply restrictions resulting from California Public Utilities Commission priority allocations. In order to provide clarity and be consistent with SCAQMD's original intent for setting NOx standards for EGFs under Rule 1135, LADWP recommends revising the proposed definition as follows:

> FORCE MAJEURE NATURAL GAS CURTAILMENT means an interruption in natural gas service due to any one of the following unforeseeable or unavoidable events: failure, malfunction, natural disaster, or a supply restriction resulting from a California Public Utilities Commission priority allocation system; provided that such event is not the result of an intentional or negligent act or omission on the part of the owner or operator of an electric power generating unit; and provided further that as a result of such event, the daily fuel needs of an electric power generating unit cannot be met with the natural gas available. 2.2

[1] SCAQMD Staff Report PAR 1135, letter from Stephen Rhoads, California Energy Commission, to James Lents, Ph.D (5/20/91) (comment letter no. 4, page 000156) (enclosure).

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Cost-Effectiveness Analysis

The draft staff report provides cost-effectiveness analysis of reducing NOx emissions from natural gas boilers and natural gas combined cycle turbines based on NOx emissions and capacity factor levels. However, the assumptions associated with the emissions and capacity factors are not clear. For example, the draft report does not indicate whether the annual NOx emissions and percent capacity factors used in the cost-effectiveness analysis are based on a historic annual average over a multi-year period and if so, what years are used. In addition, SCAQMD has not provided a cost-effectiveness analysis for natural gas simple cycle turbines. Without this information, stakeholders cannot evaluate the accuracy and appropriateness of the proposed cost-effectiveness analysis.

In addition, LADWP has questions on the technical basis that SCAQMD is using for setting the capacity factor limitations under the proposed low-use exemption. The proposed exemption provides that gas turbines and boilers installed prior to the adoption date of a final Rule 1135 would not be subject to the otherwise applicable NOx limits in paragraph (d)(1) provided that these generating units do not exceed specific capacity factor levels on a calendar year and average three-year basis. However, the draft staff report does not show the cost-effectiveness analysis used to justify the proposed capacity factor levels. LADWP urges SCAQMD provide this cost-effective analysis (and assumptions associated with the analysis) so that stakeholders have an opportunity to review and provide meaningful comments on the cost-effectiveness analysis methodology and approach used for setting the capacity factor cutoff levels used for determining eligibility for the low-use exemption. Currently, stakeholders do not know if affected generating units having to operate above these capacity factor cutoff levels could be required to incur NOx emissions control costs that exceed SCAQMD's own cost-effectiveness threshold of $50,000 per ton of NOx reduced.

2.3

Use of Liquid Petroleum Fuel

As part of efforts to maintain a reliable electric system and minimize power outages during potential natural gas curtailments, LADWP recommissioned twelve existing dual fuel electric generating units to be able to operate on California Air Resources Board ultra-low sulfur diesel fuel in 2016. At the time of recommissioning, LADWP worked closely with SCAQMD permitting staff to amend the Title V operating permits to meet acceptable NOx emission limits in the event of force majeure natural gas curtailment. In addition, permit conditions related to diesel fuel readiness testing time limits were also established based on the projected air quality impacts determined by extensive air dispersion modeling and electric generating unit manufacturer recommendations. In light of these thorough and rigorous efforts in setting limitations on the use of liquid petroleum fuel that are tailored to the design and operating scenarios of each electric generating unit, LADWP agrees with SCAQMD's decision to rely on these limitations under PAR 1135, instead of setting one-size-fits-all requirements on using diesel fuel at affected generating units. Furthermore, significant

2.4

Ms. Uyen-Uyen Vo
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variability exists depending on the type, design and operating parameters of each specific electric generating unit. Attempting to address all of these variables for the many different types of affected units by rule would be very difficult to achieve. 2.4

Internal Combustion Engines – Emergency Use

PAR 1135 (f)(1)(4) indicates that the owner of an EGF shall not install internal combustion engines that burn liquid petroleum as the primary fuel. Although the draft staff report states that the restriction on new installations of electric power generating internal combustion engines using liquid petroleum as the primary fuel would not apply to engines installed for the purpose of providing emergency backup power, the revised rule language in the July 20 version of PAR 1135 is not clear on this point. In particular, the relevant proposed rule language is silent on whether there is an exclusion for emergency diesel generators that are necessary in the event of "emergency use" as defined in SCAQMD Rule 1470. Therefore, LADWP recommends clarifying PAR 1135 (f)(1)(4) to state: 2.5

> Effective [Date of Adoption], the owner or operator of an electricity generating facility shall not install prime electric power generating unit internal combustion engines that burn liquid fuel as the primary fuel.

Also, LADWP recommends adding the following language in (f)(1)(4):

> This requirement does not apply to stationary diesel fueled internal combustion and other compression ignition engines that have been installed at an electric generating facility for only the purpose of providing emergency backup power to assure electric grid reliability.

Once-Through Cooling

LADWP supports SCAQMD's proposed exemption for electric generating boiler units that are subject to once-through cooling (OTC) requirements under Clean Water Act Section 316(b) as it would avoid stranded costs incurred for installing NOx pollution control equipment for a short interim period of time. However, other equipment types such as combined cycle and simple cycle turbines are subject to Clean Water Act Section 316(b) and would also have stranded costs associated with pollution controls resulting from the shutdown of the electric generating unit. Therefore, LADWP requests PAR 1135 (g)(3) be revised to broaden the applicability of OTC units: 2.6

> Once-Through Cooling ~~Boilers~~ Electric Power Generating Units
> An ~~boiler~~ electric power generating unit subject to the Clean Water Act Section 316(b) shall not be subject to paragraph (d)(1) provided that:

Ms. Uyen-Uyen Vo
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(A) The NOx and ammonia limits, averaging times, start-up, shutdown and tuning requirements specified on the SCAQMD permit as [Date of Adoption] are retained." 2.6

In addition, the requirement for the owner or operator of an OTC unit to submit a shutdown and retirement plan (Subparagraph (g)(3)(B)) should be deleted from PAR 1135. Owners and operators of OTC units are already required to submit implementation plans in compliance with Clean Water Act Section 316(b) and the information in the plans are included in the National Pollution Discharge Elimination System facility permits. Similarly, the OTC plans are posted on the California State Water Resources Control Board's website. Therefore, the proposed OTC shutdown and retirement plan requirement would be duplicative and unnecessary. 2.7

LADWP appreciates the opportunity to provide comments on PAR 1135. If you have questions or would like additional information, please contact me at (213) 367-0403 or Ms. Jodean Giese at (213) 367-0409.

Sincerely,

Mark J. Sedlacek

Mark J. Sedlacek
Director of Environmental Affairs

JG/EK/TG:rs
Enclosure
c/enc.: Ms. Susan Nakamura, SCAQMD
Mr. Michael Morris, SCAQMD
Mr. Gary Quinn, SCAQMD
Mr. Tracy Goss, SCAQMD
Mr. Kevin Orellana, SCAQMD
Ms. Jodean Giese

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, Governor

CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

May 20, 1991

James Lents, Ph.D
Executive Office
South Coast Air Quality Management District
9150 Flair Drive
El Monte, California 91731

Dear Dr. Lents:

We received your PAR Rule 1135E last week, and appreciate the opportunity for one final round of comment. Your decision to defer adoption another month makes sense, since this draft contains significant changes and new provisions which merit further discussion.

I should begin by reiterating the California Energy Commission (CEC) staff's continuing support for adoption of an effective, flexible retrofit rule. Clearly, the changes in the May 2 draft rule indicate you are listening to the concerns raised by the affected parties. You have made progress in addressing the definition of alternative resources and thermal credit, force majeure oil use and conditional exemptions for periods of low load or emergency conditions not exceeding ten days per year. Finally, you have made another bold step forward by incorporating the California Air Resources Board's (CARB) Best Available Retrofit Control Technology (BARCT) cost-effectiveness threshold, as well as the resultant rates and caps.

Each of these topics is likely to raise some spirited discussion at the workshop. To further that exchange, the following sections highlight issues which should be addressed.

Section (b)(9) Force Majeure

The 1135E revision removing the post 1996 oil phase-out requirement is a major improvement. Since this is likely to put increased and permanent focus on the definition of force majeure, some additional scrutiny may be in order. Potential questions include:

-- Is this definition a reasonable representation of legal language currently used in practice in state and federal administrative and contract law? 4-1

-- Should supply restrictions resulting from CPUC priority allocations due to unexpected supply shortfalls or emergency redirections be allowed force majeure treatment? 4-2

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Dr. James Lents
May 20, 1991
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Section (c) Emissions Limitations

The emission rate limits in the rule have been lowered in this draft to .15 Lb/MWh for Southern California Edison (SCE) and Los Angeles Department of Water and Power (LADWP). (.20 Lb/MWh remains constant for the smaller cities). Caps have also been adjusted for all utilities, some up, some down.

CEC staff recognizes CARB's statutory responsibility to make BARCT determinations, and we appreciate their willingness to accept and attempt to define a flexible "system" BARCT. The limits in the current draft are, however, below the ER-90 results we reported in our testimony in December. This is primarily due to the fact that the ER-90 analysis did not examine 1135 limits per se, but simply assumed utility-proposed compliance plans meeting a .25 Lb/MWh rate in the "ICEM" electricity system resource cost effectiveness testing. To the extent that District and ARB cost thresholds result in rates below .25, an ER-90 "equivalent" outcome would reflect lower daily and annual caps. For example, at .15 and $26,500 average cost, illustrative ER-90 results for SCE are summarized in Table 1. (CEC staff has not yet completed its review of PAR 1135E requirements for the municipal utilities.)

The same analysis is presented in Table 2, but with the assumption that repowered units will meet a BACT requirement of .10, rather than .15, which was the assumption in the adopted ER-90 data sets. As the results in Table 2 demonstrate, this question can have a significant impact upon results.

A second issue of consequence is how the repowered resources are treated in the modelling analysis. Tables 1 and 2 show this sensitivity for the .15 and .10 BACT assumption, respectively.

Key clarification questions include:

-- What is the District's assumption regarding BACT for repower or replacement combustion projects? 4-3

-- What is the District's intention regarding qualification of .10 utility repower or replacement projects as "alternative" resources? 4-4

-- What additional PROSYM modelling is planned or needed to address peak day variations or other contingency concerns? 4-5

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Dr. James Lents
May 20, 1991
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Section (h) Exemptions

As emphasized in the Attachment to Jim Boyd's recent letter to you, CEC staff recognizes that increasing cost-effectiveness thresholds can make rule limits lower; these rule limits in turn require recognition of potential emergency situations which cannot be accounted for under expectable average conditions, even with standard deviations taken into account. Your staff and ARB agree, and as a result you have added a new Section (h) to PAR 1135E.

All parties appear to be in agreement that exemption provisions are needed for both "minimum load" and unforeseen "high emission" circumstances. A number of differing options exist to provide high emission exemptions. At District staff's request, CEC staff developed the following language:

(h) System Emergency Exemptions

The emissions limitations specified in sections (c) 1, (c) 2 and (c) 3 shall not apply under emergency conditions in which a utility system is required to request or provide emergency support, as defined in Item 5 of the Coordinated Bulk Power Supply Program (April, 1990). This exemption is limited to those situations in which the specified procedure for requesting emergency relief have been followed, including a utility determination that normal arrangements for capacity and energy are not sufficient to meet a system's requirements, and the next relief measure for either the requesting or responding utility is reduction of firm load. 4-10

PAR 1135E chooses an alternative approach, one which contains specific conditions and specifies a limited number of days for which an exemption can be utilized.

CEC staff understands this is a difficult issue, and is willing to work with you to evaluate all options. Specific questions in the current draft language meriting workshop discussion include:

-- What is the numerical basis for the 10 day exemption limitation? 4-6

-- Is the 10-day language adequate to cover emergency and other unforeseen circumstances? 4-7

-- Why do the conditions specified in Section (h) not include interruption of non-firm load? 4-8

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Dr. James Lents
May 20, 1991
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In closing I want to emphasize that your staff has made a tremendous effort to produce a staff report which does address the many complex energy and air quality questions the rule raises. And, we recognize that lingering questions such as those above are challenging, and that neither your staff nor the CEC and California Public Utilities Commission staffs have easy answers. These issues, and others, are, however, certain to be raised in the coming weeks. A continuing dialogue can best inform the final decision your board members will make in July.

One final note regarding the compliance plan schedule is needed. In our April comments we urged you to acquire and approve utility compliance plans as expeditiously as possible. While we understand that adoption has been deferred one month, this draft actually defers plan submittal and approval by over 3 months beyond the April Rule. Again, we ask why utilities need 6 months to develop plans, and why approval--even with public hearings-- will require another 6? This schedule appears to add as much as 6 months to actual implementation without justification. Moreover, this will preclude the approved plans from being incorporated into ER-92. We thus recommend amendments to Section (d) as follows: 4-9

"(d) Compliance Plans

(1) Compliance Plan (Plan) approval and disapproval:

(A) Each owner or operator of a boiler should submit a Plan by November 1, 1991..."

(D) On or after March 1, 1992, failure to have an approved plan...".

Sincerely,

Stephen Rhoads

STEPHEN RHOADS
Executive Director

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RESPONSE TO RULE COMMENTS
STEPHEN RHOADS, EXECUTIVE DIRECTOR
THE CALIFORNIA ENERGY COMMISSION
(5/20/91)
LETTER NO. 4

4-1 We believe that the definition of force majeure gas curtailment is clear, unambiguous, and enforceable.

4-2 Staff believes that available evidence shows that very few gas curtailments would actually occur in the District from the mid-1990s. However, a relief mechanism has been built into the proposed regulation for gas curtailments. This definition includes supply restrictions due to the reasons mentioned in the comment.

4-3 We assumed 0.15 lbs NOx/MWH for new combined cycle gas turbine generators.

4-4 Gas turbines and other resources that meet the requirements for Approved Alternative or Advanced Combustion Resources would qualify to participate in the Rule 1135 bubble.

4-5 Staff does not intend to conduct additional model runs to study peak day variations any further. Sufficient data is currently available to enable the adoption of regulatory limits.

4-6 Staff believes 10 days is a good compromise. On one hand it should provide compliance on 355 days per year or more. On the other, it allows the utilities to plan for less than 100% compliance, in case of unusual circumstances beyond their control. It is important to realize that the utilities will not be allowed any of the exemption days unless they can justify they meet the exemption requirements. If a severe emergency were to require extraordinary in-basin generation for more that 10 days, as happened with SCE in 1985, they would be justified to petition the hearing board for a variance. The 10-day exemption will eliminate the burden of a variance for every short-term, high -generation incident that occurs.

4-7 The proposed higher daily limits for upto 10 days per year is expected to address anticipated needs. However, totally unforeseen and unusual conditions that make compliance impossible may merit the attention of the Hearing Board.

4-8 We have added the condition requested for interruption of non-firm load.

4-9 Due to the major changes proposed to the emission rates and caps, the District thinks the almost 6 months provided after rule adoption is a reasonable time to allow the utilities to prepare and submit their compliance plans.

000156

Assuming the District receives CARB, CEC and PUC comments by February 1, 1992, the District will have till March 1, 1992 to review the comments and the plans, and to notify the utilities of necessary changes. This provides the utilities with a month, until April 1, 1992, to consider comments and revise their plans. Because the plans will be submitted as SIP revisions, a public hearing is also required. The public hearing could be set at the May 1, 1992 District Board meeting to be heard at the June 5, 1992 Board meeting. This would be the last opportunity for the Board to approve the plans in time for the July 1, 1992 deadline.

4-10 Staff believes that the CEC-recommended language does not address emergency, high-generation situations which do not require emergency support between utilities. Also there should not be an automatic exemption for emergency support days when the support occurs during a low-demand period that does not require high daily generation.

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Response to Comment 2-1

To address the potential confusion from the definition for "electricity generating facility," staff has revised the rule language in paragraphs (c)(7), (c)(8), (c)(12), and (c)(17). "Electricity generating facility" is now defined as a facility that is an investor-owned electric utility, is a publicly owned electric utility, or has combined generation of 50 MW. Investor-owned utility is an electric power distribution company overseen by the California Public Utilities Commission. Publicly owned electric utility is a special purpose district, including municipal districts or municipalities, which operates electric generating units for power distribution to residents of that district or jurisdiction. With the change in applicability, no new facilities are subject to PAR 1135, but Colton Power, LP (SCAQMD ID #s 182561 and 182563) and City of Riverside, Public Utilities Department (SCAQMD ID # 164204) will no longer be subject to PAR 1135 and will instead be subject to PAR 1134.

Response to Comment 2-2

Staff added "unavoidable" to the definition of force majeure natural gas curtailment in paragraph (c)(9). The definition of force majeure natural gas curtailment was amended to be consistent with SCAQMD Rule 701 – Air Pollution Emergency Contingency Actions. The definition is also consistent with the language recommended by the commenter. Therefore, unavoidable or unforeseen events include failures, malfunctions, natural disasters, or supply restrictions from CPUC priority allocation system that are not an intentional or negligent act or omission.

Response to Comment 2-3

As noted in the tables for the assessment of existing equipment (Tables 2-2 through 2-5), the emissions evaluated are from reporting year 2016. The other tables (Tables 2-15 through 2-18) have been updated to clarify that the same data is used to determine cost-effectiveness. Information for the cost-effectiveness for natural gas simple cycle gas turbines has been included in the staff report. Cost-effectiveness varies by unit with the cost-effectiveness threshold for natural gas simple cycle gas turbines reaching annual capacity levels between 10.4% and 38.5% with an average of 18.7% and a mean of 16.3%.

Response to Comment 2-4

Thank you for the comment.

Response to Comment 2-5

Staff has removed subparagraph (f)(1)(4). The definition for "electric generating unit" has been changed to include only internal combustion engines located on Santa Catalina Island and therefore this provision is no longer needed.

Response to Comment 2-6

The rule language in paragraph (g)(2) has been clarified to include turbines as well as boilers subject to once-through-cooling regulation.

Response to Comment 2-7

Staff understands that the owner and operators of once-through-cooling electric generating units subject to the Clean Water Act Section 316(b) have already submitted implementation plans and the information is posted on California State Water Resources Control Board's website. SCAQMD will instead require notification of the shutdown and retirement date by January 1, 2023, and any further updates to the shutdown and retirement dates.

Comment Letter 3

Burbank Water & Power, August 10, 2018

August 10, 2018

VIA ELECTRONIC MAIL
(mmorris@aqmd.gov)

Mr. Michael Morris
Planning and Rules Manager
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

SUBJECT: Comment Letter – Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities

Dear Mr. Morris,

Burbank Water and Power (BWP) is pleased to provide comments on the proposed amendments to Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities (PAR 1135). The proposed amendments are of significant interest and concern to BWP.

Overall, it is BWP's opinion that the South Coast Air Quality Management District (SCAQMD) has done a great job addressing stakeholder concerns during the development of PAR 1135. While BWP is supportive of the proposed amended rule, there is one area that BWP feels requires additional review.

The current PAR 1135 language includes a low use provision, paragraph (g)(6). The provision allows low-use equipment to continue operating without retrofit provided that they do not exceed an annual capacity factor limit. According to PAR 1135, a facility will have to submit a permit application requesting a change of permit conditions to incorporate the low use provision by July 1, 2019. Because of the pending New Source Review (NSR) issues, which may not be resolved by July 1, 2019, BWP is requesting that the deadline to submit a permit application to incorporate the low use provision be extended to July 1, 2022. 3.1

This will allow facilities to have a clear understanding of the path going forward prior to making major decisions on retrofitting equipment.

Burbank Water and Power
164 West Magnolia Boulevard, P.O. Box 631, Burbank CA 91503-0631

BWP looks forward to your response. Please feel free to contact Claudia Reyes, Senior Environmental Engineer, at (818) 238-3510 if you have any questions, or would like to discuss further.

Sincerely,

Frank Messineo

Frank Messineo
Power Production Manager – BWP Power Supply Division

cc: Claudia Reyes (via electronic mail)
Sean Kigerl (via electronic mail)
Dr. Krishna Nand (via electronic mail)

Response to Comment 3-1

In subparagraph (g)(4)(C), staff has extended the submission date of permit applications for the low-use exemption to July 1, 2022. Staff believes this is the latest date in which a permit could be submitted that allows enough time for the permit change to be completed by January 1, 2024, the deadline required in paragraph (d)(1).

Comment Letter 4

Pasadena Water & Power, August 16, 2018

PASADENA WATER AND POWER
POWER SUPPLY BUSINESS UNIT

August 16, 2018

Sent via electronic mail to mmoris@aqmd.gov and US Mail

Mr. Michael Morris
Planning and Rules Manager
21865 Copley Drive
Diamond Bar, CA 91765

Subject: Pasadena Water and Power Comments on Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electrical Generating Facilities

Dear Mr. Morris:

The City of Pasadena Water and Power Department (PWP) appreciates the opportunity to comment on the proposed amendments to Rule 1135 (PAR 1135) – Emissions of Oxides of Nitrogen from Electrical Generating Facilities, which would impose additional requirements on PWP's Electrical Power Generating Facility.

PWP is a municipal utility responsible for providing safe, reliable and reasonably priced water and electric power to its customers. PWP's local electric generation units are located at a single facility and consist of five stationary combustion gas turbines ("GT"): GT-1, GT-2, GT-3, and GT-4 are simple cycle units and GT-5 is a combined cycle unit. GT-5 is PWP's new state of the art combined cycle gas turbine system with the lowest emission concentration limits in the basin. It replaced a 1960's era steam boiler system to modernize and increase the efficiency of the City's electrical generating fleet.

These gas turbine units provide reliability and protection against energy market price spikes for our customers, and are an essential part of the Pasadena's electrical system. Under existing agreements their capacity and electrical output is available to California Independent System Operator ("CAISO") as required.

There are several days in a year when sufficient amount of electricity cannot be imported into Pasadena due to the equipment and transmission constraints. During such times, these gas turbine units make up for the shortfall in the electrical power.

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PWP Comments: Proposed Amended Rule 1135
August 16, 2018
Page 2

PWP staff has been regularly meeting and working with the South Coast Air Quality Management District (SCAQMD) PAR 1135 team. We commend their outreach and work to solicit and address stakeholders concerns during this rule-making process. PWP offers its qualified support for PAR 1135 and requests further review of the current language relating to the submission of the permit application for low-use exemption under [g(5)(c)(ii)].

1) **Low use provision paragraph (g)(5)**

As the rulemaking analysis has shown, this is a much needed and beneficial option for the electric power generating units. However, the following change is needed to provide the necessary flexibility to allow PWP to upgrade GT-1, GT-2, GT-3, and GT-4 units to meet the proposed NOx BARCT emission limit of 2.5 ppmv before the PAR 1135 deadline. It will also preserve PWP's ability to run these units past January 1, 2024 as low-use units, if they are not able to meet the NOx BARCT emission limit of 2.5 ppmv after these upgrades.

(C) Initial Requirement for Low-Use Exemption

The owner or operator of an electricity generating facility that elects the low-use exemption pursuant to paragraph (g)(5) for a gas turbine or a boiler shall:

(i) Demonstrate compliance with subparagraph (g)(5)(A) or (g)(5)(B) using data from calendar years 2016, 2017 and 2018; and
(ii) Submit SCAQMD Permit applications for each electric power generating unit requesting the change of SCAQMD permit conditions to incorporate the low-use exemption by July 1, ~~2019~~ 2023. 4.1

The reasons for the request for the change in the date of submission of the permit application (from July 1, 2019 to July 1, 2023) are provided below.

As discussed with your team, PWP has completed a feasibility study for upgrading PWP's existing simple cycle gas turbines (GT-1 through GT-4) to meet the proposed NOx BARCT emission limit of 2.5 ppmv. Based on the results of this study, PWP plans to begin these upgrades upon the final adoption of PAR 1135 in the following order: (a) GT-2, (b) GT-1, (3) GT-3 and (4) GT-4. Due to the length of time needed for permitting and procurement, and constraints on taking gas turbine units out of service for the upgrades, PWP will not be able to complete upgrades to all the gas turbine units until April 2023. (See the attached tentative schedule for upgrades to the gas turbine units GT-1 through GT-4).

It is possible that some of the upgraded gas turbine(s) may not be able to meet the NOx BARCT emission limit of 2.5 ppmv and PWP may have to submit permit application(s) requesting the change of permit conditions to incorporate the low-use exemption.

PWP Comments: Proposed Amended Rule 1135
August 16, 2018
Page 3

Therefore, we request the change in permit submission date from July 1, 2019 to July 1, 2023 in (g)(5)(c)(ii). Note that PWP may not operate a gas turbine unit that does not meet the NOx BARCT emission limit of 2.5 ppm after December 31, 2023, unless the modified permit incorporating the low-use exemption has been issued by the SCAQMD.

PWP would also like to discuss with PAR 1135 team another approach for preparing
only one permit application for upgrading the gas turbines as well as for incorporating
the low-use exemption. Under this approach, the permit issued by the SCAQMD will 4.1
have a provision for upgrading the gas turbines. The SCAQMD permit will also have a
provision for low-use exemption, effective January 1, 2024 if the gas turbine(s) is not
able to meet NOx BARCT emission limit of 2.5 ppmv.

Making the requested change in the permit submission date from July 1, 2019 to July 1, 2023 in (g)(5)(c)(ii) will allow PWP to proceed with the upgrades and preserve our ability to apply for the low-use exemption should the upgraded gas turbine units fall short of the NOx BARCT emission limit of 2.5 ppmv.

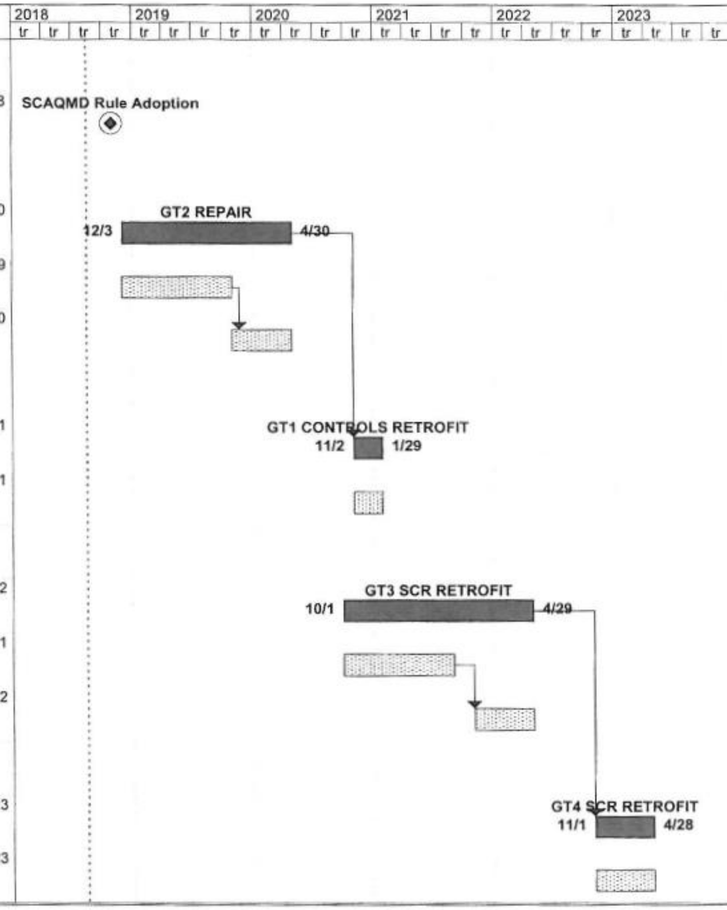
We look forward to your response. Please contact Kim Yapp, Environmental Engineer at (626) 744-3926 or me at (626) 744-4568 should you have any questions.

Sincerely,

Arturo Silva, Power Plant Manager

cc: Dr. Krishna Nand (via electronic mail)

ID		Task Name	Duration	Start	Finish
1					
2		SCAQMD Rule Adoption	1 day?	Fri 11/2/18	Fri 11/2/18
3					
4		GT2 REPAIR	369 days?	Mon 12/3/18	Thu 4/30/20
5		Spec Prep & Contracting	239 days?	Mon 12/3/18	Thu 10/31/19
6		Design, Construction, & Commissioning	130 days?	Fri 11/1/19	Thu 4/30/20
7					
8		GT1 CONTROLS RETROFIT	65 days?	Mon 11/2/20	Fri 1/29/21
9		Design, Construction, & Commissioning	65 days?	Mon 11/2/20	Fri 1/29/21
10					
11		GT3 SCR RETROFIT	412 days	Thu 10/1/20	Fri 4/29/22
12		Spec Prep & Contracting	239 days?	Thu 10/1/20	Tue 8/31/21
13		Design, Construction, & Commissioning	130 days?	Mon 11/1/21	Fri 4/29/22
14					
15		GT4 SCR RETROFIT	129 days?	Tue 11/1/22	Fri 4/28/23
16		Design, Construction, & Commissioning	129 days?	Tue 11/1/22	Fri 4/28/23



PWP COMPLIANCE SCHEDULE
Rule 1135 Amendment (Proposed)

Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

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Response to Comment 4-1

Please refer to Response to Comment 3-1. There are no provisions in Rule 1135 precluding the incorporation of the low-use exemption as a contingency measure when modifying the gas turbine to meet the proposed emission limits under the same permit application.

Comment Letter 5

Southern California Edison, August 16, 2018

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Laura Renger
Principal Manager, Air & Climate Policy
Regulatory Affairs
626-302-6984
laura.renger@sce.com

August 16, 2018

Dr. Phil Fine, Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Via e-mail at: pfine@aqmd.gov

SUBJECT: Proposed Amended Rule 1135: Emissions of Oxides of Nitrogen from Electricity Generating Facilities

Dear Dr. Fine:

Southern California Edison (SCE) appreciates the opportunity to comment on the South Coast Air Quality Management District's (District) Proposed Amended Rule (PAR) 1135. This rule would establish Best Available Retrofit Control Technology (BARCT) and the monitoring, recordkeeping, and reporting (MRR) requirements for Electricity Generating Facilities (EGFs) after the sunset of the Regional CLean Air Incentive Market (RECLAIM) Program as required by Assembly Bill 617. SCE greatly appreciates the extra effort that District staff has put into working with us on this complicated set of issues.

SCE generally supports the proposed rule as it relates to our Mountainview Generating Station, two gas turbine peaking units, and two hybrid gas turbine/battery energy storage units. However, SCE has significant concerns about its effect on our Pebbly Beach Generating Station (PBGS) on Catalina Island. Specifically:

- The Proposed Rule's unreasonably tight deadlines likely will prevent SCE from investing in the clean, lower-emission generation we would prefer – instead, forcing us to opt for diesel engines (which can be installed much faster). For the past 3 years, SCE has engaged in an integrated resource planning effort to develop a strategy for ensuring clean, reliable electricity generation for Catalina Island. This effort is currently before the California Public Utilities Commission and includes stakeholders from the public and private sector, as well as other state agencies. We are concerned that there is insufficient time to evaluate potential options – including renewable energy – that would result in lower emissions than could be attained by the installation of new diesel engines. 5.1

PO Box 800
2244 Walnut Grove Ave.
Rosemead, CA 91770

Dr. Phil Fine
Deputy Executive Officer
August 16, 2018
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- The proposed rule has a nitrogen oxides (NOx) emission concentration limit of 45 ppm for internal combustion engines based on a 40% efficiency factor. However, emission concentrations vary based on efficiency – higher efficiency generally results in higher NOx concentrations. SCE sees the need for a method to adjust the emissions limit based on actual engine efficiency. 5.2
- SCE would appreciate additional time to work with District staff to clarify Monitoring, Recordkeeping, and Reporting requirements before the Proposed Rule is finalized. 5.3

Additional Time is Needed for BARCT Implementation and Additional Study of the Feasibility of Alternative Technology

Due to the unique geographic and resource constraints on Catalina Island, electricity generation there is so complex that compliance with the Proposed Rule's deadlines will pose a serious challenge. The proposed compliance timeline requires the facility to meet specific emission limits that are quite aggressive. Given this compressed timeline, SCE would need to move quickly to replace the engines with new Tier 4 diesel engines. SCE anticipates this course of action will be met by strong opposition by environmental organizations and possibly state regulators as well.

Rather than replacing the engines with Tier 4 diesel engines, SCE is exploring cleaner options as part of our integrated resource planning effort for PBGS. These options include renewable energy resources and energy storage. It must be noted that all alternative options to diesel replacement face significant issues that are outside SCE's control such as securing the necessary land rights and permits, and even determining the technical feasibility given Catalina's unique 5.1
geographic issues. As a part of SCE's resource planning process, we will seek input from numerous stakeholders including the CPUC, and conduct engineering studies to determine which options may be feasible based on costs, permitting feasibility, and the likelihood of CPUC approval. To do this, SCE will need at least one year to conduct the analysis of potential alternatives, and two additional years to determine the feasibility of obtaining required land rights and permits. If additional land rights are necessary (for a renewable energy project), the condemnation process could also require an additional 18 months. (This timeline is SCE's best estimate now, and could be affected by actions outside of our control, such as agency delays and stakeholder opposition.)

If it is determined that alternative options cannot be permitted and SCE needed to move forward with the acquisition of new diesel engines, SCE may still need to acquire some additional land rights, which could take up to 18 months to acquire.

Dr. Phil Fine
Deputy Executive Officer
August 16, 2018
Page 3 of 4

The Proposed Emission Concentration Limits May Not Appropriately Account for Engines' Performance in Practice

PAR 1135 sets a requirement for NOx emissions at 45 ppmv corrected to 15% O_2, based on EPA's certified Tier 4 engine's emissions of 0.67 g/kWh and assuming an engine efficiency of 40%.

Engine efficiencies vary depending upon an engine's type, model, size, and manufacturer's guarantee. Engines with high efficiency will result in high emissions concentrations but can still meet the certified Tier 4 engine's emissions level. For example, while an efficiency factor of 40% yields NOx emissions of 45 ppmv, an engine with an efficiency factor of 60% will have NOx emissions of 67 ppmv. At PBGS, SCE needs to use various sizes of engines to allow operational flexibility and ensure grid reliability. Some of the engines we need to use cannot meet the new proposed limit. 5.2

SCE understands the need to demonstrate compliance in term of concentration limits and has done so successfully on one of the most critical units on the island. Working closely with the District's permitting staff, we have achieved and maintained a low and reasonable NOx concentration level on Unit 15. SCE would like an opportunity to continue working with the District's permitting staff in future permit applications to determine appropriate emissions concentration levels for the engines.

To address the need to correct the emissions concentrations based on the engine efficiency, SCE respectfully suggests that the District include the following language in Table II: "or EPA's certified Tier 4 engine emissions equivalence as established and approved by Executive Officer" to the proposed emissions limits, or provide clarification or guidance to correct the concentration in the event that the engine efficiency is greater or less than 40%.

Additional Details and Clarity are Needed for Monitoring, Recordkeeping, and Reporting

The proposed MRR, in particularly the Continuous Emissions Monitoring Systems (CEMS) requirements, were designed primarily for existing utility boilers. SCE recognizes that the District staff has been working diligently to address MRR requirements for various types of electricity generating units (namely gas turbines, utility boilers, and internal combustion engines). 5.3 However, significant changes are needed to the provisions regarding CEMS, including for non-RECLAIM facilities. For example, SCE's CEMS for the four peaking units, which are currently subject to Rule 1134, will be required to add additional reporting codes per Section 2.1(h). At this time, SCE is not confident that CEMS manufacturers will be able to effectuate the required changes in order to meet the new requirements and as written, there is not enough definition in the proposal to make that determination. SCE requests more time to work with District staff to provide clarity on these issues.

Dr. Phil Fine
Deputy Executive Officer
August 16, 2018
Page 4 of 4

Conclusion

SCE appreciates the time and effort the District staff has invested on this issue, as well as the collaboration between District staff and SCE. As many complex issues remain, more time is needed for additional collaboration.

SCE is committed to delivering safe, reliable, affordable, and clean energy. We welcome a partnership with the District and interested parties to develop and execute the vision for PBGS's energy future. Thank you for considering these comments. We look forward to continuing to work with you and your staff on this rulemaking process.

If you have any questions or would like to discuss these issues, please contact me at (626) 302-6984, or by email at Laura.Renger@sce.com, or contact Thomas Gross, Senior Advisor, Environmental Affairs and Compliance, at (626) 302-9545 or by email at Thomas.Gross@sce.com.

Sincerely,

Laura Renger
Principal Manager, Air and Climate Policy

Cc: Dawn Wilson, SCE
Jim Buerkle, SCE
Don Neal, SCE
Wayne Nastri, SCAQMD
Clerk of the Board, SCAQMD

Response to Comment 5-1

Rule 2009 – Compliance Plan for Power Producing Facilities allowed only three years for electric generating units to achieve BARCT. However, staff recognizes the unique challenges of construction on Santa Catalina Island and has included a provision for that facility to request a three-year time extension for electric generating units located on Santa Catalina island in paragraph (d)(5). A mitigation fee of $100,000 per year extended is included in the proposed rule. The mitigation fee closely approximates the excess emission fees that would be charged if the facility sought a variance to extend the compliance date. The extension would forgo up to an estimated 4.7 tons per year of NOx emission reductions. Rule 303 Table I – Schedule of Excess Emissions Fees establishes a fee of $3,643.58 per ton of excess NOx. This would result in a fee of $17,125 per year or $47 per day. However, Rule 303 (f) establishes a minimum fee of $192.36 per day. Over a 365-day period, the excess emission fee would be $70,211. Including filing and appearance fees, and adjusting for inflation, staff approximated the mitigation fee at $100,000 per year.

Response to Comment 5-2

Staff believes that Rule 1135 needs to have concentration limits to demonstrate continuous compliance. Including compliance provisions allowing demonstration by Tier IV engine emission standards through source testing is periodic at best. This would preclude the use of a continuous emission monitoring system. The internal combustion engine that currently meets a 51 ppmv at 15% oxygen on a dry basis NOx concentration permit limit was installed decades ago and has been shown to meet the permit limit and the proposed NOx concentration rule limit. Engine efficiency typically ranges between 32% and 46%. SCAQMD assumed this range of engine efficiency, and thus, the ability to meet the proposed rule limit are expected to be achievable using readily available diesel technology without needing to allow for differing engine efficiencies.

The 45 ppmv at 15% oxygen on a dry basis was calculated using the EPA Tier IV limit of 0.67 g/kwh, assuming an engine efficiency of 40%, and the equations below.

$$\frac{0.67g}{kwh\ out} X \frac{0.7457\ kwh\ out}{1\ bhp\ out} X \frac{lb}{454g} X \frac{0.4\ bhp\ out}{1\ bhp\ in} X \frac{bhp\ in}{0.002545\ mmbtu} = 0.173\ lbs/mmbtu$$

$$\frac{0.173\ lbs}{mmbtu} X \frac{mmbtu}{9190\ scf} X \frac{20.9 - 15}{20.9} X \frac{ppm}{1.194E-7} = 44.5\ ppm$$

Response to Comment 5-3

The monitoring, recordkeeping, and reporting requirements for non-RECLAIM units has been revised to allow for use of SCAQMD Rule 218 or 40 CFR Part 75 with the additional requirement to calculate NOx ppmv pursuant to SCAQMD Rule 218. This should allow SCE's four peaking units to continue current monitoring procedures in the interim until Rule 113 is adopted.

Comment Letter 6

NRG Energy, August 17, 2018

From: Piantka, George
To: Uyen-Uyen Vo
Subject: PAR 1135 Comments
Date: Friday, August 17, 2018 12:00:09 AM

Ms. Vo,

I attended the August 2nd Proposed Amended Rule 1135 Workshop on behalf of the electrical generating facilities owned and operated by NRG Energy in the South Coast. I gave verbal comments which were primarily focused on the request for air district staff to clarify the implementation of PAR 1135 with respect to CEMS data management to ensure compliance with the amended rule. For example, I noted that it is possible for peaking plants to be dispatched infrequently and for short durations such that less than 90% of daily data validations points are possible, in particular for brief 6.1 operations that are coincident with a daily calibration. The rule should alleviate the potential for non-compliance for short duration operations. I also noted that the full scale span should remain at 10-95% to be consistent with 40 CFR Part 75. Calibration of MW meters should remain consistent with CAISO annual calibration requirements. During the amendment of Rule 1135, we ask staff consider the elimination of the requirement to maintain chart recorders.

Best Regards,
George Piantka, PE
Sr. Director, Regulatory Environmental Services
NRG Energy, Inc.
5790 Fleet Street, Suite 200
Carlsbad, CA 92008
760.710.2156 office
760.707.6833 mobile
george.piantka@nrg.com

Response to Comment 6-1

Please refer to Response to Comment 1-7.

Comment Letter 7

~~NRG Energy, August 17, 2018~~Cemtek KVB-Enertec, August 16, 2018

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August 16, 2018

South Coast Air Quality Management District
ATTN: Ms. Uyen-Uyen Vo
Planning, Rule Development and Area Sources
21865 Copley Drive
Diamond Bar, CA 91765

Subject: Request for Comments and Questions Relevant to the Proposed Amended Rule 1135

Dear Ms. Vo,

Thank you for the opportunity to have open communication with South Coast Air Quality Management District relevant to the Proposed Amended Rule 1135, and the possible impact the amendment has on our customers. Below I have outlined my comments and questions regarding this proposition.

1. PAR 1135 is a command and control regulation, given that most if not all of the facilities that are or will be regulated by this do have limits in their air permits that are similar to the ones stated in the proposed rule, how will a facility transition out of the NOX RECLAIM program into being subject to only PAR 1135? 7.1

2. If a facilities current air permit does not have limits as low as the PAR 1135 proposed limits, does that force them out of the NOX RECLAIM program? And if yes, what it the timeframe for the facility to make the necessary changes to their emissions units to come in compliance? Would this facility be considered a new source when doing this? 7.2

3. PAR 1135-7 (d)(1)(B) and multiple other places. Other CEMS hourly data is block hour averages and a 60-minute rolling average is a departure from that average determination. The rolling 60-minute average, can this be defined by SCAQMD as to how this is expected to be done? 7.3

4. Continuous Emission Monitoring Systems (CEMS) Requirements Document for Electric Generating Facilities - PAR-4 (2.1) (h) Can SCAQMD provide definitions for the codes that are not defined in Rule 1135 such as 3 – Tamper/security, 5 – Hot Standby ? Are the CEMS status codes to be determined on minute or hourly basis? How are these CEMS status to be reported or just recorded? 7.4

4. Continuous Emission Monitoring Systems (CEMS) Requirements Document for Electric Generating Facilities - PAR-7 (2.10) The criteria for data points gathered by the NOx CEMS to lie with 20-95 percent of span is more restrictive than R218.1 which is 10-95 percent of span. Is this intended to be more restrictive? 7.5

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6. Continuous Emission Monitoring Systems (CEMS) Requirements Document for Electric Generating Facilities – PAR – 12 (4.0) The rule does not specify how the data used to demonstrate compliance is to be reported. What is the format of 4.1.5? What reporting frequency of 4.1.3 and 4.1.5? 7.6

7. Continuous Emission Monitoring Systems (CEMS) Requirements Document for Electric Generating Facilities – PAR – 12 (4.0) When will the first report be due the SCAQMD? 7.7

Please let me know if you need any further information and/or clarification to address the comments and questions herein.

Thank you for your consideration and time. My colleagues and I look forward to receiving a response prior to the public hearing date October 5, 2018.

Kind regards,

Keith Crabbe, Engineering Manager
Cemtek KVB-Enertec
Email: keith@cemteks.com
Office: (714) 437-7100 ext. 221
Cell: (714) 904-4405

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2849 Sterling Drive, Hatfield, PA 19440 • Phone: 215-996-9200 • Fax: 330-860-8982 • Tech Support Phone: 800-582-1670

Response to Comment 7-1

Facilities will exit the NOx RECLAIM program pursuant to Rule 2001 – Applicability, and Rule 2002 – Allocations for Oxides of Nitrogen (NO_x) and Oxides of Sulfur (SO_x). Facilities that remain in the NOx RECLAIM program will be required to follow both the RECLAIM regulations and Rule 1135. PAR 1135 paragraph (~~e~~d)(7) requires facilities to reconcile their permit(s) with Rule 1135 by July 1, 2022.

Response to Comment 7-2

If a facility's SCAQMD permit does not have limits as low as the proposed limits in PAR 1135, they will not be forced out of the NOx RECLAIM program. A facility is given until January 1, 2024 to make the necessary changes to their units to comply with Rule 1135. Due to the unique circumstance on Santa Catalina Island, that facility has an optional alternative compliance deadline of January 1, 2026 and also has the option to request a three year time extension. If a facility is required to modify their permit(s), depending on the equipment modification, they may be considered a new source.

Response to Comment 7-3

Staff has removed the document "Continuous Emission Monitoring Systems (CEMS) Requirements Document for Utility Boilers" and all references to the document. Units that have been permitted as of the rule adoption date will maintain their averaging time. Units installed as of the rule adoption date will have the rolling 60-minute average which will likely require new software or a software change.

Response to Comment 7-4

Staff has removed the document "Continuous Emission Monitoring Systems (CEMS) Requirements Document for Utility Boilers" and all references to the document. The CEMS status codes are no longer necessary.

Response to Comment 7-5

Staff has removed the document "Continuous Emission Monitoring Systems (CEMS) Requirements Document for Utility Boilers" and all references to the document. Criteria for data points gathered by the NOx CEMS will be in Rule 2012 for RECLAIM NO_x sources and former RECLAIM NO_x sources and Rule 218 or 40 CFR Part 75 for non-RECLAIM NO_x sources.

Response to Comment 7-6

Staff has removed the document "Continuous Emission Monitoring Systems (CEMS) Requirements Document for Utility Boilers" and all references to the document. 4.1.3 and 4.1.5 are no longer required.

Response to Comment 7-7

Staff has removed the document "Continuous Emission Monitoring Systems (CEMS) Requirements Document for Utility Boilers" and all references to the document. Reporting requirements are no longer specified in this document.

Comment Letter 8

U.S. Environmental Protection Agency, Region 9, August 16, 2018

Uyen-Uyen Vo

From:	Gong, Kevin <Gong.Kevin@epa.gov>
Sent:	Thursday, August 16, 2018 2:49 PM
To:	Uyen-Uyen Vo
Cc:	Lo, Doris; Withey, Charlotte; Law, Nicole
Subject:	EPA Region 9 Comments on SCAQMD PAR 1135, version dated July 20, 2018

Dear Ms. Vo,

Thank you for providing us an opportunity to comment on the South Coast Air Quality Management District's ("District's") Proposed Amended Rule 1135 "Emissions of Oxides of Nitrogen from Electricity Generating Facilities" ("Rule"). We have reviewed the proposed language and are providing the following comments on certain issues which may impact the EPA's ability to approve the Rule into the California State Implementation Plan (SIP).

Enforceability of "Low-Use" or "Near Limit" Permit Condition Exemptions

The provisions in sections (g)(1), (g)(2) and (g)(4) exempt combined cycle gas turbines, boilers, and internal combustion engines from the Rule's emission limits as laid out in section (d) of the Rule if these units have permit limits that are below specified thresholds, and if these units retain each of those permit limits.

Section (g)(3) exempts once-through-cooling boilers from the emission limits in section (d) if those units retain their existing permit limits and submit shutdown and retirement plans on or before January 1, 2023.

Section (g)(5) exempts low-use turbines and boilers from the emission limits in section (d) if those units operate below specified annual capacity factor thresholds, and retain their existing permit limits. 8.1

The draft rule provisions cited above appear to presume that RACT-level controls are contained in the District permits. However, these permits are not a part of the SIP. While we agree that exempting certain units from the Rule's emission limits may be consistent with the Clean Air Act's requirements (e.g., for units for which additional controls to meet the Rule's emission limits are not cost effective because the incremental improvement is prohibitively expensive), the SIP must be able to stand on its own in ensuring that all applicable units implement Reasonably Available Control Technology (RACT).

In addition, the District would need to provide a demonstration for each affected unit that the existing controls constitute RACT because more effective controls are not economically or technically feasible.

Stringency of Low Use Thresholds

Section (g)(5) allows for units that operate below a specified annual capacity factor averaged over three years (10% for turbines and 1% for boilers) to be exempt from the emission limits in section (d) of this rule, provided that they retain their permitted emission limits and do not operate above a specified annual capacity factor in any one year (25% for turbines, and 2.5% for boilers). Please clarify why such an averaging scheme is necessary for the implementation of this Rule. As with the other exemptions discussed above, the District would also need to provide a demonstration for each affected unit that the existing controls constitute RACT because more effective controls are not economically or technically feasible. 8.2

RECLAIM Replacement

Rule 1135 is intended to regulate applicable units exiting RECLAIM. Please ensure that, prior to the replacement of the RECLAIM provisions with new command and control rules such as Rule 1135, that the District documents how the emission reductions achieved under RECLAIM will be continued in Rule 1135, either in this rulemaking or in a future 8.3

1

rulemaking that will rescind or replace RECLAIM. For instance, we note that it appears cogeneration facilities are no longer covered by the Rule. 8.3

We look forward to working with the District to resolve these issues. Please let me know if you have any questions regarding our comments.

Thank you,

Kevin Gong
Rules Office, Air Division (AIR-4)
U.S. Environmental Protection Agency, Region 9
75 Hawthorne St. San Francisco, CA 94105
(415) 972-3073 | gong.kevin@epa.gov

Response to Comment 8-1

Cost-effectiveness calculations for near-limit and low-use equipment are now included in the staff report in Tables 2-15 through 2-18. To qualify for the provisions, equipment must retain federally enforceable permit condition limits as of the date of adoption of the rule.

The near-limit diesel internal combustion engine has a cost-effectiveness of $224,221 based on a replacement cost of $3.9 million, no change in annual operating costs and annual emission reductions of 0.7 tons per year.

Near-Limit Diesel Internal Combustion Engine from Table 2-15

Unit	Size (BHP)	Annual NOx Emissions (tons)	NOx Permit Limit (ppmv @ 15% oxygen₂- dry)	Proposed BARCT NOx Emission Limit (ppmv @ 15% oxygen, dry)	Capital Cost (million)	Annual Emission Reductions (tons)	Cost-Effectiveness ($/ton NOx)
ICE4	3,900	5.9	51	45	$3.9	0.7	$224,221

The near-limit combined cycle gas turbines are utilized between 35 and 39 percent of their capacity. To reach the $50,000 cost-effectiveness threshold, these units would have to run between 198 and 204 percent of their capacity. Units with cost-effectiveness thresholds greater than 100 percent would not be cost-effective to reduce emissions under any circumstances.

Near-Limit Combined Cycle Gas Turbines from Table 2-17

Unit	Annual NOx Emissions (tons)	Estimated MWh/yr	%Capacity	NOx Permit Limit (ppmv @ 15% oxygen, dry)	Capital Cost (Millions)	Operating Cost (millions)	Emission Reductions (tons)	Cost-Effectiveness ($/ton reduced)	Annual Capacity Factor (%) at $50,000 per ton of NOx Reduced
T-CC-24[1]	33	900,000	35%	2.5	$20.1	$1.6	6.6	$282,898	198.0
T-CC-25[1]	36	1,000,000	39%	2.5	$20.1	$1.6	7.2	$261,226	203.8

For low-use boilers, the annual capacity at which the cost-effectiveness threshold is reached ranges between 1.9 and 6.8 percent. The limit established in the proposed rule is 1 percent averaged over a three-year period or 2.5 percent in any year.

Low-Use Boiler Thresholds from Table 2-16

Unit	Annual NOx Emissions (tons)	Average Annual Capacity Factor (%)	NOx Permit Limit (ppmv @ 3% oxygen dry)	Capital Cost (millions)	Operating Cost (millions)	Annual Emission Reductions (tons)	Cost-Effective ness ($/ton reduced)	Annual Capacity Factor (%) at $50,000 per ton of NOx Reduced
B18	113.6	42.6	38	7.5	0.8	116.3	$6,922	5.9
B12	39.7	25.6	40	4.8	0.4	34.6	$13,262	6.8
B15	177.5	29.5	82	5.9	0.4	167.1	$3,149	1.9

For low-use combined cycle gas turbines, the cost-effectiveness threshold ranges between 12.7 and ~~XXX~~ 30.6 percent. The limit established is the proposed rule is 10 percent averaged over a three-year period or 25 percent in any year.

Low-Use Combined Cycle Gas Turbines from Table 2-17

Unit	Annual NOx Emissions (tons)	Estimated MWh/yr	%Capacity	NOx Permit Limit (ppmv @ 15% oxygen, dry)	Capital Cost (Millions)	Operating Cost (millions)	Emission Reductions (tons)	Cost-Effectiveness ($/ton reduced)	Annual Capacity Factor (%) at $50,000 per ton of NOx Reduced
T-CC-22	12.1	60,000	4%	7	$14.8	$1.1	7.8	$169,744	12.8
T-CC-23	8.9	40,000	3%	7	$14.8	$1.1	5.2	$253,696	12.7
T-CC-1	4.3	35,000	8%	7.6	$6.2	$0.5	3.2	$174,447	29.0
T-CC-26	0.8	6,000	2%	9	$4.6	$0.3	0.6	$669,774	30.6
T-CC-27	0.5	4,000	1%	9	$7.2	$0.5	0.4	$1,579,869	24.0
T-CC-28	0.5	4,000	1%	9	$7.2	$0.5	0.4	$1,579,869	24.0

Similarly, for low-use simple cycle gas turbines, the cost-effectiveness threshold ranges between 10 and 39 percent. The limit established is 10 percent averaged over a three-year period or 25 percent in any year.

Low-Use Simple Cycle Gas Turbines from Table 2-18

Unit	Annual NOx Emissions (tons)	Estimated MWh/yr	%Capacity	NOx Permit Limit (ppmv @ 15% oxygen, dry)	Capital Cost (Millions)	Operating Cost (millions)	Emission Reductions (tons)	Cost-Effectiveness ($/ton reduced)	Annual Capacity Factor (%) at $50,000 per ton of NOx Reduced
T-SC-15	0.5	1500	0.36%	3.5	$6.2	$0.41	0.14	$3,679,674	26%
T-SC-68	1.2	4000	0.99%	5	$6.1	$0.41	0.62	$820,407	16%
T-SC-10	1.9	4000	1.01%	5	$6.0	$0.39	0.97	$513,404	10%
T-SC-30	1.5	4000	1.01%	5	$6.0	$0.39	0.75	$664,064	13%
T-SC-40	1.6	4000	1.01%	5	$6.0	$0.39	0.81	$613,190	12%
T-SC-13	0.0	120	0.13%	5	$2.3	$0.15	0.01	$12,993,169	34%
T-SC-33	0.0	120	0.13%	5	$2.3	$0.15	0.02	$10,320,468	27%
T-SC-43	0.0	120	0.13%	5	$2.3	$0.15	0.02	$10,624,725	28%
T-SC-52	0.0	120	0.13%	5	$2.3	$0.15	0.01	$14,756,563	39%
T-SC-66	2.4	8000	1.93%	5	$6.2	$0.41	1.20	$426,186	16%
T-SC-67	8.9	40000	9.63%	5	$6.2	$0.42	4.45	$116,440	22%
T-SC-18	2.0	6000	1.45%	5	$6.2	$0.41	1.00	$512,207	15%
T-SC-19	1.6	5000	1.20%	5	$6.2	$0.41	0.81	$636,213	15%
T-SC-21	1.1	4000	0.96%	5	$6.2	$0.41	0.53	$971,264	19%
T-SC-23	1.0	4000	0.96%	5	$6.2	$0.41	0.51	$1,004,867	19%
T-SC-25	2.0	5000	1.20%	5	$6.2	$0.41	0.99	$519,131	13%
T-SC-57	1.5	4000	0.96%	5	$6.2	$0.41	0.74	$693,129	13%
T-SC-75	3.6	12000	2.76%	5	$6.4	$0.42	1.79	$295,758	16%
T-SC-64	0.09	270	0.10%	9	$4.7	$0.34	0.06	$6,419,676	13%

Unit	Annual NOx Emissions (tons)	Estimated MWh/yr	%Capacity	NOx Permit Limit (ppmv @ 15% oxygen, dry)	Capital Cost (Millions)	Operating Cost (millions)	Emission Reductions (tons)	Cost-Effectiveness ($/ton reduced)	Annual Capacity Factor (%) at $50,000 per ton of NOx Reduced
T-SC-65	0.0	0		9	$0.0	$0.00	0.00		
T-SC-61	0.06	120	0.23%	24	$1.6	$0.12	0.05	$2,697,954	12%
T-SC-63	0.13	240	0.46%	24	$1.6	$0.12	0.11	$1,254,841	11%

The cost-effectiveness for retrofitting combined cycle gas turbines to 5 ppmv at 15% oxygen on a dry basis, instead of the proposed rule limit of 2 ppmv at 15% oxygen on a dry basis, results in $2,092,818 per ton of NOx reduced. The cost-effectiveness for retrofitting simple cycle gas turbines to 5 ppmv at 15% oxygen on a dry basis, instead of the proposed rule limit of 2.5 ppmv at 15% oxygen on a dry basis, results in $3,405,421 per ton of NOx reduced. The cost-effectiveness of retrofitting the gas turbines to a limit higher than the proposed rule is much greater than the $50,000 per ton of NOx reduced threshold. The cost-effectiveness for retrofitting boilers to 9 ppmv at 3% oxygen on a dry basis, instead of the proposed rule limit of 5 ppmv at 3% oxygen on a dry basis, results in $45,478 per ton of NOx reduced. While the cost-effectiveness is lower than the $50,000 per ton of NOx reduced threshold, it remains higher than the $5,630 per ton of NOx reduced cost-effectiveness of the proposed limits.

Through the rule development process, staff has been in communication with EPA. EPA has provided comments regarding the state implementation plan (SIP) enforceability of Proposed Amended Rule 1135. As proposed, Proposed Amended Rule 1135 includes some provisions which require units to maintain their existing permit conditions. EPA understands the need for these provisions, but requests that limits be incorporated into Rule 1135 when Rule 1135 is amended to incorporate Rule 113 for monitoring, recordkeeping, and reporting

Response to Comment 8-2

The averaged three-year and one-year exemptions for low-use equipment is included because low-use equipment do not meet cost-effectiveness criteria. Allowing both a one-year threshold and a three-year threshold allows for minor year-to-year variations because of inclement weather or local emergencies. The one-year threshold limit avoids allowing two additional years when it is clear that the equipment will no longer qualify for the low-use exemption.

Cost-effectiveness calculations and annual capacity to reach the cost-effectiveness threshold are now included in the staff report (Tables 2-15 through 2-18). For natural gas simple cycle gas turbines, cost-effectiveness varies by unit with the cost-effectiveness threshold for simple cycle units reaching annual capacity levels between 10.4% and 38.5% with an average of 18.7% and a mean of 16.3%. For natural gas combined cycle gas turbines, the cost-effectiveness threshold is reached at annual capacity levels between 12.7% and 204%. The units with cost-effectiveness thresholds greater than 100% would not be cost-effective to reduce emissions under any circumstances. For boilers, all three remaining non-OTC operable boilers are currently cost-effective to retrofit. However, the facility is considering requesting a low-use provision. Back calculating from their current cost-effectiveness, they would reach the threshold between 1.9% and 6.8%.

The cost-effectiveness for retrofitting combined cycle gas turbines to 5 ppmv at 15% oxygen on a dry basis, instead of the proposed rule limit of 2 ppmv at 15% oxygen on a dry basis, results in $2,092,818 per ton of NOx reduced. The cost-effectiveness for retrofitting simple cycle gas turbines to 5 ppmv at 15% oxygen on a dry basis, instead of the proposed rule limit of 2.5 ppmv at 15% oxygen on a dry basis, results in $3,405,421 per ton of NOx reduced. The cost-effectiveness of retrofitting the gas turbines to a limit higher than the proposed rule is much greater than the $50,000 per ton of NOx reduced threshold. The cost-effectiveness for retrofitting boilers to 9 ppmv at 3% oxygen on a dry basis, instead of the proposed rule limit of 5 ppmv at 3% oxygen on a dry basis, results in $45,478 per ton of NOx reduced. While the cost-effectiveness is lower than the $50,000 per ton of NOx reduced threshold, it remains higher than the $5,630 per ton of NOx reduced cost-effectiveness of the proposed limits.

Through the rule development process, staff has been in communication with EPA. EPA has provided comments regarding the state implementation plan (SIP) enforceability of Proposed Amended Rule 1135. As proposed, Proposed Amended Rule 1135 includes some provisions which require units to maintain their existing permit conditions. EPA understands the need for these provisions, but requests that limits be incorporated into Rule 1135 when Rule 1135 is amended to incorporate Rule 113 for monitoring, recordkeeping, and reporting

Response to Comment 8-3

RECLAIM does not impose specific emission reduction requirements on individual sources. Instead, staff calculates BARCT requirements (which are more stringent than RACT) for all RECLAIM sources, and the total reductions are met on an agency basis. In contrast, Rule 1135 and other BARCT rules being adopted by the SCAQMD, impose BARCT on individual source categories. If no BARCT has changed since the last RECLAIM amendment, the emission reductions from BARCT rules would be identical to those from the last RECLAIM amendments. However, staff expects a number of source categories to have new BARCT requirements, so that aggregate emission reductions under the new BARCT rules will be greater than under existing RECLAIM.

Cogeneration turbines will be covered in Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines and will also remain subject to NOx RECLAIM regulations until the facility exits the NOx RECLAIM program.

Comment Letter 9

Bloom Energy, August 16, 2018

Bloomenergy

August 16, 2018

Chairman William A. Burke
South Coast Air Quality Management District
21865 Copley Dr.
Diamond Bar, CA 91765

Re: Proposed Amended Rule 1135

Dear Chair Burke,

Bloom Energy (Bloom) appreciates the opportunity to provide these comments on Proposed Amended Rule 1135. We strongly support the South Coast Air Quality Management District's (SCAQMD or District) efforts to protect public health, improve air quality, and reduce emissions from oxides of nitrogen (NOx)—as specified under the 2016 Air Quality Management Plan and AB 617 (2017)—from electricity generating facilities. Our comments specifically focus on the benefits fuel cells can provide in assisting SCAQMD in reaching these goals.

Bloom is a provider of a breakthrough all-electric solid oxide fuel cell technology that produces reliable power using a highly resilient and environmentally superior non-combustion process. By virtue of their non-combustion process, Bloom Energy Servers virtually eliminate emissions of criteria air pollutants including NOx, SOx, CO, VOCs, and particulate matter that are associated with traditional combustion and diesel back up power configurations while providing onsite power 24x7x365. The result is a significantly lower air emissions profile as compared to combustion-based distributed or central station power generation—reducing localized impacts in disadvantaged and vulnerable communities.

Bloom's fuel cells are fuel flexible and can operate on either natural gas or renewable natural gas. In addition, our all-electric solution allows fuel cell systems to be deployed at sites where it is not necessary to match an on-site thermal load, thereby expanding the opportunities available to address energy needs with clean, reliable distributed generation. With more than 200 MW installed across over 480 sites in California, Bloom has a proven technology with a strong track record of providing cost-competitive, clean, reliable energy solutions.

Importantly, on any fuel source, Bloom Energy Servers reduce NOx emissions compared to the grid, gas turbines, and reciprocating engines—see Table 1. These fuel cell benefits align perfectly with SCAQMD's mission to "clean the air and protect the health of all residents in the South Coast Air District through practical and innovative strategies."[1]

[1] "Goals and Priority Objectives," South Coast Air Quality Management District, http://yourstory.aqmd.gov/nav/about/goals-priority-objectives

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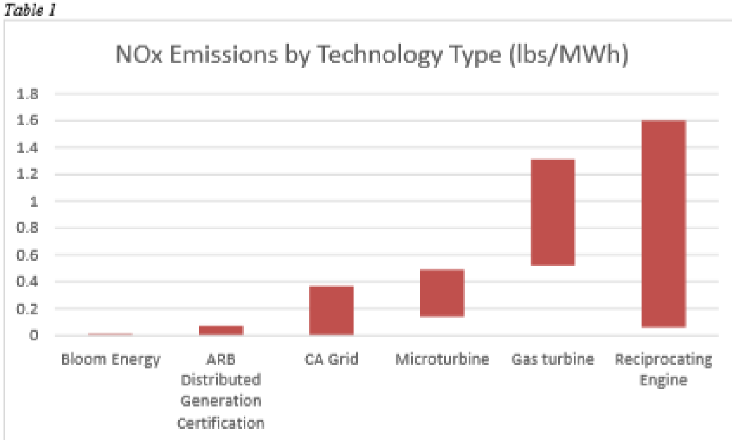
Be

Table 1



[2]

Given that Bloom's fuel cells emit virtually no NOx, they are a valuable alternative compliance mechanism. We encourage the SCAQMD to explore incorporating this innovative, low-emission solution as part of PAR 1135. 9.1

We thank the District for the opportunity to provide feedback and reiterate that Bloom's fuel cell technology should be an integral component of the District's continuing efforts to protect public health and improve air quality through PAR 1135.

Respectfully,

Erin Grizard
Senior Director, Regulatory and Government Affairs

Sam Schabacker
Policy Manager

[2] "Amendments to the Distributed Generation Certification Regulation," California Air Resources Board, pg 5, https://www.arb.ca.gov/energy/dg/2006regulation.pdf; "Bloom Energy Server ES5-300kW," Bloom Energy, https://bloomenergy.com/datasheets/energy-server-es5-300kw; "Catalog of CHP Technologies," Environmental Protection Agency, page 1-6, https://www.epa.gov/sites/production/files/2015-07/documents/catalog_of_chp_technologies_section_1._introduction.pdf; "Combined Heat and Power Catalog: CHP Program," New York State Energy Research and Development Authority, https://portal.nyserda.ny.gov/servlet/servlet.FileDownload?file=00Pt0000005wxi5EAA.

1299 Orleans Drive, Sunnyvale CA 94089 T 408 543 1500 F 408 543 1501 www.bloomenergy.com

Response to Comment 9-1

Thank you for providing the information regarding fuel cells. PAR 1135 does not mandate the types of electric generating units for a facility; PAR 1135 establishes the emissions limits for different types of electric generating units.

Comment Letter 10

Sanitation Districts of Los Angeles, July 23, 2018

Uyen-Uyen Vo

From:	Rothbart, David <DRothbart@lacsd.org>
Sent:	Monday, July 23, 2018 12:06 PM
To:	Uyen-Uyen Vo
Cc:	Michael Morris; Steve Jepsen (sjepsen@dudek.com); Alison Torres
Subject:	Rule 1135 Comments

Hi Uyen-Uyen,

Thanks for updating the definitions in PAR 1135. While I think most existing biogas energy projects would now be excluded, we probably should address food waste and manure gas as well. With the mandatory diversion of food waste away from landfills, public and private food waste digestion facilities should become more common. At the moment a few non-wastewater treatment plant facilities are digesting food waste and generating biogas (e.g., CR&R and Kroger) . I'm not sure if any food waste digestion facilities are exporting electricity yet, but it seems probable that some facilities would eventually attempt to install engines, turbines or boilers. Similarly Inland Empire Utilities Agency had a manure digester, so including manure might be reasonable as well. 10.1

Last, but not least, it's possible to have a privately owned wastewater treatment plant, so it might be helpful to expand the Treatment Works definition. Please let me know if you have any questions. 10.2

Thanks again,

David

DAVID L. ROTHBART, P.E., BCEE
SCAP Air Quality Committee Chair
Supervising Engineer | Air Quality Engineering
SANITATION DISTRICTS OF LOS ANGELES COUNTY | 1955 Workman Mill Road, Whittier, CA 90601
Phone: 562.908.4288 x2412 | Cell: 714.878.9855 | FAX: 562.692.9690
Converting Waste Into Resources | www.LACSD.org

1

Response to Comment 10-1

If, in the future, biogas is used at electricity generating facilities, it will be subject to the proposed emission limits. Biogas used in turbines, engines, or boilers located at other types of facilities would be subject to equipment specific rules.

Response to Comment 10-2

Staff has revised the definition of electricity generating facility in paragraph (c)(8), which excludes publicly owned treatment works. If a privately owned treatment works were to begin operation, it would be subject to PAR 1135 if its combined generation capacity is 50 megawatts or more of electrical power for distribution in the state or local electrical grid system, excluding power from cogeneration units.

Comment Letter 11

Yorke Engineering, July 31, 2018

From: Greg Wolffe (GWolffe@YorkeEngr.com)
To: Uyen-Uyen Vo
Cc: jadams yorkeengr.com; Steve Bean
Subject: SCAQMD Proposed Amended Rule 1135 - OLS Energy
Date: Tuesday, July 31, 2018 11:08:53 AM
Attachments: image001.jpg
image002.jpg

Hi Uyen-Uyen.

The proposed Rule 1135 language (g)(5)(C) - Initial Requirement for Low-Use Exemption – appears to require that a EGF demonstrate compliance with the low use exemption using data from calendar years 2016, 2017, and 2018 and that they submit SCAQMD permit applications for a condition to incorporate the low-use exemption by July 1, 2019.

As we discussed with you last month, OLS is transitioning rule applicability from 1134 to 1135 in June/July 2018, based on their new contract to shift from dedicated service to being a EGF to Cal-ISO. As a result, they will not have the calendar years of inventory required to demonstrate the low-use exemption by next year. We seek your opinion as to how this can be accommodated within the current structure of the proposed rule language. For example, one option may be to add language to (g)(5)(C)(i) that states "Demonstrate compliance with subparagraph (g)(5)(A) or (g)(5)(B) using data from calendar years 2016, 2017, and 2018 <u>or any other period deemed representative by the Executive Officer</u>". 11.1

Please let us know if you would like to discuss options for OLS.

Thanks!

Greg

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<image001.jpg>

Specializing in Air Quality & Environmental Compliance

Response to Comment 11-1

Please see Response 3-1 and the revised rule language in subparagraph (g)(4)(C).

Comment Letter 12

California Council for Environmental and Economic Balance, August 31, 2018

California Council for Environmental and Economic Balance
101 Mission Street, Suite 1440, San Francisco, California 94105
415-512-7890 phone, 415-512-7897 fax, www.cceeb.org

August 31, 2018

Susan Nakamura
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
Submitted electronically to snakamura@aqmd.gov

RE: PAR 1135 – Best Available Retrofit Control Technology

Dear Susan,

We submit the following comments on behalf of the California Council for Environmental and Economic Balance (CCEEB) on Proposed Amended Rule 1135 (PAR 1135), specifically concerning staff's proposal to require equipment replacement as Best Available Retrofit Control Technology (BARCT). CCEEB is a nonpartisan, nonprofit coalition of business, labor, and public leaders that advances strategies for a healthy environment and sound economy. CCEEB represents many facilities that operate in the South Coast Air Quality Management District (District) and would be affected by these amendments.

CCEEB wishes to better understand the process and authority by which the District is basing its position that a BARCT standard may require total replacement of a particular piece of equipment. We are aware of no other air district that has taken this position. Additionally, the California Health and Safety Code Section 40406 defines BARCT as:

> *As used in this chapter, "best available retrofit control technology" means an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source.* 12.1

The Preliminary Draft Staff Report for PAR 1135 makes two arguments supporting staff's position. The first cites "on-line dictionaries" to reason that the definition of retrofit does not "preclude replacement technology."[1] The second cites case law, as determined by *American Coatings Ass'n. v. South Coast Air Quality Mgt. Dist.*, 54 Cal. 4th 446, 465 (2012) to support the notion that the District is not precluded from requiring

[1] SCAQMD. "Preliminary Draft Staff Report Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities." July, 2018. p.2-1.

replacement technology as long as it is not "arbitrary or irrational."[2] The notion that because the district is not explicitly *precluded* from acting does not logically – or legally – mean that the district *has* the authority to act.

In this regard, CCEEB seeks further understanding regarding staff's position. CCEEB believes the Preliminary Draft Staff Report does not adequately address or analyze the District's authority for establishing a BARCT standard that requires total replacement of equipment. Detailed analysis is warranted given the statutory requirements of BARCT. 12.1

CCEEB is also concerned regarding the implications of staff's position for future rule makings and BARCT determinations. As the first RECLAIM landing rule to be adopted, we are concerned that PAR 1135 may establish a new precedent that could be applied in future rules. CCEEB believes this may go beyond the definition of and the District's authority for BARCT. At a minimum, this concept should first be discussed with the RECLAIM working group.

We appreciate the opportunity to provide these comments on the PAR 1135 and look forward to continuing to engage staff in the rulemaking and broader public process. In the meantime, should you have any questions or wish to discuss our comments further, please contact me (billq@cceeb.org or 415-512-7890 ext. 115), Janet Whittick (janetw@cceeb.org or ext. 111), or Devin Richards (devinr@cceeb.org or ext. 110).

Sincerely,

Bill Quinn
CCEEB Vice President
South Coast Air Project Manager

cc: Philip Fine, SCAQMD
Jerry Secundy, CCEEB
Janet Whittick, CCEEB
Devin Richards, CCEEB
CCEEB South Coast Air Project Members

[2] *Ibid*

Response to Comment 12-1

As explained in detail below, BARCT may certainly include the replacement of equipment. In summary, we explain the particular instance in which SCAQMD has sought to specify a level equivalent to equipment replacement as BARCT for internal combustion engines on Santa Catalina Island. This demonstrates how public policy supports SCAQMD's interpretation. Moreover, as we explained in the Preliminary Draft Staff Report, the statutory definition of BARCT supports a broad interpretation. And applicable dictionary definitions do not preclude the view that BARCT can include equipment replacement. Finally, even if a court were to conclude that BARCT cannot encompass equipment replacement, BARCT is not a limitation on SCAQMD authority. The SCAQMD retains broad statutory authority to adopt emission-control requirements for stationary sources, and that authority may require equipment replacement, as long as the requirement is not arbitrary and capricious.

Public Policy Supports the SCAQMD's Interpretation

As noted in the staff report for PAR 1135, staff has proposed a BARCT for diesel fueled engines that appears to be more cost-effectively met by replacing the engine rather than trying to install additional add-on controls. If SCAQMD were precluded from requiring the replacement of these engines, the oldest and dirtiest power-producing equipment would continue to operate for possibly many years, even though it would be cost-effective and otherwise reasonable to replace those engines. As long as an emissions limit meets the requirements of the definition set forth in section 40406, there is no policy reason why replacement equipment cannot be an element of BARCT. And there is no policy reason why BARCT – if it does not include replacements – would somehow limit the SCAQMD from requiring equipment replacement where that requirement is reasonable and feasible. "If the statutory language permits more than one reasonable interpretation, courts may consider other aids, such as the statute's purpose, legislative history, and public policy." *Jones v. Lodge at Torrey Pines Partnership*, 42 Cal. 3d. 1158, 1163 (2008). In this case, the statue permits two reasonable interpretations, since the statutory definition in 40406 does not preclude requiring equipment replacement if it is reasonable considering economic and other factors. The legislative history and public policy both support the SCAQMD's interpretation, and a narrow interpretation is inconsistent with the broad language of the statutory definition.

The BARCT proposed for internal combustion engine power producers (replacement with Tier IV engines) is economically and practically reasonable and therefore does not "go beyond" BARCT if we look strictly at the statutory definition. As stated by the Supreme Court, the "statutes that provide the districts with regulatory authority serve a public purpose of the highest order-protection of the public health." *W. Oil & Gas Assn. v. Monterey Bay Unified Air Pollution Control Dist.*, 49 Cal. 3d 408, 419 (1989) ("WOGA"). Therefore, courts should not find that any statute causes an "implied repeal" of the districts' authority. *Id.*

The proposal to require replacement of five out of the six internal combustion engines at Santa Catalina Island is supported by overwhelming policy justifications. There are six internal combustion engines at the facility, of which three are at least 50 years old. The other three were installed in 1974, 1985, and 1995. The 1995 engine was installed with SCR; the other five had SCR installed in 2003. Staff concludes that it would be more cost-effective to replace the five oldest of these engines with new Tier IV engines rather than to install additional add-on controls. (The sixth engine was found not to be cost-effective to replace). These engines account for 0.06%

of the electric utility power produced in the District (Draft Staff Report, Table 4-1, 9 MWhr divided by 15,904 MWhr). But they account for 5.7% of the emissions inventory from electricity generating facilities (Draft Staff Report, Table 4-2, 0.2 tpd divided by 3.5 tpd). If the SCAQMD could not require replacement of these engines, then paradoxically the oldest, highest-emitting equipment would escape control.

The SCAQMD has in the past required replacement of old equipment in appropriate cases. The SCAQMD has required replacement, for example, in its dry-cleaning rule, adopted in 2002, which required all perchloroethylene dry-cleaning machines to be phased out by 2020, with other specific requirements implemented starting shortly after rule adoption. (Rule 1421(d)(1)(F)). Thus, a perchloroethylene machine that was installed in 2001 would be required to be replaced with a non-perchloroethylene machine when it is 19 years old. While this is a rule relating to toxic air contaminants, we do not believe the SCAQMD's authority is any less for criteria pollutants.

Dictionary Definitions Support SCAQMD's Interpretation

We do not agree that the term "retrofit" excludes replacement, such as replacement of an engine. We do not find that limitation in the dictionary definitions for the term "retrofit" including those cited in the SCAQMD staff report for Rule 1135. Instead, at least one definition provides that "retrofit" can mean "to replace existing parts, equipment, etc., with updated parts or systems." http://www.dictionary.com/browse/retrofit. Nothing in this definition requires that only part of a piece of equipment can be replaced. Indeed, according to this definition, a retrofit can include the replacement of an entire system. In our view, at least one dictionary definition of the term "retrofit" encompasses "replacement of equipment or systems." *See* definition cited above. This definition is broad enough to include replacing the entire piece of equipment or system. Therefore, the key question is what did the legislature mean when it imposed the BARCT requirement on SCAQMD?

Statutory Definition of BARCT Supports SCAQMD's Interpretation

The statutory definition of BARCT, as found in Health & Safety Code section 40406, does not contain any language precluding replacement technology. Section 40406 defines BARCT as "an emissions limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source." Thus, BARCT is an emissions limitation. Nothing in the statutory definition specifies the type of technology that may be used. The California Supreme Court has made it clear that it is the definition of BARCT that controls, not implications from the language used in the term itself. Thus, the Supreme Court rejected the argument that "best available retrofit control technology" is limited to that which is readily available at the time when the regulation is enacted, and instead concluded that it encompasses technology that is "achievable," i.e. expected to become available at a future date. *American Coatings Ass'n. v. South Coast Air Quality Mgt. Dist.,* 54 Cal. 4th 446, 462 (2012). The Court focused on the actual statutory definition, which provides that BARCT is "an emissions limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source." *American Coatings,* 54 Cal. 4th at 463. The Court concluded that in common usage, "achievable" means "capable of being achieved," which in turn includes "a potentiality to be fulfilled or a goal to be achieved at some future date." *Id.*

Thus, an emissions reduction was "achievable" when the rule was adopted in 1999 if it was "capable of being achieved" by the rule deadline of 2006. *American Coatings,* 54 Cal. 4th at 464. This was so even if that reduction was not "readily available" in 1999, notwithstanding the use of the word "available" in the term being defined. The Supreme Court held that the statutory definition controls, and in this case the statutory definition does not preclude replacement technology.

When the Legislature has defined a term, courts must follow that definition. *People v. Ward*, 62 Cal. App. 4th 122, 126 (1998). Following the California Supreme Court's analysis in *American Coatings,* the test of whether an emission limit constitutes BARCT is whether it meets the definition found in the statute, section 40406. If so, then it is within the statutory definition of BARCT, whether or not it is within the most common understanding of "retrofit." This does not mean that the word "retrofit" is surplusage. The use of the word "retrofit" serves to distinguish an emission limit that is imposed on existing sources, and which under the statutory definition must consider economic and other factors, from the emissions limit imposed on new sources. The limit for new sources must be met if it has been achieved in practice, regardless of cost. *See* definition of "best available control technology" [BACT] in section 40405, which includes "the most stringent emission limitation that is achieved in practice by that class or category of source." We do not argue that a replacement can be BARCT if it does not meet the definition of BARCT. Instead, if a limit meets that definition, it can be BARCT even if it can most cost-effectively be met by replacing the equipment with new equipment, as recognized in the dictionary definition discussed above.

The *American Coatings* ruling is not irrelevant just because it dealt with a rule for architectural coatings, requiring coating reformulation, which "does not typically involve the manufacture of modified production equipment or new add-on controls," whereas control technologies that require physical modification of existing equipment or installation of add-on controls may require "significant disruption to the operation of the facility." We do not know whether the claim regarding architectural coatings is correct, but even if it is, we do not understand how this relates to the question at issue since *both* retrofit add-on controls and replacements would involve the disruption of facility operations for some time.

Other Statutory References to "Retrofit" Are Inapplicable

The legislature has used the term replacement as well as retrofit in certain sections of the Health and Safety Code. §§ 43021(a), 44281(a). Furthermore, the legislature defined retrofit in sections 44275(a)(19) and 44299.80(o), and the definition does not mention replacement but rather making modifications to the engine and fuel system. Finally, these same code sections define "repower" as replacing an engine with a different engine. §§ 44275(a)(18), 44299.80(n). However, all of these code sections were adopted long after 1987, when the legislature mandated SCAQMD to require BARCT for existing sources. They do not shed any light on what the legislature meant by "retrofit" in 1987 when section 40406 was adopted. All of the sections cited (except section 43021(a)) deal with incentive programs, and the definitions are specifically stated to be only "as used in this chapter"; i.e. for the specific incentive program. (§§ 44275(a); 44299.80(a)). These definitions facilitate the administering agency in implementing the programs, which generally provide different amounts of funding for different types of projects, including "repowering" or "retrofitting." *See e.g.*

https://www.arb.ca.gov/msprog/moyer/source_categories/moyer_sc_on_road_hdv_2.htm
Therefore, the legislature had a specific purpose in distinguishing between replacements and retrofits in these particular chapters, whereas no one has identified a policy reason that the legislature would have wanted to exclude replacement projects from BARCT, as long as they met the statutory definition.

Section 43021(a), enacted in 2017 as Part of SB1, prohibits Air Resources Board rules that require the "retirement, replacement, retrofit, or repower" of a commercial motor vehicle for a period of time. An argument can be made that this language means that a replacement must be different than a retrofit, under that theory it must also mean that a replacement is different from a repower, whereas under the sections cited above, a repower IS a replacement. Presumably, the legislature wanted to make very sure it covered all possibilities. And to add to the confusion, the Carl Moyer statutes appear to distinguish "retrofit" (an eligible project under §~~44282~~44281(a)(2)) from "use of emission-reducing add-on equipment" (an eligible project under §44281(a)(3)). Normally installing add-on controls is considered a type of retrofit.

Statute Discussing Best Available Control Technology Determinations Does Not Circumscribe BARCT Definition
Section ~~40920.6~~40440.11 states that in establishing the best available control technology, (BACT), the District shall consider only "*control options* or emission limits *to be applied to the basic production or process equipment*." BACT is frequently applied to replacement of an entire source (such as repowers of electric generating units) as well as to new and modified sources. Obviously, in the case of a new source, there is no existing equipment to which to apply the technology. We interpret this statutory language to mean that in establishing BACT, the SCAQMD is not to fundamentally change the nature of the underlying process. For example, if an applicant seeks approval of a simple cycle turbine, the SCAQMD cannot require it to instead construct a combined cycle turbine, since they have different operational characteristics and needs to fill. This would be consistent with EPA's Draft NSR Workshop Manual, p. B-13, that specifies that in determining BACT, states need not redefine the design of the source, although they retain discretion to do so where warranted (i.e. to require consideration of inherently cleaner technology). https://www.epa.gov/nsr/nsr-workshop-manual-draft-october-1990. Similarly, SCAQMD does not propose to require a facility subject to BARCT to "redefine" the nature of its source but merely to replace old diesel internal combustion engines with diesel internal combustion engines meeting EPA's Tier IV standards. Therefore, section ~~40920.6~~40440.1 does not speak to the question at hand: whether BARCT precludes replacing old equipment with new equipment of the same type.

SCAQMD Has Authority to Require Equipment Replacement Which is Not Limited by the BARCT Definition
Finally, even if BARCT by itself did not include replacement equipment, the SCAQMD could still require the equipment to be replaced. We disagree that section 40440(a)(1) grants the authority to require BARCT (i.e., that without that section, the district would have no authority to require BARCT). We also disagree with the proposition that Section 40440(a)(1) limits the District's authority.

State law has explicitly granted air districts primary authority over the control of pollution from all sources except motor vehicles since at least 1975, when the air pollution regulation provisions were recodified. *See* § 40000, enacted Stats. 1975, ch. 957, §12; *see also* § 39002, containing similar language and adopted in that same section. As held by the California Supreme Court, these two sections (and their predecessors dating back to 1947) confirm that the air districts had plenary authority to regulate non-vehicular sources "for many years." *WOGA*, 49 Cal. 3d. at 418-19. And the Supreme Court had previously recognized the air districts' authority to adopt local regulations for non-vehicular sources under the predecessor statutes. *Orange County Air Pollution Control Dist. v. Public Util. Comm.*, 4 Cal. 3d 945, 948 (1971). Under these broad statutes, the districts could have adopted BARCT requirements for non-vehicular sources. Section 40440(a)(1), therefore, was not a statute granting authority, since the districts already had authority, but a statute imposing a *mandate* to adopt BARCT.

We also disagree with the claim that section 40440(a)(1) requiring the SCAQMD to impose BARCT on existing sources was a "limitation" of district authority. State law expressly provides that districts "may establish additional, stricter standards than those set forth by law" unless the Legislature has specifically provided otherwise §§ 39002; 41508. Nothing in Section 40440(a)(1) specifically limits the District's authority. In fact, the legislative history of the bill requiring SCAQMD to impose BARCT – among other requirements – states that "this bill is intended to encourage *more aggressive improvements in air quality* and to give the District new authority to implement such improvements." *American Coatings*, 54 Cal. 4th at 466 (emphasis added). As stated by the Supreme Court, "[t]the BARCT standard was therefore part of a legislative enactment designed to augment rather than restrain the District's regulatory power." *Id.* As explained by the legislative history, BARCT is a "minimum" requirement, and the legislature did not intend it to preclude the District from adopting requirements that go beyond BARCT.

Among the new authorities granted were section 40447.5, authorizing fleet rules and limits on heavy duty truck traffic and section 40447.6, authorizing the SCAQMD to adopt sulfur limits for motor vehicle diesel fuel. We do not believe that section 40440(a)(1) granted "new" authority to require BARCT, as the districts already had authority over non-vehicular sources.

Moreover, when the Legislature extended the BARCT requirement to other districts with significant air pollution, section 40919(a)(3) (districts with serious pollution and worse) the legislature expressly stated that the bill "is intended to establish minimum requirements for air pollution control districts and quality management districts" and that "[n]othing in this act is intended to limit or otherwise discourage those district from adopting rules and regulations which exceed those requirements." Stats. 1992, ch. 945 § 18. Thus it is clear that BARCT is not intended to be a limitation or restriction on existing authority.

Although the California Supreme Court found it unnecessary to decide whether the SCAQMD could adopt rules going beyond BARCT, because it held that BARCT could include technology-forcing measures, it did state that BARCT was not designed to restrain the District's regulatory power. *American Coatings*, 54 Cal 4th at 466, 469.

In an earlier case, the California Supreme Court made it clear that new legislation does not impliedly repeal an air district's existing authority unless it "gives *undebatable evidence* of an intent to supersede" the earlier law. *WOGA*, 49 Cal. 3d. at 420 (internal citation omitted; emphasis by Supreme Court). There the court noted that the present statutes and their predecessors giving air districts authority over non-vehicular sources, including the authority to regulate air toxics, had been in effect before the allegedly preempting law was enacted (in 1983; Stats 1983 Ch. 1047), and had been generally understood and acted upon. *WOGA*, 49 Cal 3d at 419. The court concluded there was no "undebatable evidence of a legislative intent to repeal the districts' statutory authority to protect the health of their citizens by controlling air pollution." *WOGA*, 49 Cal 3d at 420. By the same token here, there is no undebatable evidence of an intent to limit air districts' existing authority by imposing a *mandate* to adopt BARCT requirements. Instead, BARCT was a minimum requirement that SCAQMD must impose, not a limit on its ability to impose additional, including more stringent, requirements. Indeed, the argument that BARCT limits SCAQMD's authority is illogical. It would make no sense for the Legislature in 1987 to limit only the district with the worst air pollution (SCAQMD) while leaving untouched the authority of other districts with lesser levels of pollution.

Nor does this conclusion leave the SCAQMD with unlimited regulatory power. In going beyond the statutory minimum of BARCT for existing sources, the District would still be limited by the requirement that its rules may not be arbitrary and capricious, or without reasonable or rational basis, or entirely lacking in evidentiary support. *American Coatings*, 54 Cal. 4^{th} at 460. And of course, the SCAQMD's rulemaking authority is limited by applicable constitutional principles. Therefore, stakeholders need not rely on an argument that BARCT restricts the SCAQMD's authority in order to ensure the SCAQMD does not implement any arbitrary action.

Conclusion

SCAQMD has the authority to require equipment replacement as a BARCT requirement as long as the requirement meets the statutory definition of BARCT. But even if BARCT were to exclude equipment replacement, the SCAQMD would still have the authority to require replacement, as long as the replacement is not arbitrary and capricious. The proposed BARCT for internal combustion engines on Santa Catalina island is reasonable and feasible, and no one has argued to the contrary.

REFERENCES

"Staff Report, Proposed Rule 1135 - Emissions of Oxides of Nitrogen from Electric Power-Generating Boilers", South Coast Air Quality Management District, June 30, 1989

"Final 2016 Air Quality Management Plan", South Coast Air Quality Management District, March 2017

"SCAQMD NOx RECLAIM – BARCT Feasibility and Analysis Review, Norton Engineering Consultants, Inc., Nov 26, 2014

Clean Water Act, 33 U.S.C. § 1326(b), Section 316(b)

"Regulation 9, Rule 8: Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines", Bay Area Air Quality Management District, July 2007

"Regulation 9, Rule 9: Nitrogen Oxides and Carbon Monoxide from Stationary Gas Turbines", Bay Area Air Quality Management District, December 2006

"Regulation 9, Rule 11: Nitrogen Oxides and Carbon Monoxide from Utility Electric Power Generating Boilers", Bay Area Air Quality Management District, May 2000

"Rule 4306 – Boilers, Steam Generators, and Process Heaters – Phase 3", San Joaquin Valley Air Pollution Control District, October 2008

"Rule 4702 – Internal Combustion Engines (Certified Equipment for Internal Combustion Engines)", San Joaquin Valley Air Pollution Control District, November 2013

"Rule 4703 – Stationary Gas Turbines", San Joaquin Valley Air Pollution Control District, September 2007

"Final Rule for Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel", U.S. Environmental Protection Agency, June 2004

"Chapter 2 – Selective Catalytic Reduction", U.S. Environmental Protection Agency, May 2016
"Air Pollution Control Cost Estimation Spreadsheet for Selective Catalytic Reduction (SCR), U.S. Environmental Protection Agency, May 2016

"Catalytic Combustion", Office of Energy Efficiency and Renewable Energy, https://www.energy.gov/eere/amo/catalytic-combustion, accessed July 19, 2018

"Catalog of CHP Technologies", U.S. Environmental Protection Agency Combined Heat and Power Partnership, September 2017

ATTACHMENT I

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Socioeconomic Impact Assessment for
Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities

November 2018

Deputy Executive Officer
Planning, Rule Development, and Area Sources
Philip M. Fine, Ph.D.

Assistant Deputy Executive Officer
Planning, Rule Development, and Area Sources
Susan Nakamura

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Reviewed By:	Barbara Baird, Chief Deputy Counsel Shah Dabirian, Ph.D., Program Supervisor Tracy Goss, Planning and Rules Manager Mike Morris, Planning and Rules Manager Mary Reichert, Senior Deputy District Counsel Jillian Wong, Ph.D., Planning and Rules Manager William Wong, Principal Deputy District Counsel

EXECUTIVE SUMMARY

A socioeconomic analysis was conducted to assess the potential impacts of Proposed Amended Rule (PAR) 1135 on the four-county region of Los Angeles, Orange, Riverside, and San Bernardino. A summary of the analysis and findings is presented below.

Elements of Proposed Amendments	PAR 1135 - Emissions of Oxides of Nitrogen from Electricity Generating Facilities will be the first command-and-control rule to be amended as part of the transition process of facilities from the NOx RECLAIM program to a command-and-control regulatory structure. PAR 1135 applies to RECLAIM and non-RECLAIM electricity generating facilities that own and operate electricity generating units (e.g., boilers; gas turbines with the exception of cogeneration turbines; and internal combustion engines on Santa Catalina Island) and are investor-owned electric utilities, publicly owned electric utilities, or have a generation capacity of at least 50 megawatts (MW) of electrical power. PAR 1135 will update NOx emission limits to reflect current Best Available Retrofit Control Technology (BARCT) and to provide implementation timeframes. The provisions in PAR 1135 establish NOx and ammonia (NH3) emission limits for boilers and gas turbines and NOx, ~~ammonia~~NH3, carbon monoxide, volatile organic compounds, and particulate matter for internal combustion engines ~~located on Santa Catalina Island~~ with the exception of emergency internal combustion engines. Additionally, PAR 1135 establishes provisions for monitoring, reporting, and recordkeeping, and establishes exemptions from specific provisions. PAR 1135 is estimated to reduce NOx emissions by ~~0.9~~1.9 tons per day by January 1, 2027.
Affected Facilities and Industries	There are ~~32~~ 31 electricity generating facilities subject to PAR 1135. All ~~32~~ 31 facilities are classified under NAICS Code 221112 - Utilities (Fossil Fuel Electric Power Generation). Of these ~~32~~ 31 affected facilities, 17 are located in Los Angeles County, six are in Orange County, five ~~six~~ are in Riverside County, and the remaining three facilities are located in San Bernardino County. ~~Twenty-seven~~ Twenty-six facilities are currently in the NOx RECLAIM program. ~~Twenty-nine~~Twenty-eight of the ~~32~~ 31 facilities were identified as not needing additional pollution controls, installation of new equipment, or modifications to their existing equipment in order to comply with PAR 1135. The electricity generating units at these facilities are not expected to require modifications to comply with PAR 1135 because the electricity generating units either: 1) currently meet the NOx emission limit; 2) are currently eligible for a low-use provision; 3) have a NOx emission ~~levels~~ limit that ~~are~~ is near the proposed NOx emission limit and the unit is exempt from the NOx emission limit because potential equipment modifications exceed a cost-effectiveness

	threshold of $50,000 per ton of NOx reduced; or 4) are scheduled by facility operators to be either shut down or repowered due to other regulatory requirements not pertaining to PAR 1135. Only three electricity generating facilities would be expected to have existing electric power generating units that would require potential modifications (e.g., installing new or modifying existing air pollution control systems, ~~and~~ repowering, or replacing existing electric power generating units) in order to comply with PAR 1135. Twenty-seven electric generating units would qualify for the low-use provisions. However, three of the facilities will forego use of the low-use provision and instead retrofit their turbines to come into compliance with the PAR 1135 emission limits.
Assumptions of Analysis	There are five diesel internal combustion engines located at a single facility that are expected to be replaced in order to comply with PAR 1135. Equipment and installation costs are expected to result in a one-time capital cost of $3.9 million for each unit. There are three natural gas boilers operated by a municipality. The operator plans to shut down the three natural gas boilers and repower them with three natural gas turbines (one 20 MW unit, and two 44 MW units). One-time capital costs for the 20 MW unit consists of $19.8 million in equipment costs and $10.2 million in construction and development fees. Capital costs for the 44 MW units are expected to be $35.8 million per unit in equipment costs and an additional $17.4 million per unit in construction and development fees. There are seven 47 MW simple cycle gas turbines located at three municipalities that will be retrofit to meet the 2.5 ppmv NOx limit. All but one is being done voluntarily to avoid the low-use provision restrictions. One-time capital costs for equipment and installation are $1.6 million per unit. Recurring costs for all seven units are comprised of $10,000 per unit in increased ammonia costs annually and an increase of $55,000 per unit in selective catalytic reduction (SCR) replacement costs incurred every three years. Additionally, there are two 182 MW combined cycle gas turbines located at a municipality that will be retrofit to meet the 2 ppmv NOx limit. One-time capital costs for equipment and installation are $6.1 million per unit. Recurring costs for both units are comprised of $39,000 per unit in increased ammonia costs annually and an increase of $215,000 per unit in SCR replacement costs incurred every three years. Another municipality that operates four natural gas simple cycle gas turbines has scheduled for the catalyst in each of the four ~~existing selective catalytic reduction (SCR)~~SCR systems to be replaced with more efficient catalyst to comply with the updated BARCT NOx concentration limits in PAR 1135. While the turbines qualify for the low-use provisions, the facility has made a business decision to voluntarily forgo that option. Replacement of two 30.6 MW simple cycle gas turbines ~~units are~~is expected to result in a one-time

	capital cost consisting of $439,000 per unit in equipment costs, $1.1 million in installation costs per unit, and $165,000 per unit for spent catalyst disposal and administrative fees. Replacement of two 47.3 MW simple cycle gas turbines ~~units are~~is expected to result in a one-time capital cost consisting of $241,000 per unit in equipment costs, $1.1 million in installation costs per unit, and $165,000 per unit for spent catalyst disposal and administrative fees. Recurring costs for all four units are comprised of $1,400 per unit in increased ammonia costs annually and an increase of $55,000 per unit in SCR replacement costs incurred every five years. All ~~32~~ 31 facilities will be required to have their permits modified as a result of PAR 1135. Permit fees for each piece of equipment will result in a one-time cost ranging from $3,160 - $23,933. ~~A subset of six facilities may also be required to pay a one-time notification fee of $2,637.~~
Compliance Costs	The entirety of the overall annual compliance cost is expected to be incurred by the utilities sector. Average annual compliance costs from 2019 - 2045 are expected to range from $7.4 - $10.0~~$6.4 - $8.7~~ million for the low (1% real interest rate) and high (4% real interest rate) cost scenarios, respectively. Based on the high cost scenario, the majority of PAR 1135 costs~~, of PAR 1135,~~ ~~$8.2~~$7.2 million (~~94%~~72%), stem from installation of ~~five diesel internal combustion engines and~~ three natural gas turbines at ~~two separate facilities~~a single facility. The additional capital costs of SCR replacement, installation of five diesel internal combustion engines, and permit modifications are estimated at about $1.4 million, ~~$360,000~~$1.0 million, and ~~$110,000~~$46,000, respectively.
Jobs and Other Socioeconomic Impacts	Based on the above assumptions, the compliance cost of PAR 1135, and the application of the Regional Economic Models, Inc. (REMI) model, it is projected that ~~88 to 134~~104 - 154 jobs will be forgone annually, on average, between 2019 and 2045. The projected job loss impacts represent ~~about 0.0012%~~0.0009% – 0.0014% of total employment in the four-county region. The utilities sector is projected to incur all of the compliance costs and thus experience some jobs forgone. The reduction in disposable income would dampen the demand for goods and services in the local economy, resulting in a small number of jobs forgone projected in sectors such as construction (NAICS 23), retail trade (NAICS 44 - 45), wholesale (NAICS 42), and food services (NAICS 72). The remainder of the projected reduction in employment would be across all major sectors of the economy from secondary and induced impacts of PAR 1135.
Competitiveness	It is projected that the utility sector, where all of the affected facilities belong, would experience a rise in its relative cost of production of ~~0.062% - 0.085%~~0.069% - 0.093% in 2025 for the low and high cost scenarios, respectively. The utility sector is also expected to experience an increase in its delivered price by ~~0.032% - 0.044%~~0.036% - 0.048% in 2025 for the low and high cost scenarios. Delivered prices that a facility may charge for specific goods or services may increase at a greater rate than this, allowing

	incurred costs to be passed through to downstream industries and end-users. The remaining sectors are likely to experience increases in the relative cost of production and relative delivered price with respect to their counterparts in the rest of the U.S.
Potential NOx RTC Market Impacts	If PAR 1135 is adopted, ~~27~~ 26 facilities are expected to receive an initial determination notification because, according to staff's evaluation, all of their permitted RECLAIM NOx source equipment will be subject to this rule once PAR 1135 is adopted. Electricity generating facilities in RECLAIM will need to begin complying with PAR 1135 while in RECLAIM and through the transition out of RECLAIM. Staff has committed to delay ~~issue~~ issuing a final determination notification to any facilities to exit them from RECLAIM until New Source Review (NSR) issues are resolved. The ~~27~~ 26 affected RECLAIM facilities currently account for ~~9.4%~~9.1% of annual NOx emissions and ~~19.7%~~19.5% of NOx RECLAIM trading credit (RTC) holdings in the NOx RECLAIM universe. The simultaneous transition of the ~~27~~ 26 electricity generating facilities out of the NOx RECLAIM program could potentially assert upward pressure on the discrete-year NOx RTC prices. However, many facilities will likely opt to remain in RECLAIM ~~given RECLAIM's advantageous NSR provisions~~until NSR provisions for RECLAIM are resolved. In addition, electricity generating facilities tend to be sellers of RTCs in RECLAIM.

INTRODUCTION

Control measure CMB-05 from the SCAQMD's 2016 Air Quality Management Plan (AQMP) and its adoption resolution establish a timeline to transition facilities from NOx RECLAIM to a command-and-control regulatory structure. PAR 1135 applies to RECLAIM and non-RECLAIM electricity generating facilities that own and operate electricity generating units (e.g., boilers; gas turbines with the exception of cogeneration turbines; and internal combustion engines on Santa Catalina Island) and are investor-owned electric utilities, publicly owned electric utilities, or have a generation capacity of at least 50 megawatts (MW) of electrical power. PAR 1135 will update emission limits to reflect current Best Available Retrofit Control Technology (BARCT) and to provide implementation timeframes. The provisions in PAR 1135 establish NOx and ammonia (NH3) emission limits for boilers and gas turbines and NOx, ~~ammonia~~NH3, carbon monoxide, volatile organic compounds, and particulate matter for internal combustion engines ~~located on Santa Catalina Island~~ with the exception of emergency internal combustion engines. Additionally, PAR 1135 establishes provisions for monitoring, reporting, and recordkeeping, and establishes exemptions from specific provisions. PAR 1135 is estimated to reduce NOx emissions by ~~0.9~~1.9 tons per day by January 1, 2027.

LEGISLATIVE MANDATES

The socioeconomic impact assessments at SCAQMD have evolved over time to reflect the benefits and costs of regulations. The legal mandates directly related to the assessment of the proposed amended rule include the SCAQMD Governing Board resolutions and various sections of the California Health & Safety Code ~~(H&SC)~~.

SCAQMD Governing Board Resolutions

On March 17, 1989 the SCAQMD Governing Board adopted a resolution that calls for an economic analysis of regulatory impacts that includes the following elements:

- Affected industries
- Range of probable costs
- Cost-effectiveness of control alternatives
- Public health benefits

Health & Safety Code Requirements

The state legislature adopted legislation that reinforces and expands the Governing Board resolutions for socioeconomic impact assessments. Health and Safety Code sections 40440.8(a) and (b), which became effective on January 1, 1991, require a socioeconomic analysis be prepared for any proposed rule or rule amendment that "will significantly affect air quality or emissions limitations."

Specifically, the scope of the analysis should include:

- Type of affected industries
- Impact on employment and the regional economy
- Range of probable costs, including those to industry
- Availability and cost-effectiveness of alternatives to the rule
- Emission reduction potential
- Necessity of adopting, amending or repealing the rule in order to attain state and federal ambient air quality standards

Health and Safety Code section 40728.5, which became effective on January 1, 1992, requires the SCAQMD Governing Board to actively consider the socioeconomic impacts of regulations and make a good faith effort to minimize adverse socioeconomic impacts. It also expands socioeconomic impact assessments to include small business impacts, specifically:

- Type of industries or business affected, including small businesses
- Range of probable costs, including costs to industry or business, including small business

Finally, Health and Safety Code section 40920.6, which became effective on January 1, 1996, requires incremental cost-effectiveness be performed for a proposed rule or amendment that imposes Best Available Retrofit Control Technology or "all feasible measures" requirements relating to ozone, carbon monoxide (CO), oxides of sulfur (SOx), oxides of nitrogen (NOx), and their precursors.

Incremental cost-effectiveness is defined as the difference in costs divided by the difference in emission reductions between a control alternative and the next more stringent control alternative. The necessity analysis and the analysis of control alternatives and their incremental cost-effectiveness are presented in the Staff Report prepared for the proposed amendments.

REGULATORY HISTORY

Rule 1135 – Emissions of Oxides of Nitrogen from Electric Power Generating Boilers was adopted in 1989 and applied to electric power generating steam boiler systems, repowered units, and alternative electricity generating sources. Rule 1135 set a NOx system-wide average emission limit of 0.25 lb/MWh and a daily NOx emissions cap for each utility system. Rule 1135 established interim emissions performance levels with a 1996 final compliance date. Additionally, Rule 1135 required Emission Control Plans and continuous emissions monitoring systems. The total annualized cost of these amendments was estimated at $74.0 million with an average cost-effectiveness of $10,000 per ton of NOx reduced.

Rule 1135 was submitted to the California Air Resources Board (CARB) for review, prior to submittal to the U.S. Environmental Protection Agency (U.S. EPA), Region IX, for revision to the State Implementation Plan (SIP). In March 1990, CARB staff informed SCAQMD that the adopted rule was lacking specificity in critical areas of implementation and enforcement, and was considered incomplete for submission to U.S. EPA as a ~~State Implementation Plan (SIP)~~SIP revision.

The December 21, 1990 amendment of Rule 1135 was principally developed to resolve many of the implementation and enforceability issues. This amendment included accelerated retrofit dates for emission controls, unit-by-unit emission limits, modified compliance plan and monitoring requirements, computerized telemetering, and an amended definition of alternative resources. The total annualized cost of these amendments was estimated at $12.5 million with a cost-effectiveness of $4,000 per ton of NOx reduced.

In order to consider additional staff recommendations regarding system-wide emission rates, daily emission caps, annual emission caps, oil burning, and cogeneration, the Board continued the public hearing. The July 19, 1991 amendment addressed all of these outstanding issues, including those related to modeling and BARCT analysis. U.S. EPA approved Rule 1135 into the SIP on August 11, 1998.

Electricity Generating Facilities and RECLAIM

Throughout the RECLAIM program, there have been specific provisions for electricity generating facilities. In June 2000, RECLAIM program participants experienced a sharp and sudden increase in NOx RECLAIM trading credit (RTC) prices for both 1999 and 2000 compliance years. Based on the 2000 RECLAIM Annual Report, electricity generating facilities had an initial allocation of 2,302 tons of NOx per year. In compliance year 2000, these facilities reported NOx emissions of 6,788 tons per year, approximately 4,400 tons per year over their initial allocation. This was primarily due to an increased demand for power generation and delayed installation of controls by electricity generating facilities. The electric power generating industry purchased a large quantity of RTCs and depleted the available RTCs. This situation was compounded because few RECLAIM facilities added control equipment.

As a result, in May 2001, the Board adopted Rule 2009 – Compliance Plan for Power Producing Facilities (Rule 2009). To facilitate emission reduction projects at the facilities with the majority of the emissions in RECLAIM, Rule 2009 required installation of BARCT through compliance plans at electricity generating facilities. Diesel internal combustion engines providing power to Santa Catalina Island were not subject to Rule 2009 because the facility only generates 9 MW of energy and did not qualify as a Power Producing Facility in RECLAIM. Despite the increase in NOx RTC demand, emissions from electricity generating facilities fell from 26 tons per day (TPD) of NOx emissions in 1989 to less than 10 TPD of NOx emissions by 2005. Since then, with equipment replacement and increased reliance on renewable sources, NOx emissions have further decreased to less than 4 TPD.

AFFECTED INDUSTRIES

There are ~~32~~ 31 electricity generating facilities subject to PAR 1135. All ~~32~~ 31 facilities are classified under NAICS Code 221112 - Utilities (Fossil Fuel Electric Power Generation). Of these

~~32~~ 31 affected facilities, 17 are located in Los Angeles County, six are in Orange County, ~~six~~ five are in Riverside County, and the remaining three facilities are located in San Bernardino County. ~~Twenty-seven~~Twenty-six facilities are currently in the NOx RECLAIM program. Of the remaining five facilities, one is currently subject to SCAQMD Rules 1134 and 1135 and four are not subject to Rule 1134 or 1135 because of current applicability requirements in the rules.

~~Twenty-nine~~Twenty-eight of the ~~32~~ 31 facilities were identified as not needing to modify their existing equipment in order to comply with PAR 1135. The electric power generating units at these facilities are not expected to require modifications to comply with PAR 1135 because the electric power generating units either: 1) currently meet the NOx emission limit; 2) are currently eligible for a low-use provision; 3) have an existing NOx emission ~~levels~~ limit that ~~are~~ is near the proposed NOx emission limit and the unit is exempt from the NOx emission limit because potential equipment modifications exceed a cost-effectiveness threshold of $50,000 per ton of NOx reduced; or 4) are scheduled by facility operators to be either shut down or repowered due to other regulatory requirements not pertaining to PAR 1135.

Only three electricity generating facilities would be expected to have existing electric generating units that would require potential modifications (e.g., installing new or modifying existing air pollution control systems, ~~or~~ repowering, or replacing existing electric power generating units) in order to comply with PAR 1135. Twenty-seven electric generating units would qualify for the low-use provisions. However, three of the facilities will forego use of the low-use provision and instead retrofit their turbines to come into compliance with the PAR 1135 emission limits.

Small Businesses

SCAQMD defines a “small business” in Rule 102, for purposes of fees, as one which employs 10 or fewer persons and which earns less than $500,000 in gross annual receipts. SCAQMD also defines “small business” for the purpose of qualifying for access to services from SCAQMD’s Small Business Assistance Office as a business with an annual receipt of $5.0 million or less, or with 100 or fewer employees. In addition to SCAQMD's definition of a small business, the federal Clean Air Act Amendments (CAAA) of 1990 and the federal Small Business Administration (SBA) also provide definitions of a small business.

The California Health and Safety Code section 42323 classifies a business as a “small business stationary source” if it: (1) is owned or operated by a person who employs 100 or fewer individuals; (2) is a small business as defined under the federal Small Business Act (15 U.S.C. Sec. 631, et seq.); and (3) emits less than 10 tons per year of any single pollutant and less than 20 tons per year of all pollutants. The SBA definitions of small businesses vary by six-digit North American Industrial Classification System (NAICS) codes. In general terms, a small business must have no more than 500 employees for most manufacturing industries, and no more than $7.0 million in average annual receipts for most nonmanufacturing industries.[1] A business in the industry of fossil fuel electric power generation (NAICS 221112) with fewer than 750 employees is considered a small business by SBA.

[1] The latest SBA definition of small businesses by industry can be found at http://www.sba.gov/content/table-small-business-size-standards.

Of the 32 affected facilities within SCAQMD's jurisdiction, ~~15~~ 14 are public utilities. Information on sales and employees for the 17 remaining facilities were available in the Dun and Bradstreet Enterprise Database.[2] Under SCAQMD's definition of small business, there are no small businesses affected by PAR 1135. Using the SBA definition of small business for the fossil fuel electric power generation sector, 17 of the facilities are considered small businesses. Under the CAAA definition of small business, eight of the facilities are considered small businesses.

COMPLIANCE COST

The main requirements of PAR 1135 that have cost impacts for affected facilities would include one-time costs and annual recurring costs. The one-time costs would include capital and installation of SCRs, diesel internal combustion engines, natural gas turbines, and one-time permit modifications. Annual recurring cost estimates include annual operating and maintenance costs of SCRs and additional ammonia usage.

The average annual cost of PAR 1135 is estimated to be $7.4 - $10.0~~$6.4 - $8.7~~ million between 2019 and 2045, for the low and high cost scenarios, respectively. The low cost scenario assumes a real interest rate of 1%, while the high cost scenario assumes a 4% real interest rate. The entirety of the overall annual compliance costs is expected to be incurred by the utility sector.

Staff has used the following sources to estimate costs of capital, installation, operating and maintenance of SCRs, diesel internal combustion engines, and natural gas turbines:

1) Catalog of CHP Technologies, U.S. EPA Combined Heat and Power Partnership, September 2017~~.~~
~~2) Vendor Cost Estimates.~~
2) U.S. EPA Air Pollution Control Cost Manual, November 2017
3) Vendor Cost Estimates

~~Of the 32 facilities that are in the PAR 1135 universe, only three facilities were identified as candidates for modifying their existing equipment in order to comply with PAR 1135.~~ Required modifications (and associated costs) to electricity generating units in order to meet the updated BARCT NOx concentration limits in PAR 1135 are detailed below.

There are five diesel internal combustion engines (each installed more than 33 years ago) located at one facility that are expected to be replaced in order to comply with PAR 1135. Based on vendor estimates, equipment and installation costs result in a one-time capital cost of $3.9 million for each unit.

There are three natural gas boilers operated by a municipality. Prior to the development of PAR 1135, the operator presented a project to their city council proposing plans to shut down the three natural gas boilers. Staff has assumed the municipality will repower them with three natural gas

[2] Dun & Bradstreet Enterprise Database, 2018.

turbines (one 20 MW unit and two 44 MW units). Based on U.S. EPA data, one-time capital costs for the 20 MW unit consists of $19.8 million in equipment costs and an additional $10.2 million in construction and development fees. Capital cost for the 44 MW units consist of $35.8 million per unit in equipment costs and an additional $17.4 million per unit in construction and development fees.

There are seven 47 MW simple cycle gas turbines located at three municipalities that will be retrofit to meet the 2.5 ppmv NOx limit. All but one is being done voluntarily to avoid the low-use provision restrictions. One-time capital costs for equipment and installation are $1.6 million per unit. Recurring costs for all seven units are comprised of $10,000 per unit in increased ammonia costs annually and an increase of $55,000 per unit in selective catalytic reduction (SCR) replacement costs incurred every three years.[3] Additionally, there are two 182 MW combined cycle gas turbines located at a municipality that will be retrofit to meet the 2 ppmv NOx limit. One-time capital costs for equipment and installation are $6.1 million per unit. Recurring costs for both units are comprised of $39,000 per unit in increased ammonia costs annually and an increase of $215,000 per unit in SCR replacement costs incurred every three years.

Another municipality that operates four natural gas simple cycle gas turbines has tentatively scheduled for the catalyst in each of the four existing SCR systems to be replaced with more efficient catalyst to comply with the updated BARCT NOx concentration limits in PAR 1135. While the turbines qualify for the low-use provisions, the facility has made a business decision to voluntarily forgo that option. Based on vendor cost estimates, replacement of two 30.6 MW ~~units~~ simple cycle gas turbines will result in one-time capital costs consisting of $439,000 per unit in equipment costs, $1.1 million per unit in installation costs, and $165,000 per unit for spent catalyst disposal and administrative fees. Replacement of two 40.6 MW ~~units~~ simple cycle gas turbines will result in one-time capital costs consisting of $241,000 per unit in equipment costs, $1.1 million per unit in installation costs, and $165,000 per unit for spent catalyst disposal and administrative fees. Recurring costs for all four units are comprised of $1,400 per unit in increased ammonia costs annually and an increase of $55,000 per unit in SCR replacement costs incurred every five years.

In addition, all ~~32~~ 31 facilities will be required to have their permits modified as a result of PAR 1135. Permit fees for each piece of equipment will result in a one-time cost ranging from $3,160 - $23,933. ~~A subset of six facilities may also be required to pay a one-time notification fee of $2,637.~~

Table 1 and Figure 1 present the distribution of the overall costs by selected cost categories. The majority of costs of PAR 1135 (~~$8.2~~ $7.2 million annually) stem from the installation of ~~five diesel internal combustion engines and~~ three natural gas turbines at a single municipality. The additional capital costs of SCR replacement, diesel internal combustion engines, and permit modifications are estimated at about $1.4 million, ~~$360,000~~ $1.0 million, and ~~$110,000~~$46,000, respectively.

[3] U.S. EPA Air Pollution Control Cost Manual, November 2017

~~**Table 1:**~~
~~**Total and Average Annual Cost of PAR 1135 by Cost Category**~~

-	~~Present Worth Value (2019)~~		~~Annual Average (2019-2045)~~	
~~Cost Categories~~	~~1% Discount Rate~~	~~4% Discount Rate~~	~~1% Real Interest Rate~~	~~4% Real Interest Rate~~
~~One-Time Cost~~	-	-	-	-
~~SCR Replacement (including installation)~~	~~$3,847,914~~	~~$3,608,256~~	~~$266,177~~	~~$364,418~~
~~Diesel Internal Combustion Engines (including installation)~~	~~$18,725,488~~	~~$15,717,001~~	~~$728,124~~	~~$996,859~~
~~Natural Gas Turbines (including installation)~~	~~$131,277,405~~	~~$113,458,877~~	~~$5,283,791~~	~~$7,233,932~~
~~Permit Modifications~~	~~$1,838,115~~	~~$1,645,603~~	~~$76,847~~	~~$105,210~~
~~Recurring Costs~~	-	-	-	-
~~SCR Replacement~~	~~$1,145,113~~	~~$788,918~~	~~$40,686~~	~~$40,686~~
~~Ammonia~~	~~$122,598~~	~~$83,479~~	~~$5,030~~	~~$5,030~~
~~**Total**~~	~~**$156,956,633**~~	~~**$135,302,135**~~	~~**$6,400,655**~~	~~**$8,746,135**~~

Table 1:
Total and Average Annual Cost of PAR 1135 by Cost Category

	Present Worth Value (2019)		Annual Average (2019-2045)	
Cost Categories	1% Discount Rate	4% Discount Rate	1% Real Interest Rate	4% Real Interest Rate
One-Time Cost				
SCR Replacement (including installation)	$24,384,493	$21,190,390	$987,794	$1,352,369
Diesel Internal Combustion Engines (including installation)	$18,725,488	$15,717,001	$728,124	$996,859
Natural Gas Turbines (including installation)	$131,277,405	$113,458,877	$5,283,791	$7,233,932
Permit Modifications	$773,097	$711,479	$33,275	$45,557
Recurring Costs				
SCR Replacement	$6,314,051	$4,299,368	$269,399	$269,399
Ammonia	$3,330,070	$2,267,514	$142,083	$142,083
Total	**$184,804,603**	**$157,644,629**	**$7,444,466**	**$10,040,198**

~~**Figure 1:**~~
~~**Annual Estimated Costs of the PAR 1135 Series by Cost Categories**~~

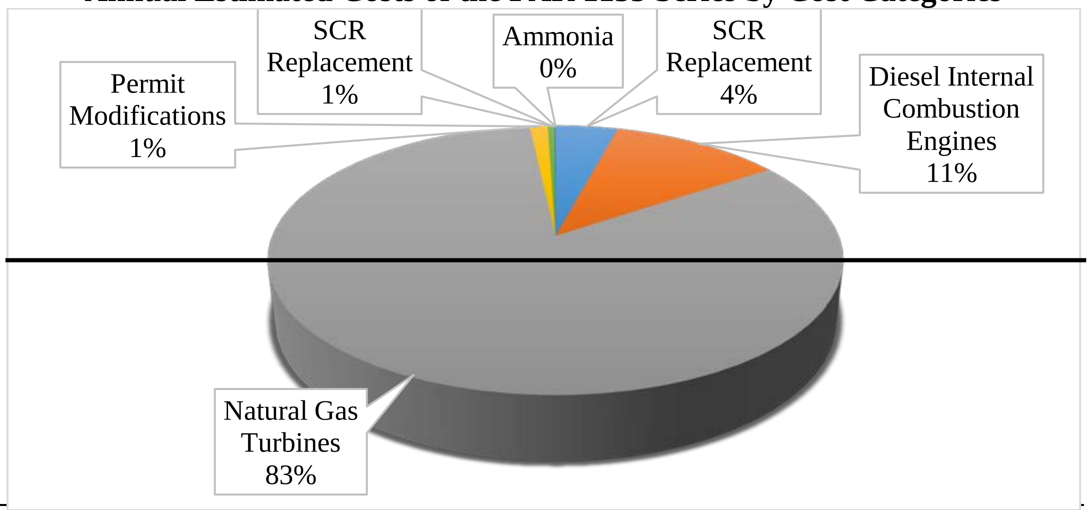
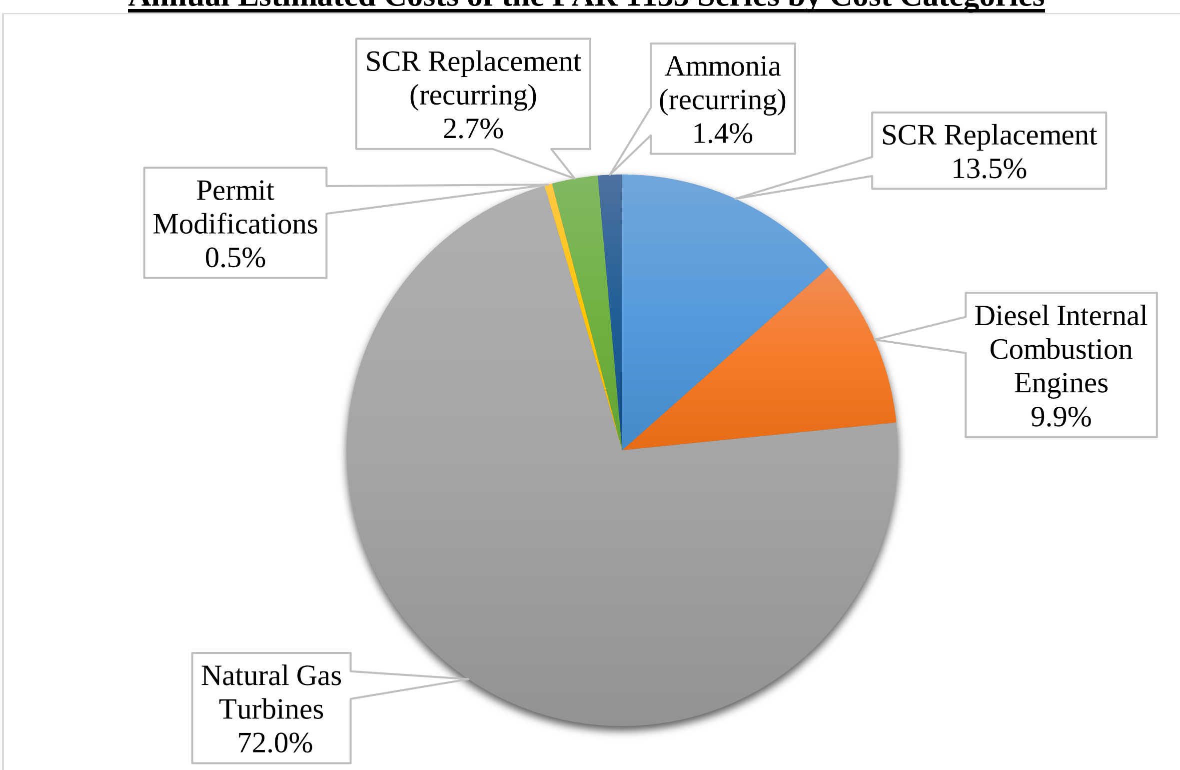


Figure 1:
Annual Estimated Costs of the PAR 1135 Series by Cost Categories



JOBS AND OTHER SOCIOECONOMIC IMPACTS

The REMI model (PI+ v2.2) was used to assess the total socioeconomic impacts of a regulatory change (i.e., the proposed rule).[4] The model links the economic activities in the counties of Los Angeles, Orange, Riverside, and San Bernardino, and for each county, it is comprised of five interrelated blocks: (1) output and demand, (2) labor and capital, (3) population and labor force, (4) wages, prices and costs, and (5) market shares.[5]

The assessment herein is performed relative to a baseline ("business as usual") where the proposed amendments would not be implemented. The proposed amendments would create a regulatory scenario under which the affected facilities would incur an average annual compliance costs totaling ~~$6.4 - $8.7~~$7.4 - $10.0 million. Direct effects of the proposed amendments have to be estimated and used as inputs to the REMI model in order for the model to assess secondary and induced impacts for all actors in the four-county economy on an annual basis and across a user-defined horizon (2019 - 2045). Direct effects of the proposed amendments include additional costs to the affected entities and additional sales, by local vendors, of equipment, devices, or services that would meet the proposed requirements~~.~~

While compliance expenditures may increase the cost of doing business for affected facilities, the purchase and installation of additional equipment combined with spending on operating and maintenance, may increase sales in other sectors. Table 2 lists the industry sectors modeled in REMI that would either incur a cost or benefit from the compliance expenditures.[6]

As discussed earlier, the total average annual compliance costs for affected facilities by PAR 1135 was estimated to range from $7.4 - $10.0~~$6.4 - $8.7~~ million per year, depending on the real interest rate assumed (1% - 4%).

PAR 1135 is expected to result in approximately ~~88 - 134~~104 - 154 jobs on average forgone annually, between 2019 and 2045, depending on the real interest rate assumed (1% - 4%). The projected job loss impacts represent about ~~0.0008% - 0.0012%~~ 0.0009 - 0.0014% of the total employment in the four-county region.

[4] Regional Economic Modeling Inc. (REMI). Policy Insight® for the South Coast Area (70 sector model). Version 2.2, 2018.

[5] Within each county, producers are made up of 66 private non-farm industries, three government sectors, and a farm sector. Trade flows are captured between sectors as well as across the four counties and the rest of U.S. Market shares of industries are dependent upon their product prices, access to production inputs, and local infrastructure. The demographic/migration component has 160 ages/gender/race/ethnicity cohorts and captures population changes in births, deaths, and migration. (For details, please refer to REMI online documentation at http://www.remi.com/products/pi.)

[6] Improved public health due to reduced air pollution emissions may also result in a positive effect on worker productivity and other economic factors; however, public health benefit assessment requires the modeling of air quality improvements. Therefore, it is conducted for AQMPs and not for individual rules or rule amendments.

Table 2:
Industries Incurring *vs.* Benefitting from Compliance Costs/Spending

Source of Compliance Costs	**REMI Industries Incurring Compliance Costs (NAICS)**	**REMI Industries Benefitting from Compliance Spending (NAICS)**
SCR Replacement	Utilities (22)	*One-time Capital Cost:* Machinery Manufacturing (333), Construction (23)
Natural Gas Turbines		*One-time Capital Cost:* Machinery Manufacturing, Construction
Diesel Internal Combustion Engines		*One-time Capital Cost:* Machinery Manufacturing, Construction
Permit Modifications		*One-time Capital Cost:* Public Administration (92)
SCR Replacement (Maintenance)		*Recurring Cost:* Professional, Scientific, and Technical Services (541)
Ammonia		*Recurring Cost:* Chemical Manufacturing (325)

As presented in Table 3, ~~235~~ 249 additional jobs could be created in the overall economy in 2022. This is mainly due to additional purchase and spending on installation of diesel internal combustion engines, natural gas turbines, and SCR replacement provided by the industries of machinery manufacturing, construction, and professional and technical services sectors. As the cost of doing business kicks in and is maintained, the positive impact of spending subsides and jobs forgone are expected to begin. Although the utility sector would bear the entirety of the estimated total compliance costs of PAR 1135, the industry job impact is projected to be relatively small (annual average of ~~4~~ five jobs foregone between 2019 and 2045). The impact to the utility sector is expected to be small due to the fact that utilities can potentially pass the additional compliance costs on to rate payers.

In earlier years of the regional simulation, the sector of machinery manufacturing (NAICS 333), construction (NAICS 23), and professional and technical services (NAICS 541) are projected to gain jobs from additional demand for equipment installation and maintenance made by the affected facilities on average. The remainder of the projected reduction in employment would be across all major sectors of the economy from secondary and induced impacts of the proposed amendments. In earlier years positive job impacts from the expenditures made by the affected facilities would more than offset the jobs forgone from the additional cost of doing business. Jobs foregone in the later years are due to additional costs of doing business by affected facilities.

As the cost of doing business kicks in and is maintained, and positive impact of spending gradually subsides, jobs foregone across all sectors are expected to begin. The reduction in disposable income would dampen the demand for goods and services in the local economy, thus resulting in a relatively large number of jobs forgone projected in sectors such as construction (NAICS 23), professional, scientific and support services, and retail trade (NAICS 44 - 45). A smaller number of jobs foregone are expected in wholesale trade (NAICS 42), administrative and support services (NAICS 561), and food services (NAICS 722).

~~Table 3:~~
~~Job Impacts of PAR 1135 (High Cost Scenario)~~

~~Industries (NAICS)~~	~~2020~~	~~2022~~	~~2025~~	~~2035~~	~~2045~~	~~Average Annual Jobs (2019 - 2045)~~	~~Average Annual Baseline (2019 - 2045)~~	~~% Change from Baseline Jobs~~
~~Utilities (22)~~	~~0~~	~~-1~~	~~-6~~	~~-5~~	~~-1~~	~~-4~~	~~20,469~~	~~-0.019%~~
~~Construction (23)~~	~~7~~	~~59~~	~~-93~~	~~-32~~	~~-10~~	~~-30~~	~~469,843~~	~~-0.006%~~
~~Machinery manufacturing (333)~~	~~0~~	~~21~~	~~1~~	~~-1~~	~~-1~~	~~2~~	~~19,979~~	~~0.008%~~
~~Rest of manufacturing (31-33)~~	~~0~~	~~3~~	~~-9~~	~~-2~~	~~-3~~	~~-4~~	~~557,185~~	~~-0.001%~~
~~Total manufacturing (31-33)~~	~~0~~	~~24~~	~~-8~~	~~-3~~	~~-4~~	~~-2~~	~~577,164~~	~~0.000%~~
~~Professional, scientific, and technical services (54)~~	~~2~~	~~37~~	~~-13~~	~~-34~~	~~-32~~	~~-21~~	~~922,718~~	~~-0.002%~~
~~Retail trade (44-45)~~	~~2~~	~~16~~	~~-20~~	~~-15~~	~~-12~~	~~-11~~	~~981,761~~	~~-0.001%~~
~~Administrative and support services (561)~~	~~1~~	~~12~~	~~-13~~	~~-12~~	~~-11~~	~~-9~~	~~817,224~~	~~-0.001%~~
~~Food services and drinking places (722)~~	~~1~~	~~8~~	~~-8~~	~~-11~~	~~-10~~	~~-7~~	~~729,571~~	~~-0.001%~~
~~Wholesale trade (42)~~	~~1~~	~~7~~	~~-9~~	~~-6~~	~~-5~~	~~-5~~	~~477,451~~	~~-0.001%~~
~~State and local government (92)~~	~~6~~	~~10~~	~~-5~~	~~-15~~	~~-11~~	~~-9~~	~~907,126~~	~~-0.001%~~
~~Other industries~~	~~8~~	~~39~~	~~-61~~	~~-45~~	~~-39~~	~~-34~~	~~4,798,261~~	~~-0.001%~~
~~Total~~	**~~28~~**	**~~235~~**	**~~-244~~**	**~~-181~~**	**~~-139~~**	**~~-134~~**	**~~11,278,751~~**	**~~-0.001%~~**

Table 2:
Job Impacts of PAR 1135 (High Cost Scenario)

Industries (NAICS)	2020	2022	2025	2035	2045	Average Annual Jobs (2019 - 2045)	Average Annual Baseline (2019 - 2045)	% Change from Baseline Jobs
Utilities (22)	0	-1	-7	-6	-1	-5	20,469	-0.022%
Construction (23)	1	58	-106	-37	-11	-35	469,843	-0.007%
Machinery manufacturing (333)	0	22	-1	-1	-1	2	19,979	0.009%
Rest of manufacturing (31-33)	0	3	-9	-4	-3	-4	557,185	-0.001%
Total manufacturing (31-33)	0	31	-16	-8	-6	-5	577,164	-0.001%
Professional, scientific, and technical services (54)	3	43	-22	-38	-36	-23	922,718	-0.003%
Retail trade (44-45)	1	16	-23	-17	-13	-13	981,761	-0.001%
Administrative and support services (561)	1	12	-16	-14	-12	-10	817,224	-0.001%
Food services and drinking places (722)	0	9	-9	-12	-11	-8	729,571	-0.001%
Wholesale trade (42)	0	8	-10	-7	-6	-6	477,451	-0.001%
State and local government (92)	4	10	-6	-17	-13	-11	907,126	-0.001%
Other industries	3	63	-77	-51	-27	-35	4,798,261	-0.001%
Total	**13**	**249**	**-292**	**-207**	**-158**	**-154**	**11,278,751**	**-0.00137%**

Figure 2 presents a trend of job gain and losses over the 2019 - 2045 time frame. The increase in jobs in 2022 ~~are~~ is due to additional spending on installation of diesel internal combustion engines and natural gas turbines. Staff has analyzed an alternative scenario (worst case) where the affected facilities would not purchase any control or service from providers within the South Coast Air Basin. This scenario would result in an average of ~~170~~ 196 jobs forgone annually.

~~**Figure 2:**~~
~~**Projected Regional Job Impact, 2019-2045**~~

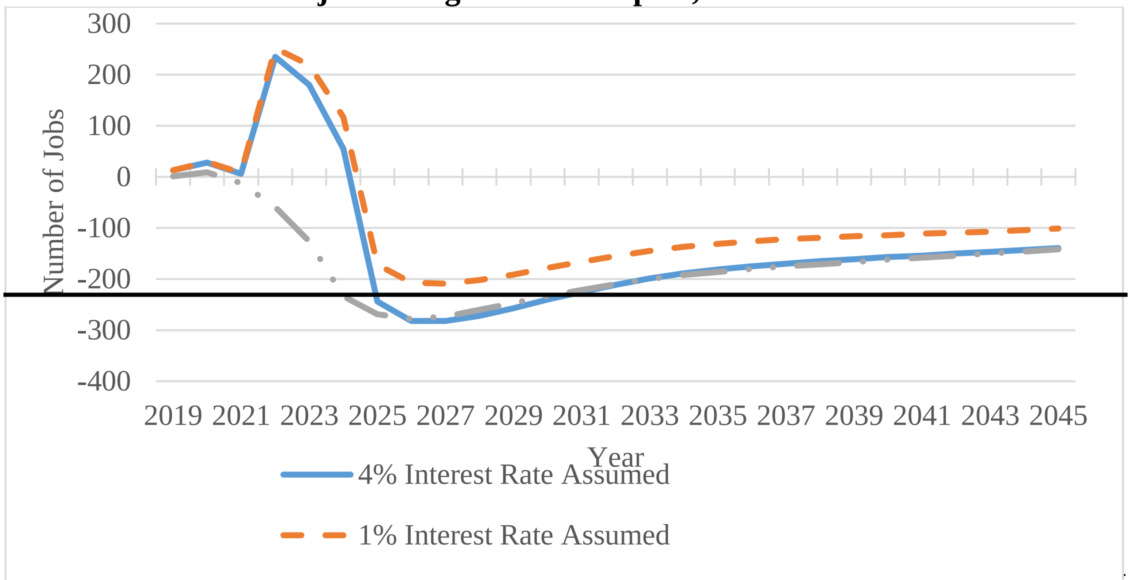
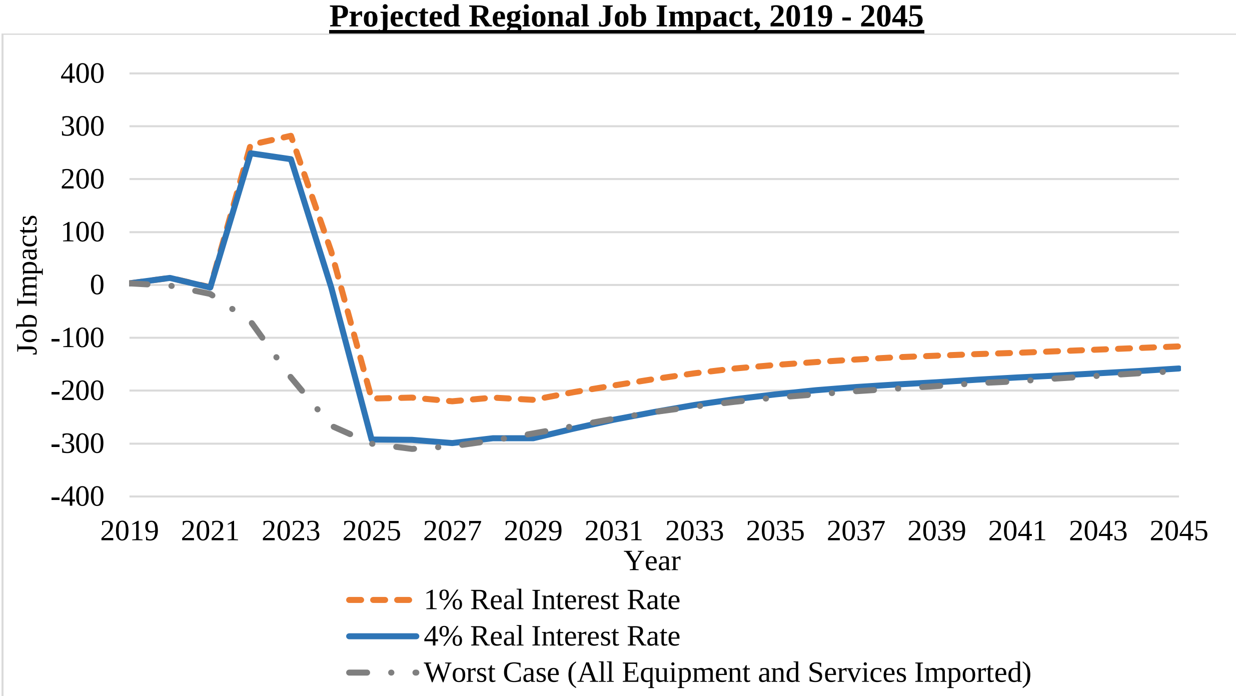


Figure 2:
Projected Regional Job Impact, 2019 - 2045



Competitiveness

The additional cost brought on by PAR 1135 would increase the cost of services rendered by the affected industries in the region. The magnitude of the impact depends on the size, diversification, and infrastructure in a local economy as well as interactions among industries. A large, diversified, and resourceful economy would absorb the impact described above with relative ease.

Changes in production/service costs would affect prices of goods produced locally. The relative delivered price of a good is based on its production cost and the transportation cost of delivering the good to where it is consumed or used. The average price of a good at the place of use reflects prices of the good produced locally and imported elsewhere.

It is projected that the utility sector, where most of the affected facilities belong, would experience a rise in its relative cost of production of 0.069% - 0.093%~~0.062% - 0.085%~~ in 2025 for the low and high cost scenarios, respectively. The utility sector is also expected to experience an increase in its delivered price by 0.036% - 0.048%~~0.032% - 0.044%~~ in 2025 for the low and high cost scenarios, respectively. Delivered prices that a facility may charge for specific goods or services may increase at a greater rate than predicted, allowing incurred costs to be passed through to downstream industries and end-users. The remaining sectors are likely to experience increases in the relative cost of production and relative delivered price with respect to their counterparts in the rest of the U.S.

UPDATED COST IMPACTS ASSESSMENT FOR COMPLIANCE WITH RULE 2002

Potential Impacts for NOx RECLAIM Facilities Ready to Exit

Rule 2002(f)(9) prohibits a RECLAIM facility from selling any future compliance year RTCs upon receipt of a final determination notification that it is ready to exit the NOx RECLAIM program. If PAR 1135 is adopted, ~~27~~ 26 facilities are expected to receive an initial determination notification because, according to staff's evaluation, all of their permitted RECLAIM NOx source equipment will be subject to this rule once PAR 1135 is adopted. Final determination notifications will not be issued, however, until New Source Review (NSR) issues are resolved. In addition, staff ~~is working on amendments to~~has amended Rules 2001 and 2002 that will allow a facility to remain in RECLAIM to allow time for the SCAQMD to address NSR and permitting for the transition from RECLAIM to a command-and-control regulatory structure.

Among the ~~27~~ 26 facilities, 17 were allocated NOx RTCs (no cost or fee when RTCs were allocated) at the outset of the NOx RECLAIM program (the remaining ~~12~~ 9 facilities joined the NOx RECLAIM program after its inception in 1994 and were not issued allocations). The initial allocations for the 17 facilities amounted to approximately 4.81 tons per day (TPD). Due to past adjustments including reductions in allocations or "shaves," and more importantly, the sale of these initial allocations as infinite-year block (IYB) RTCs to other NOx RECLAIM facilities and brokers/investors, the total NOx RTCs currently held by these ~~27~~ 26 facilities is ~~4.42~~4.39 TPD for compliance years 2019 and later.[7] At the same time, total NOx emissions from these same facilities have declined to 1.86 TPD in 2016.

If these ~~27~~ 26 facilities receive final determination notifications in 2018, they will not be able to sell their NOx RTCs for compliance year 2019 and onwards. For the purpose of this analysis, it is assumed that none of the ~~27~~ 26 facilities would acquire additional NOx RTCs or sell their current NOx RTC holdings of ~~4.42~~4.39 TPD before receiving a final determination notification. However, it is foreseeable that at least some of these NOx RTC holdings may be sold or transferred before they are frozen due to receipt of final determination notifications. In addition, staff has committed to not issuing any final determination notifications until NSR issues are resolved. Lastly, as they pertain to SCAQMD, RTCs are not property rights. It is known to all market participants that are purchasing RTCs beyond the current compliance year is accompanied by known investment risks that are embedded within the RECLAIM programs. The risk factors include, but may not be limited to, programmatic allocation shaves, potential RTC trade freezes, and the eventual sunset of either RECLAIM program.

Since there were no costs associated with the initially allocated NOx RTCs for a RECLAIM facility, the facilities would not incur financial losses as a result of complying with Rule 2002(f)(9) if their frozen future compliance year NOx RTC holdings are at or below their respective adjusted initial allocations. However, it was estimated that, out of the total ~~4.42~~4.39 TPD of future compliance year NOx RTCs currently held by the ~~27~~ 26 facilities, at least ~~1.51~~1.49 TPD were acquired by some of the affected facilities in addition to their initial allocations, either through purchases with positive prices or transfers at no cost. If these facilities continue to stay in the NOx RECLAIM program and their NOx emissions remain between 5% above and below their 2016 levels,[8] then 0.10 TPD of these additionally acquired RTCs were estimated to be used for compliance purposes, with the remaining ~~1.41~~1.39 TPD being potential surplus RTCs available for sale or transfer. Applying the most recent 12-month rolling average NOx RTC price for compliance year 2017 of $2,530 per ton,[9] the total value of all potential surplus RTCs would be approximately $1.3 million for the compliance year 2019. These facilities can elect to transfer or sell these RTCs prior to receiving a final determination notification. If the electricity generating facility is holding these RTCs at or after the final determination notification they will not be able to sell, use, or transfer the RTCs.

In addition, ~~five~~ three out of the ~~27~~ 26 facilities are estimated to have insufficient NOx RTC holdings if they were to continue to stay in the NOx RECLAIM program and their NOx emissions remain between 5% above and below their 2016 levels. By exiting the NOx RECLAIM program, these facilities would avoid the need to acquire about 0.13 - 0.18 TPD of NOx RTCs which, if also

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[7] According to the NOx RTC holdings data as of July 31, 2018 and excluding any transactions that may have occurred after this date.

[8] In order to estimate the number of RTCs needed for compliance in future years, it is necessary to project the emissions levels of all electricity generating facilities. We analyze three scenarios; 1) emissions are 5% below 2016 levels; 2) emissions remain at 2016 levels; and 3) emissions are 5% above 2016 levels.

[9] 12-month rolling average of Compliance Year 2017 NOx RTCs, as calculated from July 2017 to July 2018. See Table I of "Twelve-Month and Three-Month Rolling Average Price of Compliance Years 2017 and 2018 NOx and SOx RTCs," available at: http://www.aqmd.gov/docs/default-source/reclaim/nox-rolling-average-reports/nox-and-sox-rtcs-rolling-avg-price-cy-2017-18---jul-2018.pdf

valued at $2,530 per ton, would imply potential total cost-savings approximately worth $119,000 - $162,000 for the compliance year 2019.[10]

The value of potential surplus RTCs and RTCs needed to comply varies in subsequent years due to future shaves. The current schedule calls for a 2.00 TPD shave beginning in 2020, a 2.00 TPD shave beginning in 2021, and a 4.00 TPD shave beginning in 2023. For electricity generating facilities in RECLAIM, the number of projected surplus RTCs decreases from ~~1.42~~1.39 TPD in 2019 to ~~1.00~~1.06 TPD in 2022. Over the same time period, the number of RTCs needed to comply increases from 0.15 TPD in 2019 to ~~0.37~~0.33 TPD in 2022.[11] As a result, the total compliance year cost of freezing exiting facilities' RTCs decreases from ~~$1.2~~$1.1 million in 2019 to ~~$0.6~~$0.7 million in 2022.

The year electricity generating facilities exit RECLAIM could have a significant effect on the cumulative costs on RTCs if electricity generating facilities do not sell or transfer any RTCs prior to receiving their final determination notification. Cumulative costs of freezing RTCs range from ~~$3.8~~$4.0 million in 2019 to ~~$0.6~~$0.7 million in 2022.[12] Table 4 includes the total value of potential RTC sales foregone for all affected facilities with surplus RTCs exiting RECLAIM, as well as the potential total cost-savings for all facilities with insufficient RTC holdings for potential exit years 2019, 2020, 2021, and 2022.

The dollar figures for the potential costs and savings for facilities exiting RECLAIM listed in Table 4 are highly sensitive to the assumed RTC price of $2,530 per ton. In general, RTC prices are highly variable, with prices typically decreasing as their expiration dates approach and during the 60 days after expiration during which they can be traded. This general trend has been repeated every year since 1994 except for compliance years 2000 and 2001 (during the California energy crisis). Prices for NOx RTCs that expired in calendar year 2017 also followed this general trend. The general declining trend of RTC prices nearing and just past expiration indicates there was an adequate supply to meet RTC demand during the final reconciliation period following the end of the compliance years. Further uncertainty has been introduced due to the Governing Board's decision to transition to a command-and-control regulatory structure.

[10] Cost savings vary based on the projected emissions in compliance year 2019. The range in cost savings presented represents 5% below/above 2016 emission levels.
[11] Results are based on the assumption that NOx emissions in the years 2019, 2020, 2021, and 2022 remain at 2016 levels.
[12] Cumulative costs of freezing RTCs is calculated by summing the total compliance cost for current year and each subsequent year (up to and including 2022).

~~**Table 4:**~~

~~**Forgone Sales and Cost-savings for Affected Facilities by Potential Year of RECLAIM Exit**~~

	~~**Year of RECLAIM Exit**~~			
	~~**2019**~~	~~**2020**~~	~~**2021**~~	~~**2022**~~
~~**Acquired RTCs potentially for sale if remain (TPD)**~~	~~1.415~~	~~1.323~~	~~1.298~~	~~0.996~~
~~**Potential RTC sales foregone if exiting**~~	~~$1,306,448~~	~~$1,221,673~~	~~$1,198,323~~	~~$919,316~~
~~**RTCs need for compliance if remain (TPD)**~~	~~0.152~~	~~0.197~~	~~0.233~~	~~0.365~~
~~**Total cost-savings by exiting**~~	~~$140,528~~	~~$181,491~~	~~$215,199~~	~~$337,325~~
~~**Total compliance year cost**~~	~~$1,165,921~~	~~$1,040,182~~	~~$983,124~~	~~$581,991~~
~~**Cumulative cost from exiting**~~	~~$3,771,218~~	~~$2,605,297~~	~~$1,565,115~~	~~$581,991~~

~~Note: Results are based on the assumption that NOx emissions in the years 2019, 2020, 2021, and 2022 remain at 2016 levels. Assumes an RTC price of $2,530 per ton.~~

Table 4:

Forgone Sales and Cost Savings for Affected Facilities by Potential Year of RECLAIM Exit

	Year of RECLAIM Exit			
	2019	**2020**	**2021**	**2022**
Acquired RTCs potentially for sale if remain (TPD)	1.390	1.390	1.364	1.062
Potential RTC sales foregone if exiting	$1,283,249	$1,283,249	$1,259,900	$980,892
RTCs need for compliance if remain (TPD)	0.152	0.195	0.220	0.331
Total cost-savings by exiting	$140,528	$179,960	$203,490	$305,404
Total compliance year cost	$1,142,722	$1,103,289	$1,056,409	$675,488
Cumulative cost from exiting	$3,977,909	$2,835,187	$1,731,898	$675,488

Note: Results are based on the assumption that NOx emissions in the years 2019, 2020, 2021, and 2022 remain at 2016 levels. Assumes an RTC price of $2,530 per ton.

Potential NOx RTC Market Impacts

Since the SCAQMD Governing Board's March 2017 adoption of the 2016 AQMP, which includes the sunset of NOx RECLAIM, the number of NOx IYB trades has decreased significantly. The IYB price has also declined rapidly, from a 12-month rolling average of $380,057 per ton in January 2017 to $20,103 per ton in July 2018, which largely reflects the remaining years of the NOx RECLAIM program life that is expected by the market participants. However, the short-term price impact of facility exit on the discrete-year RTC market may not go hand-in-hand with the overall impact of the NOx RECLAIM program transition on the IYB market, as evidenced by the surge in discrete-year NOx RTC prices in 2017.

The analysis below will focus on the potential impacts to the discrete-year NOx RTC market due to compliance with Rule 2002. The potential exit of the ~~29~~ 26 facilities from the NOx RECLAIM program could possibly affect the demand and supply in the NOx RTC market for compliance year 2019 and beyond, as well as the future prevailing NOx RTC prices. Therefore, the remaining NOx RECLAIM facilities may be indirectly impacted as a result.

Table 5 reports the potentially foregone market demand and supply for three different NOx emission scenarios. The first scenario assumes future NOx emissions of the ~~27~~ 26 facilities would be 5% below their respective 2016 levels; the second scenario assumes the same emission levels as in 2016; and the third scenario assumes their future NOx emissions would be 5% above their respective 2016 levels. These scenarios are consistent with the variations of overall NOx emissions from the RECLAIM universe, which had a maximum year-over-year difference of approximately 5% during the period of 2011 - 2016.

The foregone market demand, as estimated by the shortage of a facility's future compliance year NOx RTC holdings for NOx emissions reconciliation, would be about 0.13 - 0.18 TPD. At the same time, the potential foregone market supply from *all* facilities with potential surplus RTC holdings is estimated at ~~2.64 - 2.78~~2.67 - 2.80 TPD, or about ~~1,400% - 2,050%~~1,420% - 2,080% greater than the estimated foregone market demand. However, some of these facilities with potential surplus NOx RTCs have never sold or transferred NOx RTCs to another NOx RECLAIM facility since the NOx RECLAIM program began in 1994. Therefore, it is reasonable to assume that they will not participate in the market even if they continue to stay in the NOx RECLAIM program. When estimated by the potential surplus NOx RTC holdings from only the facilities with a historical record of NOx RTC sales and/or transfers, the foregone market supply is estimated to be lower at ~~2.39 - 2.57~~2.43 - 2.60 TPD, or about 1,360% - ~~1,980%~~1,990% greater than the estimated foregone market demand.

Additionally, when compared to the 7.00 TPD of discrete-year NOx RTCs traded in calendar year 2017, the estimated net foregone market supply of 2.39 - 2.78 TPD represents 34% - 37% of that total traded volume.[13]

[13] In calendar year 2017, a total of 2,556 tons of discrete year NOx RTCs were traded (2556 tons/365 days = 7.00 TPD). See page ES-2 of "Annual RECLAIM Audit Report for 2016 Compliance Year," available at http://www.aqmd.gov/docs/default-source/reclaim/reclaim-annual-report/2016-reclaim-report.pdf. Notice, however, that some of the RTCs might have been traded more than once in the same year.

Given the analysis above and the fact that the ~~27~~ 26 facilities currently account for ~~9.4%~~9.1% of annual NOx emissions and ~~19.7%~~19.5% of NOx RTC holdings in the NOx RECLAIM universe, the simultaneous transition of the ~~27~~ 26 PAR 1135 facilities out of the NOx RECLAIM program could potentially exert upward pressure on the discrete-year NOx RTC prices.

There are currently procedures in place to intervene if the NOx RTC price becomes excessively high. Rule 2002(f)(1)(H) specifies that in the event that the NOx RTC price exceeds $22,500 per ton based on the 12-month rolling average, or exceeds $35,000 per ton based on the 3-month rolling average calculated pursuant to subparagraph (f)(1)(E), the Executive Officer will report the determination to the Governing Board. If the Governing Board finds that the 12-month rolling average RTC price exceeds $22,500 per ton or the 3-month rolling average RTC price exceeds $35,000 per ton, then the Non-tradable/Non-usable NOx RTCs, as specified in subparagraphs (f)(1)(B) and (f)(1)(C) valid for the period in which the RTC price is found to have exceeded the applicable threshold, shall be converted to Tradable/Usable NOx RTCs upon Governing Board concurrence.

~~Table 5:~~
~~Potential Impacts on NOx RTC Market Demand and Supply~~

-	-	~~NOx Emission Scenarios for Future Compliance Years~~		
		~~*5% Below 2016 NOx Emissions*~~	~~*Same as 2016 NOx Emissions*~~	~~*5% Above 2016 NOx Emissions*~~
~~*A*~~	~~**Foregone Market Demand (TPD)**~~	~~0.129~~	~~0.153~~	~~0.176~~
~~*B*~~	~~**Foregone Market Supply (TPD)**~~ ~~*– From All Facilities with Surplus RTC Holdings*~~	~~2.777~~	~~2.707~~	~~2.637~~
~~*C*~~	~~**Net Foregone Market Supply (TPD)**~~ ~~(= *B* - *A*)~~	~~2.648~~	~~2.554~~	~~2.461~~
-	~~***Percent Difference:***~~ ~~***(Supply – Demand)/Demand*** (= *C* / *A*)~~	~~2,046%~~	~~1,673%~~	~~1,399%~~
~~*D*~~	~~**Foregone Market Supply (TPD)**~~ ~~*– From Facilities with Surplus RTC Holdings & Historical Record of RTC Sales/Transfers*~~	~~2.700~~	~~2.634~~	~~2.567~~
~~*E*~~	~~**Net Foregone Market Supply (TPD)**~~ ~~(= *D* - *A*)~~	~~2.571~~	~~2.481~~	~~2.391~~
-	~~***Percent Difference:***~~ ~~***(Supply – Demand)/Demand*** (= *E* / *A*)~~	~~1,986%~~	~~1,625%~~	~~1,359%~~

**Table 5:
Potential Impacts on NOx RTC Market Demand and Supply**

		NOx Emission Scenarios for Future Compliance Years		
		5% Below 2016 NOx Emissions	***Same as 2016 NOx Emissions***	***5% Above 2016 NOx Emissions***
A	**Foregone Market Demand**	0.129	0.152	0.175
B	**Foregone Market Supply** *– From All Facilities with Surplus RTC Holdings*	2.806	2.739	2.672
C	**Net Foregone Market Supply** (= *B* - *A*)	2.677	2.586	2.496
	Percent Difference: ***(Supply – Demand)/Demand*** (= *C / A*)	2,076%	1,700%	1,423%
D	**Foregone Market Supply** *– From Facilities with Surplus RTC Holdings & Historical Record of RTC Sales/Transfers*	2.729	2.665	2.601
E	**Net Foregone Market Supply** (= *D* - *A*)	2.600	2.513	2.426
	Percent Difference: ***(Supply – Demand)/Demand*** (= *E / A*)	2,017%	1,651%	1,383%

Note: The supply and demand of NOx RTCs are expressed in TPD and rounded to the nearest thousandth. Percent differences are rounded to the nearest integer.

It is possible some or all facilities choose not to exit RECLAIM upon receipt of their initial determination notification. The vast majority of facilities will likely opt to remain in RECLAIM following the adoption of PAR 1135. The decision to remain in RECLAIM coincides with more favorable NSR provisions and those facilities with surplus RTCs have incentive to remain in order to sell excess credits. Conversely, those facilities with insufficient RTC holdings have incentive to opt out of RECLAIM and forego acquiring the necessary RTCs to comply with RECLAIM requirements. Under this scenario, the adoption of PAR 1135 could potentially result in a net cost savings as it pertains to the RTCs currently held by RECLAIM electricity generating facilities.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Mitigated Subsequent Environmental Assessment for Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities

October 2018

SCAQMD No. 09142018RB
State Clearinghouse No: 2016071006

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PREFACE

This document constitutes the Final Mitigated Subsequent Environmental Assessment (SEA) for Proposed Amended Rule (PAR) 1135 – Emissions of Oxides of Nitrogen From Electricity Generating Facilities. A Draft Mitigated SEA was released for a 30-day public review and comment period from September 18, 2018 to October 18, 2018. Analysis of PAR 1135 in the Draft Mitigated SEA did not result in the identification of any environmental topic areas that would be significantly adversely affected after mitigation. SCAQMD received one comment letter relative to the analysis in the Draft Mitigated SEA. The comment letter received relative to the Draft Mitigated SEA and the response is included in Appendix F of this Final Mitigated SEA.

In addition, subsequent to release of the Draft Mitigated SEA, modifications were made to PAR 1135. To facilitate identification, modifications to the document are included as <u>underlined text</u> and text removed from the document is indicated by ~~strikethrough~~. To avoid confusion, minor formatting changes are not shown in underline or strikethrough mode.

Staff has reviewed the modifications to PAR 1135 and concluded that none of the revisions constitute: 1) significant new information; 2) a substantial increase in the severity of an environmental impact; or, 3) provide new information of substantial importance relative to the draft document. In addition, revisions to the proposed project in response to verbal or written comments would not create new, avoidable significant effects. As a result, these revisions do not require recirculation of the document pursuant to CEQA Guidelines Sections 15073.5 and 15088.5. Therefore, this document now constitutes the Final Mitigated SEA for PAR 1135.

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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. 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 has proposed new amendments to Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities. Rule 1135 applies to electric ~~power~~ generating units (e.g., diesel internal combustion engines located on Santa Catalina Island, boilers, and turbines~~, or internal combustion engines~~) that generate electric power for distribution, with the exception of cogeneration turbines ~~or~~and emergency internal combustion engines) at electricity generating facilities that are ~~market participants of the California Independent System Operator Corporation (California ISO), a municipal or public electric utility, or an electric utility located on~~

~~Santa Catalina Island~~investor-~~-~~owned electric utilities, publicly owned electric utilities, or have a generation capacity of at least 50 megawatts of electrical power. Proposed Amended Rule (PAR) 1135 will update the NOx emissions limits for electric ~~power~~ generating units to reflect current BARCT and provide implementation timeframes to achieve compliance. PAR 1135 also proposes ~~to revise the continuous emissions monitoring (CEMS) requirements for current Rule 1135 facilities and to add new~~ monitoring, reporting, and recordkeeping requirements ~~for those facilities exiting the NOx RECLAIM program~~. Additionally, PAR 1135 establishes exemptions from specific provisions. Implementation of the proposed project is estimated to reduce NOx emissions by ~~0.9~~1.7 tons per day ~~by January 1, 2024~~after implementation of the BARCT limits and the Clean Water Act once-through cooling provision, which is expected to be achieved by the retrofitting or~~,~~ repowering of existing electric generating units with BARCT units that can achieve the revised NOx emission limits, or the retiring of existing electric power generating units ~~with BARCT units that can achieve the revised NOx emission limits~~.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

The March 2017 Final Program Environmental Impact Report (EIR) for the 2016 AQMP determined that the overall implementation of CMB-05 has the potential to generate adverse environmental impacts in seven topic areas – air quality, energy, hazards and hazardous materials, hydrology and water quality, noise, solid and hazardous waste, and transportation. More specifically, the March 2017 Final Program EIR evaluated the impacts from installation and operation of additional control equipment and selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR) equipment potentially resulting in construction emissions, increased electricity demand, hazards from additional ammonia transport and use, increase in water use and wastewater discharge, changes in noise volume, generation of solid waste from construction and disposal of old equipment, and catalysts replacements, as well as changes in traffic patterns and volume. For the entire 2016 AQMP, the analysis concluded that significant and unavoidable adverse environmental impacts from the project are expected to occur after implementing mitigation measure 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 1135[6]. PAR 1135 revises NOx

[6] SCAQMD's rule development webpage for PAR 1135 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#1135.

emission limits to reflect current BARCT for electric ~~power~~ generating units. PAR 1135 also ~~revises the continuous emissions monitoring (CEMS) requirements and~~ establishes ~~new~~ monitoring, reporting, and recordkeeping requirements. Under PAR 1135, electric generating facilities that were originally subject to the NOx RECLAIM program will now be subject to the emission limits for NOx as well as other contaminants. PAR 1135 is estimated to reduce NOx emissions by ~~0.9~~1.7 tons per day after the implementation of the BARCT limits and the Clean Water Act once-through-cooling provision~~by January 1, 2024~~, from electricity generating facilities located throughout the entire SCAQMD jurisdiction 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 1135 may also create secondary adverse environmental impacts.

SCAQMD staff has determined that PAR 1135 contains new information of substantial importance which was not known and could not have been known at the time the Final Program EIR was certified for the March 2017 adoption of the 2016 AQMP (referred to herein as the March 2017 Final Program EIR). PAR 1135 is not expected to create new significant effects, after mitigation, that were not discussed in the previously certified March 2017 Final Program EIR for the 2016 AQMP.

Thus, analysis of the proposed project indicates that the type of CEQA document appropriate for the proposed project is a Mitigated Subsequent Environmental Assessment (SEA). The Mitigated SEA is a substitute CEQA document, prepared in lieu of a Mitigated Subsequent Negative Declaration with no unmitigated significant impacts (CEQA Guidelines Section 15162(b)), pursuant to SCAQMD's Certified Regulatory Program (CEQA Guidelines Section 15251(l); codified in SCAQMD Rule 110). The Mitigated 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.

Thus, SCAQMD, as lead agency for the proposed project, has prepared this Final Mitigated SEA pursuant to its Certified Regulatory Program. PAR 1135 is not expected to have statewide, regional or areawide significance; therefore, a CEQA scoping meeting is not required to be held for the proposed project pursuant to Public Resources Code Section 21083.9(a)(2). Moreover, a CEQA scoping meeting is not required for a Mitigated SEA under CEQA Guidelines Section 15162(d). Further, mitigation measures are proposed to avoid or reduce any potentially significant adverse impacts. [CEQA Guidelines Section 15252(a)(2)(B)]. The Final Mitigated SEA includes a project description in Chapter 1 and an Environmental Checklist in Chapter 2. The Environmental Checklist provides a standard tool to identify and evaluate a project's adverse environmental impacts, and the analysis concluded that no significant adverse impacts, after mitigation, would be expected to occur if PAR 1135 is implemented.

The Draft Mitigated SEA ~~is being~~ was released for a 30-day public review and comment period from September 18, 2018 to October 18, 2018. The SCAQMD received one comment letter ~~Any comments on the analysis presented in this Draft Mitigated SEA received~~ during the public comment period on the analysis presented in the Draft Mitigated SEA. The comment letter and the response are ~~will be responded to and~~ included in the Final Mitigated SEA (see Appendix F).

Subsequent to release of the Draft Mitigated SEA, minor modifications were made to PAR 1135 in response to verbal or written comments. Staff has reviewed the modifications to PAR 1135 and concluded that none of the modifications constitute: 1) significant new information; 2) a substantial increase in the severity of an environmental impact; or, 3) provide new information of substantial importance relative to the draft document. In addition, revisions to PAR 1135 in response to verbal or written comments would not create new, avoidable significant effects. As a result, these revisions do not require recirculation of the Draft Mitigated SEA pursuant to CEQA Guidelines Sections 15073.5 and 15088.5. Thus, the Draft Mitigated SEA has been revised to reflect the aforementioned modifications such that it is now a Final Mitigated SEA.

The March 2017 Final Program EIR for the 2016 AQMP, upon which this Final Mitigated 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 1135, the SCAQMD Governing Board must review and certify the Final Mitigated SEA as providing adequate information on the potential adverse environmental impacts that may occur as a result of adopting PAR 1135.

PROJECT LOCATION

Rule 1135 applies to RECLAIM and non-RECLAIM electricity generating facilities that are located throughout SCAQMD's jurisdiction and are ~~market participants of California ISO,~~ owned or operated by an investor-owned electric utility, a publicly owned electric utility, or have electric generating units with a combined generation capacity of 50 megawatts or more of electrical power for distribution in the state or local electrical grid system~~by a municipality, or located on Santa Catalina Island located throughout SCAQMD's jurisdiction~~. SCAQMD staff has identified ~~34~~ 31 electricity generating facilities that would be subject to PAR 1135. All ~~34~~ 31 facilities are categorized using North American Industry Classification System (NAICS) code and summarized in Appendix D of this Final Mitigated SEA. Appendix D also contains the list of affected facilities and their locations within SCAQMD's jurisdiction.

The SCAQMD has jurisdiction over an area of approximately 10,743 square miles, consisting of the four-county Basin (Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino counties), and the Riverside County portions of SSAB and 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 1-1).

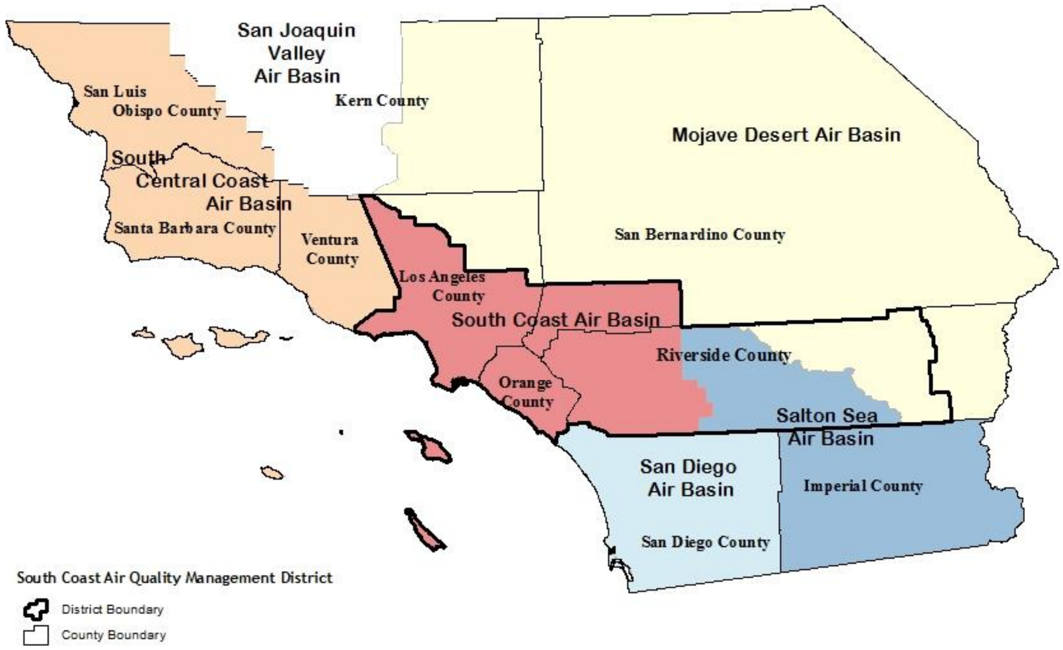

Figure 1-1
Southern California Air Basins

PROJECT BACKGROUND

Rule 1135 ~~- Emissions of Oxides of Nitrogen from Electric Power Generating Boilers,~~ was adopted by the SCAQMD Governing Board in 1989 and applied to electric power generating steam boiler systems, repowered units, and alternative electricity generating sources. Rule 1135 set a system-wide average NOx emission limit of 0.25 pound (lb) per megawatt (MW)-hour (hr) and a daily NOx emissions cap for each utility system. Rule 1135 established interim emissions performance levels with a 1996 final compliance date. Additionally, Rule 1135 required Emission Control Plans and continuous emissions monitoring systems (CEMS).

Rule 1135 was submitted to the California Air Resources Board (CARB) for review, prior to submittal to the Environmental Protection Agency (EPA), Region IX, for revision to the State Implementation Plan (SIP). In March 1990, CARB staff informed SCAQMD that the rule, as adopted, was lacking specificity in critical areas of implementation and enforcement, and was therefore, considered incomplete for submission to EPA as a SIP revision.

As such, Rule 1135 was later amended in December 1990 ~~to modify the rule's title to "Emissions of Oxides of Nitrogen from Electric Power Generating Systems" and~~ to resolve many of the implementation and enforceability issues raised by EPA. In particular, the December 1990 amendments to Rule 1135 included accelerated dates for retrofitting equipment with air pollution control equipment, unit-by-unit NOx emission limits, modified compliance plan and monitoring requirements, a requirement for computerized telemetering, and an amended definition of alternative resources.

Rule 1135 was amended again on July 19, 1991; this amendment contained system-wide emission rates, daily emission caps, annual emission caps, oil burning, cogeneration requirements, and a modeling and BARCT analysis. EPA approved the July 1991 version of Rule 1135 into the SIP on August 11, 1998.

PROJECT DESCRIPTION

If adopted, PAR 1135, as part of the on-going transition for facilities in the NOx RECLAIM program to a command-and-control regulatory structure, would apply to RECLAIM and non-RECLAIM electricity generating facilities that contain electric ~~power~~ generating units (e.g., boilers, ~~gas~~ turbines with the exception of cogeneration turbines, ~~or~~ and diesel internal combustion engines that generate electric power for distribution and are located on Santa Catalina Island with the exception of emergency internal combustion engines).~~, with the exception of cogeneration turbines) and are market participants of the California ISO, a municipal or public electric utility, or an electric utility located on Santa Catalina Island.~~

The following is a detailed summary of the key elements contained in PAR 1135. A draft of PAR 1135 can be found in Appendix A.

Purpose – Subdivision (a)

PAR 1135 proposes new subdivision (a) to establish the rule's purpose, which is to reduce NOx emissions from electric generating units (diesel internal combustion engines located at Santa Catalina Island, boilers, combined cycle turbines, and simple cycle turbines) at electricity generating facilities.

Applicability - Subdivision (b)

PAR 1135 proposes to revise the rule's applicability to include electric ~~power~~ generating units at electricity generating facilities (see subdivision (c) for these definitions), instead of electric power generating systems. In the current version of Rule 1135, electric power generating systems consist of boilers, turbines, other advanced combustion resources, and alternative equipment that are capable of producing power and owned by or under contract to sell power to an electric utility. PAR 1135 proposes to replace the term electric power generating system with the term electric ~~power~~ generating units, including diesel internal combustion engines located on Santa Catalina Island, boilers, combined cycle gas turbines, and simple ~~gas~~ cycle gas turbines at electricity generating facilities. As explained in the definition of electricity generating facilities in subdivision (c), an electricity generating facility is an investor-owned electric utility, publicly owned electric utility, or a facility with 50 megawatts or more of combined generation capacity. ~~that generates electrical power and is owned or operated by or under contract to sell power to California Independent System Operator Corporation, a municipal or public electric utility, or an electric utility on Santa Catalina Island.~~ However, PAR 1135 will not apply to cogeneration turbines or units located at landfills, petroleum refineries, or publicly owned treatment works.

Definitions - Subdivision (c)

PAR 1135 proposes to delete obsolete definitions as well as add new definitions and modify existing definitions to clarify and explain key concepts. Please refer to PAR 1135 in Appendix A for each definition.

The following outdated definitions are proposed to be deleted:

Advanced Combustion Resource
Alternative Resource
Approved Alternative or Advanced Combustion Resource
Alternative Resource or Advanced Combustion Resource Breakdown

Cogeneration Facility
Displace
District-Wide Daily Limits
Electric Power Generating System
Replacement Unit
Start-Uup or Shutdown
Useful Thermal Energy

The following definitions are proposed to be modified:

Boiler
Daily
Force Majeure Natural Gas Curtailment
NOx Emissions

The following definitions are proposed to be added:

Annual Capacity Factor
Cogeneration Turbine
Combined Cycle Gas Turbine
Duct Burner
~~Electricity Generating Facility~~
Electric ~~Power~~ Generating Unit
Electricity Generating Facility
Former RECLAIM NOx Source
Internal Combustion Engine
Investor-Owned Electric Utility
Landfill
Non-RECLAIM NOx Source
~~Municipal or Public Electric Utility~~
Petroleum Refinery
Publicly Owned Electric Utility
Publicly Owned Treatment Works
RECLAIM NOx Source
SCAQMD-Wide Daily Limits
Shutdown
Simple Cycle Gas Turbine
Start-uUp
Tuning

Emissions Limits – Renumbered Subdivision (d)

Subdivision (c) is proposed to be renumbered to subdivision (d) and renamed from "Emission Limitations" to "Emissions Limits." Due to the proposed deletion of the term electric power generating system throughout PAR 1135, any reference to electric power generating system is also proposed to be deleted from subdivision (d) and replaced with the terms "electric ~~power~~ generating unit" or "electricity generating facility", as appropriate.

New paragraph (d)(1) proposes to add the following emissions limits for boilers and ~~gas~~ turbines with a compliance date of no later than January 1, 2024. It is important to note that the NOx and ammonia emissions limits would not apply during start-up, shutdown, and tuning.

Table 1-1
Emissions Limits for Boilers and Gas Turbines

Equipment Type	NOx (ppmv)	Ammonia (NH3) Slip (ppmv)	Oxygen Correction (%, dry)
Boiler	5	5	3
Combined Cycle Gas Turbine and Associated Duct Burner	2	5	15
Simple Cycle Gas Turbine	2.5	5	15

Subparagraph (d)(1)(A) proposes to average the emissions limits over a sixty minute rolling average for boilers and turbines. ~~specify that these emission limits are not applicable during start-up, shutdown, and tuning periods. Requirements for start-up, shutdown, and tuning for each electric power generating unit shall be included in the SCAQMD permit. The SCAQMD permit shall include limits for duration, mass emissions, and number of start-ups, shutdowns, and, if applicable, tunings.~~

~~Subparagraph (d)(1)(B) proposes to average the emission limits over a sixty minute rolling average for units that are installed after the date of adoption.~~

Subparagraph (d)(1)(~~C~~B) proposes to ~~require electric power generating units~~allow boilers and gas turbines that are installed or issued permits to construct prior to the date of adoption to retain the averaging time requirements specified on the SCAQMD permit if they time does not exceed a three hour average for NOx and one hour average for ammonia.

New paragraph (d)(2) and subparagraph (d)(2)(A) proposes to add the following emission limits for diesel~~-fueled~~ internal combustion engines with a compliance date no later than January 1, 2024. It is important to note that the NOx, ammonia, carbon monoxide, volatile organic compounds, and particulate matter emissions limits would not apply during start-up, shutdown, and tuning.

Table 1-2
Emissions Limits for Diesel Internal Combustion Engines
~~Located on Santa Catalina Island~~

Equipment Type	NOx (ppmv)	Ammonia (NH3) Slip (ppmv)	CO (ppmv)	VOC (ppmv)	PM (lbs/mmbtu)	Oxygen Correction (%, dry)
Internal Combustion Engine (Diesel)	45	5	250	30	0.0076	15

Subparagraph (d)(2)(B) proposes to allow internal combustion engines located on Santa Catalina Island that are installed prior to the date of adoption to retain the averaging time requirements specified on the SCAQMD permit, but cannot exceed one hour for NOx, ammonia, and volatile organic compounds and 15 minutes for carbon monoxide.

Paragraph (d)(3) proposes to require the owner or operator of an electricity generating facility to incorporate start-up, shutdown, and tuning requirements into the SCAQMD permit for each electric generating unit; each electric generating unit must have these requirements incorporated into their permits by January 1, 2024. Subparagraphs (d)(3)(A) through (d)(3)(D) establish a maximum time limits for start-up, shutdown, and tuning requirements. For boilers, each start-up cannot exceed ten hours and each shutdown cannot exceed six hours. Combined cycle gas turbines cannot exceed four hours for each non-cold start-up, six hours for each cold start-up, thirty minutes for each shutdown, and ten hours per year for tuning. For simple cycle gas turbines, the time limits are one hour for each start-up, forty-five minutes for each shutdown, and ten hours per year for tuning. The time limits for internal combustion engines are one hour for each start-up and thirty minutes for each shutdown.

~~Subp~~Paragraph (d)(4)~~(2)(B)~~ proposes an alternative compliance approach~~effective dates~~ for an owner or operator of an electricity generating facility~~electric power generating units~~ located on Santa Catalina Island with diesel internal combustion engines ~~and provides an option that,~~ in lieu of meeting the emission limits in subparagraph (d)(2)(A)~~, a Compliance Plan may be submitted~~..

Under subparagraph (d)(4)(A)~~this provision~~, the owner or operator of ~~a~~ diesel internal combustion engines located on Santa Catalina ~~may~~ must submit a written notification to the Executive Officer by January 1, 2022~~ compliance plan by January 1,~~. The owner or operator must include a description of the proposed technologies, schedule of permits submittals, and timeframes for ordering and installing equipment, as well as adopt a permit condition to limit the total amount of NOx emissions to 13 tons. ~~2022 to extend the emission limits effective date, provided emission reductions are substantially greater than if the engines were simply replaced with Tier IV compliant diesel engines. If the owner or operator can provide specifications of electric power generating units or other electrical generation or transmission equipment to provide power to Santa Catalina Island that will reduce emissions by an additional 33% to a total of 20 tons per year, then the effective date will be delayed unit January 1, 2025. If the specifications demonstrate that emissions will be reduced by 67% or more, then the effective date will be further delayed until January 1, 2026.~~

To further incentivize lower emitting electricity generating technologies, paragraph (d)(5) allows Santa Catalina Island an extension of up to three years for compliance with the applicable emissions limits (see Table 1-2) or the alternative compliance approach. The extension is allowed for both compliance approaches as the facility may initially pursue lower emitting technologies later to discover that hurdles to permitting, land acquisition, or some other extenuating circumstance prevents the implementation of the lower emitting technology. The extension includes a mitigation fee of $100,000 per year. The mitigation fee will be used to fund future studies and projects designed to reduce criteria pollutants and toxic air contaminant emissions. The amount for the mitigation fee is approximately the amount that a facility would otherwise have had to pay to go through the variance process, including excess emissions fees, notification fees, and other procedural fees. In order to qualify for the extension, the facility must first reduce some NOx emissions. If the facility wants an extension from having to install two new diesel internal combustion engines, the two existing diesel internal combustion engines must be retrofitted or repowered to 45 ppmv NOx at 15% oxygen on a dry basis by January 1, 2023. If requesting an extension for the alternative compliance approach, Santa Catalina Island must reduce their actual mass emissions of NOx to 50 tons for compliance year 2022 and to 40 tons for compliance year 2023. The extension request is required to be submitted at least one year before the compliance deadlines and must identify the units that need a time extension, the reason an extension is needed, and the progress to date of the project. The criteria for approving an extension requires the Executive Officer to determine if the facility correctly followed the procedures for submitting an extension request and if the extension is necessary due to extenuating circumstances. Examples of extenuating circumstances can include engineering designs, construction plans, land acquisition contracts, permit applications, and purchase orders that impact scheduling.

Several obsolete provisions in subdivision (d) are proposed for deletion. In particular, the District-wide daily and annual limits on emissions rate and emissions cap for Southern California Edison, Los Angeles Department of Water and Power, the City of Burbank, and the City of Pasadena, are proposed to be removed from paragraphs (c)(1) ~~(d)(3)~~ and ~~(d)(4)~~(c)(2) because these facilities entered the RECLAIM program in October 1993 which made the limits in Rule 1135 obsolete for these facilities.

Paragraphs (d)(3) and (d)(4) are also proposed to be retained to allow the City of Glendale to continue to comply with their current SCAQMD-wide daily and annual limits on emissions rates and emissions cap for the interim period until the emissions limitations in paragraph (d)(1) go into effect.

Sub~~P~~paragraph (d)(~~5~~6)(C) proposes to relocate the reference to "violation of any requirements" from paragraphs (c)(1), ~~and~~ (c)(2), (c)(3), and (c)(4) to subparagraph~~s~~ (d)(6)(~~c~~A)~~(d)(3) and (d)(4)~~ and (d)(6)(B). In addition, paragraph (d)(6~~5~~)(C) proposes to delete the provision pertaining to the applicability to approved alternative or advance combustion resources. ~~All references throughout the current version of Rule 1135 rule to "approved alternative or advanced combustion resource" is proposed to be replaced with the term "electric power generating unit."~~

Several additional obsolete provisions are proposed for deletion. In particular, in the current version of Rule 1135, the dates in paragraphs (d)(6) and (d)(7) have passed and as such, the obsolete dates are proposed for removal in PAR 1135. Further, ~~sub~~paragraph (d)(8) in the current version of Rule 1135 states that a violation of any unit specific NOx emission limit in a permit or a compliance plan constitutes a violation of Rule 1135. However, since permits and compliance plans are enforceable, this language is redundant and therefore, proposed for deletion in PAR 1135.

Compliance Plans – Old Subdivision (d)

Old subdivision (d) specific to compliance plans is proposed to be deleted and replaced with renumbered subdivision (d) – Emissions Limits, because the compliance dates have passed and compliance plans will no longer be necessary.

Monitoring, Recordkeeping, and Reporting (Subdivision (E))~~Measurements – Subdivision (e)~~

All provisions in current Rule 1135 subdivision (e) are proposed for deletion. Once Rule 113 is adopted, all Rule 1135 equipment will transition to Rule 113 for Monitoring, Recordkeeping, and Reporting (MRR). For the interim period, the intention of the PAR 1135 MRR is to maintain current MRR for all facilities and minimize the RECLAIM reporting requirements.

All the provisions in the current Rule 1135 subdivision (e) will be deleted because there are only three units that are currently subject to the monitoring requirements in subdivision (e) and these three units also conduct monitoring in accordance with SCAQMD Rule 218 – Continuous Emission Monitoring.

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 1135 equipment will be required to transition to complying with the MRR requirements in Rule 113.

Paragraph (e)(1) applies to current NOx RECLAIM sources and these sources will be required to demonstrate compliance with the NOx emissions limits in accordance with SCAQMD Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions.

Paragraph (e)(2) applies to former RECLAIM facilities and these facilities will be require to demonstrate compliance with the NOx emissions limits, in accordance with SCAQMD Rule 2012, except for the following provisions that reference reporting requirements or that do not apply to electric generating units:

- (c)(3) – facility permit holder of a major NOx source
- (c)(4) – Super Compliant Facilities
- (c)(5) – facility Permit holder of a facility which is provisionally approved for NOx Super Compliant status
- (c)(6) – after final approval of Super Compliant status
- (c)(7) – facility designated as a NOx Super Compliant Facility
- (c)(8) – super Compliant Facility exceeds its adjusted allocations
- (d)(2)(B) – install, maintain and operate a modem
- (d)(2)(C) – equipment-specific emission rate or concentration limit
- (d)(2)(D) – monitor one or more measured variables as specified in Appendix A
- (d)(2)(E) – comply with all applicable provisions of subdivision (f)
- (e) – NOx Process Unit
- (g)(5) – system is inadequate to accurately determine mass emissions
- (g)(6) – sharing of totalizing fuel meters
- (g)(7) – equipment which is exempt from permit requirements pursuant to Rule 219 - Equipment Not Requiring A Written Permit Pursuant to Regulation II
- (g)(8) – rule 2012 and Appendix A
- (h)(1) – facilities with existing CEMS and fuel meters as of October 15, 1993
- (h)(2) – interim emission reports
- (h)(4) – installation of all required or elected monitoring and reporting systems
- (h)(5) – existing or new facility which elects to enter RECLAIM or a facility which is required to enter RECLAIM
- (h)(6) – new major NOx source at an existing facility
- (i) – Recordkeeping
- (k) – Exemption
- (l) – Appeals

- Reported Data and Transmitting/Reporting Frequency requirements from Appendix A – "Protocol for Monitoring, Reporting and Recordkeeping for Oxides of Nitrogen (NOx) Emissions"

Paragraph (e)(3) applies to non-RECLAIM facilities and these facilities have the option to comply with 40 CFR Part 75 or Rule 218 – Continuous Emission Monitoring, in order to demonstrate with the NOx emission limits. If a facility elects to comply with 40 CFR Part 75, the facility must calculate NOx in ppmv pursuant to Rule 218.

Paragraph (e)(4) applies to the City of Glendale and requires this facility to calculate their NOx emissions in accordance with their approved CEMS plan in order to demonstrate compliance with the SCAQMD-wide daily limits on emissions rates and emissions caps and annual emissions limits.

Paragraph (e)(5) applies to the diesel internal combustion engines located on Santa Catalina Island. To demonstrate compliance with the carbon monoxide and volatile organic compound emissions limits, the facility must comply with SCAQMD Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines, subdivision (f) – Monitoring, Testing, Recordkeeping and Reporting and subdivision (g) – Test Methods. To demonstrate compliance with the particulate matter emission limit, the facility must conduct yearly source tests according to SCAQMD Method 5.1 – Determination of Particulate Matter Emissions from Stationary Sources Using a Wet Impingement Train or SCAQMD Method 5.2 – Determination of Particulate Matter Emissions from Stationary Sources using Heated Probe and Filter. Yearly is defined as a period of twelve consecutive months determined on a rolling basis with a new twelve month period beginning on the first day of each calendar month.

Paragraph (e)(6) applies to electric generating units with catalytic control devices. To demonstrate compliance with the ammonia emission limit, subparagraph (e)(6)(A) requires facilities to conduct source testing according to SCAQMD Method 207.1 – Determination of Ammonia Emissions from Stationary Sources. Source testing will be quarterly for the first twelve months of operation and then annually thereafter if four consecutive quarterly source tests determines that the unit is in compliance with the ammonia limit. If there is a failed annual test, then the facility must conduct quarterly source tests until four consecutive tests pass before resuming annual source tests. In lieu of ammonia source testing, subparagraph (e)(6)(B) allows facilities to utilize ammonia CEMS certified under an approved SCAQMD protocol. At this time, SCAQMD is in the process of finding a host site for an ammonia CEMS demonstration project. Upon successful demonstration, SCAQMD will develop an ammonia CEMS protocol. Once an ammonia CEMS protocol is developed then SCAQMD intends to require ammonia CEMS instead of source testing to demonstrate compliance with the ammonia limits. At this time, an ammonia CEMS is approximately $60,000. The provision that allows for ammonia CEMS instead of source testing allows facilities to transition to ammonia CEMS once a protocol is ready, but is not specifically required by Rule 1135.

Paragraph (e)(7) requires that former NOx RECLAIM sources and other NOx sources no tin the RECLAIM program maintain all of their monitoring, recordkeeping, and reporting documents for five years and make it available to SCAQMD upon request. However, for data gathered and computed for 15 minute intervals or less, those records need to be maintained for a minimum of 48 hours.

In addition to demonstrating compliance with the emissions limits of the rule, paragraph (e)(8) requires former NOx RECLAIM sources and other NOx sources not in the RECLAIM program to maintain an operating log for each electric generating unit. The log must include all of the following: time and duration of start-ups and shutdowns; total hours of operation; quantity of fuel; cumulative hours of operation to date for the calendar year; megawatt hours of electricity produced; and net megawatt hours of electricity produced.

~~Revisions to subdivision (e) are proposed to reflect that facilities subject to the current version of Rule 1135 will be required to continue to comply with existing monitoring and recordkeeping requirements in Rule 1135 while RECLAIM facilities will continue to comply with Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions, excluding reporting requirements.~~

~~Paragraph (e)(1) proposes to replace the requirement for a Remote Terminal Unit (RTU) with a data acquisition system (DAS).~~

~~Paragraph (e)(2) proposes to replace all references to the District's "CEMS Requirement Document for Utility Boilers," dated July 19, 1991 with SCAQMD's "CEMS Requirement Document for Electric Power Generating Units," dated [Date of Adoption]. Further, all references in paragraph (e)(2) to boiler, replacement unit and approved alternative or advanced combustion resource is proposed to be replaced with the term "electric power generating unit."~~

~~Old paragraph (e)(3) is proposed to be deleted for consistency with paragraph (e)(1) which proposes to delete the requirements applicable to RTUs.~~

~~Old paragraph (e)(4) is also proposed for deletion because the compliance dates have passed.~~

~~The provisions for backup data gathering and maintaining a storage system is proposed for removal from paragraph (e)(6) because proposing to require a DAS in paragraph (e)(1) makes these requirements no longer necessary.~~

~~Old paragraph (e)(5) (which has been renumbered in PAR 1135 as paragraph (e)(3)) proposes to replace all references to the District's "CEMS Requirement Document for Utility Boilers," dated July 19, 1991 with SCAQMD's "CEMS Requirement Document for Electric Power Generating Units," date [Date of Adoption]. Further, all references in renumbered paragraph (e)(3) to boiler, replacement unit, and approved alternative or advanced combustion resource are proposed to be replaced with the term "electric power generating unit."~~

~~Old paragraph (e)(6) is proposed for deletion because the compliance dates have passed.~~

~~Old paragraph (e)(7) (which has been renumbered in PAR 1135 as paragraph (e)(4)) proposes to require CEMS data to be recorded by a DAS. Renumbered paragraph (e)(4) proposes to replace all references to the District's "CEMS Requirement Document for Utility Boilers," dated July 19, 1991 with SCAQMD's "CEMS Requirement Document for Electric Power Generating Units," dated [Date of Adoption]. Further, all references in renumbered paragraph (e)(4) to boiler, replacement unit and approved alternative or advanced combustion resource is proposed to be replaced with the term "electric power generating unit."~~

~~Old paragraph (e)(8) (which has been renumbered in PAR 1135 as paragraph (e)(5)) proposes to replace all references to the District's "CEMS Requirement Document for Utility Boilers," dated July 19, 1991 with SCAQMD's "CEMS Requirement Document for Electric Power Generating Units," dated [Date of Adoption]. Further, all references in renumbered paragraph (e)(5) to boiler, replacement unit and approved alternative or advanced combustion resource are proposed to be replaced with the term "electric power generating unit."~~

~~New paragraph (e)(6) proposes to allow RECLAIM facilities to continue to comply with specific monitoring and recordkeeping requirements in Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions, in lieu of complying with paragraphs (e)(1) through (e)(5). In particular, RECLAIM facilities will be required to comply with all of Rule 2012 except for the requirements in the following provisions:~~
~~(c)(3) facility permit holder of a major NOx source~~
~~(c)(4) Super Compliant Facilities~~
~~(c)(5) facility Permit holder of a facility which is provisionally approved for NOx Super Compliant status~~
~~(c)(6) after final approval of Super Compliant status~~
~~(c)(7) facility designated as a NOx Super Compliant Facility~~
~~(c)(8) super Compliant Facility exceeds its adjusted allocations~~
~~(d)(2)(B) install, maintain and operate a modem~~
~~(d)(2)(C) equipment-specific emission rate or concentration limit~~
~~(d)(2)(D) monitor one or more measured variables as specified in Appendix A~~
~~(d)(2)(E) comply with all applicable provisions of subdivision (f)~~
~~(e) NOx Process Unit~~
~~(f) Permit Conditions for Large Sources and Process Units,~~
~~(g)(5) system is inadequate to accurately determine mass emissions~~
~~(g)(6) sharing of totalizing fuel meters~~
~~(g)(7) equipment which is exempt from permit requirements pursuant to Rule 219 - Equipment Not Requiring A Written Permit Pursuant to Regulation II~~
~~(g)(8) Rule 2012 and Appendix A~~
~~(h)(1) facilities with existing CEMS and fuel meters as of October 15, 1993~~
~~(h)(2) interim emission reports~~
~~(h)(4) installation of all required or elected monitoring and reporting systems~~
~~(h)(5) existing or new facility which elects to enter RECLAIM or a facility which is required to enter RECLAIM~~
~~(h)(6) new major NOx source at an existing facility~~
~~(j) Source Testing~~
~~(k) Exemption~~
~~(l) Appeals~~
~~Reported Data and Transmitting/Reporting Frequency requirements from Appendix A – "Protocol for Monitoring, Reporting and Recordkeeping for Oxides of Nitrogen (NOx) Emissions"~~

Use of Liquid Petroleum Fuel - Subdivision (f)
Due to the proposed deletion of the term "electric power generating system" throughout PAR 1135, subdivision (f) proposes to replace all references to "electric power generating system" with "electric ~~power~~ generating unit" or "electricity generating facility," as appropriate. Also, subdivision (f) proposes to replace the term "boiler" with the term "electric ~~power~~ generating unit."

Paragraph (f)(1) proposes to clarify the applicability of the NOx emission limits in subdivision (d) on days of force majeure natural gas curtailment when the use of liquid petroleum fuel is required. Old subparagraph (f)(1)(B) is proposed to be deleted because all units will have to comply with the emission limits specified in subdivision (d). Also, old subparagraph (f)(1)(D) is proposed to be removed because it is redundant to the requirements in old subparagraph (f)(1)(C), which will be renumbered as subparagraph (f)(1)(B).

Old paragraph (f)(2) proposes to ~~delete~~ modify the hours allowed for fuel readiness testing for a boiler to burn liquid petroleum fuel ~~for~~ from up to 24 hours in any calendar year to not exceed sixty minutes per week; weekly readiness testing is necessary to assure reliability of the oil firing units in case of emergencies. Several requirements are being added to readiness testing. The first added requirement, subparagraph (f)(2)(B), states that during readiness testing and when burning liquid petroleum fuel exclusively, the NOx emission limit for an electric generating unit must comply with the limit in the permit for that unit~~can only occur once the equipment has reached the emissions limitation in paragraph (d)(1) while running on natural gas and must start within 60 minutes of achieving that emissions limitation~~. Additionally, subparagraph (f)(2)(C) states that readiness testing can only occur once the equipment has achieved the emission limits in paragraph (d)(1) while running on natural gas and must start within 60 minutes of achieving that emission limits.~~ the number of units to one unit at a time that can be operated on liquid petroleum during readiness testing.~~ For clarification purposes, subparagraph (f)(2)(D) defines readiness testing as the time from when the equipment is switched from natural gas to liquid petroleum fuel to the time the equipment is switched back to natural gas.

New paragraph (f)(3) is proposed to be added to allow liquid petroleum fuel to be used during source testing, initial certification of CEMS, and semi-annual Relative Accuracy Test Audits (RATAs). The RATA tests must be conducted at the same time as weekly readiness testing.

~~New paragraph (f)(4) is proposed to be added to prohibit the installation of internal combustion engines capable of burning liquid petroleum as the primary fuel at an electricity generation facility.~~

Municipal Bubble Options – Old Subdivision (g)

The subdivision regarding Municipal Bubble Options in the current version of Rule 1135 subdivision (g), is proposed to be deleted because PAR 1135 will instead establish emission limits applicable to each unit and will delete the emission limits for electric generating systems. ~~The old subdivision (g) regarding Municipal Bubble Options is proposed to be removed because these requirements became obsolete once facilities entered into RECLAIM.~~

Exemptions – Renumbered Subdivision (g)

All of the exemptions in the current version of Rule 1135 are proposed to be deleted because these exemptions were based on old technology and are no longer necessary.

Instead, PAR 1135 proposes to include several new exemptions as follows: Subparagraph (g)(1) proposes to exempt existing combined cycle gas turbines at 2.5 ppmv NOx and 5 ppmv ammonia concentration or less averaged over 60 minutes at 15% oxygen on a dry basis from the emission limits in paragraph (d)(1), provided that the NOx and ammonia limits, start-up, shutdown, and tuning requirements, and averaging times remain on the current permit. The permit limits cannot exceed three hours for each non-cold start-up, six hours for each cold start-up, thirty minutes for each shutdown, and ten hours per year for tuning.

Paragraph (g)(2) proposes to exempt once-through-cooling electric generating units that are subject to the Clean Water Act Section 316(b) from the emission limits in paragraph (d)(1) provided that NOx and ammonia limits, start-up, shutdown, and tuning requirements, and averaging times remain on the current permit. In order to qualify for this exemption, emissions from boilers must be less than 7 ppmv NOx and 10 ppmv ammonia averaged over 720 hours at 3% oxygen on a dry basis and start-up and shutdown must be less than 12 hours for each instance. Similarly, for turbines to qualify for this exemption, the emissions cannot exceed 2 ppmv NOx and 5 ppmv ammonia averaged over 60 minutes at 15% oxygen on a dry basis, three hours for each non-cold start-up, six hours for each cold start-up, thirty minutes for each shutdown and ten hours per year for tuning. Additionally, the units must comply with their current compliance dates established pursuant to Table 1 of Section 2(B) of the State Water Resources Control Board's Statewide Water Quality Control Policy on the Use of Coastal Estuarine Waters for Power Plant Cooling (Once-Through-Cooling Policy) implementing Section 316(b) of the Clean Water Act. Notifications of shutdown and retirement dates must be submitted to the SCAQMD for each once-through-cooling electric generating unit by January 1, 2023. This provision coordinates the compliance date for the NOx concentration limit in PAR 1135 with the compliance dates in Clean Water Act Section 316(b). Additionally, the provision avoids stranded assets of adding pollution controls for an interim period of time. If the once-through-cooling electric generating unit is granted an extension by the State Water Resources Control Board, the facility must notify SCAQMD of the extension within three months. This extension is not applicable to facilities that have utilized the Modeling and Offset Exemptions in SCAQMD Rule 1304 – Exemptions, paragraph (a)(2) and the associated replacement electric generating unit is in operation as the emission credits transferred to the replacement unit are no longer available.

Paragraph (g)(3) proposes to exempt existing diesel internal combustion engines at 51 ppmv NOx and 10 ppmv ammonia averaged over 60 minutes at 15% oxygen on a dry basis from the emission limits in paragraph (d)(2), with the condition that the units keep their NOx, ammonia, carbon monoxide, volatile organic compounds, and particulate matter limits, start-up and shutdown requirements, and averaging times on the current permit. However the emission limits shall not exceed 250 ppmv averaged over 15 minutes at 15% oxygen on a dry basis for carbon monoxide, 30 ppmv averaged over 60 minutes at 15% oxygen on a dry basis for volatile organic compounds, 5.32 tons per year for particulate matter, sixty minutes for each start-up, and fifteen minutes for each shutdown.

To address low-use electrical power generating units, a low-use provision, paragraph (g)(4) proposes to allow low-use equipment to continue operating without retrofit provided that the annual capacity factor limits are not exceeded; the annual capacity factor limits are included in the permit; and the NOx and ammonia limits, start-up, shutdown, and tuning requirements, and averaging times on the current permit. Low-use gas turbines will be prohibited from exceeding the following limits: 24 ppmv NOx and 20 ppmv ammonia averaged over 60 minutes at 15% oxygen on a dry basis, three hours for each start-up, six hours for each cold start-up, thirty minutes for each shutdown, and ten hours per year for tuning. Similarly, low-use boilers will be prohibited from exceeding the following limits: 82 ppmv NOx and 10 ppmv ammonia averaged over 720 hours at 3% oxygen on a dry basis and 12 hours for each start-up and shutdown. The annual capacity factor, paragraph (c)(1), is defined as the ratio between the actual annual heat input and the annual maximum heat input if operated continuously over one year excluding usage during an Emergency Phase of the California Energy Commission Energy Emergency Response Plan or a Governor-declared State of Emergency or Energy Emergency. The annual capacity factor limits for gas turbines in subparagraph (g)(4)(A) is less than twenty-five percent in one calendar year and less than ten percent averaged over three years. For boilers, the low-use provision in subparagraph (g)(4)(B) establishes the annual capacity factor limit as less than two and one half percent in one calendar year and less than one percent averaged over three years. In order to obtain the low-use exemption, subparagraph (g)(4)(C) requires that an application for the low-use exemption be submitted by July 1, 2022. Subparagraph (g)(4)(D) requires the 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, clause (g)(4)(E)(i) states that 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. Subclause (g)(4)(E)(ii)(C) requires that after two years of the date of reported exceedance, the unit must come into compliance with the emission limits in paragraph (d)(1). The following interim milestone requirements are included in subclauses (g)(4)(E)(ii)(A) and (g)(4)(E)(ii)(B): 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 (g)(5) proposes to exempt internal combustion engines on Santa Catalina Island from the requirements in subdivision (f) – Use of Liquid Petroleum Fuel. ~~Subdivision (h) is proposed to be renumbered to subdivision (g) and all of the exemptions in originally in subdivision (h) are proposed for deletion because they were based on old technology and are no longer necessary.~~

~~Instead, PAR 1135 proposes to include several new exemptions. Paragraph (g)(1) proposes to exempt combined cycle gas turbines capable of achieving 2.5 ppmv NOx or less at 15% O2 dry from the emissions limitations proposed in paragraph (d)(1), provided that the units keep their NOx and ammonia limits, start-up, shutdown, and tuning requirements, and averaging times on the current permit. This exemption is proposed because, according to the BARCT assessment, it is not cost-effective for combined cycle gas turbines at 2.5 ppmv NOx at 15% O2 dry to reduce their limits to 2 ppmv at 15% O2 dry.~~

~~Paragraph (g)(2) proposes to exempt boilers capable of achieving at 7.0 ppmv NOx or less at 3% O2 dry from the emissions limitations in paragraph (d)(1), provided that the units adhere to their NOx and ammonia limits, start-up, shutdown, and tuning requirements, and averaging times on the current Permit. This exemption is proposed because the BARCT assessment determined that it is not cost-effective for boilers at 7.0 ppmv NOx at 3% O2 dry to reduce their limits to 5.0 ppmv at 3% O2 dry. Further, other units that are at or below 7.0 ppmv NOx may have different ammonia limits that were evaluated during the permitting process and since these units will not be modified or re-permitted, the ammonia limits from the permits should be maintained.~~

~~Paragraph (g)(3) proposes to exempt once-through-cooling boilers that are subject to the Clean Water Act Section 316(b) from the emissions limitations in paragraph (d)(1) provided that the units keep their NOx and ammonia limits, start-up, shutdown, and tuning requirements, and averaging times on the current permit and the units comply with their current shutdown dates established in the Clean Water Act Section 316(b). To coordinate the compliance dates for achieving the PAR 1135 NOx concentration limit with the compliance dates in Clean Water Act Section 316(b) and to avoid stranded assets from installing air pollution control equipment for an interim period of time, paragraph (g)(3) proposes to also require a submittal of shutdown and retirement plans for each once-through-cooling boiler by January 1, 2023.~~

~~Paragraph (g)(4) proposes to exempt diesel internal combustion engines capable of achieving 51 ppmv NOx at 15% O2 dry. This exemption is proposed because the BARCT assessment determined that it is not cost-effective for internal combustion engines (diesel) at 51 ppmv NOx at~~

~~15% O2 dry to reduce their limits to 45 ppmv at 15% O2 dry. Therefore, PAR 1135 paragraph (g)(5) proposes to exempt engines capable of achieving 51 ppmv NOx or less at 15% O2 dry from the emissions limitations in paragraph (d)(1), provided that the units keep their NOx, ammonia, CO, VOCs, and PM limits, start-up, shutdown, and tuning requirements, and averaging times on the current permit.~~

~~Paragraph (g)(5) proposes to allow low-use electrical power generating units to continue operating without being required to retrofit the units with air pollution control equipment provided that historical data can demonstrate that the annual capacity factor limits have not been exceeded; that the annual capacity factor limits are included in the permit; and the unit continues to comply with the NOx and ammonia limits, start-up, shutdown, and tuning requirements, and averaging times on the current permit. The term "annual capacity factor" is defined in paragraph (c)(1) as the ratio between the measured annual input and the annual maximum heat input if operated continuously over one year. The annual capacity factor limits for gas turbines in subparagraph (g)(5)(A) are proposed to be less than 25% in one calendar year and 10% averaged over three years. The low-use provision for boilers as proposed in subparagraph (g)(5)(B) would establish the annual capacity factor limit to be less than 2.5% in one calendar year and 1.0% averaged over three years. In order to obtain the low-use exemption, subparagraph (g)(5)(C) proposes to require an application for the low-use exemption to be submitted by May 1, 2019 provided that the unit can demonstrate compliance with the annual capacity factor limits using data from calendar years 2016, 2017, and 2018. In addition, the annual capacity factor shall be determined annually and submitted to the Executive Officer no later than April 1st following the reporting year. Usage during an Emergency Phase of the California Energy Commission Energy Emergency Response Plan or a declared State of Emergency or Energy Emergency by the Governor will not be used to calculate the annual capacity factor. In the event that a unit exceeds the annual capacity factor, then subparagraph (g)(5)(E) proposes to restrict the unit from operating unless it is compliance with the emission limits in paragraph (d)(1). Other interim milestones, including a requirement for submitting a permit application within nine months from the date of reported exceedance and a CEMS plan within six months from the date of permit application submittal, are also included in this proposed exemption.~~

~~Paragraph (g)(6) proposes to exempt internal combustion engines that are located on Santa Catalina Island from the requirements in subdivision (f) - Use of Liquid Petroleum Fuel.~~

<u>Continuous Emission Monitoring Systems (CEMS) Requirements Document for Electric Power Generating Units</u>

The document specifying CEMS requirements that are included in the current version of Rule 1135 <u>are proposed to be removed because the MRR requirements have been updated and no longer reference the document.</u> ~~for CEMS are proposed to be updated in PAR 1135 in order to be consistent with the revised definitions proposed in subdivision (c). Section 4.2.1 for Final Reporting Procedures is also proposed to be revised to remove the requirements applicable to RTUs. Instead, the CEMS requirements propose to require that the records demonstrating compliance be maintained for five years and provided to the Executive Officer upon request. Additionally, the provisions pertaining to Cogeneration Systems are proposed for removal because it is no longer necessary to measure thermal energy.~~

SUMMARY OF AFFECTED EQUIPMENT

There are ~~34~~ <u>31</u> electricity generating facilities with approximately of ~~132~~ <u>122</u> pieces of equipment located in SCAQMD's jurisdiction that are subject to PAR 1135. The universe of affected equipment is comprised of the following: 1) six diesel-fueled internal combustion engines located at a single facility; 2) ~~24~~ 23 natural gas boilers located at eight facilities; 3) ~~67~~60 natural gas simple cycle turbines located at 21 facilities; and 4) ~~35~~ 22 natural gas combined cycle turbines equipped with 11 associated duct burners located at ~~13~~ 11 facilities. As part of the rule development process, SCAQMD staff conducted a BARCT assessment for electric ~~power~~ generating units at each of the ~~34~~ 31 electricity generating facilities[7, 8]. The BARCT assessment concluded that technology is currently available to meet BARCT NOx concentration limits in PAR 1135 for electric ~~power~~ generating units.

Of the ~~34~~ 31 facilities that are in the PAR 1135 universe, ~~31~~ 25 facilities were identified as not needing to modify their existing equipment in order to comply with PAR 1135. In particular, the electric ~~power~~ generating units at these facilities are not expected to require modifications to comply with PAR 1135 because the electric ~~power~~ generating units at the aforementioned facilities: 1) meet updated BARCT; 2) are currently eligible for a low-use exemption; or 3) are scheduled by facility operators to be either shut down or repowered due to outside factors as described below that are not a direct consequence of PAR 1135. The following list describes electric ~~power~~ generating units that would not need modifications or replacement in order to comply with PAR 1135:

1) Internal Combustion Engines: One diesel internal combustion engine installed on Santa Catalina Island approximately 23 years ago is not expected to need modifications to comply with PAR 1135 since it would not be cost-effective to meet the proposed limits.

2) Natural Gas Boilers: There are ~~24~~ 23 natural gas boilers in the PAR 1135 universe ~~that are used for generating electricity, 17~~ 16 of which are subject to the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act) Section 316(b)[9] once-through-cooling (OTC) provisions which are scheduled for shutdown. The OTC provisions established compliance dates for existing power plant operators to implement measures to greatly reduce impingement mortality and entrainment of marine life. ~~Compliance with the OTC provisions is expected to lead to the retirement of most of the natural gas boilers used to generate electricity in transmission-constrained areas of Southern California~~. ~~Four~~ Two additional natural gas boilers have been identified by their facility operators as scheduled for shutdown for business decisions and two will maintain low-use provisions. Thus, because ~~21~~ 18 of the ~~24~~ 23 boilers will not be operating by 2024 and 2 will maintain low-use provisions, the analysis in this Mitigated SEA assumes that these ~~21~~ 20 boilers would not need to be modified in order to comply with PAR 1135.

3) Natural Gas Combined Cycle Gas Turbines: There are ~~35~~ 22 natural gas combined cycle gas turbines that were installed in 2005 or later, ~~24~~ 15 of which currently meet the updated BARCT NOx concentration limits in PAR 1135; thus, no additional modifications will be necessary for these ~~24~~ 15 units to comply with PAR 1135. The remaining ~~nine~~ seven units are also not expected to need modifications as a result of PAR 1135 because it is not cost-effective to retrofit these combined cycle gas turbines. However, a facility that operates two of the remaining seven units is expected to update those units to comply with BARCT limits due to a business decision.

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7 See Appendix D for a complete list of facilities affected by PAR 1135.

8 See the PAR 1135 ~~July~~ October 2018 ~~Preliminary Draft~~Final Staff Report for the BARCT Assessment.

9 Federal Water Pollution Control Act. Accessed on August 14, 2018. https://www.epa.gov/sites/production/files/2017-08/documents/federal-water-pollution-control-act-508full.pdf

4) Natural Gas Simple Cycle Gas Turbines: There are ~~67~~ 60 natural gas simple cycle gas turbines in the PAR 1135 universe, 37 of which are not expected to need modifications to comply with PAR 1135 since they already meet the updated BARCT NOx concentration limits. The remaining ~~30~~ 23 units also will not need modifications in order to comply with PAR 1135 because it is not cost-effective to retrofit them.

Of the ~~34~~ 31 facilities that are in the PAR 1135 universe, ~~only three~~six facilities were identified as candidates for modifying their existing equipment in order to comply with PAR 1135. Of the six facilities three facilities are required to comply with PAR 1135 and three other facilities have elected to comply with the updated BARCT NOx concentration limits, as a business decision, even if their units qualify for the low-use provision or it was determined that retrofitting or replacing their units was not cost effective. In particular, the following electric ~~power~~ generating units would require modifications in order to meet the updated BARCT NOx concentration limits in PAR 1135:

1) Internal Combustion Engines: There are six diesel internal combustion engines located on Santa Catalina Island, five of which were installed more than 33 years ago and are cost-effective to be modified or replaced.

2) Natural Gas Boilers: Of the ~~24~~ 23 natural gas boilers in the PAR 1135 universe, there are seven that may need modifications in order to comply with PAR 1135 if they continue operating. However, two of the seven are currently not operating and will utilize the low-use provision in PAR 1135 with the~~, and~~ two others ~~are~~ scheduled to be shut down by their operators in 2020. ~~Further, T~~The other three natural gas boilers are operated by a municipality and would need to comply with PAR 1135. Prior to the development of PAR 1135, the operator presented a project to their city council proposing plans to shut down the three natural gas boilers and repower them with four natural gas turbines[10]. The operator also proposed to make other major revisions to their facility in addition to the repowering portion of the proposed project. In response to the proposal, the city council asked the operator to explore the feasibility, reliability, and cost-effectiveness of implementing a clean/renewable energy solution in lieu of some or all of the proposed repowering project. At the time of this publication, the operator has not indicated whether the project to repower the natural gas boilers will go forward or will be revised to include clean/renewable energy. If the operator's proposal is not finalized prior to the adoption of PAR 1135, then the three natural gas boilers would need to comply with PAR 1135, and compliance would require modifications to the existing boilers, replacement of the three existing boilers with three new boilers, or repowering the existing three boilers with one or more natural gas turbines.

3) Natural Gas Combined Cycle Gas Turbines: Of the nine natural gas combined cycle units that are not expected to need modifications as a result of PAR 1135 a municipality that operates two units has tentatively scheduled, due to a business decision so they are not required to utilize the low-use provision, to have the catalyst in each of their two existing selective catalytic reduction (SCR) systems replaced with more efficient catalyst to comply with the updated BARCT NOx concentration limits in PAR 1135.

4) Natural Gas Simple Cycle Gas Turbines: Of the ~~30~~ 22 low-use natural gas simple cycle gas turbines, ~~a~~ two municipalities~~municipality~~ operate~~s~~ ~~four~~ ten units that are tentatively

10 FEIR Grayson Repowering Project. March 2018. Section 3.0 Project Description, Page 3.1. http://graysonrepowering.com/#final-eir

scheduled[11] to have the catalyst in each of the ~~four~~ ten existing selective catalytic reduction (SCR) systems replaced with more efficient catalyst to comply with the updated BARCT NOx concentration limits in PAR 1135. One municipality operates one unit that would require modifications to the catalyst in its existing SCR system to comply with the updated BARCT NOx concentration limits in PAR 1135.

Thus, based on the BARCT assessment conducted for PAR 1135, only three electricity generating facilities would be expected to have existing electric ~~power~~ generating units that would require potential modifications (e.g., installing new or modifying existing air pollution control systems, or repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three electricity generating facilities would make business decisions to comply with PAR 1135. Thus, a total of six electricity generating facilities would be expected to implement modifications to their electric generating units. The remainder of electric ~~power~~ generating units either meet updated BARCT, are scheduled to be permanently shutdown, or were found to not be cost-effective and are eligible for a low-use provision contained in PAR 1135. Units which are shutdown are permanently offline and cannot be reactivated.

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 1135 and subsequently retrofitted with NOx control equipment.

Boilers: A typical boiler, also referred to as a steam generator, is a steel or cast-iron pressure vessel equipped with burners that combust liquid, gas, or solid fossil fuel to produce steam or hot water. Boilers are classified according to the amount of energy output in millions of British Thermal Units per hour (mmBTU/hr), the type of fuel burned (natural gas, diesel, fuel oil, etc.), operating steam pressure in pounds per square inch (psi), and heat transfer media. In addition, boilers are further defined by the type of burners used and air pollution control techniques. The burner is where the fuel and combustion air are introduced, mixed, and then combusted. The combustion of fuel generates NOx, primarily "thermal" NOx with small contribution from "fuel" NOx and "prompt" NOx. For the purpose of the analysis in this Draft Mitigated SEA, controlling NOx emissions from boilers is assumed to be accomplished with selective catalytic reduction

[11] Based on the current usage of these ~~four~~ ten turbines, the scheduled modifications would not be required under PAR 1135.

(SCR) technology. While low NOx burners may be effective at reducing NOx emissions, SCRs were analyzed because SCR technology has been demonstrated to have more adverse construction and operational impacts than low NOx burners. Thus, by analyzing SCRs in lieu of low NOx burners, the analysis in this Draft Mitigated SEA applies the most conservative assumptions to represent a "worst-case" scenario.

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 Mitigated SEA, controlling NOx emissions from gas turbines is assumed to be accomplished with SCR technology.

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

One portion of the BARCT assessment for PAR 1135 evaluated technologically feasible NOx emissions control technologies specific to electric ~~power~~ generating units. 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 turbines; 2) water or steam injection for turbines; 3) catalytic combustion for turbines; 4) low-NOx burners for boilers; 5) selective catalytic reduction (SCR) for diesel internal combustion engines, boilers, and turbines; and 6) catalytic absorption systems for turbines. PAR 1135 is expected to result in ~~three~~ <u>six</u> electricity generating 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 electricity generating facility to reduce NOx emissions is dependent upon a variety of factors such as the age of the existing air pollution control equipment, the type of electric power generating unit, the amount of NOx emission reductions that can be achieved, and whether the electric power generating unit 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 1135.

Pre-Combustion Technologies

Dry Low-NOx or Lean Premix Emission Combustors for 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 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 < 9 ppmv at 15% ~~O2 dry~~oxygen on a dry basis. The technology is engineered into the combustor that becomes and intrinsic part of the turbine design. Fuel staging or air staging is utilized 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

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% ~~O2 dry~~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 for 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 dry~~oxygen on a dry basis without post-combustion controls. Several turbine manufacturers are in the development stage to incorporate this technology.

Low-NOx Burners for Boilers

Controlled fuel and air mixing at the burner reduced the peak flame temperature resulting in reduced NOx formation. Lean pre-mixed combustion gases and low turbulence flow of combustion gases combine to achieve NOx reductions of 80 to 90%. Ultra-Low-NOx Burners are able to reduce NOx concentration to 5 to 7 ppmv at 3% ~~O2 dry~~oxygen on a dry basis. The burners are scalable for various sizes of boilers and heating units. The burners can be designed for retrofit or new installations. However, retrofits to existing boilers may require complex engineering and re-design.

Post-Combustion Technologies

Selective Catalytic Reduction for Internal Combustion Engines, Boilers, and Turbines

Selective Catalytic Reduction (SCR) is the primary post-combustion technology for NOx reduction and is widely used in turbines, boilers, and engines including stationary engines and heavy duty trucks. It is the primary control for engines that meet U.S. EPA's Tier IV Final standards. SCR technology is capable of reducing NOx emissions by 95 percent or greater. In many cases, the amount of NOx reduction is limited by the creation of other pollutants such as ammonia and carbon monoxide, space constraints, or the physical limit of the NOx measuring device. Nearly all electricity generating equipment currently utilize SCR technology. For those unites that are equipped with SCR technology, further reductions may be possible by adding catalyst modules or replacing the type of catalyst with more efficient catalyst. From observations made during site visits, space is not readily available to add more catalyst modules but facilities may be able to swap out catalyst with more efficient catalyst within the existing catalyst housing.

A typical SCR system design consists of an ammonia or urea reductant storage tank, ammonia vaporization and injection equipment, an SCR reactor with catalyst, an exhaust stack plus ancillary electronic instrumentation and operations control equipment. The way an SCR system reduces NOx is by a matrix of nozzles injecting a mixture of reductant and air into the flue gas exhaust stream from the combustion equipment. As this mixture flows into the SCR reactor with catalyst, the catalyst, reductant, and oxygen in the flue gas exhaust react primarily (i.e., selectively) with NO and NO2 to form nitrogen and water. The amount of reductant introduced into the SCR system is approximately a one-to-one molar ratio of reductant to NOx for optimum control efficiency, though the ratio may vary based on equipment-specific NOx reduction requirements.

Catalysts are made from ceramic materials and active catalytic components of base metals, zeolites, or precious metals. The catalyst made be configured into plates but many new systems are configured into honeycombs to ensure uniform dispersion and reduce ammonia emissions to below 5.0 ppmv. The reductant, ammonia, is available as anhydrous ammonia, aqueous ammonia, or urea. Anhydrous ammonia is extremely hazardous and SCAQMD does not permit new installations of anhydrous ammonia storage tanks for use in air pollution control equipment. Urea is an alternative but requires conversion to ammonia in order to be used. Most new selective catalytic reduction installations utilize aqueous ammonia in a 19 percent solution.

To perform optimally, the gas temperature in control device should be between 400 degrees Fahrenheit (^{o}F) and 800^{o}F. During startup and shutdown, the temperature will be below optimal range greatly reducing the effectiveness. Thus, NOx concentration limits are generally not applicable during startup or shutdown. Newer electrical power generating equipment reduces 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. Poisoned catalysts require cleaning or replacement resulting in extended periods of non-operation for the electrical power generating equipment. In those cases, filtering may be used to reduce the impacts on the catalyst.

<u>Catalytic Absorption Systems for Turbines</u>

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.

The NOx concentration levels achieved by the various technologies assessed were consistent with the NOx concentration levels found in existing boilers, combined cycle turbines, and simple cycle turbines located in SCAQMD. Additionally, the NOx concentration levels from the technology assessment were consistent with the NOx concentration levels found in diesel internal combustion engines compliant with U.S. EPA's Final Rule for Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel[12].

[12] Final Rule for Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel. June 29, 2004. Accessed on August 14, 2018. https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-control-emissions-air-pollution-nonroad-diesel

CHAPTER 2

ENVIRONMENTAL CHECKLIST

INTRODUCTION

The environmental checklist provides a standard evaluation tool to identify a project's potential adverse environmental impacts. This checklist identifies and evaluates potential adverse environmental impacts that may be created by the proposed project.

GENERAL INFORMATION

Project Title:	Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities
Lead Agency Name:	South Coast Air Quality Management District
Lead Agency Address:	21865 Copley Drive Diamond Bar, CA 91765
CEQA Contact Person:	Mr. Ryan Bañuelos, (909) 396-3479
PAR 1135 Contact Person	Ms. Uyen-Uyen Vo, (909) 396-2238
Project Sponsor's Name:	South Coast Air Quality Management District
Project Sponsor's Address:	21865 Copley Drive Diamond Bar, CA 91765
General Plan Designation:	Not applicable
Zoning:	Not applicable
Description of Project:	PAR 1135 applies to RECLAIM and non-RECLAIM electricity generating facilities that are investor-owned electric utilities, publicly owned electric utilities, or have a generation capacity of at least 50 MW of electrical power.~~participants of the California Independent System Operation Corporation, a municipal or public electric utility, or an electric utility located on Santa Catalina Island~~. PAR 1135 is proposing to: 1) expand applicability to include units at RECLAIM electricity generating facilities and units at electricity generating facilities that were not at electric power generating systems subject to~~ previously required to comply with~~ Rule 1135; 2) update the NOx and ammonia emission limits for boilers and gas turbines; 3) establish NOx emission limits and add new emission limits for ammonia, carbon monoxide, volatile organic compounds, and particulate matter for internal combustion engines; 4) revise monitoring, reporting, and recordkeeping requirements; and 5) revise exemptions. The proposed project is estimated to reduce NOx emissions by ~~0.9~~1.7 ton per day ~~by January 1, 2024~~after implementation of the BARCT limits and Clean Water Act one-through-cooling provisions. The analysis in the Draft Mitigated SEA indicated that while the project reduces NOx emissions, complying with PAR 1135 may also create secondary adverse environmental impacts from construction and

	operation activities. However, the Final Mitigated SEA concludes that PAR 1135 would not result in significant adverse impacts to any environmental topic areas after mitigation. Some facilities affected by PAR 1135 may be identified on lists compiled by the California Department of Toxic Substances Control per Government Code section 65962.5.
Surrounding Land Uses and Setting:	Various
Other Public Agencies Whose Approval is Required:	Not applicable

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The following environmental impact areas have been assessed to determine their potential to be affected by the proposed project. As indicated by the checklist on the following pages, environmental topics marked with an "✓"involve at least one impact that is a "Potentially Significant Impact". An explanation relative to the determination of impacts can be found following the checklist for each area.

☐	Aesthetics	☐	Geology and Soils	☐	Population and Housing
☐	Agriculture and Forestry Resources	☐	Hazards and Hazardous Materials	☐	Public Services
☐	Air Quality and Greenhouse Gas Emissions	☐	Hydrology and Water Quality	☐	Recreation
☐	Biological Resources	☐	Land Use and Planning	☐	Solid and Hazardous Waste
☐	Cultural Resources	☐	Mineral Resources	☐	Transportation and Traffic
☐	Energy	☐	Noise	☐	Mandatory Findings of Significance

DETERMINATION

On the basis of this initial evaluation:

- ☐ I find the proposed project, in accordance with those findings made pursuant to CEQA Guidelines Section 15252, COULD NOT have a significant effect on the environment, and that an ENVIRONMENTAL ASSESSMENT with no significant impacts has been prepared.

- ☐ I find that although the proposed project could have a significant effect on the environment, there will NOT be significant effects in this case because revisions in the project have been made by or agreed to by the project proponent. An ENVIRONMENTAL ASSESSMENT with no significant impacts will be prepared.

- ☐ I find that the proposed project MAY have a significant effect(s) on the environment, and an ENVIRONMENTAL ASSESSMENT will be prepared.

- ☐ I find that the proposed project MAY have a "potentially significant impact" on the environment, but at least one effect: 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards; and, 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL ASSESSMENT is required, but it must analyze only the effects that remain to be addressed.

- ☑ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects: 1) have been analyzed adequately in an earlier ENVIRONMENTAL ASSESSMENT pursuant to applicable standards; and, 2) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL ASSESSMENT, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Date: September 14, 2018 **Signature:** Barbara Radlein

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

ENVIRONMENTAL CHECKLIST AND DISCUSSION

As explained in Chapter 1, the main focus of PAR 1135 is to transition facilities participating in the NOx RECLAIM program to a command-and-control regulatory structure requiring BARCT-level controls and to implement CMB-05. SCAQMD staff's review of the proposed project identified several components in PAR 1135 that would not be expected to cause any physical changes that could have secondary adverse environmental effects. For example, PAR 1135 contains requirements for affected facilities to keep records, and ~~submit~~ conduct source testing ~~protocols, and provide notifications~~, and all of these components are administrative or procedural in nature and as such, would not be expected to cause any physical changes that would create any secondary adverse environmental effects. In addition, PAR 1135 proposes to revise and delete definitions, and includes other proposed revisions for clarity and consistency throughout the rule; again, none of these components are expected to cause any physical changes that would create any secondary adverse environmental effects.

However, the proposed modifications in PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance, and these activities may create secondary adverse environmental impacts. For example, in order to comply with the emission limits proposed in PAR 1135, owners/operators of some affected facilities may need to retrofit existing equipment by: 1) installing new or modifying existing air pollution control systems; 2) repowering existing equipment by replacing an electric ~~power~~ generating unit such as a boiler with a new, different electric generating unit such as a turbine while generating an equivalent or greater net power output; or 3) replacing an electric ~~power~~ generating unit with a new unit of the same type (e.g., replacing an old turbine with a new, more efficient turbine). For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Thus, the analysis in this Mitigated SEA focuses on the potential secondary adverse environmental impacts associated with these effects of implementing PAR 1135, which have been evaluated relative to each of the 17 environmental topics identified in the following environmental checklist.

In accordance with the BARCT assessment conducted for electric ~~power~~ generating units, this analysis relies on forecasting to identify the most likely mechanisms capable of achieving compliance within the prescribed compliance schedule set forth in PAR 1135. The analysis in this Mitigated SEA also considers the availability of air pollution control equipment and electric ~~power~~ generating units on the market for installation in accordance with compliance schedule.

For these reasons, the following assumptions are based on a range of technologically feasible and cost-effective options that facility operators may employ in order to be able to achieve emission reductions of NOx and other pollutants within the compliance schedule set forth in PAR 1135.

Based on the BARCT assessment described in Chapter 1, ~~only three~~six electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135. Because each facility is very different in how compliance with PAR 1135 may be achieved, the following is a facility-by-facility summary which identifies the technologically feasible and cost-effective compliance mechanisms and the associated assumptions that have been relied upon to prepare the analysis in this Mitigated SEA.

Facility 1

Facility 1 is owned and operated by a municipality which operates four simple cycle gas turbines that each utilize water injection for pre-combustion NOx control and are vented to four selective catalytic reduction (SCR) units for post-combustion NOx control. Facility 1 currently operates under a business decision~~compliance schedule that was prepared by the facility's owner/operator in anticipation of having~~ to comply with PAR 1135. The ~~compliance schedule~~business decision ~~contains a proposal~~is to replace the catalyst modules that comprise the four existing SCR units with new, more efficient catalyst. The catalyst module replacement activities will occur in sequential order so that only one turbine and SCR will be offline at a time. Facility 1 has indicated that replacing the catalyst modules in each of the four SCR units will reduce the NOx generated by the four simple cycle gas turbines to BARCT-compliant levels as outlined in PAR 1135. For this reason, this Mitigated SEA analyzes the potential environmental effects of replacing the SCR catalyst for each turbine. In addition, the new catalyst may require the injection of additional aqueous ammonia into the SCR. Thus, this Mitigated SEA also analyzes the potential for an increased amount of ammonia use and deliveries per year.

Facility 2

Facility 2 is owned and operated by an electric utility on Santa Catalina Island which operates six diesel-fueled internal combustion engines that are each vented to SCR units for post--combustion NOx control. While the current version of Rule 1135 is not applicable to this facility, PAR 1135 proposes to include this electric utility as an ~~electric~~ electricity generating facility that will be subject to updated BARCT ~~standards~~limits. SCAQMD staff's BARCT analysis of the six engines indicates that it will be technologically feasible and cost-effective to replace five of the six diesel-fueled engines in order to comply with the emission limits in PAR 1135 on or before January 1, 2024, unless a written notification indicating the decision to utilize the alternative compliance ~~plan~~ approach is submitted to the Executive Officer by January 1, 2022 to extend the emission limit effective date.

The BARCT analysis examined potential compliance options which considered a number of factors such as technological feasibility, existing site location constraints, cost-effectiveness, availability of air pollution control equipment and replacement engines, and whether the operator/owner may feasibly install new equipment.

Ordinarily when deciding the cleanest replacement equipment available, replacing a diesel engine with ~~a~~ cleaner equipment that is fueled with natural gas is one feasible way to lower NOx emissions and comply with PAR 1135. However, natural gas is not available on Santa Catalina Island and there is currently no way to safely deliver natural gas to the island in the large quantities that would be needed to supply new engines because it is a gas, not a liquid fuel.

Further, even if there was a way to deliver natural gas to the island, a vast, uninterruptible supply would be needed on a daily basis and there is no natural gas storage facility available on the island. If the owner/operator of Facility 2 were able to figure out how to obtain an uninterruptible supply of natural gas and were able to find a location to build a large enough natural gas storage facility, a substantial amount of time would be needed to conduct pre-planning and engineering design, prepare cost estimates, and conduct an environmental analysis under CEQA and possibly under the NEPA, if federal land or waters are involved, and obtain numerous agency approvals at both the state and federal level. Because of the extreme complexity involved with the logistics of getting natural gas to the island combined with the relatively short timing for achieving compliance with PAR 1135, it is not feasible to replace all five diesel-fueled internal combustion engines with either five internal combustion engines that are fueled with natural gas or repowering the five diesel-fueled internal combustion engines with natural gas turbines.

Thus, the potential feasible options for achieving compliance with PAR 1135 are limited to identifying replacement equipment that burns liquid fuel and the types of liquid fuels that are currently supplied to the island (e.g., diesel fuel and liquid petroleum gas). When faced with deciding how to the fuel new replacement equipment, diesel is the preferred fuel over liquid petroleum gas because its use results in better fuel economy. Further, liquid petroleum gas requires compression in order to remain a liquid and approximately 25 percent greater storage capacity for liquid petroleum gas than diesel fuel would be needed. Because the site may not have enough available land to build additional storage to accommodate liquid petroleum gas, replacement equipment that uses liquid petroleum gas is not feasible for this site location.

Also, due to the unique location of where the utility is located on the island, there is an insufficient supply of available land on the facility's property to support converting the engines to a renewable source of energy such as solar or wind technology. Even with solar or wind technology, battery backup would be needed and a non-renewable source of electricity would still be needed during times when the sun does not shine and the wind does not blow. Again, because of the extreme complexity involved with the costs and logistics of siting, designing, and permitting a renewable energy facility, combined with the relatively short timing for achieving compliance with PAR 1135, it is unlikely that the facility will replace all five diesel-fueled internal combustion engines with a renewable energy facility, while concurrently meeting the island's electrical demand.

In lieu of building a new renewable energy facility on the island, the facility's representative suggested that an underwater electrical cable could potentially supply electricity to the island. However, the process to install a high-voltage direct current underwater electrical cable interconnection between the Port of Los Angeles or Port of Long Beach and Avalon would require a substantial amount of time to conduct pre-planning and engineering design, prepare cost estimates, conduct an environmental analysis under CEQA and NEPA since federal waters may be involved, and obtain numerous agency permits and approvals at both the state and federal level. Because of the extreme complexity involved with the logistics of installing an underwater electrical cable to meet the island's electrical demand combined with the relatively short timing for achieving compliance with PAR 1135, the facility representative indicated that it is unlikely that the facility will replace all five-diesel internal combustion engines with a single underwater electrical cable in order to comply with PAR 1135[13].

Thus, based on the BARCT assessment and through the process of elimination, the most timely, reasonable, and cost-effective option would be to replace all five diesel fueled internal combustion engines with five new U.S. EPA Tier IV Final diesel-fueled internal combustion engines and their associated SCRs that are capable of achieving compliance with the emission limits in PAR 1135. Further, since all of the existing internal combustion engines are currently equipped with SCR units for post-combustion NOx control, the facility representative indicated that it is not expected that the owner/operator would be required to modify the ~~existing SCRs and associated~~ aqueous

[13] Stationary Source Committee: Tom Gross, Southern California Edison, Oral testimony provided on August 17, 2018.

ammonia storage capacity in order to comply with PAR 1135[14] since smaller quantities of aqueous ammonia would be needed to remove fewer amounts of NOx that will be generated by the new, cleaner, and more efficient engines.

Facility 3

Facility 3 is owned and operated by a municipality which operates three natural gas boilers. Two boilers are currently equipped with low-NOx burners and flue gas recirculation for pre-combustion NOx control, and one boiler is equipped with flue gas recirculation for pre-combustion NOx control and selective non-catalytic reduction for post-combustion NOx control. In response to Senate Bill 350 which requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030 in accordance with the California Renewables Portfolio Standard, Facility 3 began exploring repowering options for their three boilers. Facility 3 released a Notice of Preparation/Initial Study (NOP/IS) in December 2016[15], a Draft EIR in September 2017[16], and a Final EIR in March 2018[17], which proposed to repower the three existing boilers with one or more natural gas turbines. Facility 3's proposed project also included other substantial changes which involved the near complete demolition and replacement of the entire facility. However, on April 10, 2018, the operator was directed by their city council to evaluate local and regional clean energy solutions in lieu of some or all of the repowering project contained in the Final EIR. As of the publication date of this Mitigated SEA, the status of Facility 3's proposed project as described in the Final EIR is undecided.

In the meantime, SCAQMD staff's review of the Final EIR indicated that there are several more components to Facility 3's proposed project than what would need to occur to solely comply with PAR 1135, if adopted. In particular, only the three existing boilers at Facility 3 would require physical modifications in order to comply with PAR 1135. However, due to the configuration of the existing three boilers, SCAQMD staff determined that retrofitting each boiler with SCR for post-combustion NOx controls would require costly, complex, and substantial modifications because of each boiler's age. As such, based on the BARCT assessment and in the event that PAR 1135 is adopted prior to certification of the Facility 3's Final EIR, SCAQMD staff determined that the most feasible and cost-effective way to comply with PAR 1135 would be to repower the three existing natural gas boilers with ~~up to~~ three new natural gas turbines equipped with three new SCR units and one new aqueous ammonia storage tank to supply all three SCR units.

Facility 4

Facility 4 is owned and operated by a municipality which operates two combined cycle gas turbines that utilize dry low NOx control and two associated duct burners and one simple cycle gas turbine that utilizes water injection for pre-combustion NOx control, all three turbines are vented to three SCR units for post-combustion NOx control. Facility 4's two combined cycle gas turbines and two associated duct burners are currently exempt from PAR 1135. Facility 4, instead of opting for the low-use provision, has elected as a business decision to optionally replace the facility's one simple cycle gas turbine SCR unit catalyst module with a new, more efficient catalyst. Facility 4 has indicated that replacing the catalyst module in its simple cycle gas turbine SCR unit will reduce

[14] Personal communication with Tom Gross, Southern California Edison, August 7, 2018.

[15] Initial Study for the Grayson Repowering Project, December 2016. http://graysonrepowering.com/#initial-study

[16] Draft Environmental Impact Report (DEIR) for the Grayson Repowering Project, September 2017. http://graysonrepowering.com/#draft-eir

[17] Final Environmental Impact Report for the Grayson Repowering Project, March 2018. http://graysonrepowering.com/#final-eir

the NOx generated by the simple cycle gas turbine to BARCT-compliant levels as outlined in PAR 1135. For this reason, this Mitigated SEA analyzes the potential environmental effects of replacing the SCR catalyst for the simple cycle turbine. In addition, the new catalyst may require the injection of additional aqueous ammonia into the SCR. Thus, this Mitigated SEA also analyzes the potential for an increased amount of ammonia use and deliveries per year.

Facility 5

Facility 5 is owned and operated by a municipality which operates two combined cycle gas turbines and five simple cycle gas turbines that each utilize water injection for pre-combustion NOx control and are vented to seven selective catalytic reduction (SCR) units for post-combustion NOx control. Facility 5, instead of opting for the low-use provision, has elected as a business decision to optionally replace each of the facility's catalyst modules that comprise the seven existing SCR units with new, more efficient catalyst. The catalyst module replacement activities will occur in sequential order so that only one turbine and SCR will be offline at a time. Facility 7 has indicated that replacing the catalyst modules in each of the seven SCR units will reduce the NOx generated by the five simple cycle gas turbines and two combined cycle gas turbines to BARCT-compliant levels as outlined in PAR 1135. For this reason, this Mitigated SEA analyzes the potential environmental effects of replacing the SCR catalyst for each turbine. In addition, the new catalyst may require the injection of additional aqueous ammonia into the SCR. Thus, this Mitigated SEA also analyzes the potential for an increased amount of ammonia use and deliveries per year.

Facility 6

Facility 6 is owned and operated by a municipality which operates one simple cycle gas turbine that is vented to a SCR unit for post-combustion NOx control. If PAR 1135 is adopted, Facility 6 would be required to retrofit their existing equipment to BARCT compliant levels. The BARCT analysis examined potential compliance options which considered a number of factors such as technological feasibility, cost-effectiveness, availability of air pollution control equipment and whether the operator/owner may feasibly install new equipment. Thus, based on the BARCT assessment, the most timely, reasonable, and cost-effective option would be to replace the catalyst module in the existing SCR unit with a new, more efficient catalyst. For this reason, this Mitigated SEA analyzes the potential environmental effects of replacing the SCR catalyst for the simple cycle turbine. In addition, the new catalyst may require the injection of additional aqueous ammonia into the SCR. Thus, this Mitigated SEA also analyses the potential for an increased amount of ammonia use and deliveries per year.

Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ six affected electricity generating facilities to comply with PAR 1135.

Table 2-1
Electricity Generating Facilities and Electric ~~Power~~ Generating Units with Potential Modifications due to PAR 1135

Electricity Generating Facility	Affected Electric ~~Power~~ Generating Equipment	Existing NOx Permit Limits ~~(ppmv)~~	Proposed NOx Limit in PAR 1135 (ppmv)	Potential Modifications due to PAR 1135
Facility 1	4 Simple Cycle Turbines	5, 5, 9, 9 ppmv	2.5	Replace ~~existing~~ catalyst modules in 4 ~~existing~~ SCRs with new catalyst modules
Facility 2	5 Diesel Internal Combustion Engines	~~97, 97, 140, 82, 103~~6.5 lbs/MW-hr*	45	Replace ~~existing~~ 5 ~~new~~ diesel internal combustion engines and SCRs with 5 new diesel internal combustion engines and SCRs
Facility 3	3 Natural Gas Boilers	38, 40, 82 ppmv	5	Removing existing boilers and installing up to 3 new ~~T~~turbines with ~~3 new~~ SCRs and one new aqueous ammonia storage tank
Facility 4	1 Simple Cycle Turbine	5 ppmv	2.55	Replace catalyst module in SCR with new catalyst module
Facility 5	2 Combined Cycle Turbines and 5 Simple Cycle Turbines	7, 7 ppmv and 5, 5, 5, 5, 5 ppmv	2, 2 and 2.5, 2.5, 2.5, 2.5, 2.5	Replace catalyst modules in 7 SCRs with new catalyst modules
Facility 6	1 Simple Cycle Turbine ~~Natural Gas Boilers~~	7.6 ppmv	2.5	Replace catalyst module in SCR with new catalyst module

* Facility 2 emissions limits are calculated on a per year facility-wide average that includes other equipment (e.g all six diesel internal combustion engines and micro turbines located on-site).

The potential source of environmental impacts from the potential modifications summarized in Table 2-1 are divided into two categories – construction and operation. Activities associated with installing new or modifying existing air pollution control equipment or components (e.g., catalyst modules) and replacing electric ~~power~~ generating units with new equipment (e.g., turbines or engines) are considered to generate construction impacts, while activities associated with periodic maintenance such as delivering aqueous ammonia and fresh catalyst and hauling away spent catalyst would be considered as operational impacts that occur after construction is complete. In order to evaluate these impacts, the following assumptions were relied upon for the analysis in this Mitigated SEA.

Assumptions

Construction at Facility 1:

- The catalyst modules in the four SCR units for the four simple cycle gas turbines are assumed to be replaced with modules that are comprised of more efficient catalyst.
- The replacement catalyst modules are pre-manufactured off-site; they are smaller than the existing catalyst modules so they are assumed to fit in the existing SCR catalyst housing without requiring modifications to the housing.
- Construction activities associated with replacing the catalyst modules for each SCR would be expected to last for a period of five days.
- The catalyst module replacement activities will occur in sequential order so that only one turbine and SCR will be ~~offline~~ replaced at a time.
- The spent catalyst modules from the four SCR units would need to be disposed of or recycled for their precious metal content.
- For each SCR, the removal of spent catalyst modules and replacement of fresh catalyst modules is assumed to require the use of one forklift, one aerial lift, and one crane – with each operating four hours per day for five days with a construction crew consisting of three members driving light duty vehicles (LDA/LDT1/LDT2). In addition, the delivery of fresh catalyst modules is assumed to be supplied by one vendor driving a medium-heavy duty truck (MHDT) and the haul away of spent catalyst modules is assumed to be conducted by one waste hauler truck driving a heavy-heavy duty truck (HHDT).

Construction at Facility 2:

- Five diesel internal combustion engines and associated SCR units would need to be replaced. Construction activities associated with replacing one engine and SCR unit would be expected to last for a period of four days. The replacement is assumed to be sequential to minimize power disruptions or reductions to the facility's customers during construction.
- SCAQMD staff assumes that the demolition and construction phases for each engine and SCR unit replacement would not overlap because only one engine and SCR unit can be offline at a time in order for the facility to maintain a sufficient amount of power to its customers without causing a service disruption or reduced power supplies.
- Each engine and SCR unit is assumed to be transported to Santa Catalina Island via barge from the Port of Los Angeles.

- All construction equipment and materials would need to be delivered to the facility via barge. Due to the limited space at the facility, the hauling, unloading, and staging of construction equipment and materials would not be able to occur on the same day as construction to replace an engine.
- To remove one existing engine and SCR unit and install one new engine and SCR unit, the following construction equipment and workers are assumed to be needed:
  - Paving: one paver, one paving equipment, one roller, one cement and mortar mixer, and one tractor/loader/backhoe operating a maximum of four hours per day on one day and a construction crew of eight workers.
  - Engine and SCR unit Removal and Replacement: two cranes, one concrete/industrial saw, one rubber tired dozer, two rubber tired loaders, six forklifts, two welders, one cement and mortar mixer, and two generator sets operating a maximum of eight hours per day for three days with a construction crew consisting of 18 workers driving light duty vehicles (LDA/LDT1/LDT2), five vendors driving a combination of heavy-heavy duty trucks and medium-heavy duty trucks (HHDT, MHDT), and five waste haulers driving heavy-heavy duty trucks (HHDT).

Construction at Facility 3[18]:

- Three boilers would need to be removed and replaced with up to three turbines that meet updated BARCT. Construction is assumed to last for approximately three years and would be expected to include the demolition/dismantling of the three existing boilers and construction of three new turbines with three new SCR units and one new aqueous ammonia storage tank.
- SCAQMD staff estimates that the demolition and construction phases would not be expected to overlap.
- No site-preparation is expected to be needed.
- Due to space limitations at the site, one turbine is assumed to be constructed on a peak day.
- The following equipment and workers are assumed to be needed:
  - Demolition: One crane, two excavators, two forklifts, two other general industrial equipment, one grader, one roller, two rubber tired dozers, four tractors/loaders/backhoes operating a maximum of eight hours per day for 150 days with a construction crew consisting of 68 workers driving light duty vehicles (LDA/LDT1/LDT2), three vendors driving medium-heavy duty trucks (MHDT), and 4,200 waste haulers driving heavy-heavy duty trucks (HHDT).

[18] The City of Glendale prepared a Final EIR for the Grayson Repowering Project but the document was not certified by the Glendale City Council in spring of 2018. The Final EIR Grayson Repowering Project (FEIR Grayson Repowering Project) analyzed a project much grander in scope than what is required to comply with PAR 1135, for example they intend to demolish the existing Grayson Power Plant support structures and equipment except for Unit 9. See the FEIR Grayson Repowering Project: http://graysonrepowering.com/#final-eir. The construction impacts were analyzed using CalEEMod Version 2016.3.1, however since the preparation of the FEIR Grayson Repower Project CalEEMod has been updated to Version 2016.3.2. The FEIR Grayson Repowering Project concluded that construction activities are less than significant, for the analysis in this SEA SCAQMD staff assumed a similar schedule and construction equipment, modified for the impacts from compliance with PAR 1135, which will overestimate the SEA's construction impacts. Nonetheless, the analysis in the SEA shows that there are no significant construction impacts to air quality.

- Grading: Two excavators, one grader, one rollers, three tractors/loaders/backhoes, one concrete/industrial saw, one rubber tired dozer operation a maximum of eight hours per day for 30 days with a construction crew consisting of 15 workers driving light duty vehicles (LDA/LDT1/LDT2) and 3,000 waste haulers driving heavy-heavy duty trucks (HHDT).
- Paving: One aerial lift, one crane, one forklift, two pavers, two paving equipment, and two rollers operating a maximum of seven hours per day for 14 days with a construction crew consisting of 10 workers driving light duty vehicles (LDA/LDT1/LDT2), three vendors driving medium-heavy duty trucks (MHDT), and 220 waste haulers driving heavy-heavy duty trucks (HHDT).
- Construction: Three tractors/loaders/backhoes, three rubber tired loaders, six cranes, two welders, two rollers, two excavators, two forklifts, two other construction equipment operating a maximum of six hours per day for 300 days with a construction crew consisting of 200 workers driving light duty vehicles (LDA/LDT1/LDT2), eight vendors driving medium-heavy duty trucks (MHDT), and 3,700 waste haulers driving heavy-heavy duty trucks (HHDT).
- Architectural Coatings: One air compressor operating a maximum of four hours per day for 14 days with a construction crew consisting of four workers driving light duty vehicles (LDA/LDT1/LDT2).

Construction at Facility 4:

- The catalyst modules in the SCR unit for the simple cycle gas turbine is assumed to be replaced with a module that is comprised of a more efficient catalyst.
- The replacement catalyst modules are pre-manufactured off-site; they are smaller than the existing catalyst modules so they are assumed to fit in the existing SCR catalyst housing without requiring modifications to the housing.
- Construction activities associated with replacing a catalyst module for the SCR would be expected to last for a period of five days.
- The spent catalyst modules from the SCR unit would need to be disposed of or recycled for its precious metal content.
- For one SCR, the removal of spent catalyst modules and replacement of fresh catalyst modules is assumed to require the use of one forklift, one aerial lift, and one crane – with each operating four hours per day for five days with a construction crew consisting of three members driving light duty vehicles (LDA/LDT1/LDT2). In addition, the delivery of fresh catalyst modules is assumed to be supplied by one vendor driving a medium-heavy duty truck (MHDT) and the haul away of spent catalyst modules is assumed to be conducted by one waste hauler truck driving a heavy-heavy duty truck (HHDT).

Construction at Facility 5:

- The catalyst modules in the seven SCR units for the two combined cycle gas turbines and five simple cycle gas turbines are assumed to be replaced with modules that are comprised of more efficient catalyst.

- The replacement catalyst modules are pre-manufactured off-site; they are smaller than the existing catalyst modules so they are assumed to fit in the existing SCR catalyst housing without requiring modifications to the housing.
- Construction activities associated with replacing the catalyst modules for each SCR would be expected to last for a period of five days.
- The catalyst module replacement activities will occur in sequential order so that only one turbine and SCR will be replaced at a time.
- The spent catalyst modules from the four SCR units would need to be disposed of or recycled for their precious metal content.
- For each SCR, the removal of spent catalyst modules and replacement of fresh catalyst modules is assumed to require the use of one forklift, one aerial lift, and one crane – with each operating four hours per day for five days with a construction crew consisting of three members driving light duty vehicles (LDA/LDT1/LDT2). In addition, the delivery of fresh catalyst modules is assumed to be supplied by one vendor driving a medium-heavy duty truck (MHDT) and the haul away of spent catalyst modules is assumed to be conducted by one waste hauler truck driving a heavy-heavy duty truck (HHDT).

Construction at Facility 6:

- The catalyst modules in the SCR unit for the simple cycle gas turbine is assumed to be replaced with a module that is comprised of a more efficient catalyst.
- The replacement catalyst modules are pre-manufactured off-site; they are smaller than the existing catalyst modules so they are assumed to fit in the existing SCR catalyst housing without requiring modifications to the housing.
- Construction activities associated with replacing a catalyst module for the SCR would be expected to last for a period of five days.
- The spent catalyst modules from the SCR unit would need to be disposed of or recycled for its precious metal content.
- For one SCR, the removal of spent catalyst modules and replacement of fresh catalyst modules is assumed to require the use of one forklift, one aerial lift, and one crane – with each operating four hours per day for five days with a construction crew consisting of three members driving light duty vehicles (LDA/LDT1/LDT2). In addition, the delivery of fresh catalyst modules is assumed to be supplied by one vendor driving a medium-heavy duty truck (MHDT) and the haul away of spent catalyst modules is assumed to be conducted by one waste hauler truck driving a heavy-heavy duty truck (HHDT).

Construction at all ~~3~~ 6 Facilities:

- CalEEMod version 2016.3.2 will be used to analyze the construction emissions at each of the ~~three~~ six facilities based on the aforementioned assumptions.
- Construction activities are not assumed to overlap at the ~~three~~ six facilities because of the wide variation of modifications that may be anticipated and the varying amounts of lead time needed for pre-construction/engineering design. The facility with the highest amount of daily construction emissions will represent the worst-case.

Operation at all ~~3~~ 6 Facilities:

Up to ~~34~~ 31 facilities will need to comply with PAR 1135, but only six~~three~~ facilities would be expected to undergo physical modifications. Of the ~~three~~ six affected facilities, ~~only~~ Facilities 1, 3, 4, 5, and 6 ~~and 3~~ are expected to have new operation impacts, as explained below:

- Facility 1's proposed replacement and upgrade of the SCR catalyst modules may require additional aqueous ammonia to be injected into the four SCR units in order to achieve the desired NOx emission reductions. This analysis assumes an increase of six aqueous ammonia deliveries per year will be needed to supply the existing aqueous ammonia storage tank. However, because Facility 1 currently replaces the spent SCR catalyst modules approximately every five years as part of regular maintenance, this analysis assumes that the same maintenance schedule will continue with the upgraded SCR catalyst modules.

- Facility 2 is assumed to not create any new operational impacts because the proposed modifications would not change: 1) the amount of urea that is currently delivered and stored; and 2) the current maintenance schedule for replacing spent SCR catalyst approximately every five years.

- Facility 3 is expected to install one new aqueous ammonia tank; thus, new operational impacts relative to the delivery and storage of aqueous ammonia are anticipated. Facility 3 is also expected to install three new SCRs which will require spent catalyst to be replaced approximately every five years.

- Facility 4's proposed replacement and upgrade of the SCR catalyst module may require additional aqueous ammonia to be injected into the SCR unit in order to achieve the desired NOx emission reductions. This analysis assumes an increase of six aqueous ammonia deliveries per year will be needed to supply the existing aqueous ammonia storage tank. However, because Facility 4 currently replaces the spent SCR catalyst module approximately every five years as part of regular maintenance, this analysis assumes that the same maintenance schedule will continue with the upgraded SCR catalyst module.

- Facility 5's proposed replacement and upgrade of the SCR catalyst modules may require additional aqueous ammonia to be injected into the seven SCR units in order to achieve the desired NOx emission reductions. This analysis assumes an increase of 11 aqueous ammonia deliveries per year will be needed to supply the existing aqueous ammonia storage tank. However, because Facility 5 currently replaces the spent SCR catalyst modules approximately every five years as part of regular maintenance, this analysis assumes that the same maintenance schedule will continue with the upgraded SCR catalyst modules.

- Facility 6's proposed replacement and upgrade of the SCR catalyst module may require additional aqueous ammonia to be injected into the SCR unit in order to achieve the desired NOx emission reductions. This analysis assumes an increase of six aqueous ammonia deliveries per year will be needed to supply the existing aqueous ammonia storage tank. However, because Facility 6 currently replaces the spent SCR catalyst module approximately every five years as part of regular maintenance, this analysis assumes that the same maintenance schedule will continue with the upgraded SCR catalyst module.

- No additional permanent employees are expected to be hired at any of the ~~three~~ six facilities as a result of PAR 1135.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
I.	**AESTHETICS**. Would the project:				
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☑
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☑
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☑
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☑

Significance Criteria

The proposed project impacts on aesthetics will be considered significant if:

- The project will block views from a scenic highway or corridor.
- The project will adversely affect the visual continuity of the surrounding area.
- The impacts on light and glare will be considered significant if the project adds lighting which would add glare to residential areas or sensitive receptors.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.

Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the three affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

I. a), b) c) & d) No Impact. To reduce NOx emissions from the affected electricity generating facilities, ~~three~~ six facilities would need to make physical modifications as summarized in Table 2-1 in order to comply with updated BARCT in PAR 1135.

At each of the ~~three~~ six facilities, varying types of construction equipment such as cranes, tractors, backhoes, aerial lifts, compressors, welders, and forklifts, et cetera, may be needed to carry out the facility-specific physical modifications during construction. However, since electricity generating facilities are heavy industrial facilities that currently utilize a wide range of on-road vehicles and off-road equipment such as aerial lifts, cranes, forklifts and other types of heavy-duty equipment on site as part of their day-to-day operations, using these or similar equipment during construction activities for PAR 1135 may not discernably different in appearance. For example, an aerial lift or crane, when fully extended, may be temporarily visible in the surrounding areas while in use, depending on where the equipment is located within each facility's property boundary and whether there are any other structures on or off of the property that would block or buffer the line of sight outside of the property lines. Thus, the use of these equipment during construction will not be expected to be visually different during construction than when they are used during regular day-to-day operations. Aside from aerial lifts or cranes, the majority of construction equipment that may be needed is expected to be relatively low in height and not substantially visible to the surrounding area due to existing fencing along the property lines and existing structures currently within the facilities that may buffer the views of the construction activities. Further, once all of the construction activities are completed at the each of the three facilities, the overall visual profile of the facilities post-construction is not expected to be substantially different in appearance to the surrounding areas because the modified and/or replaced equipment will be at the same or similar heights of the existing equipment and surrounding structures.

Specific to Facility 1, the SCR catalyst modules for each of the four existing SCR units are assumed to need replacing and the modules are contained within an existing housing structure. Further, the replacement SCR catalyst modules are expected to be smaller than the existing modules. In addition, the act of swapping out the spent SCR catalyst modules with fresh, more efficient catalysts will not be expected to be visible offsite. Thus, no physical modifications that would alter the height profiles or overall appearance of the existing housing structures are necessary and only SCR module change-out activities are expected to occur during construction. Thus, once the SCR catalyst modules are replaced for each SCR unit, the outside appearance of each SCR unit and the housing of the catalyst modules will remain unchanged.

Facility 2 would be expected to replace five diesel internal combustion engines and associated SCR units, with one engine and SCR unit being replaced per year. Once construction of each new engine and SCR unit is completed at Facility 2 and the existing internal combustion engines and SCR units are removed, the overall appearance is of the new engines and SCRs at this facility is expected to have similar physical and height characteristics as the existing engines.

Facility 3 would be expected to demolish three existing boilers and install three new turbines with three new SCR units and one new aqueous ammonia storage tank. While the new turbines are a different type of electric power generating unit when compared to the boilers and may have a different footprint and height, the overall industrial appearance and footprint of Facility 3 is not expected to drastically change as a result of these construction activities.

For Facility 4 and 6, the SCR catalyst modules for each existing SCR unit is assumed to need replacing and the modules are contained within an existing housing structure. Further, the replacement SCR catalyst modules are expected to be smaller than the existing modules. In addition, the act of swapping out the spent SCR catalyst modules with a fresh, more efficient catalyst will not be expected to be visible offsite. Thus, no physical modifications that would alter the height profiles or overall appearance of the existing housing structures are necessary and only SCR module change-out activities are expected to occur during construction. Thus, once the SCR catalyst modules are replaced for each SCR unit, the outside appearance of the SCR unit and the housing of the catalyst modules will remain unchanged.

Facility 5, is assumed to need to replace the SCR catalyst modules for each of the seven existing SCR units contained within an existing housing structure, with one module replaced per year. Further, the replacement SCR catalyst modules are expected to be smaller than the existing modules. In addition, the act of swapping out the spent SCR catalyst modules with fresh, more efficient catalysts will not be expected to be visible offsite. Thus, no physical modifications that would alter the height profiles or overall appearance of the existing housing structures are necessary and only SCR module change-out activities are expected to occur during construction. Thus, once the SCR catalyst modules are replaced for each SCR unit, the outside appearance of each SCR unit and the housing of the catalyst modules will remain unchanged.

Because each affected electricity generating facility is located in existing industrial or commercial land use areas, any construction equipment that is needed at each of the ~~three~~ six facilities is not expected to be substantially discernable from what typically exists on-site for conducting routine operations and maintenance activities. Further, the construction activities are not expected to adversely impact views and aesthetics resources since most of the heavy equipment and activities are expected to occur within the confines of each existing facility property and are expected to introduce only minor visual changes to areas outside each electricity generating facility, if at all, depending on the location of the construction activities within each facility.

Lastly, the construction activities are expected to be temporary in nature and will cease following completion of the modifications. Also, once construction at each of the ~~three~~ six facilities is completed, any construction equipment that has been rented will be removed from each facility. Further, any new equipment that is installed would be expected to blend in with the existing industrial profile at the affected facilities because the heights of these replacements units are expected to have a similar profile when compared to neighboring existing equipment on-site and their associated stack heights would be about the same as existing stacks within the affected facilities.

Therefore, any potential construction and operation activities as a result of the proposed project would not be expected to damage, degrade, or obstruct scenic resources and the existing visual character of any site in the vicinity of affected facilities.

There are no components in PAR 1135 that would require construction activities to occur at night. Further, cities often have their own limitations and prohibitions that restrict construction from occurring during evening hours and weekends. Therefore, no additional temporary construction lighting at each facility would be expected. Similarly, while the proposed project has no provisions that would require affected equipment to operate at night, some facilities currently operate multiple shifts and existing lighting is utilized during the nighttime shifts. For those facilities, once construction is complete, additional permanent light fixtures may be installed on or near the repowered, retrofitted, or replaced electric ~~power~~ generating units for safety and security reasons. These permanent light fixtures should be positioned to direct light downward toward equipment within the facility so as to not create additional light or glare offsite to residences or sensitive receptors. Therefore, the proposed project is not expected to create a new source of substantial light or glare at any of the affected facilities in a manner that would adversely affect day or nighttime views in the surrounding areas.

Conclusion

Based upon these considerations, significant adverse aesthetics impacts are not expected from implementing PAR 1135. Since no significant aesthetics impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
II.	**AGRICULTURE AND FORESTRY RESOURCES.** Would the project:				
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland mapping and Monitoring Program of the California Resources Agency, to non- agricultural use?	☐	☐	☐	☑
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☑
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☑
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☑

Significance Criteria

Project-related impacts on agriculture and forestry resources will be considered significant if any of the following conditions are met:

- The proposed project conflicts with existing zoning or agricultural use or Williamson Act contracts.
- The proposed project will convert prime farmland, unique farmland or farmland of statewide importance as shown on the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency, to non-agricultural use.
- The proposed project conflicts with existing zoning for, or causes rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined in Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)).
- The proposed project would involve changes in the existing environment, which due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 <u>and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications</u>.

Of the ~~three~~ <u>six</u> affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the three facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ <u>six</u> affected electricity generating facilities. Therefore, at each of the ~~three~~ <u>six</u> affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

II. a), b), c), & d) No Impact. Compliance with PAR 1135 is expected to be met by repowering, retrofitting, or replacing affected electric ~~power~~ generating units to meet updated BARCT. Since both construction and operation activities that would occur as a result of implementing the proposed project would occur within the existing boundaries of each affected facility, there are no provisions in PAR 1135 that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments and no land use or planning requirements relative to agricultural resources would be altered by the proposed project. Each of the ~~three~~ <u>six</u> affected facilities are located on existing industrial or commercial land use areas. For these reasons, implementation of PAR 1135 would not convert farmland to non-agricultural use or conflict with zoning for agriculture use or a Williamson Act contract. Furthermore, it is not expected that PAR 1135 would conflict with existing zoning for, or cause rezoning of, forest land; or result in the loss of forest land or conversion of forest land to non-forest use. Consequently, the proposed project would not create any significant adverse agriculture or forestry impacts.

Conclusion

Based upon these considerations, significant adverse agriculture and forestry resources impacts are not expected from implementing PAR 1135. Since no significant agriculture and forestry resources impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	**Less Than Significant With Mitigation**	**Less Than Significant Impact**	**No Impact**
III. AIR QUALITY AND GREENHOUSE GAS EMISSIONS. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☑
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☐	☑	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☑	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☑	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☑	☐
f) Diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s)?	☐	☐	☑	☐
g) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☑	☐
h) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☑	☐

Significance Criteria

To determine whether or not air quality and greenhouse gas impacts from implementing PAR 1135 are significant, impacts will be evaluated and compared to the criteria in Table 2-2. PAR 1135 will be considered to have significant adverse impacts if any one of the thresholds in Table 2-2 are equaled or exceeded.

Table 2-2
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 $\mu g/m^3$ (construction)[e] & 2.5 $\mu g/m^3$ (operation) 1.0 $\mu g/m^3$
$PM_{2.5}$ 24-hour average	 10.4 $\mu g/m^3$ (construction)[e] & 2.5 $\mu g/m^3$ (operation)
SO_2 1-hour average 24-hour average	 0.25 ppm (state) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)
Sulfate 24-hour average	 25 $\mu g/m^3$ (state)
CO 1-hour average 8-hour average	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 $\mu g/m^3$ (state) 0.15 $\mu g/m^3$ (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; $\mu g/m^3$ = microgram per cubic meter; ≥ = greater than or equal to; MT/yr CO_2eq = metric tons per year of CO_2 equivalents; > = greater than

Revision: March 2015

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.

Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ six affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

III. a) No Impact. The SCAQMD is required by law to prepare a comprehensive district-wide Air Quality Management Plan (AQMP) which includes strategies (e.g., control measures) to reduce emission levels to achieve and maintain state and federal ambient air quality standards, and to ensure that new sources of emissions are planned and operated to be consistent with the SCAQMD's air quality goals. The AQMP's air pollution reduction strategies include control measures which target stationary, area, mobile and indirect sources. These control measures are based on feasible methods of attaining ambient air quality standards. Pursuant to the provisions of both the state and federal Clean Air Acts, the SCAQMD is also required to attain the state and federal ambient air quality standards for all criteria pollutants.

The most recent regional blueprint for how the SCAQMD will achieve air quality standards and healthful air is outlined in the 2016 AQMP[19] which contains multiple goals of promoting reductions of criteria air pollutants, greenhouse gases, and toxics. In particular, the 2016 AQMP contains control measure CMB-05 – Further Reductions from RECLAIM Assessment, to commit to additional NOx emission reductions of five tons per day to occur by 2025. Also, CMB-05 concluded that an orderly sunset of the RECLAIM program may be the best way to achieve the additional five tons per day and reduce compliance burdens for RECLAIM facilities, while also achieving more actual and SIP creditable emissions reductions. Thus, CMB-05 also committed to

[19] SCAQMD, Final 2016 Air Quality Management Plan, March, 2017. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf

a process of transitioning NOx RECLAIM facilities to a command-and-control regulatory structure to ensure that the applicable equipment will meet BARCT level equivalency as soon as practicable.

As part of the on-going transition from facilities in the NOx RECLAIM program to a command-and-control regulatory structure and implementation of CMB-05 in the 2016 AQMP, PAR 1135 has been crafted to further reduce NOx emissions from electric generating facilities that own or operate electric ~~power~~ generating units. Upon implementation, PAR 1135 would be expected to reduce NOx emissions by achieving updated BARCT compliance for electric ~~power~~ generating units.

For these reasons, PAR 1135 is not expected to obstruct or conflict with the implementation of the 2016 AQMP because the emission reductions from implementing PAR 1135 are in accordance with the emission reduction goals in the 2016 AQMP. PAR 1135 will help reduce NOx emissions, which is consistent with the goals of the 2016 AQMP. Therefore, implementing PAR 1135 to reduce NOx emissions from electricity generating facilities would not conflict with or obstruct implementation of the applicable air quality plans. Since no significant impacts were identified for this issue, no mitigation measures are necessary or required.

III. b) and f) Less Than Significant Impact. SCAQMD staff is not aware of any new electricity generating facilities planned to be constructed in the immediate future and is unable to predict or forecast, when, if at all, any would be built in the long-term. Therefore, in accordance with CEQA Guidelines Section 15145, an evaluation of construction and operation impacts for new facilities is concluded to be speculative and will not be evaluated further in this Mitigated SEA. Instead, the focus of the analysis will be on the affected facilities (Facility 1, Facility 2, ~~and~~ Facility 3, Facility 4, Facility 5, and Facility 6) and the effects of complying with PAR 1135 as explained in the following discussion.

Construction and Operation Activities

The primary source of air quality construction impacts that would be expected to occur from complying with PAR 1135 would be from physical changes and modifications to electric ~~power~~ generating units. There are approximately ~~34~~ 31 facilities that will need to comply with PAR 1135, but only ~~three~~six, Facilities 1, 2, ~~and~~ 3, 4, 5, and 6, would be expected to undergo physical modifications requiring construction as a result of complying with PAR 1135. Specifically, ~~Facility~~facilities 1, 4, 5, and 6 ~~is~~are expected to undergo some minor construction to replace the existing catalyst modules in each of ~~the~~ their ~~four~~ existing SCRs with new catalyst modules. Facility 2 is expected to undergo substantial construction to replace five existing diesel internal combustion engines and SCR units with five new diesel internal combustion engines and SCR units. Finally, Facility 3 is expected to removing three existing boilers and installing up to three new turbines, three new SCRs and one new aqueous ammonia storage tank.

Similarly during operation (e.g., after construction is completed), only ~~two~~ five facilities, Facilities 1 ~~and~~ 3, 4, 5, and 6 would be expected to have new, albeit limited, operational impacts occur as a result of complying with PAR 1135.

In particular, if Facility 1, 4, 5, and 6 replace~~s~~ the SCR catalyst modules with upgraded, more efficient catalyst modules in in each of ~~the four~~ their existing SCRs, additional aqueous ammonia may need to be injected into each of the ~~four~~ SCR units in order to achieve the desired NOx emission reductions in accordance with PAR 1135. This potential increase in ammonia usage is estimated to require approximately ~~six~~ one and a half additional deliveries of ammonia per year per SCR unit which will in turn increase the annual operational emissions from six additional ammonia delivery vehicles per year for Facility 1, two additional ammonia delivery vehicles per year for Facility 4, 11 additional ammonia delivery vehicles per year for Facility 5, and two additional ammonia delivery vehicles per year for Facility 6. It is important to note that Facility 1, 4, 5, and 6 currently replace~~s~~ the spent SCR catalyst modules approximately once every five years as part of regular maintenance and the potential for upgrading the catalyst modules is not expected to alter this five-year maintenance cycle. As such, this analysis assumes that no new or additional operational impacts associated with conducting catalyst maintenance activities (e.g., delivering fresh catalyst modules and hauling away and spent catalyst modules) will occur if the SCR catalyst modules are upgraded.

Once Facility 2 completes the replacement of their five existing diesel internal combustion engines and SCR units with five new diesel internal combustion engines and SCR units, the operation of the five new engines and SCR units will not be expected to create any new or additional operational impacts. Further, ~~because Facility 2 will not change the existing SCRs,~~ there would be no change to: 1) the amount of urea that is currently delivered, stored, and utilized by the ~~existing~~ new SCRs; and 2) the current maintenance schedule for replacing spent SCR catalyst (e.g., approximately every five years). Thus, no new or additional operational activities will be expected to occur at Facility 2 as a result of PAR 1135.

After Facility 3 removes their three existing boilers and installs up to three new turbines, three new SCRs, and one new aqueous ammonia storage tank, new operational impacts relative to the delivery and storage of aqueous ammonia are anticipated. Further, specific to the installation of three new SCRs, new operational activities to replace spent catalyst with fresh catalyst approximately every five years would be expected to occur at Facility 3.

Thus, the analysis focuses on the potential secondary adverse environmental impacts during construction at Facilities 1, 2, ~~and~~ 3, 4, 5, and 6 and during operation at Facilities 1, ~~and~~ 3, 4, 5, and 6. Table 2-3 summarizes the key requirements in PAR 1135 that may create secondary adverse air quality and greenhouse gas (GHG) impacts during construction and operation.

Table 2-3
Physical Actions Anticipated at Affected Facilities During Construction and Operation

Affected Facility	Physical Actions Anticipated During:	
	Construction	**Operation**
Facility 1	Remove and haul away existing catalyst modules and deliver and install new catalyst modules for 4 existing SCRs	1. Continue existing spent catalyst replacement practices and maintenance schedule (e.g., every 5 years). 2. No change to existing aqueous ammonia storage tank. 3. Potential annual increase in amount of aqueous ammonia delivered and used by 4 existing SCRs.
Facility 2	1. Remove 5 existing diesel internal combustion engines and SCR units and install 5 new diesel internal combustion engines and SCR units 2. Haul construction equipment, removed and new engines, SCR units, and waste material to and from Santa Catalina Island via barge	1. No changes to existing urea storage and usage. ~~2. No changes to existing SCR systems.~~ ~~3.~~2. Continue existing spent catalyst replacement practices and maintenance schedule (e.g., every 5-years)
Facility 3	1. Remove 3 existing boilers 2. Install up to 3 new turbines 3. Install up to 3 new SCRs 4. Install 1 new aqueous ammonia storage tank	1. New deliveries, storage, and use of aqueous ammonia by 3 new SCRs 2. New spent catalyst replacement practices and maintenance schedule (e.g., every 5 years)
Facility 4	Remove and haul away existing catalyst module and deliver and install new catalyst module for the existing SCR	1. Continue existing spent catalyst replacement practices and maintenance schedule (e.g., every 5 years). 2. No change to existing aqueous ammonia storage tank. 3. Potential annual increase in amount of aqueous ammonia delivered and used by existing SCR.
Facility 5	Remove and haul away existing catalyst modules and deliver and install new catalyst modules for 7 existing SCRs	1. Continue existing spent catalyst replacement practices and maintenance schedule (e.g., every 5 years). 2. No change to existing aqueous ammonia storage tank. 3. Potential annual increase in amount of aqueous ammonia delivered and used by 7 existing SCRs.
Facility 6	Remove and haul away existing catalyst module and deliver and install new catalyst module for the existing SCR	1. Continue existing spent catalyst replacement practices and maintenance schedule (e.g., every 5 years). 2. No change to existing aqueous ammonia storage tank. 3. Potential annual increase in amount of aqueous ammonia delivered and used by existing SCR.

For the purpose of the conducting a worst-case CEQA analysis for Facilities 1, 2, ~~and~~ 3, 4, 5, and 6 the following detailed assumptions have been made:

- Upon adoption of PAR 1135, one facility has four simple cycle turbines, one facility has three boilers, ~~and~~ one facility has five diesel internal combustion engines, one facility has one simple cycle turbine, one facility has two combined cycle turbines and associated duct burners and five simple cycle turbines, and one facility has one simple cycle turbine that would each be required to comply with updated BARCT emission limits by January 1, 2024. Each affected facility would be expected to undergo construction activities, as summarized in Table 2-3.

Construction at Facility 1, 4, 5, and 6:

- The catalyst modules in ~~the four~~ each affected SCR unit~~s~~ for the four simple cycle gas turbines at Facility 1, the simple cycle gas turbine at Facility 4, the two combined cycle gas turbines and five simple cycle gas turbines at Facility 5, and the simple cycle gas turbine at Facility 6 are assumed to be replaced with more efficient catalyst.
- The replacement catalyst modules are pre-manufactured off-site; they are smaller than the existing catalyst modules so they are assumed to fit in the existing SCR catalyst housing without requiring modifications to the housing.
- Construction activities associated with replacing the catalyst modules for each SCR would be expected to last for a period of five days.
- The catalyst module replacement activities will occur in sequential order so that only one turbine and SCR will be offline at a time.
- The spent catalyst modules from ~~the four~~each affected SCR unit~~s~~ would need to be disposed of, or recycled for their precious metal content.
- For each SCR, the removal of spent catalyst modules and replacement of fresh catalyst modules is assumed to require the use of one forklift, one aerial lift, and one crane – with each operating four hours per day for five days with a construction crew consisting of three members driving light duty vehicles (LDA/LDT1/LDT2). In addition, the delivery of fresh catalyst modules is assumed to be supplied by one vendor driving a medium-heavy duty truck (MHDT) and the haul away of spent catalyst modules is assumed to be conducted by one waste hauler truck driving a heavy-heavy duty truck (HHDT).

Construction at Facility 2:

- Five diesel internal combustion engines and SCR units would need to be replaced. Construction activities associated with replacing one engine and SCR unit would be expected to last for a period of four days. The replacement is assumed to be sequential to minimize power disruptions or reductions to the facility’s customers during construction.
- SCAQMD staff assumes that the demolition and construction phases for each engine and SCR replacement would not overlap because only one engine and SCR unit can be offline at a time in order for the facility to maintain a sufficient amount of power to its customers without causing a service disruption or reduced power supplies.
- Each engine and SCR unit is assumed to be transported to Santa Catalina Island via barge from the Port of Los Angeles.

- All construction equipment and materials would need to be delivered to the facility via barge. Due to the limited space at the facility, the hauling, unloading, and staging of construction equipment and materials would not be able to occur on the same day as construction to replace an engine.
- To remove one existing engine and SCR unit and install one new engine and SCR unit, the following construction equipment and workers are assumed to be needed:
  - Paving: one paver, one paving equipment, one roller, one cement and mortar mixer, and one tractor/loader/backhoe operating a maximum of four hours per day on one day and a construction crew of eight workers.
  - Engine and SCR unit Removal and Replacement: two cranes, one concrete/industrial saw, one rubber tired dozer, two rubber tired loaders, six forklifts, two welders, one cement and mortar mixer., and two generator sets operating a maximum of eight hours per day for three days with a construction crew consisting of 18 workers driving light duty vehicles (LDA/LDT1/LDT2), five vendors driving a combination of heavy-heavy duty trucks and medium-heavy duty trucks (HHDT, MHDT), and five waste haulers driving heavy-heavy duty trucks (HHDT).

Construction at Facility 3[20]:

- Three boilers would need to be removed and replaced with up to three turbines that meet updated BARCT. Construction is assumed to last for approximately three years and would be expected to include the demolition/dismantling of the three existing boilers and construction of three new turbines with three new SCR units and one new aqueous ammonia storage tank.
- SCAQMD staff estimates that the demolition and construction phases would not be expected to overlap.
- No site-preparation is expected to be needed.
- Due to space limitations at the site, one turbine is assumed to be constructed on a peak day.
- The following equipment and workers are assumed to be needed:
  - Demolition: One crane, two excavators, two forklifts, two other general industrial equipment, one grader, one roller, two rubber tired dozers, four tractors/loaders/backhoes operating a maximum of eight hours per day for 150 days with a construction crew consisting of 68 workers driving light duty vehicles (LDA/LDT1/LDT2), three vendors driving medium-heavy duty trucks (MHDT), and 4,200 waste haulers driving heavy-heavy duty trucks (HHDT).

[20] The City of Glendale prepared a Final EIR for the Grayson Repowering Project but the document was not certified by the Glendale City Council at their meeting in Spring 2018. The Final EIR Grayson Repowering Project (FEIR Grayson Repowering Project) analyzed a project much grander in scope than what is required to comply with PAR 1135. For example the project description proposed to demolish the entire existing Grayson Power Plant support structures and equipment except for Unit 9. See the FEIR Grayson Repowering Project: http://graysonrepowering.com/#final-eir. The construction impacts were analyzed using CalEEMod Version 2016.3.1. However since the preparation of the FEIR Grayson Repower Project, CalEEMod has been updated to Version 2016.3.2. The FEIR Grayson Repowering Project concluded that construction air quality impacts would be less than significant. For the analysis in this SEA, SCAQMD staff assumed a similar construction schedule and construction equipment profile as in the FEIR, but adjusted the analysis to only focus on the activities and corresponding impacts that would be expected to occur in order to comply with PAR 1135. While SCAQMD staff's approach overestimates the construction impacts, the analysis in the SEA also concludes that there would be no significant air quality impacts during construction.

- Grading: Two excavators, one grader, one rollers, three tractors/loaders/backhoes, one concrete/industrial saw, one rubber tired dozer operation a maximum of eight hours per day for 30 days with a construction crew consisting of 15 workers driving light duty vehicles (LDA/LDT1/LDT2) and 3,000 waste haulers driving heavy-heavy duty trucks (HHDT).
- Paving: One aerial lift, one crane, one forklift, two pavers, two paving equipment, and two rollers operating a maximum of seven hours per day for 14 days with a construction crew consisting of 10 workers driving light duty vehicles (LDA/LDT1/LDT2), three vendors driving medium-heavy duty trucks (MHDT), and 220 waste haulers driving heavy-heavy duty trucks (HHDT).
- Construction: Three tractors/loaders/backhoes, three rubber tired loaders, six cranes, two welders, two rollers, two excavators, two forklifts, two other construction equipment operating a maximum of six hours per day for 300 days with a construction crew consisting of 200 workers driving light duty vehicles (LDA/LDT1/LDT2), eight vendors driving medium-heavy duty trucks (MHDT), and 3,700 waste haulers driving heavy-heavy duty trucks (HHDT).
- Architectural Coatings: One air compressor operating a maximum of four hours per day for 14 days with a construction crew consisting of four workers driving light duty vehicles (LDA/LDT1/LDT2).

Construction at all ~~3~~ Six Facilities:

- CalEEMod version 2016.3.2 will be used to analyze the construction emissions at each of the ~~three~~ six facilities based on the aforementioned assumptions.
- Construction activities are not assumed to overlap at the ~~three~~ six facilities because of the wide variation of modifications that may be anticipated and the varying amounts of lead time needed for pre-construction/engineering design. The facility with the highest amount of daily construction emissions will represent the worst-case.

Operation at all ~~3~~ Six Facilities:

Up to ~~34~~ 31 facilities will need to comply with PAR 1135 but only ~~three~~ six facilities would be expected to undergo physical modifications. Of the ~~three~~ six affected facilities, ~~only~~ Facilities 1 ~~and~~ 3, 4, 5, and 6 are expected to have new operation impacts, as explained below:

- ~~Facility~~ Facilities ~~1's~~ 1, 4, 5, and 6 proposed replacement and upgrade of ~~the~~ each affected SCR catalyst module~~s~~ may require additional aqueous ammonia to be injected into the four SCR units at Facility 1, one SCR unit at Facility 4, seven SCR units at Facility 5, and one SCR unit at Facility 6 in order to achieve the desired NOx emission reductions. This analysis assumes an increase of six aqueous ammonia deliveries per year at Facility 1, two aqueous ammonia deliveries per year at Facility 4, 11 aqueous ammonia deliveries per year at Facility 5, and two aqueous ammonia delivers per year at Facility 6 will be needed to supply the existing aqueous ammonia storage tanks. However, because Facility 1, 4, 5, and 6 currently replaces ~~the~~ each spent SCR catalyst module~~s~~ approximately every five years as part of regular maintenance, this analysis assumes that the same maintenance schedule will continue with the upgraded SCR catalyst modules.
- Facility 2 is assumed to not create any new operational impacts because the proposed modifications would not change: 1) the amount of urea that is currently delivered and

stored; and 2) the current maintenance schedule for replacing spent SCR catalyst approximately every five years.

- Facility 3 is expected to install one new aqueous ammonia tank; thus, new operational impacts relative to the delivery and storage of aqueous ammonia are anticipated. Facility 3 is also expected to install three new SCRs which will require spent catalyst to be replaced approximately every five years.
- No additional permanent employees are expected to be hired at any of the ~~three~~ six facilities as a result of PAR 1135.

Construction Impacts

Construction emissions were estimated using the California Emissions Estimator Model® version 2016.3.2 (CalEEMod[21]). To retrofit, repower, or replace electric ~~power~~ generating units the use of construction off-road equipment was assumed on a facility-by-facility basis and is detailed in Tables 2-4 through 2-6 [22]. In addition, emissions from all on-road vehicles transporting workers, vendors, and material removal and delivery during construction were also calculated using CalEEMod. The detailed output reports for the CalEEMod runs are included in Appendix C of this Mitigated SEA. Tables 2-7 through 2-9 summarize the results of the construction air quality analysis during the construction activities. Appendix C also contains the spreadsheets with the results and assumptions used for this analysis.

Table 2-4
Construction Equipment to
Replace Catalyst Modules in One SCR Unit at Facility 1, 4, 5, and 6

Construction Phase	Off-Road Equipment Type	Amount	Daily Usage Hours
Building Construction	Forklift	1	4
Building Construction	Aerial Lift	1	4
Building Construction	Crane	1	4

[21] CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operations from a variety of land use projects.

[22] In general, no or limited construction emissions from grading are anticipated because retrofitting, repowering, or replacing electric power generating units occurs at existing industrial/commercial facilities and, therefore, would not be expected to require digging, earthmoving, grading, etc.

Table 2-5
Construction Equipment to
Remove One Engine and Install One New Engine and SCR Unit at Facility 2

Construction Phase	Off-Road Equipment Type	Amount	Daily Usage Hours
Demolition	Concrete/Industrial Saw	1	8
Demolition	Crane	1	7
Demolition	Forklift	3	7
Demolition	Generator Set	1	7
Demolition	Rubber Tired Dozer	1	1
Demolition	Rubber Tired Loader	2	7
Demolition	Tractor/Loader/Backhoe	2	6
Demolition	Welder	1	7
Building Construction	Crane	1	7
Building Construction	Forklift	3	7
Building Construction	Generator Set	1	7
Building Construction	Rubber Tired Loader	2	7
Building Construction	Tractor/Loader/Backhoe	2	8
Building Construction	Welder	1	7
Paving	Cement and Mortar Mixer	1	3
Paving	Paver	1	4
Paving	Paving Equipment	1	4
Paving	Roller	1	2
Paving	Tractor/Loader/Backhoe	1	4

Table 2-6
Construction Equipment Remove Three Boilers and Install Three New Turbines, Three New SCR Units, and One New Aqueous Ammonia Storage Tank at Facility 3

Construction Phase	Off-Road Equipment Type	Amount	Daily Usage Hours
Demolition	Concrete/Industrial Saw	1	8
Demolition	Crane	1	3
Demolition	Excavator	2	3
Demolition	Forklift	2	2
Demolition	Grader	1	1
Demolition	Other General Industrial Equipment	2	2
Demolition	Roller	1	1
Demolition	Rubber Tired Dozer	2	3
Demolition	Tractor/Loader/Backhoe	2	4
Grading	Concrete/Industrial Saw	1	8
Grading	Excavator	2	3
Grading	Grader	1	4
Grading	Roller	1	4
Grading	Rubber Tired Dozer	1	4
Grading	Tractor/Loader/Backhoe	2	3
Building Construction	Cranes	2	3
Building Construction	Excavator	2	1
Building Construction	Forklift	2	6
Building Construction	Other Construction Equipment	2	1
Building Construction	Roller	1	1
Building Construction	Rubber Tired Loader	2	2
Building Construction	Tractor/Loader/Backhoe	2	1
Building Construction	Welders	1	4
Paving	Aerial Lift	1	1
Paving	Cement and Mortar Mixer	4	6
Paving	Crane	1	4
Paving	Forklift	1	3
Paving	Paver	2	5
Paving	Paving Equipment	2	5
Paving	Roller	2	5
Paving	Tractor/Loader/Backhoe	1	7
Architectural Coating	Air Compressor	1	4

Table 2-7
Peak Daily Construction Emissions During
Catalyst Modules Replacement in One SCR at Facility 1, 4, 5 and 6

Construction Activity	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
1 SCR Catalyst Replacement occurring on a peak day	0.4	5.0	3.1	0.0	0.3	0.2
Total Peak Daily Construction Emissions	0.4	5.0	3.1	0.0	0.3	0.2
SIGNIFICANCE THRESHOLD FOR CONSTRUCTION	75	100	550	150	150	55
SIGNIFICANT?	NO	NO	NO	NO	NO	NO

a. The emissions are estimated using CalEEMod version 2016.3.2 and include emissions from on-road vehicles and off-road construction equipment.
b. To avoid having more than one unit being offline at a time, the replacement of catalyst modules for one SCR unit is assumed to occur on a peak day.
c. Appendix C contains the detailed calculations.

Table 2-8A
Peak Daily Construction Emissions
To Transport One Engine and SCR unit to Facility 2

Construction Activity	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
1 Barge Round-Trip	1.3	10	22	0.10	0.19	1.5
Total Peak Daily Construction Emissions	**1.3**	**10**	**22**	**0.10**	**0.19**	**1.5**
SIGNIFICANCE THRESHOLD FOR CONSTRUCTION	75	100	550	150	150	55
SIGNIFICANT?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

a. The emissions were estimated using barge emission factors in the Final Negative Declaration for the Petro-Diamond Terminal Company Marine Terminal Permit Modification Project, Appendix A: Emission Calculations. July 2008.
b. Facility 2 is assumed to replace five engines in sequential order because only one engine can be offline at a time in order for the facility to maintain a sufficient amount of power to its customers without causing a service disruption or reduced power supplies. Thus, only one existing engine demolition and one new engine installation is expected to occur each year. On a peak day, there will be one engine installation at Facility 2. Barge trips are not expected to occur on the same day as the installation of one new engine.
c. Appendix C contains the detailed calculations.

Table 2-8B
Peak Daily Construction Emissions
To Install One New Engine and SCR unit at Facility 2

Construction Activity	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
1 Engine Demolition and 1 New Engine Installation	4.3	40	27	0.1	3.4	2.3
Total Peak Daily Construction Emissions	**4.3**	**40**	**27**	**0.1**	**3.4**	**2.3**
SIGNIFICANCE THRESHOLD FOR CONSTRUCTION	75	100	550	150	150	55
SIGNIFICANT?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

a. The emissions were estimated using CalEEMod version 2016.3.2 and include emissions from on-road vehicles and off-road construction equipment.
b. Facility 2 is assumed to replace five engines in sequential order because only one engine can be offline at a time in order for the facility to maintain a sufficient amount of power to its customers without causing a service disruption or reduced power supplies. Thus, only one existing engine demolition and one new engine installation is expected to occur each year. On a peak day, there will be one engine installation at Facility 2. Barge trips are not expected to occur on the same day as the installation of one new engine.
c. Appendix C contains the detailed calculations.

Table 2-9
Peak Daily Construction Emissions to Remove Three Boilers
and Install Three New Turbines, Three New SCR Units,
and One New Aqueous Ammonia Storage Tank at Facility 3

Construction Activity	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Remove 3 Existing Boilers and Install 3 New Turbines, 3 New SCR units, and 1 New Aqueous Ammonia Storage Tank	16	51	22	0.1	6.3	3.3
Total Peak Daily Construction Emissions	16	51	22	0.1	6.3	3.3
SIGNIFICANCE THRESHOLD FOR CONSTRUCTION	75	100	550	150	150	55
SIGNIFICANT?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

a. The emissions are estimated using CalEEMod version 2016.3.2 and include emissions from on-road vehicles and off-road construction equipment.
b. Due to space constraints and to avoid having more than one unit being offline at a time, the demolition/removal of existing equipment and the installation of new equipment is assumed to occur on different days in multiple stages.
c. Appendix C contains the detailed calculations.

Given the duration of the construction expected at each of the ~~three~~ six affected facilities and the length of time to comply with the requirements of PAR 1135 (on or before January 1, 2024, approximately five years for compliance), the construction phases for each facility are not expected to overlap on a peak day. In the most conservative assumption, if two facilities were to overlap their construction phases, the air quality impacts due to construction are expected to be less than significant. Thus, as shown in Tables 2-7 through 2-9 the air quality impacts due to construction from implementation of PAR 1135 are expected to be less than significant.

Operational Impacts

As explained previously, secondary air quality operational impacts are expected to occur from the following activities: 1) Facility 1, 4, 5, and 6's proposed replacement and upgrade of the catalyst modules in each of the four existing SCR units for their four existing turbines at Facility 1, the one existing SCR unit for their one existing turbine at Facility 4, the seven existing SCR units for their seven existing turbines at Facility 5, and the one existing SCR unit for the one existing turbine at Facility 6; and 2) Facility 3's deliveries and usage of aqueous ammonia for their new aqueous ammonia tank and the new five-year maintenance schedule to replace spent catalyst in their three new SCRs.

It is important to note that there are other types of ongoing, needed maintenance of the electric ~~power~~ generating units themselves and the periodic source tests that are conducted are both types of operational activities which already take place at each of the affected facilities and are considered part of the existing setting. PAR 1135 does not impose new maintenance or source testing requirements that would alter this existing setting.

Total operational emissions were estimated using CARB's EMFAC2017[23] for the following mobile sources: trucks for aqueous ammonia and catalyst module deliveries and trucks for hauling away spent catalysts. Facilities 1 ~~and~~ 3, 4, 5, and 6 already have monthly deliveries of aqueous ammonia, with one delivery occurring on a peak day at each facility. However, after PAR 1135 is implemented, additional annual deliveries of aqueous ammonia are expected at Facility 1, 4, 5, and 6 due to the additional aqueous ammonia required for the four SCRs with upgraded catalyst modules at Facility 1, the one SCR with an upgraded catalyst module at Facility 4 and 6, and the seven SCRs with upgraded catalyst modules at Facility 5, but the deliveries of aqueous ammonia on a peak day are expected to remain the same as the baseline. Facility 3 currently has one existing aqueous ammonia storage tank, so if one additional aqueous ammonia storage tank is installed as a result of PAR 1135, then the amount of aqueous ammonia to be delivered on a peak day is expected to double when compared to the existing setting. Nonetheless, one delivery truck can carry two trailers with sufficient supplies of aqueous ammonia on a peak day. Therefore, it is not expected that there would be an additional increase in ammonia delivery trucks to occur on a peak day due to implementation of PAR 1135.

In addition, Facility 3's spent catalyst modules in the new SCR units will need to be replaced approximately every five years; thus, this analysis assumes one additional delivery of fresh catalyst modules and one haul trip of spent catalyst modules per year for each of the three new SCR units.

For Facility 1, 4, 5, and 6 one truck currently delivers aqueous ammonia on a peak day, driving a round trip distance of 100 miles for each delivery. The existing air quality impacts during operation from one truck delivering aqueous ammonia to Facility 1, 4, 5, and 6 are summarized in Table 2-10. After changing out the SCR catalyst modules, the existing SCR units are anticipated to consume additional aqueous ammonia such that an additional six deliveries of aqueous ammonia to Facility 1 per year will be needed. This annual increase in aqueous ammonia deliveries will not

[23] The EMFAC emissions model is developed and used by CARB to assess emissions from on-road vehicles including cars, trucks, and buses in California. It should be noted that EMFAC2017 has not yet been approved by U.S. EPA but does provide the latest factors developed. https://www.arb.ca.gov/msei/categories.htm#onroad_motor_vehicles

change the number of aqueous ammonia deliveries occurring on a peak day (e.g., one truck). The detailed spreadsheet with the assumptions used for this analysis are provided in Appendix C.

Table 2-10
Existing Peak Daily Operational Emissions from One Aqueous Ammonia ~~Deliveries~~Delivery to Facility 1, 4, 5, and 6

Key Activities During Operation	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
One Existing Delivery Truck	0.34	0.52	0.03	0.02	0.08	0.00
Total Peak Daily Operational Emissions	**0.34**	**0.52**	**0.03**	**0.02**	**0.08**	**0.00**
SIGNIFICANCE THRESHOLD DURING OPERATION	55	55	550	150	150	55
SIGNIFICANT?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

a. On a peak day, there is currently one aqueous ammonia delivery to Facility 1, 4, 5, and 6 and PAR 1135 will not increase the number of deliveries on a peak day. However, on an annual basis, six additional deliveries of aqueous ammonia will be expected at Facility 1, two additional deliveries of aqueous ammonia will be expected at Facility 4, 11 additional deliveries of aqueous ammonia will be expected at Facility 5, and two additional deliveries of aqueous ammonia will be expected at Facility 6. .
b. Each delivery truck is assumed to travel a round trip distance of 100 miles.
c. The increased T6 instate construction heavy truck is for additional aqueous ammonia deliveries at Facility 1, 4, 5, and 6.
d. See Appendix C for detailed calculations.

For Facility 3, the analysis assumes that there will be either one new truck delivery of aqueous ammonia or fresh catalyst modules or one new haul truck to dispose of spent catalyst modules occurring on a peak day, driving a round trip distance of 100 miles for each delivery type. The air quality impacts from these activities during operation are summarized in Table 2-11. The detailed spreadsheet with the assumptions used for this analysis are provided in Appendix C.

Table 2-11
Peak Daily Operational Emissions – Facility 3

Key Activities During Operation	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
One New Delivery or Haul Truck	0.34	0.52	0.03	0.02	0.08	0.00
Total Peak Daily Operational Emissions	0.34	0.52	0.03	0.02	0.08	0.00
SIGNIFICANCE THRESHOLD DURING OPERATION	55	55	550	150	150	55
SIGNIFICANT?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

a. It is conservatively assumed that on a peak day, there will either be one new truck delivery trips of aqueous ammonia or fresh catalyst modules to Facility 3, or one new truck haul trip for removing spent catalyst for disposal from Facility 3.
b. On an annual basis, an additional 24 new aqueous ammonia delivery truck trips and 3 new fresh catalyst module delivery truck trips to Facility 3 and 3 new spent catalyst haul away truck trips trucks (via T6 instate construction heavy truck) from Facility 3 are expected.
c. Each delivery or haul truck is assumed to travel a round trip distance of 100 miles.
d. See Appendix C for detailed calculations.

As indicated in Tables 2-10 and 2-11, operational emissions anticipated from implementing PAR 1135 do not exceed any air quality significance thresholds for any criteria pollutants. Therefore, the operational air quality impacts from implementing the proposed project are considered less than significant.

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 1135, construction activities could potentially overlap with operational activities. Based on key compliance dates in PAR 1135, the overlap could occur from the date of adoption of PAR 1135 until January 1, 2024, which is the date when electricity generating facilities are required to ensure their electric ~~power~~ generating units are in compliance with the emission limits set forth in PAR 1135. The largest amount of peak daily emissions during this overlap period would occur if Facility 3 is undergoing construction (see Table 2-9) on the same day both Facilities 1, ~~and~~ 3, 4, 5, and 6 are undergoing operational activities (see Tables 2-10 and 2-11, respectively). 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 CEQA significance thresholds for operation because the latter are more stringent, and thus, more conservative. As such, emissions data from these three tables is presented in Table 2-12 and the total emissions have been compared to the air quality significance thresholds for operation.

Table 2-12
Peak Daily Emissions in Construction and Operation Overlap Phase

Construction and Operation Overlap Phase	VOC (lb/day)	NOx (lb/day)	CO (lb/day)	SOx (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Peak Construction Emissions (Facility 3)[a]	16	51	22	0.1	6.3	3.3
Peak Operational Emissions (Facility 1)[b]	0.34	0.52	0.03	0.02	0.08	0.0
Peak Operational Emissions (Facility 3)[b]	0.34	0.52	0.03	0.02	0.08	0.0
Peak Operational Emissions (Facility 4)[b]	0.34	0.52	0.03	0.02	0.08	0.0
Peak Operational Emissions (Facility 5)[b]	0.34	0.52	0.03	0.02	0.08	0.0
Peak Operational Emissions (Facility 6)[b]	0.34	0.52	0.03	0.02	0.08	0.0
Total Overlapping Emissions [c]	~~17~~17.7	~~52~~53.6	~~22.6~~22.2	~~0.14~~0.2	~~6.46~~6.7	3.3
SIGNIFICANCE THRESHOLD DURING OPERATION	55	55	550	150	150	55
SIGNIFICANT?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

a. The maximum construction impact during the overlap phase is conservatively assumed to be the peak daily construction emissions from Table 2-9.
b. The maximum operational impact during the overlap phase is conservatively assumed to be the peak daily operational emissions from Tables 2-10 and Table 2-11 combined.
c. Once construction is completed at Facility 2, operational emissions from periodic maintenance are expected to be about the same as the pre-project operational emissions. Therefore, no new operational emissions from Facility 2 are expected.

As indicated in Table 2-12, 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 from construction and operation overlap 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.

III. c) Less Than Significant Impact.

Cumulatively Considerable Impacts

Based on the foregoing analysis, since criteria pollutant project-specific air quality impacts from implementing PAR 1135 would not be expected to exceed any of the air quality significance thresholds in Table 2-2, cumulative air quality impacts are also expected to be less than significant. SCAQMD cumulative significance thresholds are the same as project-specific significance thresholds. Therefore, potential adverse impacts from implementing PAR 1135 would not be "cumulatively considerable" as defined by CEQA Guidelines Section 15064(h)(1) for air quality impacts. Per CEQA Guidelines Section 15064(h)(4), the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable.

The SCAQMD's guidance on addressing cumulative impacts for air quality is as follows: "As Lead Agency, the SCAQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR." "Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."[24]

This approach was upheld by the court in *Citizens for Responsible Equitable Environmental Development v. City of Chula Vista* (2011) 197 Cal. App. 4th 327, 334. The Court determined that where it can be found that a project did not exceed the South Coast Air Quality Management District's established air quality significance thresholds, the City of Chula Vista properly concluded that the project would not cause a significant environmental effect, nor result in a cumulatively considerable increase in these pollutants. The court found this determination to be consistent with CEQA Guidelines Section 15064.7, stating: "The lead agency may rely on a threshold of significance standard to determine whether a project will cause a significant environmental effect." The court found that, "[a]lthough the project will contribute additional air pollutants to an existing nonattainment area, these increases are below the significance criteria." "Thus, we conclude that no fair argument exists that the Project will cause a significant unavoidable cumulative contribution to an air quality impact." In *Rialto Citizens for Responsible Growth*, the court upheld the SCAQMD's approach to utilizing the established air quality significance thresholds to determine whether the impacts of a project would be cumulatively considerable. *Rialto Citizens for Responsible Growth v. City of Rialto* (2012) 208 Cal. App. 4th 899. As in *Chula Vista* and *Rialto Citizens for Responsible Growth*, here the SCAQMD has demonstrated, when using accurate and appropriate data and assumptions, that the project will not

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[24] SCAQMD Cumulative Impacts Working Group White Paper on Potential Control Strategies to Address Cumulative Impacts From Air Pollution, August 2003, Appendix D, Cumulative Impact Analysis Requirements Pursuant to CEQA, at D-3. http://www.aqmd.gov/docs/default-source/Agendas/Environmental-Justice/cumulative-impacts-working-group/cumulative-impacts-white-paper-appendix.pdf.

exceed the established SCAQMD significance thresholds. Thus, it may be concluded that the proposed project will not contribute to a significant unavoidable cumulative air quality impact.

III. d) Less Than Significant Impact. Diesel particulate matter (DPM) is considered a carcinogenic and chronic toxic air contaminant (TAC). Since the on- and off-road diesel equipment that may be used at Facilities 1, 2, ~~and~~ 3, 4, 5, and 6 are expected to occur over a short-term during construction (e.g., no more than off and on over a five year period at any facility) and operation (e.g., delivery or haul trips would occur on one day), a Health Risk Assessment (HRA) was not conducted. The analysis in Section III. b) and f) concluded that the quantity of pollutants that may be generated from implementing the proposed project would be less than significant during construction, operation, and the construction and operation overlap period. Thus, the quantity of pollutants that may be generated from implementing PAR 1135 would not be considered substantial, irrespective of whether sensitive receptors are located near the affected facilities. For these reasons, implementation of PAR 1135 is not expected to expose sensitive receptors to substantial pollutant concentrations. Therefore, no significant adverse air quality impacts to sensitive receptors are expected from implementing PAR 1135.

III. e) Less Than Significant Impact.

Odor Impacts

With regard to odors, for all diesel-fueled equipment and vehicles that may be used during construction and operation at Facilities 1, 2, ~~and~~ 3, 4, 5, and 6 the diesel fuel is required to have a low sulfur content (e.g., 15 ppm by weight or less) in accordance with SCAQMD Rule 431.2 – Sulfur Content of Liquid Fuels. Such fuel is expected to minimize odor. Construction equipment will be primarily utilized within the confines of Facilities. Dispersion of diesel emissions over distance generally occurs so that odors associated with diesel emissions may not be discernable to offsite receptors, depending on the location of the equipment and its distance relative to the nearest offsite receptor. Further, the diesel trucks that may be used during both construction and operation activities will be operated on road until arriving at their destination facilities. Once on-site, the diesel trucks will not be allowed to idle longer than five minutes at any one location in accordance with the CARB idling regulation, so odors from these vehicles would not be expected for a prolonged period of time. Therefore, the addition of several pieces of construction equipment and trucks that will operate intermittently over a relatively short period of time, are not expected to generate diesel exhaust odor substantially greater than what is already typically present at the affected facilities.

The operation of the barge will occur over a short period of time (less than one day) and because dispersion of diesel emissions over distance generally occurs so that odors associated with diesel emissions may not be discernable to nearby receptors, especially since the barge would be traveling across the ocean. Therefore, operation of the barge is not expected to create objectionable odors affecting a substantial number of people.

The operation of gasoline fueled passenger vehicles for construction workers will be primarily utilized to transport construction workers to and from each facility during construction. The amount of gasoline fueled passenger vehicles used as part of the proposed project is relatively low when compared to the total population of passenger vehicles within the SCAQMD. Also, the gasoline fueled passenger vehicles would be used over a relatively short period of time and are not expected to generate gasoline exhaust odor substantially greater than what is already typically present on existing roadways.

Thus, PAR 1135 is not expected to create significant adverse objectionable odors during construction or operation. Since no significant impacts were identified for this issue, no mitigation measures for odors are necessary or required.

III. g) and h) Less Than Significant Impact.

Greenhouse Gas (GHG) 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. However, 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[25].

The analysis of GHGs is different 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. 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 have a cumulative impact because they contribute to global climate effects.

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 GHG interim threshold is set at 10,000 metric tons of CO2 equivalent emissions (CO2e) per year (MT/yr). Projects with incremental increases below this threshold will not be cumulatively considerable.

[25] 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.

GHG emission impacts from implementing PAR 1135 were calculated at the project-specific level during construction and operation for Facilities 1, 2, ~~and~~ 3, 4, 5, and 6. For example, the replacement of catalyst modules in the four existing SCR units and the corresponding annual increase in deliveries of aqueous ammonia at Facilities~~Facility~~ 1, 4, 5, and 6 has the potential to increase the use of fuel (e.g., gasoline and diesel) during construction and operation which will in turn cause an increase CO2 emissions. Similar increases in both gasoline and diesel fuel use are also expected to occur at Facilities 2 and 3.

Table 2-13 summarizes the GHG analysis, which shows that the implementation of PAR 1135 may result in the generation of ~~25.9~~26.2 amortized[26] MT/yr of CO2e emissions during construction and ~~0.11~~0.15 MT/yr of CO2e emissions from mobile sources during operation from all the affected facilities, which is less than the SCAQMD's air quality significance threshold of 10,000 MT/yr of CO2e for GHGs. The detailed calculations of project GHG emissions can be found in Appendix C.

Table 2-13
GHG Emissions From Facilities 1, 2, ~~and~~ 3, 4, 5, and 6

Activity	CO2e (MT/year[a])
Construction [b] – on-road vehicles, barges, and off-road equipment	~~25.9~~26.2
Operation – on-road vehicles	~~0.01~~0.15
Total Project Emissions	~~25.91~~26.35
SIGNIFICANCE THRESHOLD	**10,000**
SIGNIFICANT?	**NO**

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

Thus, as shown in Table 2-13 the SCAQMD's GHG significance threshold for industrial sources will not be exceeded. For this reason, implementing the proposed project is not expected to generate significant adverse cumulative GHG air quality impacts. Further, PAR 1135 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.

Conclusion

Based upon these considerations, significant air quality and GHG emissions impacts are not expected from implementing PAR 1135. Since no significant air quality and GHG emissions impacts were identified, no mitigation measures are necessary or required.

[26] GHGs from short-term construction activities are amortized over 30 years. To amortize GHGs from temporary construction activities over a 30-year period (*est. life of the project/ equipment*), the amount of CO_2e emissions during construction are calculated and then divided by 30.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
IV.	**BIOLOGICAL RESOURCES.** Would the project:				
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑
c)	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☑
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☑
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑
f)	Conflict with the provisions of an adopted Habitat Conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑

Significance Criteria
Impacts on biological resources will be considered significant if any of the following criteria apply:

- The project results in a loss of plant communities or animal habitat considered to be rare, threatened or endangered by federal, state or local agencies.
- The project interferes substantially with the movement of any resident or migratory wildlife species.
- The project adversely affects aquatic communities through construction or operation of the project.

Discussion
As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.
.

Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ six affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

IV. a), b), c), & d) No Impact. The proposed project does not require the acquisition of land, building new structures, or construction on greenland to comply with PAR 1135. Also, PAR 1135 does not require the conversion of riparian habitats or sensitive natural communities where endangered or sensitive species may be found. Physical modifications at Facilities 2 and 3 may require some demolition and concrete pours which could involve some minor earth-moving activities, but these activities are expected to take place within each facility's boundaries that are already paved and developed. The sites of the affected facilities that would be subject to PAR 1135 currently do not support riparian habitat, federally protected wetlands, or migratory corridors because they are existing developed and established facilities currently used for industrial purposes. Additionally, special status plants, animals, or natural communities identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service are not expected to be found on or in close proximity to the affected facilities because the affected facilities are in existing industrial or commercial land use areas. Therefore, PAR 1135 would have no direct or indirect impacts that could adversely affect plant or animal species or the habitats on which they rely with the SCAQMD's jurisdiction.

Finally, the electric ~~power~~ generating units that may undergo modifications as part of implementing PAR 1135 are located at existing facilities and the anticipated modifications would not occur on or near a wetland, riparian habitat, or in the path of migratory species. Therefore, PAR 1135 would have no direct or indirect impacts that could adversely affect plant or animal species or the habitats on which they rely within the SCAQMD's jurisdiction.

IV. e) & f) No Impact. The proposed project is not envisioned to conflict with local policies or ordinances protecting biological resources or local, regional, or state conservation plans. Land use and other planning considerations are determined by local governments and no land use or planning requirements would be altered by implementing PAR 1135. Additionally, PAR 1135 would not conflict with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or any other relevant habitat conservation plan, and would not create divisions in any existing communities because all activities associated with complying with PAR 1135 would occur at existing electricity generating facilities that are located in previously disturbed areas which are not typically subject to Habitat or Natural Community Conservation Plans.

The SCAQMD, as the Lead Agency, has found that, when considering the record as a whole, there is no evidence that implementation of PAR 1135 would have potential for any new adverse effects on wildlife resources or the habitat upon which wildlife depends. Accordingly, based upon the preceding information, the SCAQMD has, on the basis of substantial evidence, rebutted the presumption of adverse effect contained in Title 14 of the California Code of Regulations Section 753.5 (d) - Projects Eligible for a No Effect Determination.

Conclusion

Based upon these considerations, significant biological resource impacts are not expected from implementing PAR 1135. Since no significant biological resource impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
V.	**CULTURAL RESOURCES.** Would the project:				
a)	Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☐	☐	☑
b)	Cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5?	☐	☐	☐	☑
c)	Directly or indirectly destroy a unique paleontological resource, site, or feature?	☐	☐	☐	☑
d)	Disturb any human remains, including those interred outside formal cemeteries?	☐	☐	☐	☑
e)	Cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074?	☐	☐	☐	☑

Significance Criteria

Impacts to cultural resources will be considered significant if:

- The project results in the disturbance of a significant prehistoric or historic archaeological site or a property of historic or cultural significance, or tribal cultural significance to a community or ethnic or social group or a California Native American tribe.
- Unique paleontological resources or objects with cultural value to a California Native American tribe are present that could be disturbed by construction of the proposed project.
- The project would disturb human remains.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~

generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.

Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ six affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

V. a), b), c), d) & e) No Impact. There are existing laws in place that are designed to protect and mitigate potential impacts to cultural resources. For example, CEQA Guidelines state that generally, a resource shall be considered “historically significant” if the resource meets the criteria for listing in the California Register of Historical Resources, which include the following:

- Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
- Is associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values;
- Has yielded or may be likely to yield information important in prehistory or history (CEQA Guidelines Section 15064.5).

Buildings, structures, and other potential culturally significant resources that are less than 50 years old are generally excluded from listing in the National Register of Historic Places, unless they are shown to be exceptionally important. For any of the buildings or structures that may be affected by PAR 1135 that are older than 50 years, they are buildings that are currently utilized for industrial purposes and would generally not be considered historically significant since they would not have any of the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values. Therefore, PAR 1135 is not expected to cause any impacts to significant historic cultural resources.

Construction-related activities are expected to be confined within the existing footprint of the affected facilities that have already been fully developed and paved such that PAR 1135 is not expected to require physical changes to the environment which may disturb paleontological or archaeological resources. Furthermore, it is envisioned that these areas are already either devoid of significant cultural resources or whose cultural resources have been previously disturbed. Therefore, PAR 1135 has no potential to cause a substantial adverse change to a historical or archaeological resource, directly or indirectly to destroy a unique paleontological resource or site or unique geologic feature, or disturb any human remains, including those interred outside formal cemeteries. Implementing of PAR 1135 is, therefore, not anticipated to result in any activities or promote any programs that could have a significant adverse impact on cultural resources in the District.

PAR 1135 is not expected to require physical changes to a site, feature, place, cultural landscape, sacred place or object with cultural value to a California Native American Tribe. Furthermore, PAR 1135 is not expected to result in a physical change to a resource determined to be eligible for inclusion or listed in the California Register of Historical Resources or included in a local register of historical resources. For these reasons, PAR 1135 is not expected to cause any substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074.

As part of releasing this CEQA document for public review and comment, the SCAQMD also provided a formal notice of the proposed project to all California Native American Tribes (Tribes) that requested to be on the Native American Heritage Commission's (NAHC) notification list per Public Resources Code Section 21080.3.1(b)(1). The NAHC notification list provides a 30-day period during which a Tribe may respond to the formal notice, in writing, requesting consultation on the proposed project.

In the event that a Tribe submits a written request for consultation during this 30-day period, the SCAQMD will initiate a consultation with the Tribe within 30 days of receiving the request in accordance with Public Resources Code Section 21080.3.1(b). Consultation ends when either: 1) both parties agree to measures to avoid or mitigate a significant effect on a Tribal Cultural Resource and agreed upon mitigation measures shall be recommended for inclusion in the environmental document [see Public Resources Code Section 21082.3(a)]; or 2) either party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached [see Public Resources Code Section 21080.3.2(b)(1)-(2) and Section 21080.3.1(b)(1)].

Conclusion

Based upon these considerations, significant adverse cultural resources impacts are not expected from implementing PAR 1135. Since no significant cultural resources impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VI.	**ENERGY.** Would the project:				
a)	Conflict with adopted energy conservation plans?	☐	☐	☐	☑
b)	Result in the need for new or substantially altered power or natural gas utility systems?	☐	☐	☐	☑
c)	Create any significant effects on local or regional energy supplies and on requirements for additional energy?	☐	☐	☐	☑
d)	Create any significant effects on peak and base period demands for electricity and other forms of energy?	☐	☐	☐	☑
e)	Comply with existing energy standards?	☐	☐	☐	☑

Significance Criteria

Impacts to energy resources will be considered significant if any of the following criteria are met:

- The project conflicts with adopted energy conservation plans or standards.
- The project results in substantial depletion of existing energy resource supplies.
- An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities.
- The project uses non-renewable resources in a wasteful and/or inefficient manner.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.
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Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ six affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

VI. a) & e) No Impact. PAR 1135 is not expected to conflict with any adopted energy conservation plans or violate any energy conservation standards because existing facilities would be expected to continue implementing any existing energy conservation plans that are currently in place regardless of whether PAR 1135 is implemented.

PAR 1135 is not expected to cause new development because it does not require new facilities to be built. While PAR 1135 will primarily apply to existing facilities, it will also apply to any new facilities that may be built in the future. However, SCAQMD staff is not aware of any new electricity generating facilities planned to be constructed in the immediate future and is unable to predict or forecast, when, if at all, any would be built in the long-term. Therefore, in accordance with CEQA Guidelines Section 15145, an evaluation of construction and operation energy impacts for new facilities is concluded to be speculative and will not be evaluated further in this analysis. Instead, the focus of the analysis will be on the affected facilities (~~Facility 1, Facility 2, and Facility 3~~Facilities 1, 2, 3, 4, 5, and 6) and the energy effects of complying with PAR 1135 as explained in the following discussion.

Any energy resources that may be necessary to replace, repower, or retrofit electric ~~power~~ generating units in accordance with PAR 1135 would be used to achieve NOx reductions from electricity generating facilities, and therefore, would not be using non-renewable resources in a wasteful manner. In actuality, the potential modifications to the affected electricity generating units as outlined in Table 2-1 would be expected to improve the efficiency of the modified or replaced equipment once construction is completed. Further, the air quality benefits that would be expected to occur as a result of implementing PAR 1135 would not require the affected electricity generating facilities to provide additional electricity and natural gas to their customers; thus, PAR 1135 would not require substantial alterations in order to increase the existing power generated or natural gas supply systems because any additional energy needed to implement PAR 1135 can be provided from existing supplies. For these reasons, PAR 1135 would not be expected to conflict with energy conservation plans or existing energy standards, or use non-renewable resources in a wasteful manner.

VI. b), c) & d) Less Than Significant Impact. PAR 1135 applies to electricity generating facilities that produce power from the operation of electric ~~power~~ generating units. PAR 1135 will not result in the loss of utility systems because the affected facilities will continue to generate the same amount of electricity after the completion of the modifications and new equipment installations. Post-project, the new equipment will continue to be able to handle local and regional needs as well as peak demands.

To implement the physical modifications outlined in Table 2-1, diesel fuel is expected to be needed to operate off-road construction equipment and on-road vehicles (passenger vehicles and trucks) during construction. Gasoline and diesel fuel would be also needed to operate on-road vehicles (passenger vehicles and trucks) during operation.

It is important to note that diesel fuel is expected to continue to be used at Facility 2 since the new replacement engines will also require diesel fuel to operate. However, because the new replacement engines at Facility 2 are expected to be more efficient than their older, less efficient predecessors, an equivalent or less amount of diesel fuel is expected to be needed to produce the same electricity power output, post construction.

Similarly, while no natural gas will be needed during construction, during operation, Facility 1, 4, 5, and 6 will continue to operate ~~its four~~their simple cycle turbines which are currently fueled by natural gas. Thus, ~~Facility~~ Facilities ~~1's~~ 1, 4, 5, and 6's turbines will continue to require natural gas for their operation after the catalyst module upgrades have been made to their ~~four~~ existing SCR units. The upgrades to the catalyst modules will help the existing SCR units operate more efficiently. The SCR units require electricity, not natural gas, to operate. For these reasons, the operation of each affected ~~the four~~ turbine~~s~~ and ~~four~~ each affected SCR unit~~s~~ after the modifications are implemented are not expected to substantially alter the amount of natural gas or electricity needed by Facility 1, 4, 5, and 6 above current baseline levels.

Also, since Facility 3 is anticipated to replace its three natural gas boilers with up to three new natural gas turbines, natural gas will continue to be utilized by Facility 3. Because the new replacement turbines at Facility 3 are expected to be more efficient than the older, less efficient boilers, an equivalent or less amount of natural gas is expected to be needed to produce the same electricity power output, post construction.

The following sections evaluate the various types of energy that may be affected by the implementation of PAR 1135.

Construction

During construction, diesel fuel will be consumed by portable construction equipment (e.g., welders, forklifts, and etc.) needed to replace, retrofit, or repower electric ~~power~~ generating units, gasoline will be consumed by construction workers' vehicles, and diesel fuel will be consumed vendor or haul trucks traveling to and from each affected facility. Also, in particular to Facility 2, one diesel-fueled barge will be needed to transport the replacement internal combustion engines and SCR units and traveling to and from the Port of Los Angeles to Santa Catalina Island (the city of Avalon).

To estimate "worst-case" energy impacts associated with construction activities, SCAQMD staff estimated the total gasoline and diesel fuel consumption for each affected facility during construction and operation based on CARB's OFFROAD2017 model. Also, in order to estimate the amount of diesel fuel that may be consumed by the barge's main engine and two auxiliary engines during equipment transport to and from Facility 2, SCAQMD staff relied on the engine fuel use estimates presented in the July 2008 Final Negative Declaration for Petro-Diamond

Terminal Company Marine Terminal Permit Modification Project[27]. Appendix C contains the assumptions and calculations for estimating fuel usage associated with construction.

CalEEMod version 2016.3.2 was used to calculate construction emissions which was determined from the default trip lengths for construction worker commute trips (e.g., 29.4 miles per worker round trip to/from the construction site per day), vendor trips (e.g., 14 miles per vendor round trip to/from the construction site per day), and waste hauler trips (e.g., 40 miles per waste hauler round trip to/from the construction site per day). The fuel usage per vehicle used during construction round trips was then calculated by taking the CalEEMod output and assuming that each: 1) construction workers' gasoline-fueled passenger vehicle would get a fuel economy rate of approximately 21 miles per gallon (mpg); 2) vendor diesel truck would get a fuel economy rate of approximately 6.6 mpg; and 3) waste hauler diesel truck would get a fuel economy rate of approximately 5.9 mpg. Table 2-14 summarizes the projected fuel use impacts associated with construction at Facilities 1, 2, and 3.

Table 2-14
Total Projected Fuel Usage for Construction Activities

Fuel Type	Year 2016 Estimated Basin Fuel Demand (mmgal/yr)	Fuel Usage (mmgal)	Total % Above Baseline	Exceed Significance Thresholds?[c]
Diesel	749	~~0.0771~~0.0772	0.0103	**NO**
Gasoline	6,997	~~0.0006~~0.0007	0.00001	**NO**

[a] California Annual Retail Fuel Outlet Report Results (CEC-A15) Spreadsheets, 2017 California Energy Commission (http://www.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html). [Accessed August 24, 2018.]

[b] Estimated peak fuel usage from construction activities. Diesel usage estimates are based on the usage of portable construction equipment and vendor and haul trips plus barge trips. Gasoline usage estimates are derived from construction workers' vehicle daily trips to and from work.

[c] SCAQMD's energy threshold for both types of fuel used is 1% of fuel supply.

The 2016 California Annual Retail Fuel Outlet Report Results from the California Energy Commission (CEC) state that 749 million gallons of diesel and 6,997 million gallons of gasoline were consumed in 2016 in the Basin. Thus, even if an additional ~~77,304~~77,223 gallons of diesel and ~~649~~ 703 gallons of gasoline are consumed during construction, the fuel usages are 0.0103% and 0.00001% above the 2016 baseline for diesel and gasoline, respectively, and both projected increases are well below the SCAQMD's significance threshold for fuel supply. Thus, no significant adverse impact on fuel supplies would be expected during construction.

Operation - Fuel Use From Vehicles

Once construction is completed, additional vehicle trips and fuel use are expected to be needed from the following activities during operation: 1) delivering six additional trips per year of aqueous ammonia to Facility 1,~~;~~ two additional trips per year of aqueous ammonia to Facility 4, 11 additional trips per year of aqueous ammonia to Facility 5, and two additional trips per year of aqueous ammonia to Facility 6; 2) periodically delivering aqueous ammonia to supply the new

[27] Final Negative Declaration for: Petro-Diamond Terminal Company Marine Terminal Permit Modification Project. Appendix A: Emission Calculations: Fuel Use Estimation. July 2008. Page 71. http://www.aqmd.gov/docs/default-source/ceqa/documents/permit-projects/2008/2008petrofnd.pdf

aqueous ammonia storage tank at Facility 3; and 3) replacing spent catalyst modules with fresh catalyst modules in the three new SCRs approximately every five years at Facility 3.

For Facility 1 ~~and~~ , 3, 4, 5, and 6 it is assumed one delivery or haul truck (e.g., for either aqueous ammonia, fresh catalyst modules, or spent catalyst modules) would occur on a peak day. In addition, a round trip distance of 100 miles with a fuel economy of approximately 5.9 miles per gallon (mpg) for HDT was assumed for every on-road truck that is used for the delivery of aqueous ammonia or the delivery or hauling of catalyst modules. The air quality impacts for these vehicle trips during operation were analyzed and summarized in Table 2-10 and Table 2-11. The detailed spreadsheet with the assumptions used for this analysis are provided in Appendix C. As previously explained in Section III - Air Quality and Greenhouse Gases, by assuming that Facility 1 will need six HDTs per year, ~~and~~ Facility 3 will need 30 HDTs per year, Facility 4 will need two HDTs per year, Facility 5 will need 11 HDTs per year, and Facility 6 will need two HDTs per year the corresponding projected annual total diesel use is presented in Table 2-15 and would be approximately ~~1,231~~1,744 gallons per year.

The 2016 California Annual Retail Fuel Outlet Report Results from California Energy Commission states that 749 million gallons of gasoline are consumed in 2016 in the Basin. Thus, even if an additional ~~1,231~~1,744 gallons per year of diesel are consumed during operation, the diesel fuel usage is 0.0002% above the 2016 baseline for diesel, and the projected increase is well below the SCAQMD's significance threshold for diesel fuel supply As such, no significant adverse impact on diesel fuel supplies would be expected during operation.

Table 2-15
Annual Total Projected Diesel Fuel Usage for Operational Activities

Type of Equipment	**Diesel** (gal/yr)
HDT – Facility 1	205
HDT – Facility 3	1,026
HDT – Facility 4	68
HDT – Facility 5	376
HDT – Facility 6	68
Total:	~~1,231~~1,744
Year 2016 Estimated Basin Fuel Demand (gal/yr) [a]	749,000,000
Total % Above Baseline	0.0002
SIGNIFICANT?[b]	**NO**

[a] California Annual Retail Fuel Outlet Report Results (CEC-A15) Spreadsheets, 2017 California Energy Commission (http://www.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html). [Accessed February 6, 2018.]

[b] SCAQMD's energy threshold for fuel used is 1% of fuel supply.

Conclusion

Based upon these considerations, significant adverse energy impacts are not expected from implementing PAR 1135. Since no significant energy impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VII. GEOLOGY AND SOILS. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☑
• Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	☐	☑
• Strong seismic ground shaking?	☐	☐	☐	☑
• Seismic–related ground failure, including liquefaction?	☐	☐	☐	☑
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☑
c) Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☑
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☑
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☑

Significance Criteria

Impacts on the geological environment will be considered significant if any of the following criteria apply:

- Topographic alterations would result in significant changes, disruptions, displacement, excavation, compaction, or over covering of large amounts of soil.
- Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.
- Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction or landslides.
- Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.
- Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.

Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ six affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

VII. a), b), c), d), & e) No Impact. Of the physical modifications summarized in Table 2-1 that may occur at Facilities 1, 2, ~~and~~ 3, 4, 5, and 6 only the modifications at Facilities 2 and 3 may require some demolition activities as part of removing old equipment and installing new equipment. If modifications to the foundations and equipment supports are needed, some relatively minor site preparation activities may be required prior to installing equipment and these activities would occur within facility boundaries. Nevertheless, the degree of site preparation that may be needed would not be on a scale that could adversely affect geophysical conditions at Facilities 1, 2, ~~or~~ 3, 4, 5, or 6.

It is also important to note that PAR 1135 does not contain any requirements that would cause or require a new facility to be built. While PAR 1135 will primarily apply to existing facilities, it will also apply to any new facilities that may be built in the future. However, SCAQMD staff is not aware of any new electricity generating facilities planned to be constructed in the immediate future and is unable to predict or forecast, when, if at all, any would be built in the long-term. Therefore, in accordance with CEQA Guidelines Section 15145, an evaluation of geology and soils impacts for new facilities is concluded to be speculative and will not be evaluated further in this analysis. Instead, the focus of the analysis will be on the affected facilities (Facilities 1, 2, ~~and~~ 3, 4, 5, and 6) and the geology and soils effects of complying with PAR 1135 as explained in the following discussion.

Southern California is an area of known seismic activity. As part of the issuance of building permits, local jurisdictions are responsible for assuring that the Uniform Building Code is adhered to and can conduct inspections to ensure compliance. The Uniform Building Code is considered to be a standard safeguard against major structural failures and loss of life. The basic formulas used for the Uniform Building Code seismic design require determination of the seismic zone and site coefficient, which represents the foundation condition at the site. The Uniform Building Code requirements also consider liquefaction potential and establish stringent requirements for building foundations in areas potentially subject to liquefaction.

Accordingly, the anticipated physical modifications of electric ~~power~~ generating units and their associated air pollution control equipment at Facilities 1, 2, ~~and~~ 3, 4, 5, and 6 in order to comply with PAR 1135 would be expected to conform to the Uniform Building Code and all other applicable state and local building codes. Structures must be designed to comply with the Uniform Building Code Zone 4 requirements if they are located in a seismically active area. The local city or county is responsible for assuring that the existing affected facilities comply with the Uniform Building Code as part of the issuance of the building permits and can conduct inspections to ensure compliance. The Uniform Building Code is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to provide structures that will: 1) resist minor earthquakes without damage; 2) resist moderate earthquakes without structural damage but with some non-structural damage; and 3) resist major earthquakes without collapse but with some structural and non-structural damage.

The Uniform Building Code is considered to be a standard safeguard against major structural failures and loss of life. The Uniform Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The basic formulas used for the Uniform Building Code seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site. The Uniform Building Code requirements also consider liquefaction potential and establish stringent requirements for building foundations in areas potentially subject to liquefaction.

Accordingly, existing buildings, structures, and equipment, as well as any that may be modified or replaced as a result of PAR 1135, are likely to conform to the Uniform Building Code and all other applicable state codes in effect at the time they were constructed. Thus, PAR 1135 would not alter the exposure of people or property to geological hazards such as earthquakes, landslides, mudslides, ground failure, or other natural hazards. As a result, substantial exposure of people or structures to the risk of loss, injury, or death involving the rupture of an earthquake fault, seismic ground shaking, ground failure or landslides is not anticipated.

Of the physical modifications described in Table 2-1, none would be expected to involve construction activities that will result in substantial soil erosion or the loss of topsoil or make the soils under Facilities 1, 2, ~~and~~ 3, 4, 5, and 6 further susceptible to expansion or liquefaction. Furthermore, subsidence is also not anticipated to be a problem since only minor excavation, grading, or filling activities, if any, are expected to occur at the affected facilities. Additionally, even if the areas where Facilities 1, 2, ~~and~~ 3, 4, 5, and 6 are located may be prone to new landslide impacts or have unique geologic features, PAR 1135 would not be expected to change the pre-existing geology and soils setting or increase or exacerbate any existing risks at these facilities. PAR 1135 would also not require any existing facilities to be relocated onto a geologic unit or soil that is unstable or that would become unstable and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Further, people or property will not be exposed to new impacts related to expansive soils or soils incapable of supporting water disposal because no additional water will be necessary to make the physical modifications that are summarized in Table 2-1. Finally, because each affected facility has an existing sewer system, the installation of septic tanks or alternative wastewater disposal systems or modifications to the existing sewer systems would not be necessary. Thus, implementation of PAR 1135 will not adversely affect soils associated with a installing a new septic system or alternative wastewater disposal system or modifying an existing sewer.

Conclusion

Based upon these considerations, significant adverse geology and soils impacts are not expected from the implementation of PAR 1135. Since no significant geology and soils impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VIII.	**HAZARDS AND HAZARDOUS MATERIALS.** Would the project:				
a)	Create a significant hazard to the public or the environment through the routine transport, use, and disposal of hazardous materials?	☐	☐	☑	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset conditions involving the release of hazardous materials into the environment?	☐	☑	☐	☐
c)	Emit hazardous emissions, or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☑	☐
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment?	☐	☐	☑	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public use airport or a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
g)	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☑
h)	Significantly increased fire hazard in areas with flammable materials?	☐	☐	☑	☐

Significance Criteria

Impacts associated with hazards 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.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.

Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ six affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

VIII. a) Less than Significant Impact. Compliance with PAR 1135 is expected to result in physical modifications to Facilities 1, 2, ~~and~~ 3, 4, 5, and 6 that may require additional deliveries, storage and use of aqueous ammonia which is considered a hazardous chemical.

For example, Facility 1, 4, 5, and 6 currently receives deliveries of and stores aqueous ammonia; the aqueous ammonia is injected into ~~four~~ each facilities SCR units to reduce NOx emissions from ~~their four simple cycle~~each turbine~~s~~. To comply with PAR 1135, Facility 1, 4, 5, and 6 is expected to replace the existing catalyst modules in each of their affected ~~the four~~ SCR units and the new catalyst modules are expected to require additional aqueous ammonia to be injected into each affected SCR unit in order to achieve the desired NOx emission reductions. The existing aqueous ammonia storage capacity is expected to be sufficient to handle the anticipated increased consumption rate of aqueous ammonia on a peak day such that no new storage tanks would need to be installed and no new deliveries would need to occur on a peak day. However, the increased aqueous ammonia consumption rate will increase the number of turnovers (e.g., refilling frequency) of the storage tank on an annual basis such that deliveries of aqueous ammonia to Facility 1, 4, 5, and 6 are projected to increase by up to six truck trips per year for Facility 1, two truck trips per year for Facility 4, eleven truck trips per year for Facility 5, and two truck trips per year for Facility 6. Facility 1, 4, 5, and 6 currently receives aqueous ammonia from a local supplier located in the greater Los Angeles area and deliveries are made by tanker trucks via public roads; the supplier and delivery amounts per trip are not expected to change as a result of PAR 1135. The maximum capacity of an ammonia tanker truck is approximately 7,000 gallons. Because the amount of aqueous ammonia that is currently delivered to Facility 1, 4, 5, and 6 on a daily basis is not expected to change (e.g., one truck on a peak day per delivery), there will be no increase in the number of peak daily truck trips such that no new significant transportation impacts associated with deliveries of aqueous ammonia at Facility 1, 4, 5, and 6 will be expected to occur.

Facility 2 currently receives deliveries of and stores urea on-site as part of existing operations for their SCR system. The urea is converted to aqueous ammonia on-site for use in their existing SCR units. The amount of urea that may be needed by Facility 2 as a result of PAR 1135 is not expected to change such that the current amount and frequency of urea deliveries at Facility 2 should be sufficient and thus, is also not expected to change. Thus, there will be no increase in the number of peak daily truck trips that no new significant transportation impacts associated with deliveries of urea to Facility 2 will be expected to occur.

Similar to Facility 1, 4, 5, and 6, Facility 3 also currently receives deliveries of and stores aqueous ammonia on-site and the aqueous ammonia is injected into their existing SCR units to reduce NOx emissions from their existing combustion equipment. To comply with PAR 1135, Facility 3 is expected to replace three existing boilers with three new natural gas turbines equipped with three new SCR units. Because the existing aqueous ammonia storage capacity at the site is not expected to be sufficient to handle the anticipated increased need for aqueous ammonia, Facility 3 plans to demolish one aqueous ammonia tank and install a new 12,000 gallon tank constructed above a spill containment basin and equipped with sump vapor control[28]. Facility 3 currently receives aqueous ammonia from a local supplier located in the greater Los Angeles area and deliveries are made by tanker trucks via public roads. As a result of PAR 1135, one new delivery of aqueous ammonia via tanker truck is expected to occur on a peak day. Also, when compared to the existing setting, the new aqueous ammonia tank will have a larger capacity than the size of the tank to be demolished. As such, a net increase in the total amount of aqueous ammonia stored on site is expected to occur at Facility 3.

Overall, even with additional aqueous ammonia deliveries per year at Facility 1, 4, 5, and 6 and the additional aqueous ammonia delivery at Facility 3 on a peak day, the total increase in the number of aqueous ammonia deliveries on a peak day is not expected to exceed a single delivery on a daily basis. Hence, no new significant hazards are expected to the public or environment through the continued routine transport of aqueous ammonia or urea at each of the affected facilities. Further, the transport, storage, use, and disposal of hazardous materials (aqueous

[28] FEIR Grayson Repowering Project. March 2018. Section 3.0 Project Description, Page 3.32. http://graysonrepowering.com/#final-eir

ammonia and urea) at the affected facilities is already required to be managed in accordance with applicable federal, state, and local rules and regulations and compliance with these regulations is expected to continue after PAR 1135 is implemented. Regulations for the transport of hazardous materials by public highway are described in 49 CFR Sections 173 and 177. Therefore, PAR 1135 is not expected to create a significant hazard to the public or environment through the routine transport, storage, use, and disposal of hazardous materials.

VIII. b) Less than Significant Impact with Mitigation. In the process of implementing physical modifications to comply with PAR 1135, facility operators must comply with several requirements relative to hazards and hazardous materials. For example, OSHA requires the preparation of a fire prevention plan per 29 CFR Part 1910 and also implements requirements for the protection of workers handling toxic, flammable, reactive, or explosive materials per 20 CFR Part 1910 and CCR Title 8. 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 a Risk Management Plan (RMP) to prevent accidental releases of regulated substances. RMPs consist of three main elements: 1) a hazard assessment that includes off-site consequences analyses and a five-year accident history; 2) a prevention program, and 3) an emergency response program. At the local level, RMPs are implemented by the local fire departments. If any of the facilities subject to PAR 1135 has already prepared an RMP, it may need to be revised to incorporate any modifications that are made as part of efforts to comply with PAR 1135. The Hazardous Materials Transportation Act is the federal legislation that regulates transportation of hazardous materials. Finally, facility operators 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. Thus, for any physical modifications that are undertaken by Facilities 1, 2, ~~and~~ 3, 4, 5, and 6 to comply with PAR 1135, each facility is assumed to comply with the above mentioned regulations; thus, no significant adverse compliance impacts with these regulatory requirements are expected.

Of the ~~three~~ six facilities identified in Table 2-1 as undergoing physical modifications in order to comply with PAR 1135: 1) ~~Facility~~ Facilities 1, 4, 5, and 6 ~~is~~ are expected to maintain ~~its~~ their existing aqueous ammonia storage capacity; 2) Facility 2 is expected to maintain its existing urea storage capacity; and 3) Facility 3 is expected to increase the amount of aqueous ammonia stored on-site. Facilities 1, 2, ~~and~~ 3, 4, and 5 are all located less than 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. Facility 6 is located more than 2,800 feet from a sensitive receptor. Each of these ~~three~~ six facilities is located within an urbanized, industrial, or commercial land use area.

With the ongoing on-site storage and handling of aqueous ammonia at Facilities 1 ~~and~~ 3, 4, 5, and 6 there is an existing possibility for an accidental spill and release of aqueous ammonia, which could create a potential risk for an offsite public and sensitive receptor exposure. However, since only Facility 3 is expected to increase the amount of aqueous ammonia that is delivered, stored, and used as a result of PAR 1135, only Facility 3 is expected to alter the existing potential risk for an offsite public and sensitive receptor exposure.

Ammonia (NH3), though not a carcinogen, is a chronic and acutely hazardous material. Located on the MSDS for NH3 (19 percent by weight), the hazards ratings are as follows: health is rated 3 (highly hazardous), flammability is rated 1 (slight), and reactivity is rated 0 (none). Therefore, an increase in the use of ammonia in response to the proposed project may increase the current existing risk setting associated with deliveries (i.e., truck and road accidents) and on-site or offsite spills for each facility that currently uses, will begin to use, or will increase the use of 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 and migrate 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.

~~However, c~~Current SCAQMD ~~policy~~ practice typically does not~~no longer~~ allow~~s~~ the use of anhydrous ammonia for air pollution control equipment. Further, ~~To~~to minimize the hazards associated with using ammonia for air pollution control technology, it is the permitting ~~policy~~ practice of the SCAQMD to typically 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 material lists unlike anhydrous ammonia or aqueous ammonia at higher percentages. As such, SCAQMD staff does not typically 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. Thus, because aqueous ammonia (at 19 percent by weight) would be required for any permits issued for the installation of air pollution control equipment that utilize ammonia, ~~no new~~ hazards from toxic clouds are expected to be ~~associated~~ lessened when compared to higher concentrations of ammonia~~with the proposed project~~. As a practical matter, the actual concentration that is typically utilized is a solution of 19% aqueous ammonia, which contains approximately 81% water. Due to the high water content, aqueous ammonia is not considered to be flammable. Thus, heat-related hazard impacts such as fires, explosions, and boiling liquid-expanding vapor explosion (BLEVE) are not expected to occur from the increased delivery, storage and use of aqueous ammonia as part of implementing PAR 1135. Therefore, heat-related hazard impacts are not expected to occur as a result of the proposed project and will not be evaluated as part of this hazards analysis.

In addition, the shipping, handling, storage, and disposal of hazardous materials inherently poses a certain risk of a release to the environment. Thus, the routine transport of hazardous materials, use, and disposal of hazardous materials may increase as a result of implementing the proposed project. Further, if a facility installs control technology that utilizes ammonia, such as SCR, the proposed project may alter the transportation modes for feedstock and products to/from the existing facilities such as aqueous ammonia and catalyst.

The accidental release of ammonia from a delivery and use is a localized event (i.e., the release of ammonia would only affect the receptors that are within the zone of the toxic endpoint). The accidental release from a delivery would also be temporally limited in the fact that deliveries are not likely to be made at the same time in the same area. Based on these limitations, it is assumed that an accidental release would be limited to a single delivery or single facility at a time. In addition, it is unlikely that an accidental release from both a delivery truck and the stationary storage tank would result in more than the amount evaluated in the catastrophic release of the storage tank because the level of ammonia in the storage tanks would be low or else the delivery trip would not be necessary.

The analysis of hazard impacts can rely on information from past similar projects (i.e., installing new, or retrofitting existing equipment with NOx control technology that utilizes ammonia 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 NOx control technology that utilizes ammonia and associated ammonia storage equipment conform to the ammonia hazard analysis in this Mitigated SEA, no further hazard analysis may be necessary. If site-specific characteristics are involved with future projects to install NOx control equipment that utilize ammonia that are outside the scope of this analysis, a further ammonia hazards analysis may be warranted.

A hazard analysis is dependent on several parameters about the potential hazard such as the capacity of the aqueous ammonia storage tank, the concentration of the aqueous ammonia, meteorological conditions, location of nearest receptor, and the dimensions of secondary containment, if any. Prior to the development of PAR 1135, the operator of Facility 3, as part of their repowering project, proposed to install a new aqueous ammonia tank to supply additional aqueous ammonia to four new natural gas turbines[29] and the effects of an offsite consequence from an accidental release of aqueous ammonia due to tank rupture was analyzed using the EPA RMP*Comp (Version 1.07) model. For the purpose of conducting a worst-case analysis in this Mitigated SEA, SCAQMD staff relied on the same assumptions as what was previously analyzed for Facility 3's repowering project[30] to evaluate what the offsite consequence hazard impact would be if the new aqueous ammonia storage tank would rupture at Facility 3, as follows:

- Number of new tanks: 1
- Capacity of tank: 12,000 gallons
- Contents: 20% concentration of aqueous ammonia[31]
- Location of tank for Facility 3: less than ¼-mile to existing residences or sensitive receptors (and adjacent to existing ammonia tank)[32]
- Liquid Temperature: 77 °F
- Containment berm: Yes
- Diked Area: 519.75 feet
- Diked Height: 4.5 feet

Based on the worst-case defaults, the toxic endpoint from a catastrophic failure of an aqueous ammonia storage tank at Facility 3 would be within 0.1 mile (528 feet) downwind of the tank location. (See Appendix E for the full analysis.) The nearest sensitive receptor to Facility 3 is located approximately 200 feet away. Thus, the hazards and hazardous materials impacts due to an aqueous ammonia storage tank rupture at Facility 3 will be significant since sensitive receptors could be exposed to an aqueous ammonia release. 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.

[29] FEIR Grayson Repowering Project. March 2018. Section 3.0 Project Description, Page 3.1. http://graysonrepowering.com/#final-eir

[30] FEIR Grayson Repowering Project. March 2018. Section 4.6 Hazards and Hazardous Materials, Page 4.6.1.6. http://graysonrepowering.com/#final-eir

[31] The EPA RMP*Comp model only has the capability of evaluating the hazard potential of a 20% solution of aqueous ammonia so the offsite consequence evaluation was based on a higher concentration of aqueous ammonia than what would be actually allowed under a SCAQMD permit (e.g., 19% aqueous ammonia).

[32] FEIR Grayson Repowering Project. March 2018. Section Appendix G Hazards and Hazardous Materials Technical Reports, Page 535. http://graysonrepowering.com/#final-eir

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. If, at the time when each facility-specific project is proposed in response to the proposed project, SCAQMD staff will conduct a CEQA evaluation of the facility-specific project and determine if the project is covered by the analysis in this Mitigated SEA. 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 or equal to ~~20~~19 percent by volume for all facilities regulated by Rule 1135.

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, thus, reducing a potentially significant hazards impact to less than significant levels.

VIII. c) Less than Significant Impact. Appendix D contains a list of all of the facilities subject to PAR 1135 that are located within one-quarter mile of a school. However, there are only ~~three~~ six facilities that are expected to make physical modifications to comply with PAR 1135 and only Facility 1 and Facility 5 ~~is~~ are located within a one-quarter mile of a school. As explained in Response VIII. a), no change in the amount of aqueous ammonia to be stored at Facility 1, 4, 5, and 6 is expected.

PAR 1135, if implemented, would reduce human exposure to NOx by requiring electric generating facilities to meet proposed NOx emission limits. All of the facilities that may be subject to PAR 1135, including Facility 1, 4, 5, and 6, are expected to continue to take the appropriate and required actions to ensure proper handling of existing quantities of hazardous or acutely hazardous materials, substances, or wastes that are currently generated. Further, any increased quantities of hazardous materials that may be collected at each facility would also be expected to be handled in the same or similar manner regardless of each facilities proximity to a school because PAR 1135 does not include new requirements or alter existing requirements for hazardous waste disposal. Therefore, PAR 1135 is not expected to emit new sources of hazardous emissions, or increase the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

VIII. d) No Impact. Government Code Section 65962.5 refers to hazardous waste handling practices at facilities subject to the Resources Conservation and Recovery Act (RCRA). PAR 1135 would affect ~~34~~ 31 facilities that are identified on lists of California Department of Toxics Substances Control hazardous waste facilities per Government Code Section 65962.5. These facilities are identified in Appendix D. PAR 1135 would not alter existing or add new requirements to change how the hazardous materials are stored while awaiting to be transported off-site to a recycling facility or a hazardous waste landfill. Hazardous wastes from the existing facilities are required to be managed in accordance with applicable federal, state, and local rules and regulations and compliance with these regulations is expected to continue after PAR 1135 is implemented. Therefore, compliance with PAR 1135 would not create a new significant hazard waste impact to the public or environment.

VIII. e) No Impact. Federal Aviation Administration regulation, 14 CFR Part 77 – Safe, Efficient Use and Preservation of the Navigable Airspace, provide information regarding the types of projects that may affect navigable airspace. Projects may adversely affect navigable airspace if they involve construction or alteration of structures greater than 200 feet above ground level within a specified distance from the nearest runway or objects within 20,000 feet of an airport or seaplane base with at least one runway more than 3,200 feet in length and the object would exceed a slope of 100:1 horizontally (100 feet horizontally for each one foot vertically from the nearest point of the runway).

Construction activities from implementing the proposed project are expected to occur within the existing confines of Facilities 1, 2, ~~and~~ 3, 4, 5, and 6 and ~~none~~ only Facility 4~~of these facilities have~~has been identified in Appendix D as being located within two miles of an airport. Thus, any construction that may occur at Facilities 1, 2, ~~and~~ 3, 4, 5, and 6 would not be expected to interfere with navigable airspace. Further, construction is expected to be conducted in accordance with all appropriate building, land use and fire codes and any new installations or structures are expected to be well below the height relative to the elevation of existing flight patterns so as to not interfere with plane flight paths consistent with 14 CFR Part 77. Such codes are designed to protect the public from hazards associated with normal operation. Therefore, the proposed project is not expected to result in a safety hazard for people residing or working in the area of Facilities 1, 2, ~~and~~ 3, 4, 5, and 6 even if these facilities are located within the vicinity of an airport.

In addition, there are ~~four~~ two other facilities identified in Appendix D as being located within two miles of an airport but none of these facilities are expected to require physical modifications. Thus, compliance with PAR 1135 at these ~~four~~ two facilities would also not be expected to interfere with navigable airspace.

Therefore, implementation of PAR 1135 at any of the ~~34~~ 31 facilities will not create any new or alter any existing safety hazard for people residing or working near any facility identified in

Appendix D that is either located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public use airport or a private airstrip.

VIII. f) No Impact. Health and Safety Code Section 25506 et seq. specifically requires all businesses handling hazardous materials to submit a business emergency response plan to assist local administering agencies in the emergency release or threatened release of a hazardous material. Business emergency response plans generally require the following:

- Identification of individuals who are responsible for various actions, including reporting, assisting emergency response personnel and establishing an emergency response team;
- Procedures to notify the administering agency, the appropriate local emergency rescue personnel, and the California Office of Emergency Services;
- Procedures to mitigate a release or threatened release to minimize any potential harm or damage to persons, property or the environment;
- Procedures to notify the necessary persons who can respond to an emergency within the facility;
- Details of evacuation plans and procedures;
- Descriptions of the emergency equipment available in the facility;
- Identification of local emergency medical assistance; and,
- Training (initial and refresher) programs for employees in:
    1. The safe handling of hazardous materials used by the business;
    2. Methods of working with the local public emergency response agencies;
    3. The use of emergency response resources under control of the handler;
    4. Other procedures and resources that will increase public safety and prevent or mitigate a release of hazardous materials.

In general, every county or city and all facilities using a certain amount of hazardous materials are required to formulate detailed contingency plans to eliminate, or at least minimize, the possibility and effect of fires, explosion, or spills. In conjunction with the California Office of Emergency Services, local jurisdictions have enacted ordinances that set standards for area and business emergency response plans. These requirements include immediate notification, mitigation of an actual or threatened release of a hazardous material, and evacuation of the emergency area.

Emergency response plans are typically prepared in coordination with the local city or county emergency plans to ensure the safety of not only the public (surrounding local communities), but the facility employees as well. The proposed project would not impair implementation of, or physically interfere with any adopted emergency response plan or emergency evacuation plan. Further, the existing facilities already have an emergency response plan in place, as applicable. While the installation of modified or new electric generating units or associated air pollution control equipment may require an update of each affected facilities existing emergency response plan to reflect the new equipment or building modifications, the action of modifying an emergency response plan will not create any environmental impacts. Thus, PAR 1135 is not expected to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

VIII. g) No Impact. The facilities affected by PAR 1135 are currently located in existing industrial, commercial or mixed land use areas and the physical activities that may be taken to comply with PAR 1135 would occur inside existing property boundaries which are not located near wildlands; therefore, there is no existing risk from wildland fires and implementation of PAR 1135 would not create a new risk.

The proposed project would also not increase the existing risk of fire hazards in areas with flammable brush, grass, or trees since no substantial or native vegetation typically exists on or near the facilities (specifically because they could be a fire hazard). Thus, PAR 1135 is not expected to expose people or structures to wildfires. Therefore, no significant increase in wildland fire hazards is expected at the facilities that would be affected by the proposed project.

VIII. h) Less Than Significant Impact. The Uniform Fire Code and Uniform Building Code set standards intended to minimize risks from flammable or otherwise hazardous materials. Local jurisdictions are required to adopt the uniform codes or comparable regulations. Local fire agencies require permits for the use or storage of hazardous materials and permit modifications for proposed increases in their use. Permit conditions depend on the type and quantity of the hazardous materials at the facility. Permit conditions may include, but are not limited to, specifications for sprinkler systems, electrical systems, ventilation, and containment. The fire departments make annual business inspections to ensure compliance with permit conditions and other appropriate regulations. Further, businesses are required to report increases in the storage or use of flammable and otherwise hazardous materials to local fire departments. Local fire departments ensure that adequate permit conditions are in place to protect against the potential risk of upset. PAR 1135 would not change the existing requirements and permit conditions for the proper handling of flammable materials. Further, PAR 1135 does not contain any requirements that would prompt facility owners/operators to begin using new flammable materials.

Conclusion

Based upon these considerations, significant adverse hazards and hazardous materials impacts are not expected from implementing PAR 1135 due to implementation of mitigation measures HZ-1 through HZ-6, which would reduce any potential hazards and hazardous materials impacts to less than significant.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards, waste discharge requirements, exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board, or otherwise substantially degrade water quality?	☐	☐	☐	☑
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☑
c) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in substantial erosion or siltation on- or off-site or flooding on- or off-site?	☐	☐	☐	☑
d) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☑
e) Place housing or other structures within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, which would impede or redirect flood flows?	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
f) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, or inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☑
g) Require or result in the construction of new water or wastewater treatment facilities or new storm water drainage facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☑
h) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☑	☐
i) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☑

Significance Criteria

Potential impacts on water resources will be considered significant if any of the following criteria apply:

Water Demand:

- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use more than 262,820 gallons per day of potable water.
- The project increases demand for total water by more than five million gallons per day.

Water Quality:

- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.
- The project will cause the degradation of surface water substantially affecting current or future uses.
- The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.

- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The project results in alterations to the course or flow of floodwaters.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.

Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ six affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

IX. a), g) & i) No Impact. Of the physical modifications described in Table 2-1, none would be expected to require water either during construction or operation. Since no water will be needed to implement the projected modifications as part of complying with PAR 1135, no changes to each affected facility's wastewater existing setting will be expected. Since no wastewater will be generated from the implementation of PAR 1135, PAR 1135 would not trigger the need for an adequate wastewater capacity determination by any wastewater treatment provider that may be serving each affected site, if any. PAR 1135 would not require or result in the construction of new water or wastewater treatment facilities or new storm water drainage facilities, or expansion of existing facilities. PAR 1135 would not be expected to violate any water quality standards, waste discharge requirements, exceed wastewater treatment requirements of the applicable of the Publicly Owned Treatment Works (POTW) or Regional Water Quality Control Board, or otherwise substantially degrade water quality that the requirements are meant to protect. Therefore, no impacts to either wastewater or wastewater treatment are expected to occur as a result of implementing PAR 1135 at any affected sites.

IX. b) & h) No Impact. As previously explained in Response IX. a), water will not be needed to make the physical modifications that are summarized in Table 2-1. Since no water will be needed to implement the projected modifications as part of complying with PAR 1135, facilities would not be expected to utilize groundwater, substantially deplete groundwater supplies, or interfere substantially with groundwater recharge. Further, since water is not expected to be needed to implement PAR 1135, a determination by the water providers which currently serve the affected facilities that there is adequate existing capacity to provide water will not be necessary. For these reasons, PAR 1135 is not expected to have significant adverse water demand impacts.

IX. c) & d) No Impact. Of the physical modifications expected to take place at Facility 1, 2, ~~and~~ 3, 4, 5, and 6 as a result of PAR 1135, none would require water during construction or operation and no new drainage facilities or alterations to existing drainage facilities will be needed beyond what currently exists at the existing facilities. Similarly, there are no streams or rivers running through the properties of the existing facilities, so any construction activities that may occur as a result of complying with PAR 1135 would not be expected to alter the course of a stream or river. PAR 1135 does not contain any requirements that would change existing drainage patterns or the procedures for how surface runoff water is handled. Thus, PAR 1135 is not expected to alter any existing drainage patterns, or cause an increase rate or amount of surface runoff water that would exceed the capacity of the facilities' existing or planned storm water drainage systems.

IX. e) & f) No Impact. None of the physical modifications that are summarized in Table 2-1 that may occur at Facilities 1, 2, ~~and~~ 3, 4, 5, and 6 in order to comply with PAR 1135 would cause or require a new facility or new housing to be constructed. Therefore, implementation of PAR 1135 is not expected to result in placing houses or structures within 100-year flood hazard areas that could create new flood hazards or create significant adverse risk impacts from flooding as a result of failure of a levee or dam or inundation by seiches, tsunamis, or mudflows.

Conclusion

Based upon these considerations, significant adverse hydrology and water quality impacts are not expected from implementing PAR 1135. Since no significant hydrology and water quality impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
X. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☑
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑

Significance Criteria

Land use and planning impacts will be considered significant if the project conflicts with the land use and zoning designations established by local jurisdictions.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.

Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the three affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135.

Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

X. a) No Impact. Of the physical modifications summarized in Table 2-1, all would occur within the existing physical boundaries of Facilities 1, 2, ~~and~~ 3, 4, 5, and 6. For this reason, implementation of PAR 1135 would not be expected to physically divide an established community. Therefore, no impacts are anticipated.

X. b) No Impact. Land use and other planning considerations are determined by local governments and no land use or planning requirements will be altered by PAR 1135. All construction and operation activities that are expected to occur as a result of complying with PAR 1135 will occur within the confines of the existing facilities and would not be expected to affect or conflict with any applicable land use plans, policies, or regulations. Further, no new development or alterations to existing land designations will occur as a result of the implementation of PAR 1135. Therefore, present or planned land uses in the region will not be affected as a result of implementing PAR 1135.

Conclusion

Based upon these considerations, significant adverse land use and planning impacts are not expected from implementing PAR 1135. Since no significant land use and planning impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XI. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☑

Significance Criteria

Project-related impacts on mineral resources will be considered significant if any of the following conditions are met:

- The project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

  - The proposed project results in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.

Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ six affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

XI. a) & b) No Impact. Of the physical modifications summarized in Table 2-1, none of the construction and operation activities necessary to implement PAR 1135 would require the use of a known mineral resource. Thus, there are no provisions in PAR 1135 that would result in the loss of availability of a known mineral resource of value to the region and the residents of the state such as aggregate, coal, clay, shale, et cetera, or of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Conclusion

Based upon these considerations, significant adverse mineral resource impacts are not expected from implementing PAR 1135. Since no significant mineral resource impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XII.	**NOISE.** Would the project result in:				
a)	Exposure of persons to or generation of permanent noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☑	☐
b)	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☑	☐
c)	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑	☐
d)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public use airport or private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☑	☐

Significance Criteria

Noise impact will be considered significant if:

- Construction noise levels exceed the local noise ordinances or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary. Construction noise levels will be considered significant if they exceed federal Occupational Safety and Health Administration (OSHA) noise standards for workers.
- The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.

Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the three affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

XII. a), b), & c) Less than Significant Impact. The facilities affected by PAR 1135 are currently located in urbanized industrial or commercial land use areas. The existing noise environment at each of the facilities is typically dominated by noise from existing equipment on-site, vehicular traffic around the facilities, and trucks entering and exiting facility premises. Large, potentially noise-intensive construction equipment would be needed temporarily during construction to repower, retrofit, or replace existing electric generating units and associated air pollution control equipment as part of implementing PAR 1135. Operation of the construction equipment would be expected to comply with all existing noise control laws and ordinances. Since the facilities are located in industrial or commercial land use areas, which have a higher background noise level when compared to other areas, the noise generated during construction will likely be indistinguishable from the background noise levels at the property line.

Once the construction is complete, the noise from operation activities will be similar to the existing noise setting currently generated on-site because replacement equipment will have a similar noise profile as the equipment being replaced. Further, SCR technology is not inherently noisy equipment, so it is unlikely that the operation of SCR units will substantially contribute or worse an facility's existing noise profile. Also, due to the attenuation rate of noise based on distance from the source, it is unlikely that noise levels exceeding local noise ordinances from the operation of repowered or retrofitted electric ~~power~~ generating units and any new air pollution control equipment such as SCRs would occur beyond a facility's boundaries. Furthermore, OSHA and CAL-OSHA have established noise standards to protect worker health. Furthermore, compliance with local noise ordinances limiting the hours of construction will reduce the temporary noise impacts from construction to sensitive receptors. These 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.

XII. d) Less than Significant Impact. As explained previously in Section VIII e), only ~~four~~ one of the affected facilities ~~are~~ is located within two miles of an airport. However, the provisions in PAR 1135 are not expected to cause changes to electric ~~power~~ generating units at the facilities located within two miles of an airport and if construction activities were to occur it is expected construction activities would be in accordance with all appropriate building, land use and fire codes and any new installations or structures are expected to be well below the height relative to the elevation of existing flight patterns so as to not interfere with plane flight paths consistent with Federal Aviation Regulation, Part 77. In addition, compliance with PAR 1135 is not expected to expose people residing or working in the vicinity of any affected facility to the same degree of excessive noise levels associated with airplanes because all noise producing equipment at the affected facilities must comply with local noise ordinances and applicable OSHA or CAL-OSHA workplace noise reduction requirements. Therefore, the impacts are expected to be less than significant.

Conclusion

Based upon these considerations, significant adverse noise impacts are not expected from the implementing PAR 1135. Since no significant noise impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XIII.	**POPULATION AND HOUSING.** Would the project:				
a)	Induce substantial growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (e.g. through extension of roads or other infrastructure)?	☐	☐	☐	☑
b)	Displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑

Significance Criteria

Impacts of the proposed project on population and housing will be considered significant if the following criteria are exceeded:

- The demand for temporary or permanent housing exceeds the existing supply.
- The proposed project produces additional population, housing or employment inconsistent with adopted plans either in terms of overall amount or location.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.

Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ six affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

XIII. a) No Impact. The construction activities associated with PAR 1135 at the affected facilities are relatively minimal such that they would not be expected to require the relocation of individuals, require new housing or commercial facilities, or change the distribution of the population. On a peak day, the analysis assumes that up to three workers may be needed to perform construction activities at Facility 1, 4, 5, and 6, up to 18 workers may be needed to perform construction activities at Facility 2, and up to 297 workers may be needed to perform construction activities at Facility 3 to comply with PAR 1135, and these workers can be supplied from the existing labor pool in the local Southern California area. Further, the physical modifications expected to take place at electricity generating facilities would not be expected to require new employees to operate and maintain the equipment because each of the affected facilities already have existing electric ~~power~~ generating units in place with personnel trained to maintain the equipment. In the event that new employees are hired, the number of new employees hired at any one facility would likely be relatively small. The human population within the SCAQMD is anticipated to grow regardless of implementing PAR 1135. As a result, PAR 1135 is not anticipated to generate any significant adverse effects, either direct or indirect, on population growth in the SCAQMD or population distribution.

XIII. b) No Impact. PAR 1135 proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT at existing electricity generating facilities as previously explained in Section III – Air Quality, SCAQMD staff is not aware of any new electricity generating facilities planned to be constructed in the immediate future and is unable to predict or forecast, when, if at all, any would be built in the long-term. Thus, PAR 1135 is not expected to result in the creation of any industry that would affect population growth, directly or indirectly or cause the displacement of substantial numbers of people that would induce the construction of replacement housing elsewhere in the SCAQMD.

Conclusion

Based upon these considerations, significant adverse population and housing impacts are not expected from implementing PAR 1135. Since no significant population and housing impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XIV. PUBLIC SERVICES. Would the proposal result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:				
a) Fire protection?	☐	☐	☑	☐
b) Police protection?	☐	☐	☐	☑
c) Schools?	☐	☐	☐	☑
d) Other public facilities?	☐	☐	☐	☑

Significance Criteria

Impacts on public services will be considered significant if the project results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response time, or other performance objectives.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.

Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ six affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

XIV. a) Less than Significant Impact. Implementation of PAR 1135 is expected to cause electricity generating facility owners or operators to make physical modifications as summarized in Table 2-1 in order to comply with updated BARCT. In the process of conducting physical modifications, Facilities 1~~, and~~ 2, 4, 5, and 6 are expected to continue current operations, while Facility 3 would be expected to halt operations for three of its boilers and ancillary equipment in order to demolish and construct three new turbines. In order to construct the retrofitted, repowered, or replaced electric ~~power~~ generating units the owner or operators at each facility would be required to obtain a building permit from the local city or county with jurisdiction over the construction. As each step in the construction process progresses, a building inspector will periodically check in with each facility to verify that construction is proceeding according the specifications in the building permit. Because applications for building permits typically undergo a thorough "plan check" process before a permit to build is issued, new safety hazards are not expected to occur during construction phase of the affected electric ~~power~~ generating units.

Operation of Facilities 1~~, and~~ 3, 4, 5, and 6 would require periodic delivery of aqueous ammonia to each facility. As discussed in detail in Section VIII, the probability and consequence of an aqueous ammonia release is less than significant with mitigation applied. Therefore, ammonia delivery, storage, and use at Facilities 1 ~~and~~ 3, 4, 5, and 6 is not expected to significantly impact the hazardous material ("Haz Mat") response capabilities of the Los Angeles County Fire Authority. Operation of Facility 2 would require periodic delivery of urea, however no increase in the frequency or amount of urea is already delivered so it is expected to result in no change in order to comply with PAR 1135.

For these reasons, implementation of PAR 1135 is not expected to substantially alter or increase the need or demand for additional public services (e.g., fire and police departments and related emergency services, etc.) above current levels, so no significant impact to these existing services is anticipated.

XIV. b), c), d) No Impact. As noted in Section XIII - Population and Housing, PAR 1135 is not expected to induce population growth in any way because the local labor pool (e.g., workforce) is expected to be sufficient to accommodate three workers at Facility 1, 4, 5, and 6, 18 workers at Facility 2, and 297 workers at Facility 3 to perform any construction activities that may be necessary at affected facilities and operation of new or modified electric ~~power~~ generating units is not expected to require additional employees. In the event that new employees are hired, the number of new employees at any one facility would likely be small. Therefore, with no significant increase in local population, no impacts would be expected to local schools.

XIV. d) No Impact. PAR 1135 is expected to result in the installation and use of new or modified electric ~~power~~ generating units as part of compliance with proposed emission limits to reflect updated BARCT. Besides obtaining building permits from the local agency and SCAQMD permits for retrofitting, repowering, or replacing electric ~~power~~ generating units, there will be no need for other types of government services because the affected facilities will continue their existing operations once physical modifications are completed at each affected facility. Because PAR 1135 would not result in the need for new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives. As explained earlier, there will be no substantive increase in population as a result of implementing PAR 1135, and, therefore, no need for physically altered government facilities.

Conclusion

Based upon these considerations, significant adverse public services impacts are not expected from implementing PAR 1135. Since no significant public services impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XV.	**RECREATION.**				
a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☑
b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment or recreational services?	☐	☐	☐	☑

Significance Criteria

Impacts to recreation will be considered significant if:

- The project results in an increased demand for neighborhood or regional parks or other recreational facilities.
- The project adversely affects existing recreational opportunities.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.

Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ six affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

XV. a) & b) No Impact. As explained previously in Section XIII - Population and Housing, the owners or operators of the affected facilities who need to perform any construction activities to comply with PAR 1135 can draw from the existing labor pool in the local Southern California area. Further, the retrofitting, repowering, or replacement of electric ~~power~~ generating units would not be expected to require new employees to operate and maintain the equipment because the affected facilities already have existing electric ~~power~~ generating units in place with personnel trained to maintain the units. In the event that new employees are hired, the number of new employees hired at any one facility would likely be relatively small, perhaps no more than one or two per facility. The human population within the District is anticipated to grow regardless of implementing PAR 1135 (see the population growth projects in the 2016 AQMP). As a result, PAR 1135 is not anticipated to generate any significant adverse effects, either direct or indirect, on population growth in the District or population distribution. Further, there are no provisions in PAR 1135 that would affect or increase the demand for or use of existing neighborhood and regional parks or other recreational facilities. Further, PAR 1135 would not require the construction of new or the expansion of existing recreational facilities that might, in turn, cause adverse physical effects on the environment because PAR 1135 will not directly or indirectly substantively increase or redistribute population.

Conclusion

Based upon these considerations, significant adverse recreation impacts are not expected from implementing PAR 1135. Since no significant recreation impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVI. SOLID AND HAZARDOUS WASTE. Would the project:				
a) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☑	☐
b) Comply with federal, state, and local statutes and regulations related to solid and hazardous waste?	☐	☐	☐	☑

Significance Criteria

The proposed project impacts on solid and hazardous waste will be considered significant if the following occurs:

- The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 <u>and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications</u>.

Of the ~~three~~ <u>six</u> affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ <u>six</u> facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ <u>six</u> affected electricity generating facilities. Therefore, at each of the ~~three~~ <u>six</u> affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

XVI. a) Less than Significant Impact. Landfills are permitted by the local enforcement agencies with concurrence from the California Department of Resources Recycling and Recovery (CalRecycle). Local agencies establish the maximum amount of solid waste which can be received by a landfill each day and for the operational life of a landfill. This analysis of solid waste impacts assumes that safety and disposal procedures required by various agencies in California will provide reasonable precautions against the improper disposal of hazardous wastes in a municipal waste landfill. Because of state and federal requirements, some facilities are attempting to reduce or minimize the generation of solid and hazardous wastes by incorporating source reduction technologies to reduce the volume or toxicity of wastes generated, including improving operating procedures, using less hazardous or nonhazardous substitute materials, and upgrading or replacing inefficient processes.

PAR 1135 would require electricity generating facilities to comply with proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT and thus the affected facilities would be expected to make physical modifications to their equipment in order to achieve compliance.

Facility 1, 4, 5, and 6 assumes that ~~four~~ each affected SCR catalyst modules would be replaced in ~~all four~~each of the affected existing SCRs. Minimal modifications to the existing catalyst housing are expected to install the replaced catalyst modules. The spent catalyst modules from ~~the four~~each affected SCR unit~~s~~ would need to be disposed of or recycled for their precious metal content. However, because Facility 1, 4, 5, and 6 currently replaces the spent SCR catalyst modules approximately every five years as part of regular maintenance, this analysis assumes that the same maintenance schedule will continue with the upgraded SCR catalyst modules. Thus, disposal of the ~~four~~ each affected spent catalysts would not generate significant waste.

Facility 2 assumes that five diesel combustion engines and SCR units would be replaced with five new diesel combustion engines and SCR units. The replaced diesel engines and SCR units would need to be disposed of. However, because each engine replacement and SCR unit is expected to occur at a frequency of once per year, and since engine replacement requires minimal construction and demolition activities, the replacement of each engine and SCR unit would not generate significant waste. Further, no new waste would be generated during operation of Facility 2 as a result of the replaced engines since there is no change to the amount of urea delivered and stored and the current maintenance schedule to replace spent SCR catalysts is expected to remain the same. Thus, the amount of waste disposal during operations would not change.

Facility 3 assumes that three boilers would need to be removed and replaced with three turbines. Demolition of each boiler and ancillary structures and equipment is expected to occur over a period of 150 days. Facility 3 is also expected to install one new aqueous ammonia tank and three new SCRs which will require spent catalyst to be replaced approximately every five years. Throughout demolition and operation activities, Facility 3 is expected to comply with all applicable local, state, and federal waste disposal regulations. Thus, any waste generated as a result of PAR 1135 would be disposed of as follows: non-hazardous materials would be disposed of at a Class II or III landfill and recycling facility, and hazardous materials including any asbestos containing material would be disposed of at a Class I landfill.

The catalyst in SCR beds generally uses various ceramic materials comprised of precious metals to aid in the capture and conversion of NOx into N2 and water in an exhaust stream. SCRs require periodic regeneration or replacement of the catalyst bed. Regeneration of catalyst is preferred, due to the high cost to purchase new catalyst; however, if the catalyst cannot be regenerated, precious metals contained in the catalyst can be recovered. These metals could then be recycled and the remaining material would most likely need to be disposed of at a landfill.

If the catalyst is not hazardous, jurisdiction for its disposal then shifts to local agencies such as the Regional Water Quality Control Board (RWQCB) or the county environmental agencies. The RWQCB has indicated that if a spent catalyst is not considered a hazardous waste, it would probably be considered a Designated Waste. A Designated Waste is characterized as a non-hazardous waste consisting of, or containing pollutants that, under ambient environmental conditions, could be released at concentrations in excess of applicable water objectives, or which could cause degradation of the waters of the state. The type of landfill that the material is disposed at will depend upon its final waste designation. As explained previously, the use of SCRs to comply with PAR 1135 is expected to be limited to Facilities 1, 2, ~~and~~ 3, 4, 5, and 6, so its use is not expected to be wide-spread and the amount needed for disposal or recycling is very small relative to the disposal capacities in the region.

Because the waste disposal needs from implementing PAR 1135 are expected to be served by existing landfills with sufficient permitted capacity to accommodate each affected facility's solid waste disposal needs, potential solid and hazardous waste impacts from implementing PAR 1135 would not be significant.

XVI. b) No Impact. It is assumed that facility operators at the facilities currently comply with all applicable local, state, or federal waste disposal regulations and PAR 1135 does not contain any provisions that would alter current practices. Thus, implementation of PAR 1135 is not expected to interfere with any affected facility's ability to comply with applicable local, state, or federal waste disposal regulations in a manner that would cause a significant adverse solid and hazardous waste impact.

Conclusion

Based upon these considerations, significant adverse solid and hazardous waste impacts are not expected from implementing PAR 1135. Since no significant solid and hazardous waste impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVII. TRANSPORTATION AND TRAFFIC. Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☑	☐
b) Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☑	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☑
d) Substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	☐	☐	☐	☑
e) Result in inadequate emergency access?	☐	☐	☐	☑
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☑

Significance Criteria

Impacts on transportation and traffic will be considered significant if any of the following criteria apply:

- Peak period levels on major arterials are disrupted to a point where level of service (LOS) is reduced to D, E or F for more than one month.
- An intersection's volume to capacity ratio increase by 0.02 (two percent) or more when the LOS is already D, E or F.
- A major roadway is closed to all through traffic, and no alternate route is available.
- The project conflicts with applicable policies, plans or programs establishing measures of effectiveness, thereby decreasing the performance or safety of any mode of transportation.
- There is an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.
- The demand for parking facilities is substantially increased.
- Water borne, rail car or air traffic is substantially altered.
- Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased.
- The need for more than 350 employees.
- An increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round trips per day.
- Increase customer traffic by more than 700 visits per day.

Discussion

As explained in the introductory remarks to the Environmental Checklist, the proposed amendments to PAR 1135 that pertain to applicability and the proposed emission limits for electric ~~power~~ generating units to reflect updated BARCT are the key elements that would be expected to require some facility operators to make physical modifications to their equipment in order to achieve compliance and these activities may create secondary adverse environmental impacts. For the purpose of the analysis in this Mitigated SEA, activities associated with installing new or modifying existing air pollution control systems, and repowering or replacing electric ~~power~~ generating units are the only activities that have been identified as having potential secondary adverse environmental impacts associated with reducing NOx and other pollutants (e.g., ammonia, CO, VOC, and PM) from electric ~~power~~ generating units. Based on the BARCT assessment described in Chapter 1, only three electricity generating facilities have electric ~~power~~ generating units that would be expected to undergo physical modifications (e.g., installing new or modifying existing air pollution control systems, and repowering or replacing existing electric ~~power~~ generating units) in order to comply with PAR 1135 and three would elect to comply due to business decisions for a total of six facilities that are expected to undergo physical modifications.

Of the ~~three~~ six affected electricity generating facilities, there are vast differences between the facilities due to the type of electric ~~power~~ generating units, geographic location, and site layout at each individual facility. Further, each of the ~~three~~ six facilities is very different in how compliance with PAR 1135 may be achieved; Table 2-1 summarizes the potential modifications that may be expected to occur at the ~~three~~ six affected electricity generating facilities. Therefore, at each of the ~~three~~ six affected facilities, secondary impacts associated with the use of on- and off-road construction equipment, construction worker vehicle trips, and delivery and haul trips during construction and operation, are expected to occur during the implementation of PAR 1135. Therefore, the responses to the following questions rely on the assumptions described in the introductory remarks and are specific to each facility and their individual secondary impacts.

XVII. a) & b) Less Than Significant Impact

Construction

As previously discussed in Section III - Air Quality and Greenhouse Gas Emissions, compliance with PAR 1135 is expected to require construction activities associated with physical modifications to electric ~~power~~ generating units – replacing, retrofitting, or repowering. Facility 1, 4, 5, and 6 ~~is~~ are expected to have approximately three construction worker round trips, one vendor truck round trip, and one haul truck round trip for a total of five construction round trips, which are assumed to be needed on a peak construction day for one SCR catalyst module replacement. Facility 2 is expected to have approximately 28 construction worker round trips, five vendor truck round trips, and 10 haul truck round trips for a total of 43 construction round trips, which are assumed to be needed on a peak construction day for one engine and SCR unit replacement. The estimate of construction round trips for Facility 2 is conservative, as only one engine and SCR unit is expected to be replaced per year and each construction phase is expected to take place on different days. Facility 3 is expected to have approximately 297 construction worker round trips, 14 vendor truck round trips, and 11,120 haul truck round trips for a total of 11,431 round trips, which are assumed for the complete duration of construction activities. Since all of the construction activities at Facility 3 are not expected to occur on the same day, the most conservative trip amount from each phase is used to determine an estimated total amount of construction round trips on a peak day. A Facility 3 peak construction day assumes 200 construction worker trips (round trips), eight vendor truck trips (round trips), and 28 haul truck trips[33] (round trips) for a total of 236 construction round trips needed on a peak construction day.

Thus, construction at each Facility on a peak day is not expected to affect on-site traffic or parking for each affected facility. Further, since the additional five construction round trips at Facility 1, 4, 5, and 6, 43 construction round trips at Facility 2, and 236 construction round trips at Facility 3 that may occur on a peak day are below the significant threshold of 350 round trips, regional traffic and transportation impacts during construction are not expected to cause a significance adverse impact. The estimated vehicle trips from all activities on the peak day during construction are summarized in Table 2-16.

Operation

Of the ~~three~~ six affected facilities, only Facilities 1, ~~and~~ 3, 4, 5, and 6 are expected to have new trips generated during operations. Facility 2 is assumed to not create any new trips as the proposed modifications would not change the amount of urea that is currently delivered and the current SCR catalyst replacement schedule is expected to remain the same. Facility 1 assumes an increase of six aqueous ammonia deliveries per year, Facility 1 assumes an increase of six aqueous ammonia deliveries per year, Facility 4 assumes an increase of two aqueous ammonia deliveries per year, Facility 5 assumes an increase of 11 aqueous ammonia deliveries per year, and Facility 6 assumes an increase of two aqueous ammonia deliveries per year will be needed to supply the increased ammonia demand and that the existing maintenance schedule for replacing spent SCR catalysts

[33] Haul trips on a peak construction day were estimated by dividing the number of total haul trips in the demolition phase by the number of days of demolition.

would remain the same. Facility 3 assumes an increase of 24 aqueous ammonia deliveries per year will be needed to supply the anticipated ammonia demand for a new ammonia tank. Facility 3 would also require spent catalysts to be replaced every five years and assumes an increase of 6 haul trips per year will be needed.

All of the trips needed to haul new SCR catalysts and waste and deliver ammonia will contribute to operational traffic and transportation impacts.

For a "worst case" analysis, SCAQMD staff assumed that ~~three~~ six facilities on a peak day would generate a maximum of one additional truck trip (round trip) to account for an ammonia or catalyst delivery needed to replace a spent SCR catalyst or to provide aqueous ammonia. On a given day no truck trip overlap is anticipated, the one additional truck trip that may occur is not expected to significantly adversely affect circulation patterns on local roadways or the level of service at intersections near each of the affected facilities. In fact, this low volume of additional daily truck traffic is negligible over the entire SCAQMD. Further, as previously explained in Section XII – Population and Housing, the physical modifications that would result as part of compliance with PAR 1135 would not be expected to require new, additional permanent employees to operate and maintain the equipment because many of the affected facilities already have existing electric ~~power~~ generating units in place with personnel trained to maintain the equipment. In the event that new employees are hired, it is expected that the number of new employees hired at any one facility would be relatively small, perhaps no more than one or two per facility. Thus, even for the trips that would be associated with employing a small amount of new workers at each affected facility, implementation of PAR 1135 is not expected to cause a significant increase in the number of worker trips during operation at any of the affected facilities. The estimated vehicles from all activities is summarized in Table 2-16.

Table 2-16
Estimation of Vehicle Trips (Round Trips)

Phase	Worker Vehicles	Vendor Trucks	Haul Trucks
Facility 1 - Construction [a]	3 per day	1 per day	1 per day
Facility 2 - Construction [a]	28 per day	5 per day	10 per day
Facility 3 - Construction [a]	200 per day	8 per day	28 per day
Facility 4 - Construction [a]	3 per day	1 per day	1 per day
Facility 5 - Construction [a]	3 per day	1 per day	1 per day
Facility 6 - Construction [a]	3 per day	1 per day	1 per day
Operation (Facility 1, ~~and~~ 3, 4, 5, and 6)	Up to 1 additional truck trip (T6 instate construction heavy) for delivery of aqueous ammonia or for replacement of an SCR catalyst from all the affected facilities per day[b]		

[a] The worst case analysis for construction is based on a maximum of ~~231~~ 240 worker vehicles plus ~~14~~ 17 vendor trucks and ~~39~~ 42 haul trucks per day for all affected facilities during a peak day to account for overlapping construction.

[b] The worst case analysis during operation is based on a maximum of 1 additional delivery truck to deliver ammonia or SCR catalyst replacement at all of the affected facilities.

XVII. c) No Impact. As explained previously in Section VIII – Hazards and Hazardous Materials, ~~four~~ three of the ~~34~~ 31 affected facilities are located within two miles of an airport. However, the physical modifications to retrofit, repower, or replace electric ~~power~~ generating units are expected to be conducted in accordance with all appropriate building, land use and fire codes and any new installations or structures are expected to be well below the height relative to the elevation of existing flight patterns so as to not interfere with plane flight paths consistent with Federal Aviation Regulation, Title 14 Part 77. Thus, compliance with PAR 1135 would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risk.

XVII. d) & e) No Impact. PAR 1135 does not involve or require the construction of new roadways because the focus of PAR 1135 is reducing NOx emissions and other pollutants from electric power generating unit at electricity generating facilities. Thus, there will no change to current public roadway designs that could increase traffic hazards. Further, PAR 1135 is not expected to substantially increase traffic hazards or create incompatible uses at or adjacent to the facilities. Emergency access at each of the affected facilities is not expected to be impacted because PAR 1135 does not contain any requirements specific to emergency access points and each affected facility is expected to continue to maintain their existing emergency access. PAR 1135 does not include provisions which would conflict with emergency access. Since PAR 1135 is expected to involve construction activities that would create new, delivery/haul truck trips that would be expected to cease after construction is completed, the proposed project is not expected to alter the existing long-term circulation patterns within the areas of each affected facility during construction. Similarly, during operation, the projected increase of additional truck trips that may be needed at each affected facility would be at less than significant levels individually and cumulatively such that implementation of the proposed project is not expected to require a modification to circulation. Thus, no long-term impacts on the traffic circulation system are expected to occur during construction or operation.

XVII. f) No Impact. PAR 1135 does not contain any requirements that would affect or alter adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. Further, the facilities would still be expected to comply with, and not interfere with adopted policies, plans, or programs supporting alternative transportation (e.g., bicycles or buses) that exist in their respective cities. Since all of the requirements and compliance activities associated with implementing PAR 1135 would be expected to occur on-site, PAR 1135 would have no impact on each facility's ability to comply with any applicable alternative transportation plans or policies.

Conclusion

Based upon these considerations, significant adverse transportation and traffic impacts are not expected from implementing PAR 1135. Since no significant transportation and traffic impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☑
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	☐	☐	☑	☐
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☑	☐

Discussion

XVIII. a) No Impact. As explained in Section IV - Biological Resources, PAR 1135 is not expected to significantly adversely affect plant or animal species or the habitat on which they rely because any construction and operational activities associated with the facilities are expected to occur entirely within the boundaries of existing developed facilities in areas that have been greatly disturbed and that currently do not support any species of concern or the habitat on which they rely. For these reasons, PAR 1135 is not expected to reduce or eliminate any plant or animal species or destroy prehistoric records of the past.

XVIII. b) Less Than Significant Impact. Based on the foregoing analyses, PAR 1135 would not result in significant adverse project-specific environmental impacts due to mitigation measures set forth in this Mitigated SEA. Potential adverse impacts from implementing PAR 1135 would be rendered "less than cumulatively considerable" as defined by CEQA Guidelines Section 15064(h)(2) for any environmental topic because mitigation measures set forth within this

Mitigated SEA render any potentially significant impacts to be less than significant. Per CEQA Guidelines Section 15064(h)(4), the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulative considerable. SCAQMD cumulative significant thresholds are the same as project-specific significance thresholds.

This approach was upheld by the court in *Citizens for Responsible Equitable Environmental Development v. City of Chula Vista* (2011) 197 Cal. App. 4th 327, 334. The Court determined that where it can be found that a project did not exceed the South Coast Air Quality Management District's established air quality significance thresholds, the City of Chula Vista properly concluded that the project would not cause a significant environmental effect, nor result in a cumulatively considerable increase in these pollutants. The court found this determination to be consistent with CEQA Guidelines Section 15064.7, stating: "The lead agency may rely on a threshold of significance standard to determine whether a project will cause a significant environmental effect." The court found that, "[a]lthough the project will contribute additional air pollutants to an existing nonattainment area, these increases are below the significance criteria." "Thus, we conclude that no fair argument exists that the Project will cause a significant unavoidable cumulative contribution to an air quality impact." In *Rialto Citizens for Responsible Growth*, the court upheld the SCAQMD's approach to utilizing the established air quality significance thresholds to determine whether the impacts of a project would be cumulatively considerable. *Rialto Citizens for Responsible Growth v. City of Rialto* (2012) 208 Cal. App. 4th 899. As in *Chula Vista* and *Rialto Citizens for Responsible Growth*, here the SCAQMD has demonstrated, when using accurate and appropriate data and assumptions, that the project will not exceed the established SCAQMD significance thresholds. Thus, it may be concluded that the proposed project will not contribute to a significant unavoidable cumulative air quality impact.

Therefore, there is no potential for significant adverse cumulative or cumulatively considerable impacts to be generated by PAR 1135 for any environmental topic.

XVIII. c) Less Than Significant Impact. Based on the foregoing analyses, PAR 1135 is not expected to cause adverse effects on human beings for any environmental topic, either directly or indirectly because: 1) the air quality and GHG impacts were determined to be less than the significance thresholds as analyzed in Section III – Air Quality and Greenhouse Gases; 2) the increased demand for energy, water, and solid waste disposal can be met by utilizing existing services as analyzed in Section VI – Energy, Section IX – Hydrology and Water Quality, and Section XVI – Solid and Hazardous Waste; 3) the hazards and hazardous materials impacts were determined to be less than significant, after mitigation, as analyzed in Section VIII – Hazards and Hazardous Materials; 4) the noise impacts were determined to be less than significant as analyzed in Section XII – Noise; and 5) the transportation and traffic impacts were determined to be less than the significance thresholds as analyzed in Section XVI – Transportation and Traffic. In addition, the analysis concluded that there would be no significant environmental impacts for the remaining environmental impact topic areas: aesthetics, agriculture and forestry resources, biological resources, cultural resources, geology and soils, land use and planning, mineral resources, public services, population and housing, and recreation.

Conclusion

As previously discussed in environmental topics I through XVIII, after mitigation, the proposed project has no potential to cause significant adverse environmental effects.

APPENDICES

Appendix A: Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities

Appendix B: CalEEMod Files and Assumptions

- **B-1: Facility 1**
- **B-2: Facility 2**
- **B-3: Facility 3**

Appendix C: CEQA Impact Evaluations – Assumptions and Calculations

- **C-1: Construction Summary**
- **C-2: Operations Summary**
- **C-3: Construction (Facility 1)**
- **C-4: Operation (Facility 1)**
- **C-5: Construction (Facility 2)**
- **C-6: Construction (Facility 3)**
- **C-7: Operation (Facility 3)**
- **C-8: Construction (Facility 4)**
- **C-9: Operation (Facility 4)**
- **C-10: Construction (Facility 5)**
- **C-11: Operation (Facility 5)**
- **C-12: Construction (Facility 6)**
- **C-13: Operation (Facility 6)**

Appendix D: PAR 1135 List of Affected Facilities

Appendix E: Hazards Analysis

Appendix F: Comment Letters Received on the Draft Mitigated SEA and Response to Comments

APPENDIX A

Proposed Amended Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities

In order to save space and avoid repetition, please refer to the latest version of Proposed Amended Rule 1135 located elsewhere in the Governing Board Package (meeting date November 2, 2018). The version of Proposed Amended Rule 1135 that was circulated with the Draft Mitigated SEA and released on September 18, 2018 for a 30-day public review and comment period ending on October 18, 2018 was identified as "PAR 1135 Preliminary Draft Rule July 2018." Original hard copies of the Draft Mitigated SEA, which include the draft version of the proposed amended rule listed above, can be obtained by visiting the Public Information Center at SCAQMD Headquarters located at 21865 Copley Drive, Diamond Bar, CA 91765, by contacting Fabian Wesson, Public Advisor by phone at (909) 396-2039 or by email at PICrequests@aqmd.gov.

APPENDIX B

CalEEMod Files And Assumptions

APPENDIX B-1

CalEEMod Files And Assumptions

Replace Catalyst Modules in One SCR Unit at Facility 1

PAR 1135 - SCR Catalyst Module Replacement

(1) 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**	2018
Utility Company	Pasadena Water & Power				
CO2 Intensity (lb/MWhr)	1664.14	**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 - No demolition, site preparation, grading, paving, or architectural coating is expected as part of the proposed project.

Off-road Equipment - Off-Road Equipment - No Architectural Coating

Off-road Equipment - Off-Road Equipment - Building Construction - Cranes (1): 4 Hours Per Day; Forklifts (1): 4 Hours Per Day; Aerial Lifts (1): 4 Hours Per Day

Off-road Equipment - Off-Road Equipment - No Demolition

Off-road Equipment - Off-Road Equipment - No Grading

Off-road Equipment - Off-Road Equipment - No Paving

Off-road Equipment - Off-Road Equipment - No Site Preparation

Trips and VMT - Trips and VMT - Building Construction - 3 Workers, 1 Vendor, 1 Haul

Architectural Coating - Architectural Coatings - No Architectural Coatings

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	0.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/7/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblOffRoadEquipment	HorsePower	63.00	97.00
tblOffRoadEquipment	LoadFactor	0.31	0.37

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
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tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00

tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	0.00	3.00

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					
2018	1.0900e-003	0.0126	7.6300e-003	1.0000e-005	1.1000e-004	5.7000e-004	6.8000e-004	3.0000e-005	5.3000e-004	5.6000e-004	0.0000	1.3648	1.3648	3.8000e-004	0.0000	1.3743
Maximum	**1.0900e-003**	**0.0126**	**7.6300e-003**	**1.0000e-005**	**1.1000e-004**	**5.7000e-004**	**6.8000e-004**	**3.0000e-005**	**5.3000e-004**	**5.6000e-004**	**0.0000**	**1.3648**	**1.3648**	**3.8000e-004**	**0.0000**	**1.3743**

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					
2018	1.0900e-003	0.0126	7.6300e-003	1.0000e-005	1.1000e-004	5.7000e-004	6.8000e-004	3.0000e-005	5.3000e-004	5.6000e-004	0.0000	1.3648	1.3648	3.8000e-004	0.0000	1.3743
Maximum	**1.0900e-003**	**0.0126**	**7.6300e-003**	**1.0000e-005**	**1.1000e-004**	**5.7000e-004**	**6.8000e-004**	**3.0000e-005**	**5.3000e-004**	**5.6000e-004**	**0.0000**	**1.3648**	**1.3648**	**3.8000e-004**	**0.0000**	**1.3743**

	ROG	**NOx**	**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**

Air District, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

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	Site Preparation	Site Preparation	12/1/2018	12/1/2018	5	0	
2	Grading	Grading	12/1/2018	12/1/2018	5	0	
3	Building Construction	Building Construction	12/1/2018	12/7/2018	5	5	
4	Paving	Paving	12/1/2018	12/1/2018	5	0	
5	Architectural Coating	Architectural Coating	12/1/2018	12/1/2018	5	0	
6	Demolition	Demolition	12/2/2018	12/1/2018	5	0	

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	0	0.00	81	0.73
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading	Concrete/Industrial Saws	0	0.00	81	0.73
Grading	Rubber Tired Dozers	0	0.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction	Aerial Lifts	1	4.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	1	4.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Paving	Cement and Mortar Mixers	0	0.00	9	0.56
Paving	Pavers	0	0.00	130	0.42
Paving	Rollers	0	0.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Architectural Coating	Air Compressors	0	0.00	78	0.48

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	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	3.00	1.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2018

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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.2 Site Preparation - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.2 Site Preparation - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Grading - 2018

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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Grading - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Grading - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Building Construction - 2018

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	1.0300e-003	0.0121	7.1700e-003	1.0000e-005		5.7000e-004	5.7000e-004		5.3000e-004	5.3000e-004	0.0000	1.1848	1.1848	3.7000e-004	0.0000	1.1941
Total	**1.0300e-003**	**0.0121**	**7.1700e-003**	**1.0000e-005**		**5.7000e-004**	**5.7000e-004**		**5.3000e-004**	**5.3000e-004**	**0.0000**	**1.1848**	**1.1848**	**3.7000e-004**	**0.0000**	**1.1941**

3.4 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	1.6000e-004	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0386	0.0386	0.0000	0.0000	0.0386
Vendor	1.0000e-005	3.1000e-004	8.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0625	0.0625	0.0000	0.0000	0.0626
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0789	0.0789	0.0000	0.0000	0.0790
Total	**5.0000e-005**	**5.0000e-004**	**4.6000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1800**	**0.1800**	**0.0000**	**0.0000**	**0.1802**

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	1.0300e-003	0.0121	7.1700e-003	1.0000e-005		5.7000e-004	5.7000e-004		5.3000e-004	5.3000e-004	0.0000	1.1848	1.1848	3.7000e-004	0.0000	1.1941
Total	**1.0300e-003**	**0.0121**	**7.1700e-003**	**1.0000e-005**		**5.7000e-004**	**5.7000e-004**		**5.3000e-004**	**5.3000e-004**	**0.0000**	**1.1848**	**1.1848**	**3.7000e-004**	**0.0000**	**1.1941**

3.4 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	1.6000e-004	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0386	0.0386	0.0000	0.0000	0.0386
Vendor	1.0000e-005	3.1000e-004	8.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0625	0.0625	0.0000	0.0000	0.0626
Worker	4.0000e-005	3.0000e-005	3.5000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0789	0.0789	0.0000	0.0000	0.0790
Total	**5.0000e-005**	**5.0000e-004**	**4.6000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1800**	**0.1800**	**0.0000**	**0.0000**	**0.1802**

3.5 Paving - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.5 Paving - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.5 Paving - 2018

<u>Mitigated Construction Off-Site</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2018

<u>Unmitigated Construction On-Site</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Demolition - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Demolition - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Demolition - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.544547	0.044708	0.198656	0.126890	0.018261	0.005879	0.019662	0.030939	0.001958	0.002113	0.004656	0.000702	0.001029

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

PAR 1135 - SCR Catalyst Module Replacement (1) 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** 2018

Utility Company Pasadena Water & Power

CO2 Intensity (lb/MWhr) 1664.14 **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 - No demolition, site preparation, grading, paving, or architectural coating is expected as part of the proposed project.

Off-road Equipment - Off-Road Equipment - No Architectural Coating

Off-road Equipment - Off-Road Equipment - Building Construction - Cranes (1): 4 Hours Per Day; Forklifts (1): 4 Hours Per Day; Aerial Lifts (1): 4 Hours Per Day

Off-road Equipment - Off-Road Equipment - No Demolition

Off-road Equipment - Off-Road Equipment - No Grading

Off-road Equipment - Off-Road Equipment - No Paving

Off-road Equipment - Off-Road Equipment - No Site Preparation

Trips and VMT - Trips and VMT - Building Construction - 3 Workers, 1 Vendor, 1 Haul

Architectural Coating - Architectural Coatings - No Architectural Coatings

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	0.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/7/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblOffRoadEquipment	HorsePower	63.00	97.00
tblOffRoadEquipment	LoadFactor	0.31	0.37

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00

tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	0.00	3.00

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					
2018	0.4352	5.0451	3.0610	5.9800e-003	0.0434	0.2299	0.2733	0.0117	0.2115	0.2232	0.0000	604.0078	604.0078	0.1670	0.0000	608.1816
Maximum	**0.4352**	**5.0451**	**3.0610**	**5.9800e-003**	**0.0434**	**0.2299**	**0.2733**	**0.0117**	**0.2115**	**0.2232**	**0.0000**	**604.0078**	**604.0078**	**0.1670**	**0.0000**	**608.1816**

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					
2018	0.4352	5.0451	3.0610	5.9800e-003	0.0434	0.2299	0.2733	0.0117	0.2115	0.2232	0.0000	604.0078	604.0078	0.1670	0.0000	608.1816
Maximum	**0.4352**	**5.0451**	**3.0610**	**5.9800e-003**	**0.0434**	**0.2299**	**0.2733**	**0.0117**	**0.2115**	**0.2232**	**0.0000**	**604.0078**	**604.0078**	**0.1670**	**0.0000**	**608.1816**

	ROG	**NOx**	**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	Site Preparation	Site Preparation	12/1/2018	12/1/2018	5	0	
2	Grading	Grading	12/1/2018	12/1/2018	5	0	
3	Building Construction	Building Construction	12/1/2018	12/7/2018	5	5	
4	Paving	Paving	12/1/2018	12/1/2018	5	0	
5	Architectural Coating	Architectural Coating	12/1/2018	12/1/2018	5	0	
6	Demolition	Demolition	12/2/2018	12/1/2018	5	0	

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	0	0.00	81	0.73
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading	Concrete/Industrial Saws	0	0.00	81	0.73
Grading	Rubber Tired Dozers	0	0.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction	Aerial Lifts	1	4.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	1	4.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Paving	Cement and Mortar Mixers	0	0.00	9	0.56
Paving	Pavers	0	0.00	130	0.42
Paving	Rollers	0	0.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Architectural Coating	Air Compressors	0	0.00	78	0.48

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	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	3.00	1.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.2 Site Preparation - 2018

Unmitigated Construction Off-Site

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					
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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

Mitigated Construction On-Site

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					
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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.2 Site Preparation - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Grading - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Grading - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Grading - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Building Construction - 2018

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	0.4130	4.8508	2.8688	5.1900e-003		0.2285	0.2285		0.2102	0.2102		522.4257	522.4257	0.1626		526.4917
Total	**0.4130**	**4.8508**	**2.8688**	**5.1900e-003**		**0.2285**	**0.2285**		**0.2102**	**0.2102**		**522.4257**	**522.4257**	**0.1626**		**526.4917**

3.4 Building Construction - 2018

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	1.7300e-003	0.0616	0.0114	1.6000e-004	3.4900e-003	2.4000e-004	3.7300e-003	9.6000e-004	2.3000e-004	1.1800e-003		17.1357	17.1357	1.1700e-003		17.1650
Vendor	4.2600e-003	0.1212	0.0302	2.6000e-004	6.4000e-003	8.9000e-004	7.2900e-003	1.8400e-003	8.5000e-004	2.6900e-003		27.8658	27.8658	1.9000e-003		27.9132
Worker	0.0162	0.0116	0.1505	3.7000e-004	0.0335	2.7000e-004	0.0338	8.8900e-003	2.5000e-004	9.1400e-003		36.5806	36.5806	1.2500e-003		36.6117
Total	**0.0222**	**0.1944**	**0.1921**	**7.9000e-004**	**0.0434**	**1.4000e-003**	**0.0448**	**0.0117**	**1.3300e-003**	**0.0130**		**81.5821**	**81.5821**	**4.3200e-003**		**81.6900**

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	0.4130	4.8508	2.8688	5.1900e-003		0.2285	0.2285		0.2102	0.2102	0.0000	522.4257	522.4257	0.1626		526.4916
Total	**0.4130**	**4.8508**	**2.8688**	**5.1900e-003**		**0.2285**	**0.2285**		**0.2102**	**0.2102**	**0.0000**	**522.4257**	**522.4257**	**0.1626**		**526.4916**

3.4 Building Construction - 2018

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	1.7300e-003	0.0616	0.0114	1.6000e-004	3.4900e-003	2.4000e-004	3.7300e-003	9.6000e-004	2.3000e-004	1.1800e-003		17.1357	17.1357	1.1700e-003		17.1650
Vendor	4.2600e-003	0.1212	0.0302	2.6000e-004	6.4000e-003	8.9000e-004	7.2900e-003	1.8400e-003	8.5000e-004	2.6900e-003		27.8658	27.8658	1.9000e-003		27.9132
Worker	0.0162	0.0116	0.1505	3.7000e-004	0.0335	2.7000e-004	0.0338	8.8900e-003	2.5000e-004	9.1400e-003		36.5806	36.5806	1.2500e-003		36.6117
Total	**0.0222**	**0.1944**	**0.1921**	**7.9000e-004**	**0.0434**	**1.4000e-003**	**0.0448**	**0.0117**	**1.3300e-003**	**0.0130**		**81.5821**	**81.5821**	**4.3200e-003**		**81.6900**

3.5 Paving - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.5 Paving - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.5 Paving - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2018

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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Demolition - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Demolition - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Demolition - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.544547	0.044708	0.198656	0.126890	0.018261	0.005879	0.019662	0.030939	0.001958	0.002113	0.004656	0.000702	0.001029

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

PAR 1135 - SCR Catalyst Module Replacement (1) 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**	2018
Utility Company	Pasadena Water & Power				
CO2 Intensity (lb/MWhr)	1664.14	**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 - No demolition, site preparation, grading, paving, or architectural coating is expected as part of the proposed project.

Off-road Equipment - Off-Road Equipment - No Architectural Coating

Off-road Equipment - Off-Road Equipment - Building Construction - Cranes (1): 4 Hours Per Day; Forklifts (1): 4 Hours Per Day; Aerial Lifts (1): 4 Hours Per Day

Off-road Equipment - Off-Road Equipment - No Demolition

Off-road Equipment - Off-Road Equipment - No Grading

Off-road Equipment - Off-Road Equipment - No Paving

Off-road Equipment - Off-Road Equipment - No Site Preparation

Trips and VMT - Trips and VMT - Building Construction - 3 Workers, 1 Vendor, 1 Haul

Architectural Coating - Architectural Coatings - No Architectural Coatings

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	0.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/7/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	11/30/2018	12/1/2018
tblOffRoadEquipment	HorsePower	63.00	97.00
tblOffRoadEquipment	LoadFactor	0.31	0.37

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00

tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	0.00	3.00

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					
2018	0.4368	5.0473	3.0509	5.9400e-003	0.0434	0.2299	0.2733	0.0117	0.2116	0.2232	0.0000	600.5501	600.5501	0.1671	0.0000	604.7268
Maximum	**0.4368**	**5.0473**	**3.0509**	**5.9400e-003**	**0.0434**	**0.2299**	**0.2733**	**0.0117**	**0.2116**	**0.2232**	**0.0000**	**600.5501**	**600.5501**	**0.1671**	**0.0000**	**604.7268**

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					
2018	0.4368	5.0473	3.0509	5.9400e-003	0.0434	0.2299	0.2733	0.0117	0.2116	0.2232	0.0000	600.5501	600.5501	0.1671	0.0000	604.7268
Maximum	**0.4368**	**5.0473**	**3.0509**	**5.9400e-003**	**0.0434**	**0.2299**	**0.2733**	**0.0117**	**0.2116**	**0.2232**	**0.0000**	**600.5501**	**600.5501**	**0.1671**	**0.0000**	**604.7268**

	ROG	**NOx**	**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	Site Preparation	Site Preparation	12/1/2018	12/1/2018	5	0	
2	Grading	Grading	12/1/2018	12/1/2018	5	0	
3	Building Construction	Building Construction	12/1/2018	12/7/2018	5	5	
4	Paving	Paving	12/1/2018	12/1/2018	5	0	
5	Architectural Coating	Architectural Coating	12/1/2018	12/1/2018	5	0	
6	Demolition	Demolition	12/2/2018	12/1/2018	5	0	

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

PAR 1135 - SCR Catalyst Module Replacement (1) - South Coast AQMD Air District, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	0.00	81	0.73
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading	Concrete/Industrial Saws	0	0.00	81	0.73
Grading	Rubber Tired Dozers	0	0.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction	Aerial Lifts	1	4.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	1	4.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Paving	Cement and Mortar Mixers	0	0.00	9	0.56
Paving	Pavers	0	0.00	130	0.42
Paving	Rollers	0	0.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Architectural Coating	Air Compressors	0	0.00	78	0.48

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	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	3.00	1.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.2 Site Preparation - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.2 Site Preparation - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Grading - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Grading - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Grading - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Building Construction - 2018

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	0.4130	4.8508	2.8688	5.1900e-003		0.2285	0.2285		0.2102	0.2102		522.4257	522.4257	0.1626		526.4917
Total	**0.4130**	**4.8508**	**2.8688**	**5.1900e-003**		**0.2285**	**0.2285**		**0.2102**	**0.2102**		**522.4257**	**522.4257**	**0.1626**		**526.4917**

3.4 Building Construction - 2018

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	1.7900e-003	0.0624	0.0124	1.6000e-004	3.4900e-003	2.4000e-004	3.7400e-003	9.6000e-004	2.3000e-004	1.1900e-003		16.8284	16.8284	1.2300e-003		16.8590
Vendor	4.4400e-003	0.1214	0.0335	2.5000e-004	6.4000e-003	9.0000e-004	7.3000e-003	1.8400e-003	8.6000e-004	2.7000e-003		27.0756	27.0756	2.0400e-003		27.1266
Worker	0.0176	0.0127	0.1362	3.4000e-004	0.0335	2.7000e-004	0.0338	8.8900e-003	2.5000e-004	9.1400e-003		34.2204	34.2204	1.1700e-003		34.2496
Total	**0.0238**	**0.1965**	**0.1821**	**7.5000e-004**	**0.0434**	**1.4100e-003**	**0.0448**	**0.0117**	**1.3400e-003**	**0.0130**		**78.1244**	**78.1244**	**4.4400e-003**		**78.2352**

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	0.4130	4.8508	2.8688	5.1900e-003		0.2285	0.2285		0.2102	0.2102	0.0000	522.4257	522.4257	0.1626		526.4916
Total	**0.4130**	**4.8508**	**2.8688**	**5.1900e-003**		**0.2285**	**0.2285**		**0.2102**	**0.2102**	**0.0000**	**522.4257**	**522.4257**	**0.1626**		**526.4916**

3.4 Building Construction - 2018

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	1.7900e-003	0.0624	0.0124	1.6000e-004	3.4900e-003	2.4000e-004	3.7400e-003	9.6000e-004	2.3000e-004	1.1900e-003		16.8284	16.8284	1.2300e-003		16.8590
Vendor	4.4400e-003	0.1214	0.0335	2.5000e-004	6.4000e-003	9.0000e-004	7.3000e-003	1.8400e-003	8.6000e-004	2.7000e-003		27.0756	27.0756	2.0400e-003		27.1266
Worker	0.0176	0.0127	0.1362	3.4000e-004	0.0335	2.7000e-004	0.0338	8.8900e-003	2.5000e-004	9.1400e-003		34.2204	34.2204	1.1700e-003		34.2496
Total	**0.0238**	**0.1965**	**0.1821**	**7.5000e-004**	**0.0434**	**1.4100e-003**	**0.0448**	**0.0117**	**1.3400e-003**	**0.0130**		**78.1244**	**78.1244**	**4.4400e-003**		**78.2352**

3.5 Paving - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.5 Paving - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.5 Paving - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2018

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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Demolition - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Demolition - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Demolition - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.544547	0.044708	0.198656	0.126890	0.018261	0.005879	0.019662	0.030939	0.001958	0.002113	0.004656	0.000702	0.001029

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

Remove One Engine and Install One New Engine at Facility 2

PAR 1135 - Diesel Internal Combustion Engine (1)

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	1,000.00	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 - User Defined Industrial

Construction Phase - Construction Phase - Diesel Internal Combustion Engine: 4 Days; Demolition: 1 Day; Paving 2 Days; Building Construction 2 Days

Off-road Equipment - Off-Road Equipment - Cranes (1): 7 Hours Per Day; Rubber Tired Loaders (2): 7 Hours Per Day; Forklifts (3): 7 Hours Per Day; Welders (1): 7 Hours Per Day; Generator Sets (1): 7 Hours Per Day

Off-road Equipment - Off-Road Equipment - No Site Preparation

Off-road Equipment - Off-Road Equipment - No Grading

Off-road Equipment - Off-Road Equipment - Cranes (1): 7 Hours Per Day; Rubber Tired Loaders (2): 7 Hours Per Day; Forklifts (3): 7 Hours Per Day; Welders (1): 7 Hours Per Day; Generator Sets (1): 7 Hours Per Day

Off-road Equipment - Off-Road Equipment - Paver (1): 4 Hours Per Day; Paving Equipment (1): 4 Hours Per Day; Rollers (1): 2 Hours Per Day; Cement and Mortar Mixers (1): 3 Hours Per Day; Tractors/Loaders/Backhoes (1) 4 Hours Per Day

Off-road Equipment - Off-Road Equipment - No Architectural Coating

Demolition - Demolition - 1,000 square feet

Trips and VMT - Trips And VMT - Demolition:10 Worker Trips, 0 Vendor Trips, 5 Hauling Trips
Building Construction: 10 Worker Trips, 0 Vendor Trips, 5 Hauling Trips
Paving: 8 Worker Trips, 5 Vendor Trips, 0 Hausing Trips

Architectural Coating - Architectural Coating - No Architectural Coating

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,500.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	0.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstructionPhase	NumDays	0.00	2.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00

tblConstructionPhase	PhaseEndDate	7/31/2018	8/2/2018
tblConstructionPhase	PhaseEndDate	7/31/2018	8/1/2019
tblConstructionPhase	PhaseEndDate	7/31/2018	8/1/2018
tblConstructionPhase	PhaseStartDate	8/1/2018	8/1/2019
tblLandUse	LandUseSquareFeet	0.00	1,000.00
tblOffRoadEquipment	HorsePower	231.00	81.00
tblOffRoadEquipment	HorsePower	203.00	89.00
tblOffRoadEquipment	HorsePower	203.00	247.00
tblOffRoadEquipment	HorsePower	89.00	97.00
tblOffRoadEquipment	HorsePower	89.00	97.00
tblOffRoadEquipment	LoadFactor	0.29	0.73
tblOffRoadEquipment	LoadFactor	0.36	0.20
tblOffRoadEquipment	LoadFactor	0.36	0.40
tblOffRoadEquipment	LoadFactor	0.20	0.37
tblOffRoadEquipment	LoadFactor	0.20	0.37
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Cranes
tblOffRoadEquipment	OffRoadEquipmentType	Forklifts	Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	3.00
tblOffRoadEquipment	UsageHours	4.00	7.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	30.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	13.00	8.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	3.5200e-003	0.0314	0.0235	4.0000e-005	2.1000e-004	2.0300e-003	2.2400e-003	6.0000e-005	1.8900e-003	1.9500e-003	0.0000	3.3784	3.3784	8.1000e-004	0.0000	3.3987
2019	2.1500e-003	0.0201	0.0137	3.0000e-005	5.9000e-004	1.1300e-003	1.7200e-003	1.0000e-004	1.0600e-003	1.1600e-003	0.0000	2.3234	2.3234	5.3000e-004	0.0000	2.3367
Maximum	**3.5200e-003**	**0.0314**	**0.0235**	**4.0000e-005**	**5.9000e-004**	**2.0300e-003**	**2.2400e-003**	**1.0000e-004**	**1.8900e-003**	**1.9500e-003**	**0.0000**	**3.3784**	**3.3784**	**8.1000e-004**	**0.0000**	**3.3987**

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					
2018	3.5200e-003	0.0314	0.0235	4.0000e-005	2.1000e-004	2.0300e-003	2.2400e-003	6.0000e-005	1.8900e-003	1.9500e-003	0.0000	3.3784	3.3784	8.1000e-004	0.0000	3.3987
2019	2.1500e-003	0.0201	0.0137	3.0000e-005	5.9000e-004	1.1300e-003	1.7200e-003	1.0000e-004	1.0600e-003	1.1600e-003	0.0000	2.3234	2.3234	5.3000e-004	0.0000	2.3367
Maximum	**3.5200e-003**	**0.0314**	**0.0235**	**4.0000e-005**	**5.9000e-004**	**2.0300e-003**	**2.2400e-003**	**1.0000e-004**	**1.8900e-003**	**1.9500e-003**	**0.0000**	**3.3784**	**3.3784**	**8.1000e-004**	**0.0000**	**3.3987**

	ROG	**NOx**	**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	**8-1-2018**	**10-31-2018**	0.0249	0.0249
5	**8-1-2019**	**9-30-2019**	0.0159	0.0159
		Highest	0.0249	0.0249

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	4.0800e-003	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	**4.0800e-003**	**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

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
	tons/yr										MT/yr					
Area	4.0800e-003	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	**4.0800e-003**	**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	8/1/2019	8/1/2019	5	1	
2	Site Preparation	Site Preparation	8/1/2018	7/31/2018	5	0	
3	Grading	Grading	8/1/2018	7/31/2018	5	0	
4	Building Construction	Building Construction	8/1/2018	8/2/2018	5	2	
5	Paving	Paving	8/1/2018	8/1/2018	5	1	
6	Architectural Coating	Architectural Coating	8/1/2018	7/31/2018	5	0	

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
Architectural Coating	Air Compressors	0	0.00	78	0.48
Paving	Cement and Mortar Mixers	1	3.00	9	0.56
Demolition	Cranes	1	7.00	81	0.73
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Rubber Tired Loaders	2	7.00	89	0.20
Site Preparation	Graders	0	8.00	187	0.41
Paving	Pavers	1	4.00	130	0.42
Paving	Rollers	1	2.00	80	0.38
Demolition	Rubber Tired Loaders	2	7.00	247	0.40
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Building Construction	Forklifts	3	7.00	97	0.37
Demolition	Forklifts	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Demolition	Welders	1	7.00	46	0.45
Demolition	Generator Sets	1	7.00	84	0.74
Building Construction	Welders	1	7.00	46	0.45
Building Construction	Generator Sets	1	7.00	84	0.74
Paving	Paving Equipment	1	4.00	132	0.36
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	12	10.00	0.00	5.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	10.00	0.00	5.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	8.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2019

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					4.9000e-004	0.0000	4.9000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1000e-003	0.0193	0.0134	2.0000e-005		1.1200e-003	1.1200e-003		1.0500e-003	1.0500e-003	0.0000	2.0818	2.0818	5.2000e-004	0.0000	2.0948
Total	**2.1000e-003**	**0.0193**	**0.0134**	**2.0000e-005**	**4.9000e-004**	**1.1200e-003**	**1.6100e-003**	**7.0000e-005**	**1.0500e-003**	**1.1200e-003**	**0.0000**	**2.0818**	**2.0818**	**5.2000e-004**	**0.0000**	**2.0948**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.5000e-004	1.4000e-004	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1906	0.1906	1.0000e-005	0.0000	0.1909
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	2.0000e-005	2.1000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0510	0.0510	0.0000	0.0000	0.0510
Total	**4.0000e-005**	**7.7000e-004**	**3.5000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.2416**	**0.2416**	**1.0000e-005**	**0.0000**	**0.2419**

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					4.9000e-004	0.0000	4.9000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1000e-003	0.0193	0.0134	2.0000e-005		1.1200e-003	1.1200e-003		1.0500e-003	1.0500e-003	0.0000	2.0818	2.0818	5.2000e-004	0.0000	2.0947
Total	**2.1000e-003**	**0.0193**	**0.0134**	**2.0000e-005**	**4.9000e-004**	**1.1200e-003**	**1.6100e-003**	**7.0000e-005**	**1.0500e-003**	**1.1200e-003**	**0.0000**	**2.0818**	**2.0818**	**5.2000e-004**	**0.0000**	**2.0947**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.5000e-004	1.4000e-004	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1906	0.1906	1.0000e-005	0.0000	0.1909
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	2.0000e-005	2.1000e-004	0.0000	5.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0510	0.0510	0.0000	0.0000	0.0510
Total	**4.0000e-005**	**7.7000e-004**	**3.5000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**1.1000e-004**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.2416**	**0.2416**	**1.0000e-005**	**0.0000**	**0.2419**

3.3 Site Preparation - 2018

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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Site Preparation - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Site Preparation - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Grading - 2018

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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Grading - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Grading - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.5 Building Construction - 2018

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	3.1600e-003	0.0276	0.0204	3.0000e-005		1.8700e-003	1.8700e-003		1.7500e-003	1.7500e-003	0.0000	2.6673	2.6673	6.9000e-004	0.0000	2.6846
Total	**3.1600e-003**	**0.0276**	**0.0204**	**3.0000e-005**		**1.8700e-003**	**1.8700e-003**		**1.7500e-003**	**1.7500e-003**	**0.0000**	**2.6673**	**2.6673**	**6.9000e-004**	**0.0000**	**2.6846**

3.5 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.9000e-004	1.5000e-004	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1929	0.1929	1.0000e-005	0.0000	0.1932
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	5.0000e-005	4.0000e-005	4.7000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1053	0.1053	0.0000	0.0000	0.1053
Total	**7.0000e-005**	**8.3000e-004**	**6.2000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.2981**	**0.2981**	**1.0000e-005**	**0.0000**	**0.2985**

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	3.1600e-003	0.0276	0.0204	3.0000e-005		1.8700e-003	1.8700e-003		1.7500e-003	1.7500e-003	0.0000	2.6673	2.6673	6.9000e-004	0.0000	2.6846
Total	**3.1600e-003**	**0.0276**	**0.0204**	**3.0000e-005**		**1.8700e-003**	**1.8700e-003**		**1.7500e-003**	**1.7500e-003**	**0.0000**	**2.6673**	**2.6673**	**6.9000e-004**	**0.0000**	**2.6846**

3.5 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.9000e-004	1.5000e-004	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1929	0.1929	1.0000e-005	0.0000	0.1932
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	5.0000e-005	4.0000e-005	4.7000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1053	0.1053	0.0000	0.0000	0.1053
Total	**7.0000e-005**	**8.3000e-004**	**6.2000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.2981**	**0.2981**	**1.0000e-005**	**0.0000**	**0.2985**

3.6 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.5000e-004	2.6000e-003	2.2400e-003	0.0000		1.5000e-004	1.5000e-004		1.4000e-004	1.4000e-004	0.0000	0.3085	0.3085	9.0000e-005	0.0000	0.3108
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.5000e-004**	**2.6000e-003**	**2.2400e-003**	**0.0000**		**1.5000e-004**	**1.5000e-004**		**1.4000e-004**	**1.4000e-004**	**0.0000**	**0.3085**	**0.3085**	**9.0000e-005**	**0.0000**	**0.3108**

3.6 Paving - 2018

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	3.1000e-004	8.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0625	0.0625	0.0000	0.0000	0.0626
Worker	2.0000e-005	2.0000e-005	1.9000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0421	0.0421	0.0000	0.0000	0.0421
Total	**3.0000e-005**	**3.3000e-004**	**2.7000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.1046**	**0.1046**	**0.0000**	**0.0000**	**0.1047**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.5000e-004	2.6000e-003	2.2400e-003	0.0000		1.5000e-004	1.5000e-004		1.4000e-004	1.4000e-004	0.0000	0.3085	0.3085	9.0000e-005	0.0000	0.3108
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.5000e-004**	**2.6000e-003**	**2.2400e-003**	**0.0000**		**1.5000e-004**	**1.5000e-004**		**1.4000e-004**	**1.4000e-004**	**0.0000**	**0.3085**	**0.3085**	**9.0000e-005**	**0.0000**	**0.3108**

3.6 Paving - 2018

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	3.1000e-004	8.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0625	0.0625	0.0000	0.0000	0.0626
Worker	2.0000e-005	2.0000e-005	1.9000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0421	0.0421	0.0000	0.0000	0.0421
Total	**3.0000e-005**	**3.3000e-004**	**2.7000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.1046**	**0.1046**	**0.0000**	**0.0000**	**0.1047**

3.7 Architectural Coating - 2018

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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2018

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	4.0800e-003	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	4.0800e-003	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	4.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.6100e-003					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	**4.0700e-003**	**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	4.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.6100e-003					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	**4.0700e-003**	**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

PAR 1135 - Diesel Internal Combustion Engine (1)

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	1,000.00	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 - User Defined Industrial

Construction Phase - Construction Phase - Diesel Internal Combustion Engine: 4 Days; Demolition: 1 Day; Paving 2 Days; Building Construction 2 Days

Off-road Equipment - Off-Road Equipment - Cranes (1): 7 Hours Per Day; Rubber Tired Loaders (2): 7 Hours Per Day; Forklifts (3): 7 Hours Per Day; Welders (1): 7 Hours Per Day; Generator Sets (1): 7 Hours Per Day

Off-road Equipment - Off-Road Equipment - No Site Preparation

Off-road Equipment - Off-Road Equipment - No Grading

Off-road Equipment - Off-Road Equipment - Cranes (1): 7 Hours Per Day; Rubber Tired Loaders (2): 7 Hours Per Day; Forklifts (3): 7 Hours Per Day; Welders (1): 7 Hours Per Day; Generator Sets (1): 7 Hours Per Day

Off-road Equipment - Off-Road Equipment - Paver (1): 4 Hours Per Day; Paving Equipment (1): 4 Hours Per Day; Rollers (1): 2 Hours Per Day; Cement and Mortar Mixers (1): 3 Hours Per Day; Tractors/Loaders/Backhoes (1) 4 Hours Per Day

Off-road Equipment - Off-Road Equipment - No Architectural Coating

Demolition - Demolition - 1,000 square feet

Trips and VMT - Trips And VMT - Demolition: 10 Worker Trips, 0 Vendor Trips, 5 Hauling Trips
Building Construction: 10 Worker Trips, 0 Vendor Trips, 5 Hauling Trips
Paving: 8 Worker Trips, 5 Vendor Trips, 0 Hausing Trips

Architectural Coating - Architectural Coating - No Architectural Coating

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,500.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	0.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstructionPhase	NumDays	0.00	2.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00

PAR 1135 - Diesel Internal Combustion Engine (1) - South Coast AQMD Air District, Summer

tblConstructionPhase	PhaseEndDate	7/31/2018	8/2/2018
tblConstructionPhase	PhaseEndDate	7/31/2018	8/1/2019
tblConstructionPhase	PhaseEndDate	7/31/2018	8/1/2018
tblConstructionPhase	PhaseStartDate	8/1/2018	8/1/2019
tblLandUse	LandUseSquareFeet	0.00	1,000.00
tblOffRoadEquipment	HorsePower	231.00	81.00
tblOffRoadEquipment	HorsePower	203.00	89.00
tblOffRoadEquipment	HorsePower	203.00	247.00
tblOffRoadEquipment	HorsePower	89.00	97.00
tblOffRoadEquipment	HorsePower	89.00	97.00
tblOffRoadEquipment	LoadFactor	0.29	0.73
tblOffRoadEquipment	LoadFactor	0.36	0.20
tblOffRoadEquipment	LoadFactor	0.36	0.40
tblOffRoadEquipment	LoadFactor	0.20	0.37
tblOffRoadEquipment	LoadFactor	0.20	0.37
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Cranes
tblOffRoadEquipment	OffRoadEquipmentType	Forklifts	Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	3.00
tblOffRoadEquipment	UsageHours	4.00	7.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	30.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	13.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.8031	34.2743	26.0985	0.0423	0.2769	2.1756	2.4525	0.0745	2.0285	2.1031	0.0000	4,193.2878	4,193.2878	1.0027	0.0000	4,218.3540
2019	4.2916	40.1480	27.4429	0.0524	1.1835	2.2534	3.4369	0.2026	2.1144	2.3171	0.0000	5,131.1027	5,131.1027	1.1738	0.0000	5,160.4488
Maximum	**4.2916**	**40.1480**	**27.4429**	**0.0524**	**1.1835**	**2.2534**	**3.4369**	**0.2026**	**2.1144**	**2.3171**	**0.0000**	**5,131.1027**	**5,131.1027**	**1.1738**	**0.0000**	**5,160.4488**

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					
2018	3.8031	34.2743	26.0985	0.0423	0.2769	2.1756	2.4525	0.0745	2.0285	2.1031	0.0000	4,193.2878	4,193.2878	1.0027	0.0000	4,218.3539
2019	4.2916	40.1480	27.4429	0.0524	1.1835	2.2534	3.4369	0.2026	2.1144	2.3171	0.0000	5,131.1027	5,131.1027	1.1738	0.0000	5,160.4488
Maximum	**4.2916**	**40.1480**	**27.4429**	**0.0524**	**1.1835**	**2.2534**	**3.4369**	**0.2026**	**2.1144**	**2.3171**	**0.0000**	**5,131.1027**	**5,131.1027**	**1.1738**	**0.0000**	**5,160.4488**

	ROG	**NOx**	**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	0.0224	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	**0.0224**	**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	0.0224	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	**0.0224**	**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	8/1/2019	8/1/2019	5	1	
2	Site Preparation	Site Preparation	8/1/2018	7/31/2018	5	0	
3	Grading	Grading	8/1/2018	7/31/2018	5	0	
4	Building Construction	Building Construction	8/1/2018	8/2/2018	5	2	
5	Paving	Paving	8/1/2018	8/1/2018	5	1	
6	Architectural Coating	Architectural Coating	8/1/2018	7/31/2018	5	0	

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
Architectural Coating	Air Compressors	0	0.00	78	0.48
Paving	Cement and Mortar Mixers	1	3.00	9	0.56
Demolition	Cranes	1	7.00	81	0.73
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Rubber Tired Loaders	2	7.00	89	0.20
Site Preparation	Graders	0	8.00	187	0.41
Paving	Pavers	1	4.00	130	0.42
Paving	Rollers	1	2.00	80	0.38
Demolition	Rubber Tired Loaders	2	7.00	247	0.40
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Building Construction	Forklifts	3	7.00	97	0.37
Demolition	Forklifts	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Demolition	Welders	1	7.00	46	0.45
Demolition	Generator Sets	1	7.00	84	0.74
Building Construction	Welders	1	7.00	46	0.45
Building Construction	Generator Sets	1	7.00	84	0.74
Paving	Paving Equipment	1	4.00	132	0.36
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	12	10.00	0.00	5.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	10.00	0.00	5.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	8.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2019

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					0.9844	0.0000	0.9844	0.1490	0.0000	0.1490			0.0000			0.0000
Off-Road	4.2015	38.6583	26.7149	0.0473		2.2471	2.2471		2.1085	2.1085		4,589.595 3	4,589.595 3	1.1413		4,618.126 8
Total	**4.2015**	**38.6583**	**26.7149**	**0.0473**	**0.9844**	**2.2471**	**3.2314**	**0.1490**	**2.1085**	**2.2575**		**4,589.595 3**	**4,589.595 3**	**1.1413**		**4,618.126 8**

3.2 Demolition - 2019

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	0.0411	1.4556	0.2786	3.9200e-003	0.0874	5.4000e-003	0.0928	0.0239	5.1700e-003	0.0291		423.4086	423.4086	0.0289		424.1307
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	0.0490	0.0341	0.4493	1.1900e-003	0.1118	8.7000e-004	0.1127	0.0296	8.0000e-004	0.0305		118.0989	118.0989	3.6900e-003		118.1912
Total	**0.0901**	**1.4897**	**0.7280**	**5.1100e-003**	**0.1992**	**6.2700e-003**	**0.2054**	**0.0536**	**5.9700e-003**	**0.0596**		**541.5075**	**541.5075**	**0.0326**		**542.3219**

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					0.9844	0.0000	0.9844	0.1490	0.0000	0.1490			0.0000			0.0000
Off-Road	4.2015	38.6583	26.7149	0.0473		2.2471	2.2471		2.1085	2.1085	0.0000	4,589.5953	4,589.5953	1.1413		4,618.1268
Total	**4.2015**	**38.6583**	**26.7149**	**0.0473**	**0.9844**	**2.2471**	**3.2314**	**0.1490**	**2.1085**	**2.2575**	**0.0000**	**4,589.5953**	**4,589.5953**	**1.1413**		**4,618.1268**

3.2 Demolition - 2019

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	0.0411	1.4556	0.2786	3.9200e-003	0.0874	5.4000e-003	0.0928	0.0239	5.1700e-003	0.0291		423.4086	423.4086	0.0289		424.1307
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	0.0490	0.0341	0.4493	1.1900e-003	0.1118	8.7000e-004	0.1127	0.0296	8.0000e-004	0.0305		118.0989	118.0989	3.6900e-003		118.1912
Total	**0.0901**	**1.4897**	**0.7280**	**5.1100e-003**	**0.1992**	**6.2700e-003**	**0.2054**	**0.0536**	**5.9700e-003**	**0.0596**		**541.5075**	**541.5075**	**0.0326**		**542.3219**

3.3 Site Preparation - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Site Preparation - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Site Preparation - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Grading - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Grading - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Grading - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.5 Building Construction - 2018

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	3.1632	27.6373	20.4199	0.0300		1.8728	1.8728		1.7492	1.7492		2,940.192 0	2,940.192 0	0.7632		2,959.273 1
Total	**3.1632**	**27.6373**	**20.4199**	**0.0300**		**1.8728**	**1.8728**		**1.7492**	**1.7492**		**2,940.192 0**	**2,940.192 0**	**0.7632**		**2,959.273 1**

3.5 Building Construction - 2018

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	0.0217	0.7698	0.1425	1.9900e-003	0.0437	2.9600e-003	0.0467	0.0120	2.8300e-003	0.0148		214.1966	214.1966	0.0147		214.5628
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	0.0539	0.0386	0.5018	1.2300e-003	0.1118	8.9000e-004	0.1127	0.0296	8.2000e-004	0.0305		121.9352	121.9352	4.1600e-003		122.0391
Total	**0.0756**	**0.8084**	**0.6443**	**3.2200e-003**	**0.1555**	**3.8500e-003**	**0.1593**	**0.0416**	**3.6500e-003**	**0.0453**		**336.1317**	**336.1317**	**0.0188**		**336.6019**

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	3.1632	27.6373	20.4199	0.0300		1.8728	1.8728		1.7492	1.7492	0.0000	2,940.1920	2,940.1920	0.7632		2,959.2731
Total	**3.1632**	**27.6373**	**20.4199**	**0.0300**		**1.8728**	**1.8728**		**1.7492**	**1.7492**	**0.0000**	**2,940.1920**	**2,940.1920**	**0.7632**		**2,959.2731**

3.5 Building Construction - 2018

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	0.0217	0.7698	0.1425	1.9900e-003	0.0437	2.9600e-003	0.0467	0.0120	2.8300e-003	0.0148		214.1966	214.1966	0.0147		214.5628
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	0.0539	0.0386	0.5018	1.2300e-003	0.1118	8.9000e-004	0.1127	0.0296	8.2000e-004	0.0305		121.9352	121.9352	4.1600e-003		122.0391
Total	**0.0756**	**0.8084**	**0.6443**	**3.2200e-003**	**0.1555**	**3.8500e-003**	**0.1593**	**0.0416**	**3.6500e-003**	**0.0453**		**336.1317**	**336.1317**	**0.0188**		**336.6019**

3.6 Paving - 2018

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	0.4999	5.1917	4.4820	6.8400e-003		0.2938	0.2938		0.2708	0.2708		680.0869	680.0869	0.2078		685.2816
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4999**	**5.1917**	**4.4820**	**6.8400e-003**		**0.2938**	**0.2938**		**0.2708**	**0.2708**		**680.0869**	**680.0869**	**0.2078**		**685.2816**

3.6 Paving - 2018

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	0.0213	0.6059	0.1509	1.3100e-003	0.0320	4.4300e-003	0.0364	9.2100e-003	4.2400e-003	0.0135		139.3290	139.3290	9.4800e-003		139.5661
Worker	0.0431	0.0309	0.4014	9.8000e-004	0.0894	7.1000e-004	0.0901	0.0237	6.6000e-004	0.0244		97.5481	97.5481	3.3300e-003		97.6313
Total	**0.0644**	**0.6368**	**0.5523**	**2.2900e-003**	**0.1214**	**5.1400e-003**	**0.1266**	**0.0329**	**4.9000e-003**	**0.0378**		**236.8772**	**236.8772**	**0.0128**		**237.1974**

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	0.4999	5.1917	4.4820	6.8400e-003		0.2938	0.2938		0.2708	0.2708	0.0000	680.0869	680.0869	0.2078		685.2816
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4999**	**5.1917**	**4.4820**	**6.8400e-003**		**0.2938**	**0.2938**		**0.2708**	**0.2708**	**0.0000**	**680.0869**	**680.0869**	**0.2078**		**685.2816**

3.6 Paving - 2018

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	0.0213	0.6059	0.1509	1.3100e-003	0.0320	4.4300e-003	0.0364	9.2100e-003	4.2400e-003	0.0135		139.3290	139.3290	9.4800e-003		139.5661
Worker	0.0431	0.0309	0.4014	9.8000e-004	0.0894	7.1000e-004	0.0901	0.0237	6.6000e-004	0.0244		97.5481	97.5481	3.3300e-003		97.6313
Total	**0.0644**	**0.6368**	**0.5523**	**2.2900e-003**	**0.1214**	**5.1400e-003**	**0.1266**	**0.0329**	**4.9000e-003**	**0.0378**		**236.8772**	**236.8772**	**0.0128**		**237.1974**

3.7 Architectural Coating - 2018

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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0224	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	0.0224	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	2.5400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0198					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	**0.0224**	**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	2.5400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0198					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	**0.0224**	**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

PAR 1135 - Diesel Internal Combustion Engine (1)

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	1,000.00	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 - User Defined Industrial

Construction Phase - Construction Phase - Diesel Internal Combustion Engine: 4 Days; Demolition: 1 Day; Paving 2 Days; Building Construction 2 Days

Off-road Equipment - Off-Road Equipment - Cranes (1): 7 Hours Per Day; Rubber Tired Loaders (2): 7 Hours Per Day; Forklifts (3): 7 Hours Per Day; Welders (1): 7 Hours Per Day; Generator Sets (1): 7 Hours Per Day

Off-road Equipment - Off-Road Equipment - No Site Preparation

Off-road Equipment - Off-Road Equipment - No Grading

Off-road Equipment - Off-Road Equipment - Cranes (1): 7 Hours Per Day; Rubber Tired Loaders (2): 7 Hours Per Day; Forklifts (3): 7 Hours Per Day; Welders (1): 7 Hours Per Day; Generator Sets (1): 7 Hours Per Day

Off-road Equipment - Off-Road Equipment - Paver (1): 4 Hours Per Day; Paving Equipment (1): 4 Hours Per Day; Rollers (1): 2 Hours Per Day; Cement and Mortar Mixers (1): 3 Hours Per Day; Tractors/Loaders/Backhoes (1) 4 Hours Per Day

Off-road Equipment - Off-Road Equipment - No Architectural Coating

Demolition - Demolition - 1,000 square feet

Trips and VMT - Trips And VMT - Demolition: 10 Worker Trips, 0 Vendor Trips, 5 Hauling Trips
Building Construction: 10 Worker Trips, 0 Vendor Trips, 5 Hauling Trips
Paving: 8 Worker Trips, 5 Vendor Trips, 0 Hausing Trips

Architectural Coating - Architectural Coating - No Architectural Coating

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,500.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	0.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstructionPhase	NumDays	0.00	2.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00

tblConstructionPhase	PhaseEndDate	7/31/2018	8/2/2018
tblConstructionPhase	PhaseEndDate	7/31/2018	8/1/2019
tblConstructionPhase	PhaseEndDate	7/31/2018	8/1/2018
tblConstructionPhase	PhaseStartDate	8/1/2018	8/1/2019
tblLandUse	LandUseSquareFeet	0.00	1,000.00
tblOffRoadEquipment	HorsePower	231.00	81.00
tblOffRoadEquipment	HorsePower	203.00	89.00
tblOffRoadEquipment	HorsePower	203.00	247.00
tblOffRoadEquipment	HorsePower	89.00	97.00
tblOffRoadEquipment	HorsePower	89.00	97.00
tblOffRoadEquipment	LoadFactor	0.29	0.73
tblOffRoadEquipment	LoadFactor	0.36	0.20
tblOffRoadEquipment	LoadFactor	0.36	0.40
tblOffRoadEquipment	LoadFactor	0.20	0.37
tblOffRoadEquipment	LoadFactor	0.20	0.37
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Cranes
tblOffRoadEquipment	OffRoadEquipmentType	Forklifts	Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	3.00
tblOffRoadEquipment	UsageHours	4.00	7.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	30.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	13.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.8131	34.2927	26.0413	0.0421	0.2769	2.1757	2.4526	0.0745	2.0287	2.1032	0.0000	4,171.333 7	4,171.333 7	1.0036	0.0000	4,196.422 5
2019	4.2971	40.1709	27.4217	0.0522	1.1835	2.2535	3.4370	0.2026	2.1145	2.3172	0.0000	5,115.7858	5,115.7858	1.1749	0.0000	5,145.158 5
Maximum	**4.2971**	**40.1709**	**27.4217**	**0.0522**	**1.1835**	**2.2535**	**3.4370**	**0.2026**	**2.1145**	**2.3172**	**0.0000**	**5,115.785 8**	**5,115.785 8**	**1.1749**	**0.0000**	**5,145.158 5**

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					
2018	3.8131	34.2927	26.0413	0.0421	0.2769	2.1757	2.4526	0.0745	2.0287	2.1032	0.0000	4,171.333 7	4,171.333 7	1.0036	0.0000	4,196.422 5
2019	4.2971	40.1709	27.4217	0.0522	1.1835	2.2535	3.4370	0.2026	2.1145	2.3172	0.0000	5,115.7858	5,115.7858	1.1749	0.0000	5,145.158 5
Maximum	**4.2971**	**40.1709**	**27.4217**	**0.0522**	**1.1835**	**2.2535**	**3.4370**	**0.2026**	**2.1145**	**2.3172**	**0.0000**	**5,115.785 8**	**5,115.785 8**	**1.1749**	**0.0000**	**5,145.158 5**

	ROG	**NOx**	**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	0.0224	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	**0.0224**	**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	0.0224	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	**0.0224**	**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	8/1/2019	8/1/2019	5	1	
2	Site Preparation	Site Preparation	8/1/2018	7/31/2018	5	0	
3	Grading	Grading	8/1/2018	7/31/2018	5	0	
4	Building Construction	Building Construction	8/1/2018	8/2/2018	5	2	
5	Paving	Paving	8/1/2018	8/1/2018	5	1	
6	Architectural Coating	Architectural Coating	8/1/2018	7/31/2018	5	0	

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
Architectural Coating	Air Compressors	0	0.00	78	0.48
Paving	Cement and Mortar Mixers	1	3.00	9	0.56
Demolition	Cranes	1	7.00	81	0.73
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Rubber Tired Loaders	2	7.00	89	0.20
Site Preparation	Graders	0	8.00	187	0.41
Paving	Pavers	1	4.00	130	0.42
Paving	Rollers	1	2.00	80	0.38
Demolition	Rubber Tired Loaders	2	7.00	247	0.40
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Building Construction	Forklifts	3	7.00	97	0.37
Demolition	Forklifts	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Demolition	Welders	1	7.00	46	0.45
Demolition	Generator Sets	1	7.00	84	0.74
Building Construction	Welders	1	7.00	46	0.45
Building Construction	Generator Sets	1	7.00	84	0.74
Paving	Paving Equipment	1	4.00	132	0.36
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	12	10.00	0.00	5.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	10.00	0.00	5.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	8.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2019

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					0.9844	0.0000	0.9844	0.1490	0.0000	0.1490			0.0000			0.0000
Off-Road	4.2015	38.6583	26.7149	0.0473		2.2471	2.2471		2.1085	2.1085		4,589.5953	4,589.5953	1.1413		4,618.1268
Total	**4.2015**	**38.6583**	**26.7149**	**0.0473**	**0.9844**	**2.2471**	**3.2314**	**0.1490**	**2.1085**	**2.2575**		**4,589.5953**	**4,589.5953**	**1.1413**		**4,618.1268**

3.2 Demolition - 2019

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	0.0423	1.4752	0.3014	3.8500e-003	0.0874	5.5000e-003	0.0929	0.0239	5.2600e-003	0.0292		415.7250	415.7250	0.0302		416.4798
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	0.0533	0.0373	0.4054	1.1100e-003	0.1118	8.7000e-004	0.1127	0.0296	8.0000e-004	0.0305		110.4656	110.4656	3.4500e-003		110.5519
Total	**0.0956**	**1.5125**	**0.7068**	**4.9600e-003**	**0.1992**	**6.3700e-003**	**0.2055**	**0.0536**	**6.0600e-003**	**0.0597**		**526.1906**	**526.1906**	**0.0336**		**527.0316**

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					0.9844	0.0000	0.9844	0.1490	0.0000	0.1490			0.0000			0.0000
Off-Road	4.2015	38.6583	26.7149	0.0473		2.2471	2.2471		2.1085	2.1085	0.0000	4,589.5953	4,589.5953	1.1413		4,618.1268
Total	**4.2015**	**38.6583**	**26.7149**	**0.0473**	**0.9844**	**2.2471**	**3.2314**	**0.1490**	**2.1085**	**2.2575**	**0.0000**	**4,589.5953**	**4,589.5953**	**1.1413**		**4,618.1268**

3.2 Demolition - 2019

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	0.0423	1.4752	0.3014	3.8500e-003	0.0874	5.5000e-003	0.0929	0.0239	5.2600e-003	0.0292		415.7250	415.7250	0.0302		416.4798
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	0.0533	0.0373	0.4054	1.1100e-003	0.1118	8.7000e-004	0.1127	0.0296	8.0000e-004	0.0305		110.4656	110.4656	3.4500e-003		110.5519
Total	**0.0956**	**1.5125**	**0.7068**	**4.9600e-003**	**0.1992**	**6.3700e-003**	**0.2055**	**0.0536**	**6.0600e-003**	**0.0597**		**526.1906**	**526.1906**	**0.0336**		**527.0316**

3.3 Site Preparation - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Site Preparation - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Site Preparation - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Grading - 2018

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Grading - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Grading - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.5 Building Construction - 2018

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	3.1632	27.6373	20.4199	0.0300		1.8728	1.8728		1.7492	1.7492		2,940.1920	2,940.1920	0.7632		2,959.2731
Total	**3.1632**	**27.6373**	**20.4199**	**0.0300**		**1.8728**	**1.8728**		**1.7492**	**1.7492**		**2,940.1920**	**2,940.1920**	**0.7632**		**2,959.2731**

3.5 Building Construction - 2018

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	0.0223	0.7805	0.1546	1.9500e-003	0.0437	3.0200e-003	0.0467	0.0120	2.8900e-003	0.0149		210.3543	210.3543	0.0153		210.7375
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	0.0586	0.0423	0.4541	1.1500e-003	0.1118	8.9000e-004	0.1127	0.0296	8.2000e-004	0.0305		114.0679	114.0679	3.8900e-003		114.1652
Total	**0.0809**	**0.8228**	**0.6087**	**3.1000e-003**	**0.1555**	**3.9100e-003**	**0.1594**	**0.0416**	**3.7100e-003**	**0.0453**		**324.4222**	**324.4222**	**0.0192**		**324.9027**

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	3.1632	27.6373	20.4199	0.0300		1.8728	1.8728		1.7492	1.7492	0.0000	2,940.1920	2,940.1920	0.7632		2,959.2731
Total	**3.1632**	**27.6373**	**20.4199**	**0.0300**		**1.8728**	**1.8728**		**1.7492**	**1.7492**	**0.0000**	**2,940.1920**	**2,940.1920**	**0.7632**		**2,959.2731**

3.5 Building Construction - 2018

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	0.0223	0.7805	0.1546	1.9500e-003	0.0437	3.0200e-003	0.0467	0.0120	2.8900e-003	0.0149		210.3543	210.3543	0.0153		210.7375
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	0.0586	0.0423	0.4541	1.1500e-003	0.1118	8.9000e-004	0.1127	0.0296	8.2000e-004	0.0305		114.0679	114.0679	3.8900e-003		114.1652
Total	**0.0809**	**0.8228**	**0.6087**	**3.1000e-003**	**0.1555**	**3.9100e-003**	**0.1594**	**0.0416**	**3.7100e-003**	**0.0453**		**324.4222**	**324.4222**	**0.0192**		**324.9027**

3.6 Paving - 2018

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	0.4999	5.1917	4.4820	6.8400e-003		0.2938	0.2938		0.2708	0.2708		680.0869	680.0869	0.2078		685.2816
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4999**	**5.1917**	**4.4820**	**6.8400e-003**		**0.2938**	**0.2938**		**0.2708**	**0.2708**		**680.0869**	**680.0869**	**0.2078**		**685.2816**

3.6 Paving - 2018

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	0.0222	0.6069	0.1675	1.2700e-003	0.0320	4.5000e-003	0.0365	9.2100e-003	4.3000e-003	0.0135		135.3782	135.3782	0.0102		135.6329
Worker	0.0469	0.0339	0.3633	9.2000e-004	0.0894	7.1000e-004	0.0901	0.0237	6.6000e-004	0.0244		91.2543	91.2543	3.1100e-003		91.3322
Total	**0.0691**	**0.6408**	**0.5308**	**2.1900e-003**	**0.1214**	**5.2100e-003**	**0.1266**	**0.0329**	**4.9600e-003**	**0.0379**		**226.6326**	**226.6326**	**0.0133**		**226.9651**

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	0.4999	5.1917	4.4820	6.8400e-003		0.2938	0.2938		0.2708	0.2708	0.0000	680.0869	680.0869	0.2078		685.2816
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4999**	**5.1917**	**4.4820**	**6.8400e-003**		**0.2938**	**0.2938**		**0.2708**	**0.2708**	**0.0000**	**680.0869**	**680.0869**	**0.2078**		**685.2816**

3.6 Paving - 2018

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	0.0222	0.6069	0.1675	1.2700e-003	0.0320	4.5000e-003	0.0365	9.2100e-003	4.3000e-003	0.0135		135.3782	135.3782	0.0102		135.6329
Worker	0.0469	0.0339	0.3633	9.2000e-004	0.0894	7.1000e-004	0.0901	0.0237	6.6000e-004	0.0244		91.2543	91.2543	3.1100e-003		91.3322
Total	**0.0691**	**0.6408**	**0.5308**	**2.1900e-003**	**0.1214**	**5.2100e-003**	**0.1266**	**0.0329**	**4.9600e-003**	**0.0379**		**226.6326**	**226.6326**	**0.0133**		**226.9651**

3.7 Architectural Coating - 2018

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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2018

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0224	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	0.0224	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	2.5400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0198					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	**0.0224**	**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	2.5400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0198					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	**0.0224**	**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-3

CalEEMod Files And Assumptions

Remove Three Boilers and Install Three New Turbines, Three New SCR Units, and One New Aqueous Ammonia Storage Tank at Facility 3

PAR 1135 - Boiler (3) to Turbine (3) Repower

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	1.00	1000sqft	0.02	15,000.00	0
Other Asphalt Surfaces	1.00	1000sqft	0.02	85,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	12			**Operational Year**	2021
Utility Company	Glendale Water & Power				
CO2 Intensity (lb/MWhr)	1115.33	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land Use - Most building footprints are occupied by non-populated structures, such as turbines, ammonia tanks, etc.

Construction Phase - Estimated Construction Schedule.

Off-road Equipment - Off-Road Equipment - Air Compressors (1): 4 Hours Per Day

Off-road Equipment - Off-Road Equipment - Demolition: Cranes (1): 3 Hours Per Day; Excavators (2): 3 Hours Per Day; Forklifts (2): 2 Hours Per Day; Other General Industrial Equipment (2): 2 Hour Per Day; Graders (1): 1 Hour Per Day; Rollers (1): 1 Hour Per Day; Rubber Tired Dozers (2): 2 Hours Per Day; Tractors/Loaders/Backhoes (2): 4 Hours Per Day; Tractors/Loaders/Backhoes (2): 2 Hours Per Day

Off-road Equipment - Off-Road Equipment - No Site Preparation

Off-road Equipment - Off-Road Equipment - Grading: Excavators (2): 3 Hours Per Day; Graders (1): 4 Hours Per Day; Rollers (1): 4 Hours Per Day; Tractors/Loaders/Backhoes (1): 4 Hours Per Day; Tractors/Loaders/Backhoes (2): 3 Hours Per Day; Rubber Tired Dozers (1): 4 Hours Per Day

Off-road Equipment - Off-Road Equipment - Const.: Welders (1): 4 Hours/Day; Tract/Load/Back (1): 1 Hour/Day; Rubber Tired Loaders (2): 2 Hours/Day; Cranes (2): 3 Hours/Day; Cranes (2): 1 Hour/Day; Welders (1): 4 Hours/Day; Tract/Load/Back (2): 1 Hours/Day; Rubber Tired Loaders (1): 2 Hours/Day; Rollers (1): 1 Hour/Day; Excavators (2): 1 Hour/Day; Cranes (2): 1 Hour/Day; Rollers (1): 1 Hour/Day

Off-road Equipment - Off-Road Equipment - Paving: Aerial Lifts (1): 1 Hour Per Day; Cranes (1): 4 Hours Per Day; Forklifts (1): 3 Hours Per Day; Pavers (2): 5 Hours Per Day; Paving Equipment (2): 5 Hours Per Day; Rollers (2): 5 Hours Per Day

Grading - No Site Preparation, Acres of Grading (4)

Demolition -

Trips and VMT - Worker, Vendor, Haul Trips Estimated Based on FIER Grayson Repowering Project and modified for compliance with PAR 1135.

Architectural Coating - Architectural Coating Estimated.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	7,500.00	36,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	22,500.00	12,000.00
tblArchitecturalCoating	ConstArea_Parking	5,100.00	0.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstructionPhase	NumDays	10.00	150.00
tblConstructionPhase	NumDays	1.00	0.00
tblConstructionPhase	NumDays	2.00	30.00

tblConstructionPhase	NumDays	100.00	300.00
tblConstructionPhase	NumDays	5.00	14.00
tblConstructionPhase	NumDays	5.00	14.00
tblConstructionPhase	PhaseEndDate	12/14/2018	6/28/2019
tblConstructionPhase	PhaseEndDate	12/17/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	12/19/2018	8/9/2019
tblConstructionPhase	PhaseEndDate	5/8/2019	10/23/2020
tblConstructionPhase	PhaseEndDate	5/15/2019	12/18/2020
tblConstructionPhase	PhaseEndDate	5/22/2019	11/19/2020
tblConstructionPhase	PhaseStartDate	12/15/2018	12/1/2018
tblConstructionPhase	PhaseStartDate	12/18/2018	7/1/2019
tblConstructionPhase	PhaseStartDate	12/20/2018	9/1/2019
tblConstructionPhase	PhaseStartDate	5/9/2019	12/1/2020
tblConstructionPhase	PhaseStartDate	5/16/2019	11/1/2020
tblGrading	AcresOfGrading	7.50	4.00
tblGrading	MaterialMoistureContentBulldozing	7.90	0.00
tblGrading	MaterialMoistureContentTruckLoading	12.00	0.00
tblGrading	MaterialSiltContent	6.90	0.00
tblGrading	MeanVehicleSpeed	7.10	0.00
tblLandUse	LandUseSquareFeet	1,000.00	15,000.00
tblLandUse	LandUseSquareFeet	1,000.00	85,000.00
tblOffRoadEquipment	HorsePower	63.00	9.00
tblOffRoadEquipment	HorsePower	158.00	81.00
tblOffRoadEquipment	HorsePower	46.00	35.00
tblOffRoadEquipment	HorsePower	97.00	79.00
tblOffRoadEquipment	HorsePower	78.00	0.00
tblOffRoadEquipment	HorsePower	203.00	147.00

tblOffRoadEquipment	HorsePower	187.00	0.00
tblOffRoadEquipment	HorsePower	231.00	130.00
tblOffRoadEquipment	HorsePower	89.00	80.00
tblOffRoadEquipment	HorsePower	158.00	247.00
tblOffRoadEquipment	HorsePower	187.00	247.00
tblOffRoadEquipment	HorsePower	231.00	97.00
tblOffRoadEquipment	HorsePower	231.00	250.00
tblOffRoadEquipment	HorsePower	89.00	97.00
tblOffRoadEquipment	HorsePower	88.00	97.00
tblOffRoadEquipment	HorsePower	80.00	97.00
tblOffRoadEquipment	HorsePower	97.00	200.00
tblOffRoadEquipment	HorsePower	130.00	97.00
tblOffRoadEquipment	HorsePower	97.00	0.00
tblOffRoadEquipment	HorsePower	97.00	200.00
tblOffRoadEquipment	HorsePower	46.00	38.00
tblOffRoadEquipment	HorsePower	78.00	0.00
tblOffRoadEquipment	HorsePower	203.00	140.00
tblOffRoadEquipment	HorsePower	158.00	99.00
tblOffRoadEquipment	HorsePower	231.00	500.00
tblOffRoadEquipment	HorsePower	80.00	65.00
tblOffRoadEquipment	HorsePower	172.00	350.00
tblOffRoadEquipment	LoadFactor	0.31	0.56
tblOffRoadEquipment	LoadFactor	0.29	0.73
tblOffRoadEquipment	LoadFactor	0.38	0.73
tblOffRoadEquipment	LoadFactor	0.45	0.29
tblOffRoadEquipment	LoadFactor	0.37	0.29
tblOffRoadEquipment	LoadFactor	0.48	0.00

tblOffRoadEquipment	LoadFactor	0.36	0.20
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblOffRoadEquipment	LoadFactor	0.29	0.42
tblOffRoadEquipment	LoadFactor	0.20	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.40
tblOffRoadEquipment	LoadFactor	0.41	0.40
tblOffRoadEquipment	LoadFactor	0.29	0.37
tblOffRoadEquipment	LoadFactor	0.29	0.37
tblOffRoadEquipment	LoadFactor	0.20	0.37
tblOffRoadEquipment	LoadFactor	0.34	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	LoadFactor	0.42	0.37
tblOffRoadEquipment	LoadFactor	0.37	0.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.48	0.00
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Excavators
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Forklifts
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Other General Industrial Equipment
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Excavators

tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Graders
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Welders
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType	Forklifts	Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType	Cement and Mortar Mixers	Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType	Pavers	Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType	Rollers	Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
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tblOffRoadEquipment	UsageHours	6.00	4.00
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tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	4.00	3.00
tblOffRoadEquipment	UsageHours	4.00	1.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	1.00	3.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	6.00	3.00
tblOffRoadEquipment	UsageHours	6.00	3.00
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tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	4.00	1.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblTripsAndVMT	HaulingTripNumber	318.00	4,200.00
tblTripsAndVMT	HaulingTripNumber	0.00	3,000.00
tblTripsAndVMT	HaulingTripNumber	0.00	3,700.00
tblTripsAndVMT	HaulingTripNumber	0.00	220.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	16.00	8.00

tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	WorkerTripNumber	40.00	68.00
tblTripsAndVMT	WorkerTripNumber	23.00	15.00
tblTripsAndVMT	WorkerTripNumber	42.00	200.00
tblTripsAndVMT	WorkerTripNumber	35.00	10.00
tblTripsAndVMT	WorkerTripNumber	8.00	4.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0398	0.4526	0.2341	7.1000e-004	0.0413	0.0183	0.0596	9.9900e-003	0.0171	0.0271	0.0000	65.6991	65.6991	0.0114	0.0000	65.9839
2019	0.3954	4.3015	2.6155	8.2100e-003	0.3132	0.1618	0.4751	0.0926	0.1508	0.2433	0.0000	760.7670	760.7670	0.1152	0.0000	763.6478
2020	0.4080	2.3225	2.2733	5.8700e-003	0.2717	0.1013	0.3730	0.0724	0.0938	0.1662	0.0000	531.9443	531.9443	0.0741	0.0000	533.7958
Maximum	**0.4080**	**4.3015**	**2.6155**	**8.2100e-003**	**0.3132**	**0.1618**	**0.4751**	**0.0926**	**0.1508**	**0.2433**	**0.0000**	**760.7670**	**760.7670**	**0.1152**	**0.0000**	**763.6478**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0398	0.4526	0.2341	7.1000e-004	0.0413	0.0183	0.0596	9.9900e-003	0.0171	0.0271	0.0000	65.6990	65.6990	0.0114	0.0000	65.9839
2019	0.3954	4.3015	2.6155	8.2100e-003	0.3132	0.1618	0.4751	0.0926	0.1508	0.2433	0.0000	760.7666	760.7666	0.1152	0.0000	763.6474
2020	0.4080	2.3225	2.2733	5.8700e-003	0.2717	0.1013	0.3730	0.0724	0.0938	0.1662	0.0000	531.9441	531.9441	0.0741	0.0000	533.7955
Maximum	**0.4080**	**4.3015**	**2.6155**	**8.2100e-003**	**0.3132**	**0.1618**	**0.4751**	**0.0926**	**0.1508**	**0.2433**	**0.0000**	**760.7666**	**760.7666**	**0.1152**	**0.0000**	**763.6474**

PAR 1135 - Boiler (3) to Turbine (3) Repower - South Coast AQMD Air District, Annual

	ROG	NOx	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	**12-1-2018**	**2-28-2019**	1.4240	1.4240
2	**3-1-2019**	**5-31-2019**	1.4095	1.4095
3	**6-1-2019**	**8-31-2019**	1.1951	1.1951
4	**9-1-2019**	**11-30-2019**	0.8164	0.8164
5	**12-1-2019**	**2-29-2020**	0.7734	0.7734
6	**3-1-2020**	**5-31-2020**	0.7543	0.7543
7	**6-1-2020**	**8-31-2020**	0.7522	0.7522
8	**9-1-2020**	**9-30-2020**	0.2453	0.2453
		Highest	1.4240	1.4240

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	0.0678	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	5.0000e-005
Energy	1.4600e-003	0.0133	0.0112	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.0000	98.7215	98.7215	2.4700e-003	7.2000e-004	98.9974
Mobile	1.8900e-003	0.0111	0.0285	1.1000e-004	8.8600e-003	9.0000e-005	8.9400e-003	2.3700e-003	8.0000e-005	2.4500e-003	0.0000	9.8824	9.8824	4.7000e-004	0.0000	9.8941
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	1.5233	1.5967	7.5700e-003	1.9000e-004	1.8415
Total	**0.0712**	**0.0244**	**0.0397**	**1.9000e-004**	**8.8600e-003**	**1.1000e-003**	**9.9500e-003**	**2.3700e-003**	**1.0900e-003**	**3.4600e-003**	**0.3251**	**110.1272**	**110.4523**	**0.0254**	**9.1000e-004**	**111.3567**

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	0.0678	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	5.0000e-005
Energy	1.4600e-003	0.0133	0.0112	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.0000	98.7215	98.7215	2.4700e-003	7.2000e-004	98.9974
Mobile	1.8900e-003	0.0111	0.0285	1.1000e-004	8.8600e-003	9.0000e-005	8.9400e-003	2.3700e-003	8.0000e-005	2.4500e-003	0.0000	9.8824	9.8824	4.7000e-004	0.0000	9.8941
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	1.5233	1.5967	7.5700e-003	1.9000e-004	1.8415
Total	**0.0712**	**0.0244**	**0.0397**	**1.9000e-004**	**8.8600e-003**	**1.1000e-003**	**9.9500e-003**	**2.3700e-003**	**1.0900e-003**	**3.4600e-003**	**0.3251**	**110.1272**	**110.4523**	**0.0254**	**9.1000e-004**	**111.3567**

	ROG	**NOx**	**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	12/1/2018	6/28/2019	5	150	Demolition of affected existing power generating units
2	Site Preparation	Site Preparation	12/1/2018	12/1/2018	5	0	No site preparation activity
3	Grading	Grading	7/1/2019	8/9/2019	5	30	Grading Activity
4	Building Construction	Building Construction	9/1/2019	10/23/2020	5	300	Include site mobilzation, equipment, electric conduit, cable
5	Paving	Paving	12/1/2020	12/18/2020	5	14	Paving activity occurs during the commissioning period
6	Architectural Coating	Architectural Coating	11/1/2020	11/19/2020	5	14	Coating Activity is estimated

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0.02

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 12,000; Non-Residential Outdoor: 36,000; Striped Parking Area: 0 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Cranes	1	3.00	231	0.73
Demolition	Graders	1	1.00	187	0.41
Demolition	Rollers	1	1.00	80	0.38
Demolition	Rubber Tired Dozers	2	3.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	4.00	97	0.37
Demolition	Excavators	2	3.00	247	0.40
Demolition	Forklifts	2	2.00	97	0.37
Demolition	Other General Industrial Equipment	2	2.00	97	0.37
Site Preparation	Graders	0	0.00	0	0.00
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	0	0.00

Grading	Excavators	2	3.00	81	0.73
Demolition	Tractors/Loaders/Backhoes	2	3.00	200	0.37
Grading	Tractors/Loaders/Backhoes	2	3.00	97	0.37
Grading	Graders	1	4.00	247	0.40
Grading	Rollers	1	4.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	4.00	200	0.37
Grading	Rubber Tired Dozers	1	4.00	247	0.40
Building Construction	Welders	1	4.00	35	0.29
Building Construction	Tractors/Loaders/Backhoes	1	1.00	79	0.29
Building Construction	Air Compressors	0	0.00	0	0.00
Building Construction	Welders	1	4.00	38	0.45
Building Construction	Rubber Tired Loaders	2	2.00	147	0.20
Building Construction	Tractors/Loaders/Backhoes	2	1.00	97	0.37
Building Construction	Air Compressors	0	0.00	0	0.00
Building Construction	Rubber Tired Loaders	1	2.00	140	0.36
Building Construction	Rollers	1	1.00	80	0.38
Building Construction	Cranes	2	3.00	97	0.37
Building Construction	Cranes	2	1.00	250	0.37
Building Construction	Excavators	2	1.00	99	0.38
Paving	Aerial Lifts	1	1.00	9	0.56
Building Construction	Cranes	2	1.00	500	0.29
Building Construction	Rollers	1	1.00	65	0.38
Paving	Cranes	1	4.00	130	0.42
Building Construction	Other Construction Equipment	2	1.00	350	0.42
Paving	Forklifts	1	3.00	80	0.38
Paving	Pavers	2	5.00	97	0.37
Architectural Coating	Air Compressors	1	4.00	78	0.48

Paving	Paving Equipment	2	5.00	132	0.36
Paving	Rollers	2	5.00	80	0.38
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Forklifts	2	6.00	89	0.20
Paving	Tractors/Loaders/Backhoes	1	7.00	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	16	68.00	3.00	4,200.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	15.00	0.00	3,000.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	22	200.00	8.00	3,700.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	14	10.00	3.00	220.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

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					4.8200e-003	0.0000	4.8200e-003	7.3000e-004	0.0000	7.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0333	0.3521	0.1824	3.8000e-004		0.0179	0.0179		0.0167	0.0167	0.0000	34.7180	34.7180	9.4900e-003	0.0000	34.9552
Total	**0.0333**	**0.3521**	**0.1824**	**3.8000e-004**	**4.8200e-003**	**0.0179**	**0.0227**	**7.3000e-004**	**0.0167**	**0.0174**	**0.0000**	**34.7180**	**34.7180**	**9.4900e-003**	**0.0000**	**34.9552**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.5800e-003	0.0935	0.0174	2.3000e-004	0.0284	3.5000e-004	0.0288	7.1200e-003	3.4000e-004	7.4600e-003	0.0000	22.6794	22.6794	1.5900e-003	0.0000	22.7193
Vendor	1.4000e-004	3.8900e-003	1.0000e-003	1.0000e-005	2.0000e-004	3.0000e-005	2.3000e-004	6.0000e-005	3.0000e-005	8.0000e-005	0.0000	0.7868	0.7868	6.0000e-005	0.0000	0.7882
Worker	3.7900e-003	3.1000e-003	0.0333	8.0000e-005	7.8300e-003	6.0000e-005	7.9000e-003	2.0800e-003	6.0000e-005	2.1400e-003	0.0000	7.5149	7.5149	2.6000e-004	0.0000	7.5213
Total	**6.5100e-003**	**0.1004**	**0.0517**	**3.2000e-004**	**0.0365**	**4.4000e-004**	**0.0369**	**9.2600e-003**	**4.3000e-004**	**9.6800e-003**	**0.0000**	**30.9811**	**30.9811**	**1.9100e-003**	**0.0000**	**31.0288**

3.2 Demolition - 2018

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					4.8200e-003	0.0000	4.8200e-003	7.3000e-004	0.0000	7.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0333	0.3521	0.1824	3.8000e-004		0.0179	0.0179		0.0167	0.0167	0.0000	34.7180	34.7180	9.4900e-003	0.0000	34.9552
Total	**0.0333**	**0.3521**	**0.1824**	**3.8000e-004**	**4.8200e-003**	**0.0179**	**0.0227**	**7.3000e-004**	**0.0167**	**0.0174**	**0.0000**	**34.7180**	**34.7180**	**9.4900e-003**	**0.0000**	**34.9552**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.5800e-003	0.0935	0.0174	2.3000e-004	0.0284	3.5000e-004	0.0288	7.1200e-003	3.4000e-004	7.4600e-003	0.0000	22.6794	22.6794	1.5900e-003	0.0000	22.7193
Vendor	1.4000e-004	3.8900e-003	1.0000e-003	1.0000e-005	2.0000e-004	3.0000e-005	2.3000e-004	6.0000e-005	3.0000e-005	8.0000e-005	0.0000	0.7868	0.7868	6.0000e-005	0.0000	0.7882
Worker	3.7900e-003	3.1000e-003	0.0333	8.0000e-005	7.8300e-003	6.0000e-005	7.9000e-003	2.0800e-003	6.0000e-005	2.1400e-003	0.0000	7.5149	7.5149	2.6000e-004	0.0000	7.5213
Total	**6.5100e-003**	**0.1004**	**0.0517**	**3.2000e-004**	**0.0365**	**4.4000e-004**	**0.0369**	**9.2600e-003**	**4.3000e-004**	**9.6800e-003**	**0.0000**	**30.9811**	**30.9811**	**1.9100e-003**	**0.0000**	**31.0288**

3.2 Demolition - 2019

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					0.0296	0.0000	0.0296	4.4900e-003	0.0000	4.4900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1879	1.9755	1.0921	2.3600e-003		0.0981	0.0981		0.0914	0.0914	0.0000	210.3119	210.3119	0.0580	0.0000	211.7621
Total	**0.1879**	**1.9755**	**1.0921**	**2.3600e-003**	**0.0296**	**0.0981**	**0.1277**	**4.4900e-003**	**0.0914**	**0.0959**	**0.0000**	**210.3119**	**210.3119**	**0.0580**	**0.0000**	**211.7621**

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	0.0150	0.5425	0.1042	1.4100e-003	0.0349	1.9700e-003	0.0368	9.4600e-003	1.8800e-003	0.0113	0.0000	137.6830	137.6830	9.6500e-003	0.0000	137.9243
Vendor	7.6000e-004	0.0226	5.6600e-003	5.0000e-005	1.2200e-003	1.5000e-004	1.3700e-003	3.5000e-004	1.4000e-004	4.9000e-004	0.0000	4.7905	4.7905	3.3000e-004	0.0000	4.7988
Worker	0.0212	0.0168	0.1829	4.9000e-004	0.0481	3.8000e-004	0.0485	0.0128	3.5000e-004	0.0131	0.0000	44.7062	44.7062	1.4000e-003	0.0000	44.7411
Total	**0.0370**	**0.5819**	**0.2928**	**1.9500e-003**	**0.0842**	**2.5000e-003**	**0.0867**	**0.0226**	**2.3700e-003**	**0.0250**	**0.0000**	**187.1797**	**187.1797**	**0.0114**	**0.0000**	**187.4642**

3.2 Demolition - 2019

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					0.0296	0.0000	0.0296	4.4900e-003	0.0000	4.4900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1879	1.9755	1.0921	2.3600e-003		0.0981	0.0981		0.0914	0.0914	0.0000	210.3116	210.3116	0.0580	0.0000	211.7618
Total	**0.1879**	**1.9755**	**1.0921**	**2.3600e-003**	**0.0296**	**0.0981**	**0.1277**	**4.4900e-003**	**0.0914**	**0.0959**	**0.0000**	**210.3116**	**210.3116**	**0.0580**	**0.0000**	**211.7618**

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	0.0150	0.5425	0.1042	1.4100e-003	0.0349	1.9700e-003	0.0368	9.4600e-003	1.8800e-003	0.0113	0.0000	137.6830	137.6830	9.6500e-003	0.0000	137.9243
Vendor	7.6000e-004	0.0226	5.6600e-003	5.0000e-005	1.2200e-003	1.5000e-004	1.3700e-003	3.5000e-004	1.4000e-004	4.9000e-004	0.0000	4.7905	4.7905	3.3000e-004	0.0000	4.7988
Worker	0.0212	0.0168	0.1829	4.9000e-004	0.0481	3.8000e-004	0.0485	0.0128	3.5000e-004	0.0131	0.0000	44.7062	44.7062	1.4000e-003	0.0000	44.7411
Total	**0.0370**	**0.5819**	**0.2928**	**1.9500e-003**	**0.0842**	**2.5000e-003**	**0.0867**	**0.0226**	**2.3700e-003**	**0.0250**	**0.0000**	**187.1797**	**187.1797**	**0.0114**	**0.0000**	**187.4642**

3.3 Site Preparation - 2018

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	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Site Preparation - 2018

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	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**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Grading - 2019

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					0.0473	0.0000	0.0473	0.0251	0.0000	0.0251	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0309	0.3233	0.2010	3.8000e-004		0.0164	0.0164		0.0153	0.0153	0.0000	34.0925	34.0925	8.8000e-003	0.0000	34.3126
Total	**0.0309**	**0.3233**	**0.2010**	**3.8000e-004**	**0.0473**	**0.0164**	**0.0637**	**0.0251**	**0.0153**	**0.0404**	**0.0000**	**34.0925**	**34.0925**	**8.8000e-003**	**0.0000**	**34.3126**

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	0.0125	0.4506	0.0866	1.1700e-003	0.0258	1.6300e-003	0.0274	7.0800e-003	1.5600e-003	8.6400e-003	0.0000	114.3547	114.3547	8.0200e-003	0.0000	114.5551
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	1.0900e-003	8.6000e-004	9.3800e-003	3.0000e-005	2.4700e-003	2.0000e-005	2.4900e-003	6.6000e-004	2.0000e-005	6.7000e-004	0.0000	2.2934	2.2934	7.0000e-005	0.0000	2.2952
Total	**0.0136**	**0.4514**	**0.0960**	**1.2000e-003**	**0.0283**	**1.6500e-003**	**0.0299**	**7.7400e-003**	**1.5800e-003**	**9.3100e-003**	**0.0000**	**116.6481**	**116.6481**	**8.0900e-003**	**0.0000**	**116.8503**

3.4 Grading - 2019

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					0.0473	0.0000	0.0473	0.0251	0.0000	0.0251	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0309	0.3233	0.2010	3.8000e-004		0.0164	0.0164		0.0153	0.0153	0.0000	34.0925	34.0925	8.8000e-003	0.0000	34.3125
Total	**0.0309**	**0.3233**	**0.2010**	**3.8000e-004**	**0.0473**	**0.0164**	**0.0637**	**0.0251**	**0.0153**	**0.0404**	**0.0000**	**34.0925**	**34.0925**	**8.8000e-003**	**0.0000**	**34.3125**

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	0.0125	0.4506	0.0866	1.1700e-003	0.0258	1.6300e-003	0.0274	7.0800e-003	1.5600e-003	8.6400e-003	0.0000	114.3547	114.3547	8.0200e-003	0.0000	114.5551
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	1.0900e-003	8.6000e-004	9.3800e-003	3.0000e-005	2.4700e-003	2.0000e-005	2.4900e-003	6.6000e-004	2.0000e-005	6.7000e-004	0.0000	2.2934	2.2934	7.0000e-005	0.0000	2.2952
Total	**0.0136**	**0.4514**	**0.0960**	**1.2000e-003**	**0.0283**	**1.6500e-003**	**0.0299**	**7.7400e-003**	**1.5800e-003**	**9.3100e-003**	**0.0000**	**116.6481**	**116.6481**	**8.0900e-003**	**0.0000**	**116.8503**

3.5 Building Construction - 2019

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	0.0783	0.7344	0.5298	8.4000e-004		0.0416	0.0416		0.0385	0.0385	0.0000	74.3401	74.3401	0.0227	0.0000	74.9080
Total	**0.0783**	**0.7344**	**0.5298**	**8.4000e-004**		**0.0416**	**0.0416**		**0.0385**	**0.0385**	**0.0000**	**74.3401**	**74.3401**	**0.0227**	**0.0000**	**74.9080**

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	4.4600e-003	0.1612	0.0310	4.2000e-004	0.0262	5.8000e-004	0.0268	6.7000e-003	5.6000e-004	7.2600e-003	0.0000	40.9009	40.9009	2.8700e-003	0.0000	40.9725
Vendor	1.3700e-003	0.0406	0.0102	9.0000e-005	2.1900e-003	2.7000e-004	2.4600e-003	6.3000e-004	2.5000e-004	8.9000e-004	0.0000	8.6155	8.6155	6.0000e-004	0.0000	8.6304
Worker	0.0420	0.0334	0.3627	9.8000e-004	0.0955	7.6000e-004	0.0962	0.0254	7.0000e-004	0.0261	0.0000	88.6784	88.6784	2.7700e-003	0.0000	88.7477
Total	**0.0479**	**0.2351**	**0.4039**	**1.4900e-003**	**0.1239**	**1.6100e-003**	**0.1255**	**0.0327**	**1.5100e-003**	**0.0342**	**0.0000**	**138.1947**	**138.1947**	**6.2400e-003**	**0.0000**	**138.3506**

3.5 Building Construction - 2019

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	0.0783	0.7344	0.5298	8.4000e-004		0.0416	0.0416		0.0385	0.0385	0.0000	74.3401	74.3401	0.0227	0.0000	74.9080
Total	**0.0783**	**0.7344**	**0.5298**	**8.4000e-004**		**0.0416**	**0.0416**		**0.0385**	**0.0385**	**0.0000**	**74.3401**	**74.3401**	**0.0227**	**0.0000**	**74.9080**

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	4.4600e-003	0.1612	0.0310	4.2000e-004	0.0262	5.8000e-004	0.0268	6.7000e-003	5.6000e-004	7.2600e-003	0.0000	40.9009	40.9009	2.8700e-003	0.0000	40.9725
Vendor	1.3700e-003	0.0406	0.0102	9.0000e-005	2.1900e-003	2.7000e-004	2.4600e-003	6.3000e-004	2.5000e-004	8.9000e-004	0.0000	8.6155	8.6155	6.0000e-004	0.0000	8.6304
Worker	0.0420	0.0334	0.3627	9.8000e-004	0.0955	7.6000e-004	0.0962	0.0254	7.0000e-004	0.0261	0.0000	88.6784	88.6784	2.7700e-003	0.0000	88.7477
Total	**0.0479**	**0.2351**	**0.4039**	**1.4900e-003**	**0.1239**	**1.6100e-003**	**0.1255**	**0.0327**	**1.5100e-003**	**0.0342**	**0.0000**	**138.1947**	**138.1947**	**6.2400e-003**	**0.0000**	**138.3506**

3.5 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	0.1751	1.6424	1.2554	2.0600e-003		0.0908	0.0908		0.0841	0.0841	0.0000	178.3523	178.3523	0.0554	0.0000	179.7364
Total	**0.1751**	**1.6424**	**1.2554**	**2.0600e-003**		**0.0908**	**0.0908**		**0.0841**	**0.0841**	**0.0000**	**178.3523**	**178.3523**	**0.0554**	**0.0000**	**179.7364**

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	0.0101	0.3686	0.0735	1.0100e-003	0.0295	1.1600e-003	0.0307	7.9000e-003	1.1100e-003	9.0100e-003	0.0000	99.1220	99.1220	6.8300e-003	0.0000	99.2927
Vendor	2.8500e-003	0.0909	0.0225	2.2000e-004	5.3700e-003	4.5000e-004	5.8200e-003	1.5500e-003	4.3000e-004	1.9800e-003	0.0000	20.9551	20.9551	1.3800e-003	0.0000	20.9895
Worker	0.0951	0.0729	0.8067	2.3300e-003	0.2337	1.8100e-003	0.2355	0.0621	1.6600e-003	0.0637	0.0000	210.3729	210.3729	6.0400e-003	0.0000	210.5238
Total	**0.1080**	**0.5324**	**0.9027**	**3.5600e-003**	**0.2686**	**3.4200e-003**	**0.2720**	**0.0715**	**3.2000e-003**	**0.0747**	**0.0000**	**330.4499**	**330.4499**	**0.0143**	**0.0000**	**330.8060**

3.5 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1751	1.6424	1.2554	2.0600e-003		0.0908	0.0908		0.0841	0.0841	0.0000	178.3521	178.3521	0.0554	0.0000	179.7362
Total	**0.1751**	**1.6424**	**1.2554**	**2.0600e-003**		**0.0908**	**0.0908**		**0.0841**	**0.0841**	**0.0000**	**178.3521**	**178.3521**	**0.0554**	**0.0000**	**179.7362**

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	0.0101	0.3686	0.0735	1.0100e-003	0.0295	1.1600e-003	0.0307	7.9000e-003	1.1100e-003	9.0100e-003	0.0000	99.1220	99.1220	6.8300e-003	0.0000	99.2927
Vendor	2.8500e-003	0.0909	0.0225	2.2000e-004	5.3700e-003	4.5000e-004	5.8200e-003	1.5500e-003	4.3000e-004	1.9800e-003	0.0000	20.9551	20.9551	1.3800e-003	0.0000	20.9895
Worker	0.0951	0.0729	0.8067	2.3300e-003	0.2337	1.8100e-003	0.2355	0.0621	1.6600e-003	0.0637	0.0000	210.3729	210.3729	6.0400e-003	0.0000	210.5238
Total	**0.1080**	**0.5324**	**0.9027**	**3.5600e-003**	**0.2686**	**3.4200e-003**	**0.2720**	**0.0715**	**3.2000e-003**	**0.0747**	**0.0000**	**330.4499**	**330.4499**	**0.0143**	**0.0000**	**330.8060**

3.6 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	0.0112	0.1064	0.0962	1.4000e-004		6.4300e-003	6.4300e-003		5.9400e-003	5.9400e-003	0.0000	12.1651	12.1651	3.7200e-003	0.0000	12.2582
Paving	3.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0112**	**0.1064**	**0.0962**	**1.4000e-004**		**6.4300e-003**	**6.4300e-003**		**5.9400e-003**	**5.9400e-003**	**0.0000**	**12.1651**	**12.1651**	**3.7200e-003**	**0.0000**	**12.2582**

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	8.5000e-004	0.0309	6.1600e-003	8.0000e-005	1.8900e-003	1.0000e-004	1.9900e-003	5.2000e-004	9.0000e-005	6.1000e-004	0.0000	8.3010	8.3010	5.7000e-004	0.0000	8.3153
Vendor	7.0000e-005	2.2400e-003	5.6000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5165	0.5165	3.0000e-005	0.0000	0.5174
Worker	3.1000e-004	2.4000e-004	2.6500e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.7000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.6914	0.6914	2.0000e-005	0.0000	0.6919
Total	**1.2300e-003**	**0.0334**	**9.3700e-003**	**1.0000e-004**	**2.7900e-003**	**1.2000e-004**	**2.9000e-003**	**7.6000e-004**	**1.1000e-004**	**8.7000e-004**	**0.0000**	**9.5089**	**9.5089**	**6.2000e-004**	**0.0000**	**9.5246**

3.6 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0112	0.1064	0.0962	1.4000e-004		6.4300e-003	6.4300e-003		5.9400e-003	5.9400e-003	0.0000	12.1651	12.1651	3.7200e-003	0.0000	12.2582
Paving	3.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0112**	**0.1064**	**0.0962**	**1.4000e-004**		**6.4300e-003**	**6.4300e-003**		**5.9400e-003**	**5.9400e-003**	**0.0000**	**12.1651**	**12.1651**	**3.7200e-003**	**0.0000**	**12.2582**

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	8.5000e-004	0.0309	6.1600e-003	8.0000e-005	1.8900e-003	1.0000e-004	1.9900e-003	5.2000e-004	9.0000e-005	6.1000e-004	0.0000	8.3010	8.3010	5.7000e-004	0.0000	8.3153
Vendor	7.0000e-005	2.2400e-003	5.6000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5165	0.5165	3.0000e-005	0.0000	0.5174
Worker	3.1000e-004	2.4000e-004	2.6500e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.7000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.6914	0.6914	2.0000e-005	0.0000	0.6919
Total	**1.2300e-003**	**0.0334**	**9.3700e-003**	**1.0000e-004**	**2.7900e-003**	**1.2000e-004**	**2.9000e-003**	**7.6000e-004**	**1.1000e-004**	**8.7000e-004**	**0.0000**	**9.5089**	**9.5089**	**6.2000e-004**	**0.0000**	**9.5246**

3.7 Architectural Coating - 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					
Archit. Coating	0.1112					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1300e-003	7.8600e-003	8.5500e-003	1.0000e-005		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	1.1915	1.1915	9.0000e-005	0.0000	1.1938
Total	**0.1124**	**7.8600e-003**	**8.5500e-003**	**1.0000e-005**		**5.2000e-004**	**5.2000e-004**		**5.2000e-004**	**5.2000e-004**	**0.0000**	**1.1915**	**1.1915**	**9.0000e-005**	**0.0000**	**1.1938**

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	1.2000e-004	1.0000e-004	1.0600e-003	0.0000	3.1000e-004	0.0000	3.1000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2766	0.2766	1.0000e-005	0.0000	0.2767
Total	**1.2000e-004**	**1.0000e-004**	**1.0600e-003**	**0.0000**	**3.1000e-004**	**0.0000**	**3.1000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.2766**	**0.2766**	**1.0000e-005**	**0.0000**	**0.2767**

3.7 Architectural Coating - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1112					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1300e-003	7.8600e-003	8.5500e-003	1.0000e-005		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	1.1915	1.1915	9.0000e-005	0.0000	1.1938
Total	**0.1124**	**7.8600e-003**	**8.5500e-003**	**1.0000e-005**		**5.2000e-004**	**5.2000e-004**		**5.2000e-004**	**5.2000e-004**	**0.0000**	**1.1915**	**1.1915**	**9.0000e-005**	**0.0000**	**1.1938**

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	1.2000e-004	1.0000e-004	1.0600e-003	0.0000	3.1000e-004	0.0000	3.1000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2766	0.2766	1.0000e-005	0.0000	0.2767
Total	**1.2000e-004**	**1.0000e-004**	**1.0600e-003**	**0.0000**	**3.1000e-004**	**0.0000**	**3.1000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**0.0000**	**0.2766**	**0.2766**	**1.0000e-005**	**0.0000**	**0.2767**

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	1.8900e-003	0.0111	0.0285	1.1000e-004	8.8600e-003	9.0000e-005	8.9400e-003	2.3700e-003	8.0000e-005	2.4500e-003	0.0000	9.8824	9.8824	4.7000e-004	0.0000	9.8941
Unmitigated	1.8900e-003	0.0111	0.0285	1.1000e-004	8.8600e-003	9.0000e-005	8.9400e-003	2.3700e-003	8.0000e-005	2.4500e-003	0.0000	9.8824	9.8824	4.7000e-004	0.0000	9.8941

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	6.97	1.32	0.68	23,312	23,312
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	6.97	1.32	0.68	23,312	23,312

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
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	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
General Light Industry	0.548858	0.043235	0.200706	0.120309	0.016131	0.005851	0.021034	0.033479	0.002070	0.001877	0.004817	0.000707	0.000925
Other Asphalt Surfaces	0.548858	0.043235	0.200706	0.120309	0.016131	0.005851	0.021034	0.033479	0.002070	0.001877	0.004817	0.000707	0.000925

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	84.2332	84.2332	2.1900e-003	4.5000e-004	84.4230
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	84.2332	84.2332	2.1900e-003	4.5000e-004	84.4230
NaturalGas Mitigated	1.4600e-003	0.0133	0.0112	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.0000	14.4883	14.4883	2.8000e-004	2.7000e-004	14.5744
NaturalGas Unmitigated	1.4600e-003	0.0133	0.0112	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.0000	14.4883	14.4883	2.8000e-004	2.7000e-004	14.5744

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					
General Light Industry	271500	1.4600e-003	0.0133	0.0112	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.0000	14.4883	14.4883	2.8000e-004	2.7000e-004	14.5744
Other Asphalt Surfaces	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		**1.4600e-003**	**0.0133**	**0.0112**	**8.0000e-005**		**1.0100e-003**	**1.0100e-003**		**1.0100e-003**	**1.0100e-003**	**0.0000**	**14.4883**	**14.4883**	**2.8000e-004**	**2.7000e-004**	**14.5744**

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					
General Light Industry	271500	1.4600e-003	0.0133	0.0112	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.0000	14.4883	14.4883	2.8000e-004	2.7000e-004	14.5744
Other Asphalt Surfaces	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		**1.4600e-003**	**0.0133**	**0.0112**	**8.0000e-005**		**1.0100e-003**	**1.0100e-003**		**1.0100e-003**	**1.0100e-003**	**0.0000**	**14.4883**	**14.4883**	**2.8000e-004**	**2.7000e-004**	**14.5744**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	166500	84.2332	2.1900e-003	4.5000e-004	84.4230
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**84.2332**	**2.1900e-003**	**4.5000e-004**	**84.4230**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	166500	84.2332	2.1900e-003	4.5000e-004	84.4230
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**84.2332**	**2.1900e-003**	**4.5000e-004**	**84.4230**

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	0.0678	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	5.0000e-005
Unmitigated	0.0678	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	5.0000e-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	8.1300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0597					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	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	5.0000e-005
Total	**0.0678**	**0.0000**	**3.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0000**	**5.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	8.1300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0597					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	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	5.0000e-005
Total	**0.0678**	**0.0000**	**3.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0000**	**5.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	1.5967	7.5700e-003	1.9000e-004	1.8415
Unmitigated	1.5967	7.5700e-003	1.9000e-004	1.8415

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0.23125 / 0	1.5967	7.5700e-003	1.9000e-004	1.8415
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**1.5967**	**7.5700e-003**	**1.9000e-004**	**1.8415**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0.23125 / 0	1.5967	7.5700e-003	1.9000e-004	1.8415
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**1.5967**	**7.5700e-003**	**1.9000e-004**	**1.8415**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.2517	0.0149	0.0000	0.6236
Unmitigated	0.2517	0.0149	0.0000	0.6236

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	1.24	0.2517	0.0149	0.0000	0.6236
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	1.24	0.2517	0.0149	0.0000	0.6236
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

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

PAR 1135 - Boiler (3) to Turbine (3) Repower

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	1.00	1000sqft	0.02	15,000.00	0
Other Asphalt Surfaces	1.00	1000sqft	0.02	85,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	12			**Operational Year**	2021
Utility Company	Glendale Water & Power				
CO2 Intensity (lb/MWhr)	1115.33	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

PAR 1135 - Boiler (3) to Turbine (3) Repower - South Coast AQMD Air District, Summer

Project Characteristics -

Land Use - Land Use - Most building footprints are occupied by non-populated structures, such as turbines, ammonia tanks, etc.

Construction Phase - Estimated Construction Schedule.

Off-road Equipment - Off-Road Equipment - Air Compressors (1): 4 Hours Per Day

Off-road Equipment - Off-Road Equipment - Demolition: Cranes (1): 3 Hours Per Day; Excavators (2): 3 Hours Per Day; Forklifts (2): 2 Hours Per Day; Other General Industrial Equipment (2): 2 Hour Per Day; Graders (1): 1 Hour Per Day; Rollers (1): 1 Hour Per Day; Rubber Tired Dozers (2): 2 Hours Per Day; Tractors/Loaders/Backhoes (2): 4 Hours Per Day; Tractors/Loaders/Backhoes (2): 2 Hours Per Day

Off-road Equipment - Off-Road Equipment - No Site Preparation

Off-road Equipment - Off-Road Equipment - Grading: Excavators (2): 3 Hours Per Day; Graders (1): 4 Hours Per Day; Rollers (1): 4 Hours Per Day; Tractors/Loaders/Backhoes (1): 4 Hours Per Day; Tractors/Loaders/Backhoes (2): 3 Hours Per Day; Rubber Tired Dozers (1): 4 Hours Per Day

Off-road Equipment - Off-Road Equipment - Const.: Welders (1): 4 Hours/Day; Tract/Load/Back (1): 1 Hour/Day; Rubber Tired Loaders (2): 2 Hours/Day; Cranes (2): 3 Hours/Day; Cranes (2): 1 Hour/Day; Welders (1): 4 Hours/Day; Tract/Load/Back (2): 1 Hours/Day; Rubber Tired Loaders (1): 2 Hours/Day; Rollers (1): 1 Hour/Day; Excavators (2): 1 Hour/Day; Cranes (2): 1 Hour/Day; Rollers (1): 1 Hour/Day

Off-road Equipment - Off-Road Equipment - Paving: Aerial Lifts (1): 1 Hour Per Day; Cranes (1): 4 Hours Per Day; Forklifts (1): 3 Hours Per Day; Pavers (2): 5 Hours Per Day; Paving Equipment (2): 5 Hours Per Day; Rollers (2): 5 Hours Per Day

Grading - No Site Preparation, Acres of Grading (4)

Demolition -

Trips and VMT - Worker, Vendor, Haul Trips Estimated Based on FIER Grayson Repowering Project and modified for compliance with PAR 1135.

Architectural Coating - Architectural Coating Estimated.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	7,500.00	36,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	22,500.00	12,000.00
tblArchitecturalCoating	ConstArea_Parking	5,100.00	0.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstructionPhase	NumDays	10.00	150.00
tblConstructionPhase	NumDays	1.00	0.00
tblConstructionPhase	NumDays	2.00	30.00

PAR 1135 - Boiler (3) to Turbine (3) Repower - South Coast AQMD Air District, Summer

tblConstructionPhase	NumDays	100.00	300.00
tblConstructionPhase	NumDays	5.00	14.00
tblConstructionPhase	NumDays	5.00	14.00
tblConstructionPhase	PhaseEndDate	12/14/2018	6/28/2019
tblConstructionPhase	PhaseEndDate	12/17/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	12/19/2018	8/9/2019
tblConstructionPhase	PhaseEndDate	5/8/2019	10/23/2020
tblConstructionPhase	PhaseEndDate	5/15/2019	12/18/2020
tblConstructionPhase	PhaseEndDate	5/22/2019	11/19/2020
tblConstructionPhase	PhaseStartDate	12/15/2018	12/1/2018
tblConstructionPhase	PhaseStartDate	12/18/2018	7/1/2019
tblConstructionPhase	PhaseStartDate	12/20/2018	9/1/2019
tblConstructionPhase	PhaseStartDate	5/9/2019	12/1/2020
tblConstructionPhase	PhaseStartDate	5/16/2019	11/1/2020
tblGrading	AcresOfGrading	7.50	4.00
tblGrading	MaterialMoistureContentBulldozing	7.90	0.00
tblGrading	MaterialMoistureContentTruckLoading	12.00	0.00
tblGrading	MaterialSiltContent	6.90	0.00
tblGrading	MeanVehicleSpeed	7.10	0.00
tblLandUse	LandUseSquareFeet	1,000.00	15,000.00
tblLandUse	LandUseSquareFeet	1,000.00	85,000.00
tblOffRoadEquipment	HorsePower	63.00	9.00
tblOffRoadEquipment	HorsePower	158.00	81.00
tblOffRoadEquipment	HorsePower	46.00	35.00
tblOffRoadEquipment	HorsePower	97.00	79.00
tblOffRoadEquipment	HorsePower	78.00	0.00
tblOffRoadEquipment	HorsePower	203.00	147.00

tblOffRoadEquipment	HorsePower	187.00	0.00
tblOffRoadEquipment	HorsePower	231.00	130.00
tblOffRoadEquipment	HorsePower	89.00	80.00
tblOffRoadEquipment	HorsePower	158.00	247.00
tblOffRoadEquipment	HorsePower	187.00	247.00
tblOffRoadEquipment	HorsePower	231.00	97.00
tblOffRoadEquipment	HorsePower	231.00	250.00
tblOffRoadEquipment	HorsePower	89.00	97.00
tblOffRoadEquipment	HorsePower	88.00	97.00
tblOffRoadEquipment	HorsePower	80.00	97.00
tblOffRoadEquipment	HorsePower	97.00	200.00
tblOffRoadEquipment	HorsePower	130.00	97.00
tblOffRoadEquipment	HorsePower	97.00	0.00
tblOffRoadEquipment	HorsePower	97.00	200.00
tblOffRoadEquipment	HorsePower	46.00	38.00
tblOffRoadEquipment	HorsePower	78.00	0.00
tblOffRoadEquipment	HorsePower	203.00	140.00
tblOffRoadEquipment	HorsePower	158.00	99.00
tblOffRoadEquipment	HorsePower	231.00	500.00
tblOffRoadEquipment	HorsePower	80.00	65.00
tblOffRoadEquipment	HorsePower	172.00	350.00
tblOffRoadEquipment	LoadFactor	0.31	0.56
tblOffRoadEquipment	LoadFactor	0.29	0.73
tblOffRoadEquipment	LoadFactor	0.38	0.73
tblOffRoadEquipment	LoadFactor	0.45	0.29
tblOffRoadEquipment	LoadFactor	0.37	0.29
tblOffRoadEquipment	LoadFactor	0.48	0.00

tblOffRoadEquipment	LoadFactor	0.36	0.20
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblOffRoadEquipment	LoadFactor	0.29	0.42
tblOffRoadEquipment	LoadFactor	0.20	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.40
tblOffRoadEquipment	LoadFactor	0.41	0.40
tblOffRoadEquipment	LoadFactor	0.29	0.37
tblOffRoadEquipment	LoadFactor	0.29	0.37
tblOffRoadEquipment	LoadFactor	0.20	0.37
tblOffRoadEquipment	LoadFactor	0.34	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	LoadFactor	0.42	0.37
tblOffRoadEquipment	LoadFactor	0.37	0.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.48	0.00
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Excavators
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Forklifts
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Other General Industrial Equipment
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Excavators

tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Graders
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Welders
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType	Forklifts	Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType	Cement and Mortar Mixers	Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType	Pavers	Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType	Rollers	Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
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tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	4.00	3.00
tblOffRoadEquipment	UsageHours	4.00	1.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	1.00	3.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	6.00	3.00
tblOffRoadEquipment	UsageHours	6.00	3.00
tblOffRoadEquipment	UsageHours	1.00	4.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	4.00	1.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblTripsAndVMT	HaulingTripNumber	318.00	4,200.00
tblTripsAndVMT	HaulingTripNumber	0.00	3,000.00
tblTripsAndVMT	HaulingTripNumber	0.00	3,700.00
tblTripsAndVMT	HaulingTripNumber	0.00	220.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	16.00	8.00

tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	WorkerTripNumber	40.00	68.00
tblTripsAndVMT	WorkerTripNumber	23.00	15.00
tblTripsAndVMT	WorkerTripNumber	42.00	200.00
tblTripsAndVMT	WorkerTripNumber	35.00	10.00
tblTripsAndVMT	WorkerTripNumber	8.00	4.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.7912	42.7850	22.4733	0.0679	4.0020	1.7451	5.7471	0.9689	1.6282	2.5971	0.0000	6,956.5235	6,956.5235	1.1941	0.0000	6,986.3756
2019	3.4871	50.7148	22.0752	0.1058	5.0676	1.5593	6.2681	2.1938	1.4542	3.3206	0.0000	11,150.6892	11,150.6892	1.2301	0.0000	11,181.4415
2020	16.0710	20.2255	20.8319	0.0539	2.5689	0.9341	3.4537	0.6830	0.8634	1.5023	0.0000	5,388.3400	5,388.3400	0.7220	0.0000	5,406.3907
Maximum	**16.0710**	**50.7148**	**22.4733**	**0.1058**	**5.0676**	**1.7451**	**6.2681**	**2.1938**	**1.6282**	**3.3206**	**0.0000**	**11,150.6892**	**11,150.6892**	**1.2301**	**0.0000**	**11,181.4415**

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					
2018	3.7912	42.7850	22.4733	0.0679	4.0020	1.7451	5.7471	0.9689	1.6282	2.5971	0.0000	6,956.5235	6,956.5235	1.1941	0.0000	6,986.3756
2019	3.4871	50.7148	22.0752	0.1058	5.0676	1.5593	6.2681	2.1938	1.4542	3.3206	0.0000	11,150.6892	11,150.6892	1.2301	0.0000	11,181.4415
2020	16.0710	20.2255	20.8319	0.0539	2.5689	0.9341	3.4537	0.6830	0.8634	1.5023	0.0000	5,388.3400	5,388.3400	0.7220	0.0000	5,406.3907
Maximum	**16.0710**	**50.7148**	**22.4733**	**0.1058**	**5.0676**	**1.7451**	**6.2681**	**2.1938**	**1.6282**	**3.3206**	**0.0000**	**11,150.6892**	**11,150.6892**	**1.2301**	**0.0000**	**11,181.4415**

PAR 1135 - Boiler (3) to Turbine (3) Repower - South Coast AQMD Air District, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.3717	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.4000e-004	4.4000e-004	0.0000		4.7000e-004
Energy	8.0200e-003	0.0729	0.0613	4.4000e-004		5.5400e-003	5.5400e-003		5.5400e-003	5.5400e-003		87.5101	87.5101	1.6800e-003	1.6000e-003	88.0301
Mobile	0.0147	0.0770	0.2196	8.1000e-004	0.0656	6.3000e-004	0.0663	0.0176	5.9000e-004	0.0182		82.4797	82.4797	3.8100e-003		82.5749
Total	**0.3944**	**0.1499**	**0.2811**	**1.2500e-003**	**0.0656**	**6.1700e-003**	**0.0718**	**0.0176**	**6.1300e-003**	**0.0237**		**169.9902**	**169.9902**	**5.4900e-003**	**1.6000e-003**	**170.6055**

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	0.3717	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.4000e-004	4.4000e-004	0.0000		4.7000e-004
Energy	8.0200e-003	0.0729	0.0613	4.4000e-004		5.5400e-003	5.5400e-003		5.5400e-003	5.5400e-003		87.5101	87.5101	1.6800e-003	1.6000e-003	88.0301
Mobile	0.0147	0.0770	0.2196	8.1000e-004	0.0656	6.3000e-004	0.0663	0.0176	5.9000e-004	0.0182		82.4797	82.4797	3.8100e-003		82.5749
Total	**0.3944**	**0.1499**	**0.2811**	**1.2500e-003**	**0.0656**	**6.1700e-003**	**0.0718**	**0.0176**	**6.1300e-003**	**0.0237**		**169.9902**	**169.9902**	**5.4900e-003**	**1.6000e-003**	**170.6055**

	ROG	NOx	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	12/1/2018	6/28/2019	5	150	Demolition of affected existing power generating units
2	Site Preparation	Site Preparation	12/1/2018	12/1/2018	5	0	No site preparation activity
3	Grading	Grading	7/1/2019	8/9/2019	5	30	Grading Activity
4	Building Construction	Building Construction	9/1/2019	10/23/2020	5	300	Include site mobilzation, equipment, electric conduit, cable
5	Paving	Paving	12/1/2020	12/18/2020	5	14	Paving activity occurs during the commissioning period
6	Architectural Coating	Architectural Coating	11/1/2020	11/19/2020	5	14	Coating Activity is estimated

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0.02

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 12,000; Non-Residential Outdoor: 36,000; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Cranes	1	3.00	231	0.73
Demolition	Graders	1	1.00	187	0.41
Demolition	Rollers	1	1.00	80	0.38

Demolition	Rubber Tired Dozers	2	3.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	4.00	97	0.37
Demolition	Excavators	2	3.00	247	0.40
Demolition	Forklifts	2	2.00	97	0.37
Demolition	Other General Industrial Equipment	2	2.00	97	0.37
Site Preparation	Graders	0	0.00	0	0.00
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	0	0.00
Grading	Excavators	2	3.00	81	0.73
Demolition	Tractors/Loaders/Backhoes	2	3.00	200	0.37
Grading	Tractors/Loaders/Backhoes	2	3.00	97	0.37
Grading	Graders	1	4.00	247	0.40
Grading	Rollers	1	4.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	4.00	200	0.37
Grading	Rubber Tired Dozers	1	4.00	247	0.40
Building Construction	Welders	1	4.00	35	0.29
Building Construction	Tractors/Loaders/Backhoes	1	1.00	79	0.29
Building Construction	Air Compressors	0	0.00	0	0.00
Building Construction	Welders	1	4.00	38	0.45
Building Construction	Rubber Tired Loaders	2	2.00	147	0.20
Building Construction	Tractors/Loaders/Backhoes	2	1.00	97	0.37
Building Construction	Air Compressors	0	0.00	0	0.00
Building Construction	Rubber Tired Loaders	1	2.00	140	0.36
Building Construction	Rollers	1	1.00	80	0.38
Building Construction	Cranes	2	3.00	97	0.37
Building Construction	Cranes	2	1.00	250	0.37
Building Construction	Excavators	2	1.00	99	0.38
Paving	Aerial Lifts	1	1.00	9	0.56

Building Construction	Cranes	2	1.00	500	0.29
Building Construction	Rollers	1	1.00	65	0.38
Paving	Cranes	1	4.00	130	0.42
Building Construction	Other Construction Equipment	2	1.00	350	0.42
Paving	Forklifts	1	3.00	80	0.38
Paving	Pavers	2	5.00	97	0.37
Architectural Coating	Air Compressors	1	4.00	78	0.48
Paving	Paving Equipment	2	5.00	132	0.36
Paving	Rollers	2	5.00	80	0.38
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Forklifts	2	6.00	89	0.20
Paving	Tractors/Loaders/Backhoes	1	7.00	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	16	68.00	3.00	4,200.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	15.00	0.00	3,000.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	22	200.00	8.00	3,700.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	14	10.00	3.00	220.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

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					0.4594	0.0000	0.4594	0.0696	0.0000	0.0696			0.0000			0.0000
Off-Road	3.1693	33.5375	17.3743	0.0366		1.7032	1.7032		1.5883	1.5883		3,644.765 6	3,644.765 6	0.9961		3,669.666 8
Total	**3.1693**	**33.5375**	**17.3743**	**0.0366**	**0.4594**	**1.7032**	**2.1626**	**0.0696**	**1.5883**	**1.6579**		**3,644.765 6**	**3,644.765 6**	**0.9961**		**3,669.666 8**

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	0.2428	8.6212	1.5965	0.0223	2.7633	0.0332	2.7965	0.6923	0.0317	0.7240		2,399.001 3	2,399.001 3	0.1641		2,403.103 3
Vendor	0.0128	0.3636	0.0905	7.9000e-004	0.0192	2.6600e-003	0.0219	5.5300e-003	2.5400e-003	8.0700e-003		83.5974	83.5974	5.6900e-003		83.7397
Worker	0.3664	0.2627	3.4120	8.3300e-003	0.7601	6.0600e-003	0.7661	0.2016	5.5800e-003	0.2072		829.1591	829.1591	0.0283		829.8659
Total	**0.6219**	**9.2474**	**5.0990**	**0.0314**	**3.5426**	**0.0419**	**3.5845**	**0.8994**	**0.0398**	**0.9392**		**3,311.757 9**	**3,311.757 9**	**0.1980**		**3,316.708 9**

3.2 Demolition - 2018

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					0.4594	0.0000	0.4594	0.0696	0.0000	0.0696			0.0000			0.0000
Off-Road	3.1693	33.5375	17.3743	0.0366		1.7032	1.7032		1.5883	1.5883	0.0000	3,644.765 6	3,644.765 6	0.9961		3,669.666 8
Total	**3.1693**	**33.5375**	**17.3743**	**0.0366**	**0.4594**	**1.7032**	**2.1626**	**0.0696**	**1.5883**	**1.6579**	**0.0000**	**3,644.765 6**	**3,644.765 6**	**0.9961**		**3,669.666 8**

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	0.2428	8.6212	1.5965	0.0223	2.7633	0.0332	2.7965	0.6923	0.0317	0.7240		2,399.001 3	2,399.001 3	0.1641		2,403.103 3
Vendor	0.0128	0.3636	0.0905	7.9000e-004	0.0192	2.6600e-003	0.0219	5.5300e-003	2.5400e-003	8.0700e-003		83.5974	83.5974	5.6900e-003		83.7397
Worker	0.3664	0.2627	3.4120	8.3300e-003	0.7601	6.0600e-003	0.7661	0.2016	5.5800e-003	0.2072		829.1591	829.1591	0.0283		829.8659
Total	**0.6219**	**9.2474**	**5.0990**	**0.0314**	**3.5426**	**0.0419**	**3.5845**	**0.8994**	**0.0398**	**0.9392**		**3,311.757 9**	**3,311.757 9**	**0.1980**		**3,316.708 9**

3.2 Demolition - 2019

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					0.4594	0.0000	0.4594	0.0696	0.0000	0.0696			0.0000			0.0000
Off-Road	2.9124	30.6280	16.9310	0.0366		1.5209	1.5209		1.4176	1.4176		3,594.250 3	3,594.250 3	0.9914		3,619.034 9
Total	**2.9124**	**30.6280**	**16.9310**	**0.0366**	**0.4594**	**1.5209**	**1.9803**	**0.0696**	**1.4176**	**1.4871**		**3,594.250 3**	**3,594.250 3**	**0.9914**		**3,619.034 9**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2301	8.1515	1.5602	0.0220	0.5496	0.0302	0.5798	0.1489	0.0289	0.1778		2,371.088 1	2,371.088 1	0.1618		2,375.131 9
Vendor	0.0116	0.3433	0.0830	7.8000e-004	0.0192	2.2700e-003	0.0215	5.5300e-003	2.1800e-003	7.7000e-003		82.8659	82.8659	5.4800e-003		83.0030
Worker	0.3330	0.2318	3.0555	8.0700e-003	0.7601	5.9200e-003	0.7660	0.2016	5.4500e-003	0.2070		803.0725	803.0725	0.0251		803.7004
Total	**0.5747**	**8.7265**	**4.6987**	**0.0308**	**1.3288**	**0.0384**	**1.3673**	**0.3560**	**0.0366**	**0.3926**		**3,257.026 6**	**3,257.026 6**	**0.1924**		**3,261.835 3**

3.2 Demolition - 2019

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					0.4594	0.0000	0.4594	0.0696	0.0000	0.0696			0.0000			0.0000
Off-Road	2.9124	30.6280	16.9310	0.0366		1.5209	1.5209		1.4176	1.4176	0.0000	3,594.2503	3,594.2503	0.9914		3,619.0349
Total	**2.9124**	**30.6280**	**16.9310**	**0.0366**	**0.4594**	**1.5209**	**1.9803**	**0.0696**	**1.4176**	**1.4871**	**0.0000**	**3,594.2503**	**3,594.2503**	**0.9914**		**3,619.0349**

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	0.2301	8.1515	1.5602	0.0220	0.5496	0.0302	0.5798	0.1489	0.0289	0.1778		2,371.0881	2,371.0881	0.1618		2,375.1319
Vendor	0.0116	0.3433	0.0830	7.8000e-004	0.0192	2.2700e-003	0.0215	5.5300e-003	2.1800e-003	7.7000e-003		82.8659	82.8659	5.4800e-003		83.0030
Worker	0.3330	0.2318	3.0555	8.0700e-003	0.7601	5.9200e-003	0.7660	0.2016	5.4500e-003	0.2070		803.0725	803.0725	0.0251		803.7004
Total	**0.5747**	**8.7265**	**4.6987**	**0.0308**	**1.3288**	**0.0384**	**1.3673**	**0.3560**	**0.0366**	**0.3926**		**3,257.0266**	**3,257.0266**	**0.1924**		**3,261.8353**

3.3 Site Preparation - 2018

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	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**	**0.0000**	**0.0000**

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Site Preparation - 2018

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	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**	**0.0000**	**0.0000**

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Grading - 2019

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					3.1524	0.0000	3.1524	1.6704	0.0000	1.6704			0.0000			0.0000
Off-Road	2.0578	21.5513	13.4020	0.0256		1.0913	1.0913		1.0223	1.0223		2,505.369 0	2,505.369 0	0.6469		2,521.540 8
Total	**2.0578**	**21.5513**	**13.4020**	**0.0256**	**3.1524**	**1.0913**	**4.2437**	**1.6704**	**1.0223**	**2.6927**		**2,505.369 0**	**2,505.369 0**	**0.6469**		**2,521.540 8**

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	0.8217	29.1124	5.5721	0.0784	1.7475	0.1080	1.8555	0.4789	0.1033	0.5822		8,468.171 9	8,468.171 9	0.5777		8,482.613 8
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	0.0735	0.0511	0.6740	1.7800e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		177.1484	177.1484	5.5400e-003		177.2869
Total	**0.8952**	**29.1635**	**6.2461**	**0.0802**	**1.9151**	**0.1093**	**2.0244**	**0.5234**	**0.1045**	**0.6279**		**8,645.320 3**	**8,645.320 3**	**0.5832**		**8,659.900 7**

3.4 Grading - 2019

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					3.1524	0.0000	3.1524	1.6704	0.0000	1.6704			0.0000			0.0000
Off-Road	2.0578	21.5513	13.4020	0.0256		1.0913	1.0913		1.0223	1.0223	0.0000	2,505.369 0	2,505.369 0	0.6469		2,521.540 8
Total	**2.0578**	**21.5513**	**13.4020**	**0.0256**	**3.1524**	**1.0913**	**4.2437**	**1.6704**	**1.0223**	**2.6927**	**0.0000**	**2,505.369 0**	**2,505.369 0**	**0.6469**		**2,521.540 8**

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	0.8217	29.1124	5.5721	0.0784	1.7475	0.1080	1.8555	0.4789	0.1033	0.5822		8,468.171 9	8,468.171 9	0.5777		8,482.613 8
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	0.0735	0.0511	0.6740	1.7800e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		177.1484	177.1484	5.5400e-003		177.2869
Total	**0.8952**	**29.1635**	**6.2461**	**0.0802**	**1.9151**	**0.1093**	**2.0244**	**0.5234**	**0.1045**	**0.6279**		**8,645.320 3**	**8,645.320 3**	**0.5832**		**8,659.900 7**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8003	16.8816	12.1799	0.0193		0.9567	0.9567		0.8854	0.8854		1,883.8155	1,883.8155	0.5756		1,898.2065
Total	**1.8003**	**16.8816**	**12.1799**	**0.0193**		**0.9567**	**0.9567**		**0.8854**	**0.8854**		**1,883.8155**	**1,883.8155**	**0.5756**		**1,898.2065**

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	0.1013	3.5905	0.6872	9.6700e-003	0.6147	0.0133	0.6281	0.1571	0.0127	0.1698		1,044.4079	1,044.4079	0.0713		1,046.1890
Vendor	0.0308	0.9154	0.2213	2.0700e-003	0.0512	6.0600e-003	0.0573	0.0147	5.8000e-003	0.0205		220.9758	220.9758	0.0146		221.3413
Worker	0.9795	0.6816	8.9867	0.0237	2.2355	0.0174	2.2529	0.5929	0.0160	0.6089		2,361.9781	2,361.9781	0.0739		2,363.8248
Total	**1.1117**	**5.1875**	**9.8952**	**0.0355**	**2.9015**	**0.0368**	**2.9383**	**0.7647**	**0.0346**	**0.7992**		**3,627.3617**	**3,627.3617**	**0.1597**		**3,631.3552**

3.5 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8003	16.8816	12.1799	0.0193		0.9567	0.9567		0.8854	0.8854	0.0000	1,883.8155	1,883.8155	0.5756		1,898.2065
Total	**1.8003**	**16.8816**	**12.1799**	**0.0193**		**0.9567**	**0.9567**		**0.8854**	**0.8854**	**0.0000**	**1,883.8155**	**1,883.8155**	**0.5756**		**1,898.2065**

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	0.1013	3.5905	0.6872	9.6700e-003	0.6147	0.0133	0.6281	0.1571	0.0127	0.1698		1,044.4079	1,044.4079	0.0713		1,046.1890
Vendor	0.0308	0.9154	0.2213	2.0700e-003	0.0512	6.0600e-003	0.0573	0.0147	5.8000e-003	0.0205		220.9758	220.9758	0.0146		221.3413
Worker	0.9795	0.6816	8.9867	0.0237	2.2355	0.0174	2.2529	0.5929	0.0160	0.6089		2,361.9781	2,361.9781	0.0739		2,363.8248
Total	**1.1117**	**5.1875**	**9.8952**	**0.0355**	**2.9015**	**0.0368**	**2.9383**	**0.7647**	**0.0346**	**0.7992**		**3,627.3617**	**3,627.3617**	**0.1597**		**3,631.3552**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6437	15.4214	11.7878	0.0193		0.8529	0.8529		0.7893	0.7893		1,846.0070	1,846.0070	0.5731		1,860.3333
Total	**1.6437**	**15.4214**	**11.7878**	**0.0193**		**0.8529**	**0.8529**		**0.7893**	**0.7893**		**1,846.0070**	**1,846.0070**	**0.5731**		**1,860.3333**

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	0.0937	3.3564	0.6678	9.5600e-003	0.2821	0.0108	0.2929	0.0754	0.0104	0.0858		1,033.9394	1,033.9394	0.0694		1,035.6739
Vendor	0.0263	0.8395	0.1999	2.0600e-003	0.0512	4.1600e-003	0.0554	0.0147	3.9800e-003	0.0187		219.5588	219.5588	0.0138		219.9034
Worker	0.9049	0.6083	8.1764	0.0230	2.2355	0.0170	2.2525	0.5929	0.0156	0.6085		2,288.8349	2,288.8349	0.0658		2,290.4801
Total	**1.0248**	**4.8042**	**9.0441**	**0.0346**	**2.5689**	**0.0319**	**2.6008**	**0.6830**	**0.0300**	**0.7130**		**3,542.3330**	**3,542.3330**	**0.1490**		**3,546.0574**

3.5 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6437	15.4214	11.7878	0.0193		0.8529	0.8529		0.7893	0.7893	0.0000	1,846.0070	1,846.0070	0.5731		1,860.3333
Total	**1.6437**	**15.4214**	**11.7878**	**0.0193**		**0.8529**	**0.8529**		**0.7893**	**0.7893**	**0.0000**	**1,846.0070**	**1,846.0070**	**0.5731**		**1,860.3333**

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	0.0937	3.3564	0.6678	9.5600e-003	0.2821	0.0108	0.2929	0.0754	0.0104	0.0858		1,033.9394	1,033.9394	0.0694		1,035.6739
Vendor	0.0263	0.8395	0.1999	2.0600e-003	0.0512	4.1600e-003	0.0554	0.0147	3.9800e-003	0.0187		219.5588	219.5588	0.0138		219.9034
Worker	0.9049	0.6083	8.1764	0.0230	2.2355	0.0170	2.2525	0.5929	0.0156	0.6085		2,288.8349	2,288.8349	0.0658		2,290.4801
Total	**1.0248**	**4.8042**	**9.0441**	**0.0346**	**2.5689**	**0.0319**	**2.6008**	**0.6830**	**0.0300**	**0.7130**		**3,542.3330**	**3,542.3330**	**0.1490**		**3,546.0574**

3.6 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	1.5965	15.2039	13.7390	0.0203		0.9179	0.9179		0.8479	0.8479		1,915.6818	1,915.6818	0.5863		1,930.3390
Paving	3.7400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6002**	**15.2039**	**13.7390**	**0.0203**		**0.9179**	**0.9179**		**0.8479**	**0.8479**		**1,915.6818**	**1,915.6818**	**0.5863**		**1,930.3390**

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	0.1194	4.2765	0.8509	0.0122	0.2746	0.0138	0.2884	0.0753	0.0132	0.0884		1,317.3745	1,317.3745	0.0884		1,319.5845
Vendor	9.8500e-003	0.3148	0.0750	7.7000e-004	0.0192	1.5600e-003	0.0208	5.5300e-003	1.4900e-003	7.0200e-003		82.3345	82.3345	5.1700e-003		82.4638
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	**0.1744**	**4.6217**	**1.3347**	**0.0141**	**0.4056**	**0.0162**	**0.4218**	**0.1104**	**0.0155**	**0.1259**		**1,514.1508**	**1,514.1508**	**0.0969**		**1,516.5723**

3.6 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5965	15.2039	13.7390	0.0203		0.9179	0.9179		0.8479	0.8479	0.0000	1,915.6818	1,915.6818	0.5863		1,930.3390
Paving	3.7400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6002**	**15.2039**	**13.7390**	**0.0203**		**0.9179**	**0.9179**		**0.8479**	**0.8479**	**0.0000**	**1,915.6818**	**1,915.6818**	**0.5863**		**1,930.3390**

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	0.1194	4.2765	0.8509	0.0122	0.2746	0.0138	0.2884	0.0753	0.0132	0.0884		1,317.3745	1,317.3745	0.0884		1,319.5845
Vendor	9.8500e-003	0.3148	0.0750	7.7000e-004	0.0192	1.5600e-003	0.0208	5.5300e-003	1.4900e-003	7.0200e-003		82.3345	82.3345	5.1700e-003		82.4638
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	**0.1744**	**4.6217**	**1.3347**	**0.0141**	**0.4056**	**0.0162**	**0.4218**	**0.1104**	**0.0155**	**0.1259**		**1,514.1508**	**1,514.1508**	**0.0969**		**1,516.5723**

3.7 Architectural Coating - 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					
Archit. Coating	15.8914					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1615	1.1226	1.2210	1.9800e-003		0.0740	0.0740		0.0740	0.0740		187.6320	187.6320	0.0145		187.9952
Total	**16.0529**	**1.1226**	**1.2210**	**1.9800e-003**		**0.0740**	**0.0740**		**0.0740**	**0.0740**		**187.6320**	**187.6320**	**0.0145**		**187.9952**

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	0.0181	0.0122	0.1635	4.6000e-004	0.0447	3.4000e-004	0.0451	0.0119	3.1000e-004	0.0122		45.7767	45.7767	1.3200e-003		45.8096
Total	**0.0181**	**0.0122**	**0.1635**	**4.6000e-004**	**0.0447**	**3.4000e-004**	**0.0451**	**0.0119**	**3.1000e-004**	**0.0122**		**45.7767**	**45.7767**	**1.3200e-003**		**45.8096**

3.7 Architectural Coating - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	15.8914					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1615	1.1226	1.2210	1.9800e-003		0.0740	0.0740		0.0740	0.0740	0.0000	187.6320	187.6320	0.0145		187.9952
Total	**16.0529**	**1.1226**	**1.2210**	**1.9800e-003**		**0.0740**	**0.0740**		**0.0740**	**0.0740**	**0.0000**	**187.6320**	**187.6320**	**0.0145**		**187.9952**

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	0.0181	0.0122	0.1635	4.6000e-004	0.0447	3.4000e-004	0.0451	0.0119	3.1000e-004	0.0122		45.7767	45.7767	1.3200e-003		45.8096
Total	**0.0181**	**0.0122**	**0.1635**	**4.6000e-004**	**0.0447**	**3.4000e-004**	**0.0451**	**0.0119**	**3.1000e-004**	**0.0122**		**45.7767**	**45.7767**	**1.3200e-003**		**45.8096**

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	0.0147	0.0770	0.2196	8.1000e-004	0.0656	6.3000e-004	0.0663	0.0176	5.9000e-004	0.0182		82.4797	82.4797	3.8100e-003		82.5749
Unmitigated	0.0147	0.0770	0.2196	8.1000e-004	0.0656	6.3000e-004	0.0663	0.0176	5.9000e-004	0.0182		82.4797	82.4797	3.8100e-003		82.5749

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	6.97	1.32	0.68	23,312	23,312
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	6.97	1.32	0.68	23,312	23,312

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
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	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
General Light Industry	0.548858	0.043235	0.200706	0.120309	0.016131	0.005851	0.021034	0.033479	0.002070	0.001877	0.004817	0.000707	0.000925
Other Asphalt Surfaces	0.548858	0.043235	0.200706	0.120309	0.016131	0.005851	0.021034	0.033479	0.002070	0.001877	0.004817	0.000707	0.000925

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	8.0200e-003	0.0729	0.0613	4.4000e-004		5.5400e-003	5.5400e-003		5.5400e-003	5.5400e-003		87.5101	87.5101	1.6800e-003	1.6000e-003	88.0301
NaturalGas Unmitigated	8.0200e-003	0.0729	0.0613	4.4000e-004		5.5400e-003	5.5400e-003		5.5400e-003	5.5400e-003		87.5101	87.5101	1.6800e-003	1.6000e-003	88.0301

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					
General Light Industry	743.836	8.0200e-003	0.0729	0.0613	4.4000e-004		5.5400e-003	5.5400e-003		5.5400e-003	5.5400e-003		87.5101	87.5101	1.6800e-003	1.6000e-003	88.0301
Other Asphalt Surfaces	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		**8.0200e-003**	**0.0729**	**0.0613**	**4.4000e-004**		**5.5400e-003**	**5.5400e-003**		**5.5400e-003**	**5.5400e-003**		**87.5101**	**87.5101**	**1.6800e-003**	**1.6000e-003**	**88.0301**

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					
General Light Industry	0.743836	8.0200e-003	0.0729	0.0613	4.4000e-004		5.5400e-003	5.5400e-003		5.5400e-003	5.5400e-003		87.5101	87.5101	1.6800e-003	1.6000e-003	88.0301
Other Asphalt Surfaces	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		**8.0200e-003**	**0.0729**	**0.0613**	**4.4000e-004**		**5.5400e-003**	**5.5400e-003**		**5.5400e-003**	**5.5400e-003**		**87.5101**	**87.5101**	**1.6800e-003**	**1.6000e-003**	**88.0301**

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	0.3717	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.4000e-004	4.4000e-004	0.0000		4.7000e-004
Unmitigated	0.3717	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.4000e-004	4.4000e-004	0.0000		4.7000e-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	0.0446					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.0000e-005	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.4000e-004	4.4000e-004	0.0000		4.7000e-004
Total	**0.3717**	**0.0000**	**2.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**4.4000e-004**	**4.4000e-004**	**0.0000**		**4.7000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0446					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.0000e-005	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.4000e-004	4.4000e-004	0.0000		4.7000e-004
Total	**0.3717**	**0.0000**	**2.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**4.4000e-004**	**4.4000e-004**	**0.0000**		**4.7000e-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

PAR 1135 - Boiler (3) to Turbine (3) Repower

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	1.00	1000sqft	0.02	15,000.00	0
Other Asphalt Surfaces	1.00	1000sqft	0.02	85,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	12			**Operational Year**	2021
Utility Company	Glendale Water & Power				
CO2 Intensity (lb/MWhr)	1115.33	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

PAR 1135 - Boiler (3) to Turbine (3) Repower - South Coast AQMD Air District, Winter

Project Characteristics -

Land Use - Land Use - Most building footprints are occupied by non-populated structures, such as turbines, ammonia tanks, etc.

Construction Phase - Estimated Construction Schedule.

Off-road Equipment - Off-Road Equipment - Air Compressors (1): 4 Hours Per Day

Off-road Equipment - Off-Road Equipment - Demolition: Cranes (1): 3 Hours Per Day; Excavators (2): 3 Hours Per Day; Forklifts (2): 2 Hours Per Day; Other General Industrial Equipment (2): 2 Hour Per Day; Graders (1): 1 Hour Per Day; Rollers (1): 1 Hour Per Day; Rubber Tired Dozers (2): 2 Hours Per Day; Tractors/Loaders/Backhoes (2): 4 Hours Per Day; Tractors/Loaders/Backhoes (2): 2 Hours Per Day

Off-road Equipment - Off-Road Equipment - No Site Preparation

Off-road Equipment - Off-Road Equipment - Grading: Excavators (2): 3 Hours Per Day; Graders (1): 4 Hours Per Day; Rollers (1): 4 Hours Per Day; Tractors/Loaders/Backhoes (1): 4 Hours Per Day; Tractors/Loaders/Backhoes (2): 3 Hours Per Day; Rubber Tired Dozers (1): 4 Hours Per Day

Off-road Equipment - Off-Road Equipment - Const.: Welders (1): 4 Hours/Day; Tract/Load/Back (1): 1 Hour/Day; Rubber Tired Loaders (2): 2 Hours/Day; Cranes (2): 3 Hours/Day; Cranes (2): 1 Hour/Day; Welders (1): 4 Hours/Day; Tract/Load/Back (2): 1 Hours/Day; Rubber Tired Loaders (1): 2 Hours/Day; Rollers (1): 1 Hour/Day; Excavators (2): 1 Hour/Day; Cranes (2): 1 Hour/Day; Rollers (1): 1 Hour/Day

Off-road Equipment - Off-Road Equipment - Paving: Aerial Lifts (1): 1 Hour Per Day; Cranes (1): 4 Hours Per Day; Forklifts (1): 3 Hours Per Day; Pavers (2): 5 Hours Per Day; Paving Equipment (2): 5 Hours Per Day; Rollers (2): 5 Hours Per Day

Grading - No Site Preparation, Acres of Grading (4)

Demolition -

Trips and VMT - Worker, Vendor, Haul Trips Estimated Based on FIER Grayson Repowering Project and modified for compliance with PAR 1135.

Architectural Coating - Architectural Coating Estimated.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	7,500.00	36,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	22,500.00	12,000.00
tblArchitecturalCoating	ConstArea_Parking	5,100.00	0.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstructionPhase	NumDays	10.00	150.00
tblConstructionPhase	NumDays	1.00	0.00
tblConstructionPhase	NumDays	2.00	30.00

PAR 1135 - Boiler (3) to Turbine (3) Repower - South Coast AQMD Air District, Winter

tblConstructionPhase	NumDays	100.00	300.00
tblConstructionPhase	NumDays	5.00	14.00
tblConstructionPhase	NumDays	5.00	14.00
tblConstructionPhase	PhaseEndDate	12/14/2018	6/28/2019
tblConstructionPhase	PhaseEndDate	12/17/2018	12/1/2018
tblConstructionPhase	PhaseEndDate	12/19/2018	8/9/2019
tblConstructionPhase	PhaseEndDate	5/8/2019	10/23/2020
tblConstructionPhase	PhaseEndDate	5/15/2019	12/18/2020
tblConstructionPhase	PhaseEndDate	5/22/2019	11/19/2020
tblConstructionPhase	PhaseStartDate	12/15/2018	12/1/2018
tblConstructionPhase	PhaseStartDate	12/18/2018	7/1/2019
tblConstructionPhase	PhaseStartDate	12/20/2018	9/1/2019
tblConstructionPhase	PhaseStartDate	5/9/2019	12/1/2020
tblConstructionPhase	PhaseStartDate	5/16/2019	11/1/2020
tblGrading	AcresOfGrading	7.50	4.00
tblGrading	MaterialMoistureContentBulldozing	7.90	0.00
tblGrading	MaterialMoistureContentTruckLoading	12.00	0.00
tblGrading	MaterialSiltContent	6.90	0.00
tblGrading	MeanVehicleSpeed	7.10	0.00
tblLandUse	LandUseSquareFeet	1,000.00	15,000.00
tblLandUse	LandUseSquareFeet	1,000.00	85,000.00
tblOffRoadEquipment	HorsePower	63.00	9.00
tblOffRoadEquipment	HorsePower	158.00	81.00
tblOffRoadEquipment	HorsePower	46.00	35.00
tblOffRoadEquipment	HorsePower	97.00	79.00
tblOffRoadEquipment	HorsePower	78.00	0.00
tblOffRoadEquipment	HorsePower	203.00	147.00

PAR 1135 - Boiler (3) to Turbine (3) Repower - South Coast AQMD Air District, Winter

tblOffRoadEquipment	HorsePower	187.00	0.00
tblOffRoadEquipment	HorsePower	231.00	130.00
tblOffRoadEquipment	HorsePower	89.00	80.00
tblOffRoadEquipment	HorsePower	158.00	247.00
tblOffRoadEquipment	HorsePower	187.00	247.00
tblOffRoadEquipment	HorsePower	231.00	97.00
tblOffRoadEquipment	HorsePower	231.00	250.00
tblOffRoadEquipment	HorsePower	89.00	97.00
tblOffRoadEquipment	HorsePower	88.00	97.00
tblOffRoadEquipment	HorsePower	80.00	97.00
tblOffRoadEquipment	HorsePower	97.00	200.00
tblOffRoadEquipment	HorsePower	130.00	97.00
tblOffRoadEquipment	HorsePower	97.00	0.00
tblOffRoadEquipment	HorsePower	97.00	200.00
tblOffRoadEquipment	HorsePower	46.00	38.00
tblOffRoadEquipment	HorsePower	78.00	0.00
tblOffRoadEquipment	HorsePower	203.00	140.00
tblOffRoadEquipment	HorsePower	158.00	99.00
tblOffRoadEquipment	HorsePower	231.00	500.00
tblOffRoadEquipment	HorsePower	80.00	65.00
tblOffRoadEquipment	HorsePower	172.00	350.00
tblOffRoadEquipment	LoadFactor	0.31	0.56
tblOffRoadEquipment	LoadFactor	0.29	0.73
tblOffRoadEquipment	LoadFactor	0.38	0.73
tblOffRoadEquipment	LoadFactor	0.45	0.29
tblOffRoadEquipment	LoadFactor	0.37	0.29
tblOffRoadEquipment	LoadFactor	0.48	0.00

tblOffRoadEquipment	LoadFactor	0.36	0.20
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblOffRoadEquipment	LoadFactor	0.29	0.42
tblOffRoadEquipment	LoadFactor	0.20	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.40
tblOffRoadEquipment	LoadFactor	0.41	0.40
tblOffRoadEquipment	LoadFactor	0.29	0.37
tblOffRoadEquipment	LoadFactor	0.29	0.37
tblOffRoadEquipment	LoadFactor	0.20	0.37
tblOffRoadEquipment	LoadFactor	0.34	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	LoadFactor	0.42	0.37
tblOffRoadEquipment	LoadFactor	0.37	0.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.48	0.00
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Excavators
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Forklifts
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Other General Industrial Equipment
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Excavators

tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Graders
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Welders
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType	Forklifts	Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType	Cement and Mortar Mixers	Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType	Pavers	Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType	Rollers	Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

PAR 1135 - Boiler (3) to Turbine (3) Repower - South Coast AQMD Air District, Winter

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	4.00	3.00
tblOffRoadEquipment	UsageHours	4.00	1.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	1.00	3.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	6.00	3.00
tblOffRoadEquipment	UsageHours	6.00	3.00
tblOffRoadEquipment	UsageHours	1.00	4.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	4.00	1.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblTripsAndVMT	HaulingTripNumber	318.00	4,200.00
tblTripsAndVMT	HaulingTripNumber	0.00	3,000.00
tblTripsAndVMT	HaulingTripNumber	0.00	3,700.00
tblTripsAndVMT	HaulingTripNumber	0.00	220.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	16.00	8.00

tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	WorkerTripNumber	40.00	68.00
tblTripsAndVMT	WorkerTripNumber	23.00	15.00
tblTripsAndVMT	WorkerTripNumber	42.00	200.00
tblTripsAndVMT	WorkerTripNumber	35.00	10.00
tblTripsAndVMT	WorkerTripNumber	8.00	4.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.8309	42.9311	22.2940	0.0670	4.0020	1.7458	5.7478	0.9689	1.6288	2.5978	0.0000	6,857.622 8	6,857.622 8	1.2003	0.0000	6,887.629 7
2019	3.5239	51.1115	21.4680	0.1042	5.0676	1.5600	6.2702	2.1938	1.4547	3.3226	0.0000	10,985.56 70	10,985.56 70	1.2559	0.0000	11,016.964 2
2020	16.0726	20.3255	20.0913	0.0522	2.5689	0.9344	3.4540	0.6830	0.8636	1.5025	0.0000	5,214.854 7	5,214.854 7	0.7216	0.0000	5,232.895 9
Maximum	**16.0726**	**51.1115**	**22.2940**	**0.1042**	**5.0676**	**1.7458**	**6.2702**	**2.1938**	**1.6288**	**3.3226**	**0.0000**	**10,985.56 70**	**10,985.56 70**	**1.2559**	**0.0000**	**11,016.96 42**

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					
2018	3.8309	42.9311	22.2940	0.0670	4.0020	1.7458	5.7478	0.9689	1.6288	2.5978	0.0000	6,857.622 8	6,857.622 8	1.2003	0.0000	6,887.629 7
2019	3.5239	51.1115	21.4680	0.1042	5.0676	1.5600	6.2702	2.1938	1.4547	3.3226	0.0000	10,985.56 70	10,985.56 70	1.2559	0.0000	11,016.96 42
2020	16.0726	20.3255	20.0913	0.0522	2.5689	0.9344	3.4540	0.6830	0.8636	1.5025	0.0000	5,214.854 7	5,214.854 7	0.7216	0.0000	5,232.895 9
Maximum	**16.0726**	**51.1115**	**22.2940**	**0.1042**	**5.0676**	**1.7458**	**6.2702**	**2.1938**	**1.6288**	**3.3226**	**0.0000**	**10,985.56 70**	**10,985.56 70**	**1.2559**	**0.0000**	**11,016.96 42**

PAR 1135 - Boiler (3) to Turbine (3) Repower - South Coast AQMD Air District, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.3717	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.4000e-004	4.4000e-004	0.0000		4.7000e-004
Energy	8.0200e-003	0.0729	0.0613	4.4000e-004		5.5400e-003	5.5400e-003		5.5400e-003	5.5400e-003		87.5101	87.5101	1.6800e-003	1.6000e-003	88.0301
Mobile	0.0140	0.0790	0.2033	7.7000e-004	0.0656	6.3000e-004	0.0663	0.0176	5.9000e-004	0.0182		78.1523	78.1523	3.7800e-003		78.2468
Total	**0.3937**	**0.1519**	**0.2648**	**1.2100e-003**	**0.0656**	**6.1700e-003**	**0.0718**	**0.0176**	**6.1300e-003**	**0.0237**		**165.6628**	**165.6628**	**5.4600e-003**	**1.6000e-003**	**166.2774**

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	0.3717	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.4000e-004	4.4000e-004	0.0000		4.7000e-004
Energy	8.0200e-003	0.0729	0.0613	4.4000e-004		5.5400e-003	5.5400e-003		5.5400e-003	5.5400e-003		87.5101	87.5101	1.6800e-003	1.6000e-003	88.0301
Mobile	0.0140	0.0790	0.2033	7.7000e-004	0.0656	6.3000e-004	0.0663	0.0176	5.9000e-004	0.0182		78.1523	78.1523	3.7800e-003		78.2468
Total	**0.3937**	**0.1519**	**0.2648**	**1.2100e-003**	**0.0656**	**6.1700e-003**	**0.0718**	**0.0176**	**6.1300e-003**	**0.0237**		**165.6628**	**165.6628**	**5.4600e-003**	**1.6000e-003**	**166.2774**

	ROG	NOx	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	12/1/2018	6/28/2019	5	150	Demolition of affected existing power generating units
2	Site Preparation	Site Preparation	12/1/2018	12/1/2018	5	0	No site preparation activity
3	Grading	Grading	7/1/2019	8/9/2019	5	30	Grading Activity
4	Building Construction	Building Construction	9/1/2019	10/23/2020	5	300	Include site mobilzation, equipment, electric conduit, cable
5	Paving	Paving	12/1/2020	12/18/2020	5	14	Paving activity occurs during the commissioning period
6	Architectural Coating	Architectural Coating	11/1/2020	11/19/2020	5	14	Coating Activity is estimated

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0.02

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 12,000; Non-Residential Outdoor: 36,000; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Cranes	1	3.00	231	0.73
Demolition	Graders	1	1.00	187	0.41
Demolition	Rollers	1	1.00	80	0.38

Demolition	Rubber Tired Dozers	2	3.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	4.00	97	0.37
Demolition	Excavators	2	3.00	247	0.40
Demolition	Forklifts	2	2.00	97	0.37
Demolition	Other General Industrial Equipment	2	2.00	97	0.37
Site Preparation	Graders	0	0.00	0	0.00
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	0	0.00
Grading	Excavators	2	3.00	81	0.73
Demolition	Tractors/Loaders/Backhoes	2	3.00	200	0.37
Grading	Tractors/Loaders/Backhoes	2	3.00	97	0.37
Grading	Graders	1	4.00	247	0.40
Grading	Rollers	1	4.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	4.00	200	0.37
Grading	Rubber Tired Dozers	1	4.00	247	0.40
Building Construction	Welders	1	4.00	35	0.29
Building Construction	Tractors/Loaders/Backhoes	1	1.00	79	0.29
Building Construction	Air Compressors	0	0.00	0	0.00
Building Construction	Welders	1	4.00	38	0.45
Building Construction	Rubber Tired Loaders	2	2.00	147	0.20
Building Construction	Tractors/Loaders/Backhoes	2	1.00	97	0.37
Building Construction	Air Compressors	0	0.00	0	0.00
Building Construction	Rubber Tired Loaders	1	2.00	140	0.36
Building Construction	Rollers	1	1.00	80	0.38
Building Construction	Cranes	2	3.00	97	0.37
Building Construction	Cranes	2	1.00	250	0.37
Building Construction	Excavators	2	1.00	99	0.38
Paving	Aerial Lifts	1	1.00	9	0.56

Building Construction	Cranes	2	1.00	500	0.29
Building Construction	Rollers	1	1.00	65	0.38
Paving	Cranes	1	4.00	130	0.42
Building Construction	Other Construction Equipment	2	1.00	350	0.42
Paving	Forklifts	1	3.00	80	0.38
Paving	Pavers	2	5.00	97	0.37
Architectural Coating	Air Compressors	1	4.00	78	0.48
Paving	Paving Equipment	2	5.00	132	0.36
Paving	Rollers	2	5.00	80	0.38
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Forklifts	2	6.00	89	0.20
Paving	Tractors/Loaders/Backhoes	1	7.00	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	16	68.00	3.00	4,200.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	15.00	0.00	3,000.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	22	200.00	8.00	3,700.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	14	10.00	3.00	220.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2018

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					0.4594	0.0000	0.4594	0.0696	0.0000	0.0696			0.0000			0.0000
Off-Road	3.1693	33.5375	17.3743	0.0366		1.7032	1.7032		1.5883	1.5883		3,644.765 6	3,644.765 6	0.9961		3,669.666 8
Total	**3.1693**	**33.5375**	**17.3743**	**0.0366**	**0.4594**	**1.7032**	**2.1626**	**0.0696**	**1.5883**	**1.6579**		**3,644.765 6**	**3,644.765 6**	**0.9961**		**3,669.666 8**

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	0.2500	8.7416	1.7313	0.0219	2.7633	0.0338	2.7971	0.6923	0.0323	0.7246		2,355.968 4	2,355.968 4	0.1717		2,360.259 7
Vendor	0.0133	0.3642	0.1005	7.6000e-004	0.0192	2.7000e-003	0.0219	5.5300e-003	2.5800e-003	8.1100e-003		81.2269	81.2269	6.1100e-003		81.3797
Worker	0.3984	0.2878	3.0878	7.7900e-003	0.7601	6.0600e-003	0.7661	0.2016	5.5800e-003	0.2072		775.6619	775.6619	0.0265		776.3236
Total	**0.6617**	**9.3935**	**4.9197**	**0.0304**	**3.5426**	**0.0426**	**3.5852**	**0.8994**	**0.0405**	**0.9399**		**3,212.857 2**	**3,212.857 2**	**0.2042**		**3,217.963 0**

3.2 Demolition - 2018

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					0.4594	0.0000	0.4594	0.0696	0.0000	0.0696			0.0000			0.0000
Off-Road	3.1693	33.5375	17.3743	0.0366		1.7032	1.7032		1.5883	1.5883	0.0000	3,644.7656	3,644.7656	0.9961		3,669.6668
Total	**3.1693**	**33.5375**	**17.3743**	**0.0366**	**0.4594**	**1.7032**	**2.1626**	**0.0696**	**1.5883**	**1.6579**	**0.0000**	**3,644.7656**	**3,644.7656**	**0.9961**		**3,669.6668**

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	0.2500	8.7416	1.7313	0.0219	2.7633	0.0338	2.7971	0.6923	0.0323	0.7246		2,355.9684	2,355.9684	0.1717		2,360.2597
Vendor	0.0133	0.3642	0.1005	7.6000e-004	0.0192	2.7000e-003	0.0219	5.5300e-003	2.5800e-003	8.1100e-003		81.2269	81.2269	6.1100e-003		81.3797
Worker	0.3984	0.2878	3.0878	7.7900e-003	0.7601	6.0600e-003	0.7661	0.2016	5.5800e-003	0.2072		775.6619	775.6619	0.0265		776.3236
Total	**0.6617**	**9.3935**	**4.9197**	**0.0304**	**3.5426**	**0.0426**	**3.5852**	**0.8994**	**0.0405**	**0.9399**		**3,212.8572**	**3,212.8572**	**0.2042**		**3,217.9630**

3.2 Demolition - 2019

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					0.4594	0.0000	0.4594	0.0696	0.0000	0.0696			0.0000			0.0000
Off-Road	2.9124	30.6280	16.9310	0.0366		1.5209	1.5209		1.4176	1.4176		3,594.2503	3,594.2503	0.9914		3,619.0349
Total	**2.9124**	**30.6280**	**16.9310**	**0.0366**	**0.4594**	**1.5209**	**1.9803**	**0.0696**	**1.4176**	**1.4871**		**3,594.2503**	**3,594.2503**	**0.9914**		**3,619.0349**

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	0.2369	8.2612	1.6880	0.0216	0.5496	0.0308	0.5804	0.1489	0.0295	0.1784		2,328.0599	2,328.0599	0.1691		2,332.2868
Vendor	0.0121	0.3435	0.0924	7.6000e-004	0.0192	2.3100e-003	0.0215	5.5300e-003	2.2100e-003	7.7400e-003		80.4949	80.4949	5.8900e-003		80.6422
Worker	0.3626	0.2538	2.7566	7.5400e-003	0.7601	5.9200e-003	0.7660	0.2016	5.4500e-003	0.2070		751.1659	751.1659	0.0235		751.7526
Total	**0.6115**	**8.8585**	**4.5371**	**0.0299**	**1.3288**	**0.0390**	**1.3679**	**0.3560**	**0.0371**	**0.3931**		**3,159.7207**	**3,159.7207**	**0.1984**		**3,164.6816**

3.2 Demolition - 2019

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					0.4594	0.0000	0.4594	0.0696	0.0000	0.0696			0.0000			0.0000
Off-Road	2.9124	30.6280	16.9310	0.0366		1.5209	1.5209		1.4176	1.4176	0.0000	3,594.2503	3,594.2503	0.9914		3,619.0349
Total	**2.9124**	**30.6280**	**16.9310**	**0.0366**	**0.4594**	**1.5209**	**1.9803**	**0.0696**	**1.4176**	**1.4871**	**0.0000**	**3,594.2503**	**3,594.2503**	**0.9914**		**3,619.0349**

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	0.2369	8.2612	1.6880	0.0216	0.5496	0.0308	0.5804	0.1489	0.0295	0.1784		2,328.0599	2,328.0599	0.1691		2,332.2868
Vendor	0.0121	0.3435	0.0924	7.6000e-004	0.0192	2.3100e-003	0.0215	5.5300e-003	2.2100e-003	7.7400e-003		80.4949	80.4949	5.8900e-003		80.6422
Worker	0.3626	0.2538	2.7566	7.5400e-003	0.7601	5.9200e-003	0.7660	0.2016	5.4500e-003	0.2070		751.1659	751.1659	0.0235		751.7526
Total	**0.6115**	**8.8585**	**4.5371**	**0.0299**	**1.3288**	**0.0390**	**1.3679**	**0.3560**	**0.0371**	**0.3931**		**3,159.7207**	**3,159.7207**	**0.1984**		**3,164.6816**

3.3 Site Preparation - 2018

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	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**	**0.0000**	**0.0000**

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.3 Site Preparation - 2018

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	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**	**0.0000**	**0.0000**

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	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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Grading - 2019

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					3.1524	0.0000	3.1524	1.6704	0.0000	1.6704			0.0000			0.0000
Off-Road	2.0578	21.5513	13.4020	0.0256		1.0913	1.0913		1.0223	1.0223		2,505.3690	2,505.3690	0.6469		2,521.5408
Total	**2.0578**	**21.5513**	**13.4020**	**0.0256**	**3.1524**	**1.0913**	**4.2437**	**1.6704**	**1.0223**	**2.6927**		**2,505.3690**	**2,505.3690**	**0.6469**		**2,521.5408**

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	0.8459	29.5042	6.0287	0.0770	1.7475	0.1101	1.8575	0.4789	0.1053	0.5842		8,314.4997	8,314.4997	0.6038		8,329.5956
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	0.0800	0.0560	0.6081	1.6600e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		165.6984	165.6984	5.1800e-003		165.8278
Total	**0.9259**	**29.5602**	**6.6368**	**0.0787**	**1.9151**	**0.1114**	**2.0265**	**0.5234**	**0.1065**	**0.6299**		**8,480.1980**	**8,480.1980**	**0.6090**		**8,495.4234**

3.4 Grading - 2019

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					3.1524	0.0000	3.1524	1.6704	0.0000	1.6704			0.0000			0.0000
Off-Road	2.0578	21.5513	13.4020	0.0256		1.0913	1.0913		1.0223	1.0223	0.0000	2,505.369 0	2,505.369 0	0.6469		2,521.540 8
Total	**2.0578**	**21.5513**	**13.4020**	**0.0256**	**3.1524**	**1.0913**	**4.2437**	**1.6704**	**1.0223**	**2.6927**	**0.0000**	**2,505.369 0**	**2,505.369 0**	**0.6469**		**2,521.540 8**

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	0.8459	29.5042	6.0287	0.0770	1.7475	0.1101	1.8575	0.4789	0.1053	0.5842		8,314.499 7	8,314.499 7	0.6038		8,329.595 6
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	0.0800	0.0560	0.6081	1.6600e-003	0.1677	1.3000e-003	0.1690	0.0445	1.2000e-003	0.0457		165.6984	165.6984	5.1800e-003		165.8278
Total	**0.9259**	**29.5602**	**6.6368**	**0.0787**	**1.9151**	**0.1114**	**2.0265**	**0.5234**	**0.1065**	**0.6299**		**8,480.198 0**	**8,480.198 0**	**0.6090**		**8,495.423 4**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8003	16.8816	12.1799	0.0193		0.9567	0.9567		0.8854	0.8854		1,883.8155	1,883.8155	0.5756		1,898.2065
Total	**1.8003**	**16.8816**	**12.1799**	**0.0193**		**0.9567**	**0.9567**		**0.8854**	**0.8854**		**1,883.8155**	**1,883.8155**	**0.5756**		**1,898.2065**

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	0.1043	3.6389	0.7435	9.5000e-003	0.6147	0.0136	0.6283	0.1571	0.0130	0.1700		1,025.4550	1,025.4550	0.0745		1,027.3168
Vendor	0.0322	0.9160	0.2465	2.0100e-003	0.0512	6.1600e-003	0.0574	0.0147	5.8900e-003	0.0206		214.6530	214.6530	0.0157		215.0458
Worker	1.0665	0.7466	8.1077	0.0222	2.2355	0.0174	2.2529	0.5929	0.0160	0.6089		2,209.3115	2,209.3115	0.0690		2,211.0371
Total	**1.2030**	**5.3015**	**9.0977**	**0.0337**	**2.9015**	**0.0371**	**2.9386**	**0.7647**	**0.0349**	**0.7996**		**3,449.4195**	**3,449.4195**	**0.1592**		**3,453.3997**

3.5 Building Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8003	16.8816	12.1799	0.0193		0.9567	0.9567		0.8854	0.8854	0.0000	1,883.8155	1,883.8155	0.5756		1,898.2065
Total	**1.8003**	**16.8816**	**12.1799**	**0.0193**		**0.9567**	**0.9567**		**0.8854**	**0.8854**	**0.0000**	**1,883.8155**	**1,883.8155**	**0.5756**		**1,898.2065**

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	0.1043	3.6389	0.7435	9.5000e-003	0.6147	0.0136	0.6283	0.1571	0.0130	0.1700		1,025.4550	1,025.4550	0.0745		1,027.3168
Vendor	0.0322	0.9160	0.2465	2.0100e-003	0.0512	6.1600e-003	0.0574	0.0147	5.8900e-003	0.0206		214.6530	214.6530	0.0157		215.0458
Worker	1.0665	0.7466	8.1077	0.0222	2.2355	0.0174	2.2529	0.5929	0.0160	0.6089		2,209.3115	2,209.3115	0.0690		2,211.0371
Total	**1.2030**	**5.3015**	**9.0977**	**0.0337**	**2.9015**	**0.0371**	**2.9386**	**0.7647**	**0.0349**	**0.7996**		**3,449.4195**	**3,449.4195**	**0.1592**		**3,453.3997**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6437	15.4214	11.7878	0.0193		0.8529	0.8529		0.7893	0.7893		1,846.0070	1,846.0070	0.5731		1,860.3333
Total	**1.6437**	**15.4214**	**11.7878**	**0.0193**		**0.8529**	**0.8529**		**0.7893**	**0.7893**		**1,846.0070**	**1,846.0070**	**0.5731**		**1,860.3333**

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	0.0964	3.3995	0.7189	9.3900e-003	0.2821	0.0110	0.2931	0.0754	0.0105	0.0859		1,014.9076	1,014.9076	0.0724		1,016.7175
Vendor	0.0275	0.8386	0.2229	2.0000e-003	0.0512	4.2200e-003	0.0554	0.0147	4.0400e-003	0.0188		213.2103	213.2103	0.0148		213.5804
Worker	0.9869	0.6660	7.3618	0.0215	2.2355	0.0170	2.2525	0.5929	0.0156	0.6085		2,140.7299	2,140.7299	0.0614		2,142.2648
Total	**1.1108**	**4.9041**	**8.3036**	**0.0329**	**2.5689**	**0.0322**	**2.6010**	**0.6830**	**0.0302**	**0.7132**		**3,368.8477**	**3,368.8477**	**0.1486**		**3,372.5626**

3.5 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6437	15.4214	11.7878	0.0193		0.8529	0.8529		0.7893	0.7893	0.0000	1,846.0070	1,846.0070	0.5731		1,860.3333
Total	**1.6437**	**15.4214**	**11.7878**	**0.0193**		**0.8529**	**0.8529**		**0.7893**	**0.7893**	**0.0000**	**1,846.0070**	**1,846.0070**	**0.5731**		**1,860.3333**

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	0.0964	3.3995	0.7189	9.3900e-003	0.2821	0.0110	0.2931	0.0754	0.0105	0.0859		1,014.9076	1,014.9076	0.0724		1,016.7175
Vendor	0.0275	0.8386	0.2229	2.0000e-003	0.0512	4.2200e-003	0.0554	0.0147	4.0400e-003	0.0188		213.2103	213.2103	0.0148		213.5804
Worker	0.9869	0.6660	7.3618	0.0215	2.2355	0.0170	2.2525	0.5929	0.0156	0.6085		2,140.7299	2,140.7299	0.0614		2,142.2648
Total	**1.1108**	**4.9041**	**8.3036**	**0.0329**	**2.5689**	**0.0322**	**2.6010**	**0.6830**	**0.0302**	**0.7132**		**3,368.8477**	**3,368.8477**	**0.1486**		**3,372.5626**

3.6 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	1.5965	15.2039	13.7390	0.0203		0.9179	0.9179		0.8479	0.8479		1,915.6818	1,915.6818	0.5863		1,930.3390
Paving	3.7400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6002**	**15.2039**	**13.7390**	**0.0203**		**0.9179**	**0.9179**		**0.8479**	**0.8479**		**1,915.6818**	**1,915.6818**	**0.5863**		**1,930.3390**

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	0.1228	4.3314	0.9160	0.0120	0.2746	0.0140	0.2886	0.0753	0.0134	0.0886		1,293.1255	1,293.1255	0.0922		1,295.4315
Vendor	0.0103	0.3145	0.0836	7.5000e-004	0.0192	1.5800e-003	0.0208	5.5300e-003	1.5100e-003	7.0400e-003		79.9538	79.9538	5.5500e-003		80.0926
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	**0.1825**	**4.6792**	**1.3677**	**0.0138**	**0.4056**	**0.0164**	**0.4220**	**0.1104**	**0.0157**	**0.1261**		**1,480.1158**	**1,480.1158**	**0.1009**		**1,482.6374**

3.6 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5965	15.2039	13.7390	0.0203		0.9179	0.9179		0.8479	0.8479	0.0000	1,915.6818	1,915.6818	0.5863		1,930.3390
Paving	3.7400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6002**	**15.2039**	**13.7390**	**0.0203**		**0.9179**	**0.9179**		**0.8479**	**0.8479**	**0.0000**	**1,915.6818**	**1,915.6818**	**0.5863**		**1,930.3390**

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	0.1228	4.3314	0.9160	0.0120	0.2746	0.0140	0.2886	0.0753	0.0134	0.0886		1,293.1255	1,293.1255	0.0922		1,295.4315
Vendor	0.0103	0.3145	0.0836	7.5000e-004	0.0192	1.5800e-003	0.0208	5.5300e-003	1.5100e-003	7.0400e-003		79.9538	79.9538	5.5500e-003		80.0926
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	**0.1825**	**4.6792**	**1.3677**	**0.0138**	**0.4056**	**0.0164**	**0.4220**	**0.1104**	**0.0157**	**0.1261**		**1,480.1158**	**1,480.1158**	**0.1009**		**1,482.6374**

3.7 Architectural Coating - 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					
Archit. Coating	15.8914					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1615	1.1226	1.2210	1.9800e-003		0.0740	0.0740		0.0740	0.0740		187.6320	187.6320	0.0145		187.9952
Total	**16.0529**	**1.1226**	**1.2210**	**1.9800e-003**		**0.0740**	**0.0740**		**0.0740**	**0.0740**		**187.6320**	**187.6320**	**0.0145**		**187.9952**

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	0.0197	0.0133	0.1472	4.3000e-004	0.0447	3.4000e-004	0.0451	0.0119	3.1000e-004	0.0122		42.8146	42.8146	1.2300e-003		42.8453
Total	**0.0197**	**0.0133**	**0.1472**	**4.3000e-004**	**0.0447**	**3.4000e-004**	**0.0451**	**0.0119**	**3.1000e-004**	**0.0122**		**42.8146**	**42.8146**	**1.2300e-003**		**42.8453**

3.7 Architectural Coating - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	15.8914					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1615	1.1226	1.2210	1.9800e-003		0.0740	0.0740		0.0740	0.0740	0.0000	187.6320	187.6320	0.0145		187.9952
Total	**16.0529**	**1.1226**	**1.2210**	**1.9800e-003**		**0.0740**	**0.0740**		**0.0740**	**0.0740**	**0.0000**	**187.6320**	**187.6320**	**0.0145**		**187.9952**

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	0.0197	0.0133	0.1472	4.3000e-004	0.0447	3.4000e-004	0.0451	0.0119	3.1000e-004	0.0122		42.8146	42.8146	1.2300e-003		42.8453
Total	**0.0197**	**0.0133**	**0.1472**	**4.3000e-004**	**0.0447**	**3.4000e-004**	**0.0451**	**0.0119**	**3.1000e-004**	**0.0122**		**42.8146**	**42.8146**	**1.2300e-003**		**42.8453**

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	0.0140	0.0790	0.2033	7.7000e-004	0.0656	6.3000e-004	0.0663	0.0176	5.9000e-004	0.0182		78.1523	78.1523	3.7800e-003		78.2468
Unmitigated	0.0140	0.0790	0.2033	7.7000e-004	0.0656	6.3000e-004	0.0663	0.0176	5.9000e-004	0.0182		78.1523	78.1523	3.7800e-003		78.2468

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	6.97	1.32	0.68	23,312	23,312
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	6.97	1.32	0.68	23,312	23,312

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
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	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
General Light Industry	0.548858	0.043235	0.200706	0.120309	0.016131	0.005851	0.021034	0.033479	0.002070	0.001877	0.004817	0.000707	0.000925
Other Asphalt Surfaces	0.548858	0.043235	0.200706	0.120309	0.016131	0.005851	0.021034	0.033479	0.002070	0.001877	0.004817	0.000707	0.000925

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	8.0200e-003	0.0729	0.0613	4.4000e-004		5.5400e-003	5.5400e-003		5.5400e-003	5.5400e-003		87.5101	87.5101	1.6800e-003	1.6000e-003	88.0301
NaturalGas Unmitigated	8.0200e-003	0.0729	0.0613	4.4000e-004		5.5400e-003	5.5400e-003		5.5400e-003	5.5400e-003		87.5101	87.5101	1.6800e-003	1.6000e-003	88.0301

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					
General Light Industry	743.836	8.0200e-003	0.0729	0.0613	4.4000e-004		5.5400e-003	5.5400e-003		5.5400e-003	5.5400e-003		87.5101	87.5101	1.6800e-003	1.6000e-003	88.0301
Other Asphalt Surfaces	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		**8.0200e-003**	**0.0729**	**0.0613**	**4.4000e-004**		**5.5400e-003**	**5.5400e-003**		**5.5400e-003**	**5.5400e-003**		**87.5101**	**87.5101**	**1.6800e-003**	**1.6000e-003**	**88.0301**

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					
General Light Industry	0.743836	8.0200e-003	0.0729	0.0613	4.4000e-004		5.5400e-003	5.5400e-003		5.5400e-003	5.5400e-003		87.5101	87.5101	1.6800e-003	1.6000e-003	88.0301
Other Asphalt Surfaces	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		**8.0200e-003**	**0.0729**	**0.0613**	**4.4000e-004**		**5.5400e-003**	**5.5400e-003**		**5.5400e-003**	**5.5400e-003**		**87.5101**	**87.5101**	**1.6800e-003**	**1.6000e-003**	**88.0301**

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	0.3717	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.4000e-004	4.4000e-004	0.0000		4.7000e-004
Unmitigated	0.3717	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.4000e-004	4.4000e-004	0.0000		4.7000e-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	0.0446					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.0000e-005	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.4000e-004	4.4000e-004	0.0000		4.7000e-004
Total	**0.3717**	**0.0000**	**2.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**4.4000e-004**	**4.4000e-004**	**0.0000**		**4.7000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0446					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.0000e-005	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		4.4000e-004	4.4000e-004	0.0000		4.7000e-004
Total	**0.3717**	**0.0000**	**2.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**4.4000e-004**	**4.4000e-004**	**0.0000**		**4.7000e-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

PAR 1135 - Boiler (3) to Turbine (3) Repower - South Coast AQMD Air District, Winter

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX C

CEQA Impact Evaluations – Assumptions and Calculations

APPENDIX C-1

CEQA Impact Evaluations – Assumptions and Calculations

Construction Summary

Appendix C
CEQA Construction Impact Evaluations - Assumptions and Calculations
(10/12/2018 rev)

Criteria Pollutant Emissions Summary

PAR 1135 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Facility 1	0.4	5.0	3.1	0.0	0.3	0.2
Facility 2	5.6	50.4	49.7	0.1	3.6	3.8
Facility 3	16.1	51.1	22.5	0.1	6.3	3.3
Facility 4	0.4	5.0	3.1	0.0	0.3	0.2
Facility 5	0.4	5.0	3.1	0.0	0.3	0.2
Facility 6	0.4	5.0	3.1	0.0	0.3	0.2
Peak Day - Worst Case Construction Emissions from each Facility	16.1	51.1	49.7	0.1	6.3	3.8
SIGNIFICACNE THRESHOLD FOR CONSTRUCTION	75	100	550	150	150	55

Notes:
1. The emissions are estimated using CalEEMod.
2. Construction activities at each Facility are expected to occur on different days in multiple stages.
3. This analysis is conservative as minimal overlap is expected to occur among the six affected facilities.

GHG Emissions Summary

PAR 1135 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr	Amortized CO2e (MT/yr)	
Facility 1	5.46	0.00	0.0	5.50		
Facility 2	8.57	0.00	0.0	8.61		
Facility 3	761	0.12	0.0	764		
Facility 4	1.4	0.0	0.0	1.4		
Facility 5	6.8	0.0	0.0	6.9		
Facility 6	1.4	0.0	0.0	1.4		
Total Emissions During Construction	784	0	0	787	26.2	Total GHG Emissions Amortized over 30 Years

Notes:
1. The emissions are estimated using CalEEMod.

Gasoline Fuel Usage Estimations Summary

Category	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
Facility 1	17.9			
Facility 2	35			
Facility 3	597			
Facility 4	17.9			
Facility 5	17.9			
Facility 6	17.9			
Total	703	0.000703022	6,997	0.00001%

Diesel Fuel Usage Estimations Summary

Category	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
Facility 1	28.4			
Facility 2	647			
Facility 3	76,462			
Facility 4	28.4			
Facility 5	28.4			
Facility 6	28.4			
Total	77,223	0.077222804	749	0.0103%

APPENDIX C-2

CEQA Impact Evaluations – Assumptions and Calculations

Operations Summary

Appendix C
CEQA Operational Impact Evaluations - Assumptions and Calculations
(10/12/2018 rev)

Emissions Summary - Operations

PAR 1135 Requirement	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	
Facility 1	0.34	0.52	0.03	0.02	0.08	0.00	0.54	0.00	0.00	0.54	
Facility 3	0.34	0.52	0.03	0.02	0.08	0.00	2.68	0.00	0.00	2.68	
Facility 4	0.34	0.52	0.03	0.02	0.08	0.00	0.13	0.00	0.00	0.13	
Facility 5	0.34	0.52	0.03	0.02	0.08	0.00	0.98	0.00	0.00	0.98	
Facility 6	0.34	0.52	0.03	0.02	0.08	0.00	0.13	0.00	0.00	0.13	
Daily Peak Construction Emissions	1.35	2.08	0.14	0.08	0.31	0.01	4.46	0.00	0.00	4.46	0.15 Amortized over 30 Years
SIGNIFICACNE THRESHOLD FOR OPERATION	550	55	150	55	55	150					

Note
1. Facility 2 is assumed to not create any new operational impacts.

Diesel Fuel Usage Estimations Summary

Category	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
Facility 1	205			
Facility 2	-			
Facility 3	1026			
Facility 4	68			
Facility 5	376			
Facility 6	68			
Total	1744	0.00174359	749	0.0002%

GHG Emissions Summary

PAR 1135 Requirement	CO2e, MT/yr	Amortized CO2e (MT/yr)	
Facility 1	0.1		
Facility 2	-		
Facility 3	0.1		
Facility 4	0.1		
Facility 5	0.1		
Facility 6	0.1		
Total Emissions During Operation	0.4	0.01	Total GHG Emissions Amortized over 30 Years

Notes:
1. The emissions are estimated using CalEEMod.

APPENDIX C-3

CEQA Impact Evaluations – Assumptions and Calculations

Construction (Facility 1)

Appendix C-3
CEQA Construction Impact Evaluations - Facility 1
(9/6/2018 rev)

Criteria Pollutant Emissions - Facility 1 SCR Catalyst Replacement

PAR 1135 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
1 SCR Catalyst Replacement	0.4	5.0	3.1	0.0	0.3	0.2
4 SCR Catalyst Replacement	1.7	20.2	12.2	0.0	1.1	0.9
Daily Peak Construction Emissions	0.4	5.0	3.1	0.0	0.3	0.2
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 - Facility 1 SCR Catalyst Replacement

PAR 1135 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr	
1 SCR Catalyst Replacement	1.36	0.00	0.00	1.37	
4 SCR Catalyst Replacement	5.5	0.0	0.0	5.5	
Total Emissions During Construction	5.5	0.0	0.0	5.5	0.18 Amortized Over 30 Years

Notes:
1. The emissions are estimated using CalEEMod.

Gasoline Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
LDA/LDT1/LDT2				21.6	4.1			
MDT				6.6	13.8			
				TOTAL	17.9	1.78685E-05	6,997	0.0000026% Gasoline

Diesel Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
HDT				5.85	6.84			
				TOTAL	6.84	6.83819E-06	749	0.0000009% Diesel

Diesel Fuel Usage Estimations

Off-Road Equipment Type	Amount	Daily Usage Hours	HP	gal/hr	gals	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
Forklift	1	4	89	0.85	3.4			
Aerial Lift	1	4	97	1.23	4.9			
Cranes	1	4	231	3.30	13.2			
				TOTAL	21.6	2.15659E-05	749	0.0000029% Diesel

References:
National Highway Traffic Safety Administration (NHTSA) vocational vehicle standards, https://www.dieselnet.com/standards/us/fe_hd.php
EPA Fuel Economy report: https://www.epa.gov/fueleconomy/trends-report
California Annual Retail Fuel Outlet Report Results (CEC-A15) Spreadsheets http://www.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html
U.S. Department of Energy, Average Fuel Economy of Major Vehicle Categories. https://www.afdc.energy.gov/data/10310
Fuel estimates (gal/hr) from EMFAC2017.

APPENDIX C-4

CEQA Impact Evaluations – Assumptions and Calculations

Operation (Facility 1)

Appendix C-4
CEQA Impact Evaluations - Assumptions and Calculations
(9/6/2018 rev)

Operational Emissions Summary - Facility 1

PAR 1135	CO, lb/day	NOx, lb/day	PM10, lb/day	PM2.5, lb/day	VOC, lb/day	SOX, lb/day
Increased Delivery Trucks	0.34	0.52	0.03	0.02	0.08	0.00
Total	0.34	0.52	0.03	0.02	0.08	0.00

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	0.54	0.00	0.00	0.54
Total	0.34	0.52	0.03	0.02	0.08	0.00	0.54	0.00	0.00	0.54

All sites	
Max. # used/day	Max. # day used/yr
1	6

Note:
1. Peak daily trips assume one new ammonia delivery occurs at Facility 1. Truck trip distances to deliver ammonia are assumed to be 100 miles round-trip
2. No additional employees are anticipated to be needed to operate the replaced SCR catalyst; the existing work force at Facility 1 is expected to be sufficient. As such, no workers' travel emissions are anticipated from the operation of the replaced SCR catalyst.
3. It is assumed medium-heavy duty diesel instate construction trucks would be used to deliver ammonia and catalyst.

Delivery Trucks (Ammonia and Catalyst) - T6 instate construction heavy (T6) - each

	CO	NOx	PM10	PM2.5	VOC	SOX	CO2	CH4	N2O	CO2e
lb/mile	0.0034	0.0052	0.0003	0.0002	0.0008	0.00002	1.97	0.00		1.97
lb/day, MT/day for GHG	0.34	0.52	0.03	0.02	0.08	0.002	0.09	0.00	0.00	0.09
										0.0030

VMT, mile/day
100.0

Emission Factors: from EMFAC2017, EPA AP-42 .

0.0030 Amortized over 30 Years

Diesel Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
HDT				5.9	205			
				TOTAL	205	0.000205128	749	0.000274% Diesel

References:

National Highway Traffic Safety Administration (NHTSA) vocational vehicle standards, https://www.dieselnet.com/standards/us/fe_hd.php

EPA Fuel Economy report: https://www.epa.gov/fueleconomy/trends-report

California Annual Retail Fuel Outlet Report Results (CEC-A15) Spreadsheets http://www.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html

U.S. Department of Energy, Average Fuel Economy of Major Vehicle Categories. https://www.afdc.energy.gov/data/10310

APPENDIX C-5

CEQA Impact Evaluations – Assumptions and Calculations

Construction (Facility 2)

Appendix C-5
CEQA Construction Impact Evaluations - Facility 2
(9/6/2018 rev)

Emissions Summary - Facility 2

PAR 1135 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
1 Engine Demolition and Installation	4.3	40	27	0.1	3.4	2.3
Daily Peak Construction Emissions	4.3	40	27	0.1	3.4	2.3
SIGNIFICACNE THRESHOLD FOR CONSTRUCTION	75	100	550	150	150	55

Notes:
1. The emissions are estimated using CalEEMod.
2. Equipment demolition and installation is expected to occur on different days in multiple stages.
3. This analysis is conservative as minimal overlap is expected to occur among the installation of each internal combustion engine.

GHG Emissions Summary - Facility 2

PAR 1135 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr		
1 Engine Installation	3.38	0.00	0.000	3.40		
Total Emissions During Construction	3.38	0.00	0.00	3.40	0.11329	Amortized over 30 Years

Notes:
1. The emissions are estimated using CalEEMod.

Gasoline Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption							
	gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
LDA/LDT1/LDT2				21.6	24.5			
MDT				6.6	10.4			
				TOTAL	34.8	3.48456E-05	6,997	0.0000050% Gasoline

Diesel Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption							
	gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
HDT				5.85	34.19			
				TOTAL	34.19	3.41909E-05	749	0.0000046% Diesel

Diesel Fuel Usage Estimations

Off-Road Equipment Type	Amount	Daily Usage Hours	HP	gal/hr	gal	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
Concrete/Industrial Saws	1	8	81	1.39	11.1			
Cranes	1	7	81	1.31	9.2			
Cranes	1	7	231	3.30	23.1			
Forklifts	6	7	97	0.85	35.9			
Generator Sets	2	7	84	1.40	19.6			
Rubber Tired Dozers	1	1	247	4.40	4.4			
Rubber Tired Loaders	2	7	247	3.88	54.3			
Tractors/Loaders/Backhoes	4	8	97	1.59	50.9			
Cement and Mortar Mixers	1	3	9	0.33	1.0			
Pavers	1	4	130	3.38	13.5			
Paving Equipment	1	4	132	2.67	10.7			
Rollers	1	2	80	1.69	3.4			
				TOTAL	237	0.000237127	749	0.000032% Diesel

References:
National Highway Traffic Safety Administration (NHTSA) vocational vehicle standards, https://www.dieselnet.com/standards/us/fe_hd.php
EPA Fuel Economy report: https://www.epa.gov/fueleconomy/trends-report
California Annual Retail Fuel Outlet Report Results (CEC-A15) Spreadsheets http://www.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html
U.S. Department of Energy, Average Fuel Economy of Major Vehicle Categories. https://www.afdc.energy.gov/data/10310
Fuel estimates (gal/hr) from EMFAC2017.

Appendix C-5
CEQA Construction Impact Evaluations - Facility 2
(9/6/2018 rev)

Emissions Summary - Facility 2: Barge Emissions

by Engine Type	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Main Engine	1.2	9.5	14	0.08	0.17	1.46
Auxiliary Engines (2)	0.1	0.7	8.2	0.02	0.02	0.02
Daily Peak Construction Emissions	1.3	10	22	0.10	0.19	1.47
SIGNIFICACNE THRESHOLD FOR CONSTRUCTION	75	100	550	150	150	55

Hours/Day
8

Notes:

1. The main and auxiliary engine emissions for VOC, NOx, and PM10 are estimated using The Carl Moyer Program Guidelines 2017 Revisions: Appendix C: Cost-Effectiveness Calculation Methodology: Formula C-6 Estimated Annual Emissions Based on Hours of Operation (tons/yr)
2. The main and auxiliary engine emissions for CO, SOx, and PM2.5 are estimated using the SMAQMD Harbor craft, Dredge and Barge Emission Factor Calculator
3. Peak daily trips assume one round trip between the Port of Los Angeles and Avalon, approximately a distance of 22 miles each way or four hours per trip.
4. Both engines use diesel fuel.

GHG Emissions Summary - Facility 2: Barge Emissions

PAR 1135 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr		
Main Engine	4.26	0.00	0.00	4.28		
Auxiliary Engines (2)	0.93	0.00	0.00	0.93		
Total Emissions During Construction	5.19	0.00	0.00	5.21	0.1736696	Amortized over 30 Years

Notes:

1. The main and auxiliary engine emissions for CO2, CH4, N2O, and CO2e are estimated using the SMAQMD Harbor craft, Dredge and Barge Emission Factor Calculator

Diesel Fuel Usage Estimations

Category					gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
Main Engine					348			
Auxiliary Engines (2)					28			
				TOTAL	376	0.000375961	749	0.000050%
								Diesel

Notes

1. The total barge diesel fuel consumption is estimated by using the engine fuel use equation from Appendix A: Emission Calculations - Final Negative Declartion for: Petro-Diamond Terminal Company Marine Terminal Permit Modification Project, July 2008

APPENDIX C-6

CEQA Impact Evaluations – Assumptions and Calculations

Construction (Facility 3)

Appendix C-6
CEQA Construction Impact Evaluations - Facility 3
(9/6/2018 rev)

Emissions Summary - Facility 3

PAR 1135 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
3 Boiler to 3 Turbine Repower	16	51	22	0.1	6.3	3.3
Daily Peak Construction Emissions	16	51	22	0.1	6.3	3.3
SIGNIFICACNE THRESHOLD FOR CONSTRUCTION	75	100	550	150	150	55

Notes:
1. The emissions are estimated using CalEEMod.
2. Equipment demolition and installation is expected to occur on different days in multiple stages.

GHG Emissions Summary

PAR 1135 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr	
3 Boiler to 3 Turbine Repower	761	0.1	0.0	764	
Total Emissions During Construction	761	0.1	0.0	764	25.4549267 Amortized over 30 Years

Notes:
1. The emissions are estimated using CalEEMod.

Gasoline Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
LDA/LDT1/LDT2				21.64	404			
MDT				6.64	193			
					597	0.000596703	6,997	0.0000085%

Diesel Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
HDT				5.85	76,041			
				TOTAL	76,041	0.076040654	749	0.01015% Diesel

References:
National Highway Traffic Safety Administration (NHTSA) vocational vehicle standards, https://www.dieselnet.com/standards/us/fe_hd.php
EPA Fuel Economy report: https://www.epa.gov/fueleconomy/trends-report
California Annual Retail Fuel Outlet Report Results (CEC-A15) Spreadsheets http://www.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html

Diesel Fuel Usage Estimations

Off-Road Equipment Type	Amount	Daily Usage Hours	HP	gal/hr	gals	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
Concrete/Industrial Saws	1	8	81	1.4	11.1			
Cranes	1	3	231	3.3	9.9			
Excavators	2	3	247	4.3	25.9			
Forklifts	2	2	97	0.9	3.4			
Graders	1	1	187	4.6	4.6			
Other General Industrial Equipment	2	2	97	1.4	5.5			
Rollers	1	1	80	1.7	1.7			
Rubber Tired Dozers	2	3	247	4.4	26.4			
Tractors/Loaders/Backhoes	2	4	97	1.6	12.7			
Tractors/Loaders/Backhoes	2	3	200	3.9	23.7			
Concrete/Industrial Saws	1	8	81	1.4	11.1			
Excavators	2	3	81	4.3	25.9			
Graders	1	4	247	4.6	18.4			
Rollers	1	4	97	1.7	6.8			
Rubber Tired Dozers	1	4	247	4.4	17.6			
Tractors/Loaders/Backhoes	1	4	200	3.9	15.8			
Tractors/Loaders/Backhoes	2	3	97	1.6	9.5			
Cranes	2	3	97	1.3	7.8			
Cranes	2	1	250	3.3	6.6			
Cranes	2	1	500	5.5	11.0			
Excavators	2	1	99	4.3	8.6			
Forklifts	2	6	89	0.9	10.3			
Other Construction Equipment	2	1	350	8.2	16.4			
Rollers	1	1	80	1.7	1.7			
Rollers	1	1	65	1.4	1.4			
Rubber Tired Loaders	2	2	147	2.8	11.2			
Rubber Tired Loaders	1	2	140	2.8	5.6			
Tractors/Loaders/Backhoes	1	1	79	1.6	1.6			
Tractors/Loaders/Backhoes	2	1	97	1.6	3.2			
Welders	1	4	35	1.2	4.8			
Welders	1	4	38	1.2	4.8			
Aerial Lifts	1	1	9	0.8	0.8			
Cement and Mortar Mixers	4	6	9	0.3	7.9			
Cranes	1	4	130	2.2	8.7			
Forklifts	1	3	80	0.9	2.6			
Pavers	2	5	97	1.7	17.3			
Paving Equipment	2	5	132	2.7	26.7			
Rollers	2	5	80	1.7	16.9			
Tractors/Loaders/Backhoes	1	7	97	1.6	11.1			
Air Compressors	1	4	78	1.0	4.1			
				TOTAL	421	0.000421254	749	0.0000562% Diesel

References:

Fuel estimates (gal/hr) from EMFAC2017.

APPENDIX C-7

CEQA Impact Evaluations – Assumptions and Calculations

Operation (Facility 3)

Appendix C-7
CEQA Impact Evaluations - Assumptions and Calculations
(9/6/2018 rev)

Operational Emissions Summary - Facility 3

PAR 1135	CO, lb/day	NOx, lb/day	PM10, lb/day	PM2.5, lb/day	VOC, lb/day	SOX, lb/day
Increased Delivery Trucks	0.34	0.52	0.03	0.02	0.08	0.00
Total	0.34	0.52	0.03	0.02	0.08	0.00

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	2.68	0.00	0.00	2.68
Total	0.34	0.52	0.03	0.02	0.08	0.00	2.68	0.00	0.00	2.68

All sites	
Max. # used/day	Max. # day used/yr
1	30

Note:
1. Peak daily trips assume one new delivery (ammonia or catalyst) occurs at Facility 3. Truck trip distances for deliveries are assumed to be 100 miles round-tr
2. No additional employees are anticipated to be needed to operate the new turbines, SCRs, or new ammonia tank; the existing work force at Facility 3 is expected to be sufficient. As such, no workers' travel emissions are anticipated from the operation of the new turbines, SCRs, and ammonia ta
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	0.0000	1.97	0.00		1.97
lb/day, MT/day for GHG	0.3379	0.5189	0.0348	0.0201	0.0771	0.0019	0.09	0.00	0.00	0.09

VMT, mile/day
100.0

Emission Factors: from EMFAC2017, EPA AP-42 . 0.0030 Amortized over 30 Years

Diesel Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
HDT				5.9	1026			
				TOTAL	1026	0.00102564	749	0.00137%
								Diesel

References:
National Highway Traffic Safety Administration (NHTSA) vocational vehicle standards, https://www.dieselnet.com/standards/us/fe_hd.php
EPA Fuel Economy report: https://www.epa.gov/fueleconomy/trends-report
California Annual Retail Fuel Outlet Report Results (CEC-A15) Spreadsheets http://www.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html
U.S. Department of Energy, Average Fuel Economy of Major Vehicle Categories. https://www.afdc.energy.gov/data/10310

APPENDIX C-8

CEQA Impact Evaluations – Assumptions and Calculations

Construction (Facility 4)

Appendix C
CEQA Construction Impact Evaluations - Facility 4
(10/12/2018 rev)

Criteria Pollutant Emissions - Facility 4 SCR Catalyst Replacement

PAR 1135 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
1 SCR Catalyst Replacement	0.4	5.0	3.1	0.0	0.3	0.2
Daily Peak Construction Emissions	0.4	5.0	3.1	0.0	0.3	0.2
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 - Facility 4 SCR Catalyst Replacement

PAR 1135 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr		
1 SCR Catalyst Replacement	1.36	0.00	0.00	1.37		
Total Emissions During Construction	1.4	0.0	0.0	1.4	0.05	Amortized Over 30 Years

Notes:
1. The emissions are estimated using CalEEMod.

Gasoline Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
LDA/LDT1/LDT2				21.6	4.1			
MDT				6.6	13.8			
				TOTAL	17.9	1.78685E-05	6,997	0.0000026% Gasoline

Diesel Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
HDT				5.85	6.84			
				TOTAL	6.84	6.83819E-06	749	0.0000009% Diesel

Diesel Fuel Usage Estimations

Off-Road Equipment Type	Amount	Daily Usage Hours	HP	gal/hr	gals	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
Forklift	1	4	89	0.85	3.4			
Aerial Lift	1	4	97	1.23	4.9			
Cranes	1	4	231	3.30	13.2			
				TOTAL	21.6	2.15659E-05	749	0.0000029% Diesel

References:
National Highway Traffic Safety Administration (NHTSA) vocational vehicle standards, https://www.dieselnet.com/standards/us/fe_hd.php
EPA Fuel Economy report: https://www.epa.gov/fueleconomy/trends-report
California Annual Retail Fuel Outlet Report Results (CEC-A15) Spreadsheets http://www.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html
U.S. Department of Energy, Average Fuel Economy of Major Vehicle Categories. https://www.afdc.energy.gov/data/10310
Fuel estimates (gal/hr) from EMFAC2017.

APPENDIX C-9

CEQA Impact Evaluations – Assumptions and Calculations

Operation (Facility 4)

Appendix C
CEQA Impact Evaluations - Assumptions and Calculations
(10/12/2018 rev)

Operational Emissions Summary - Facility 4

PAR 1135	CO, lb/day	NOx, lb/day	PM10, lb/day	PM2.5, lb/day	VOC, lb/day	SOX, lb/day
Increased Delivery Trucks	0.34	0.52	0.03	0.02	0.08	0.00
Total	0.34	0.52	0.03	0.02	0.08	0.00

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	All sites Max. # used/day	All sites Max. # day used/yr
Diesel Delivery Trucks (T6 Construction Truck)	0.34	0.52	0.03	0.02	0.08	0.00	0.13	0.00	0.00	0.13	1	2
Total	0.34	0.52	0.03	0.02	0.08	0.00	0.13	0.00	0.00	0.13		

Note:
1. Peak daily trips assume one new ammonia delivery occurs at Facility 4. Truck trip distances to deliver ammonia are assumed to be 100 miles round-trip.
2. No additional employees are anticipated to be needed to operate the replaced SCR catalyst; the existing work force at Facility 4 is expected to be sufficient. As such, no workers' travel emissions are anticipated from the operation of the replaced SCR catalyst.
3. It is assumed medium-heavy duty diesel instate construction trucks would be used to deliver ammonia and catalyst.

Delivery Trucks (Ammonia and Catalyst) - T6 instate construction heavy (T6) - each

	CO	NOx	PM10	PM2.5	VOC	SOX	CO2	CH4	N2O	CO2e	VMT, mile/day
lb/mile	0.0034	0.0052	0.0003	0.0002	0.0008	0.00002	1.97	0.00		1.97	100.0
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	
Emission Factors: from EMFAC2017, EPA AP-42							.			0.0030	Amortized over 30 Years

Diesel Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
HDT				5.9	68			
				TOTAL	68	6.8376E-05	749	0.000091% Diesel

References:
National Highway Traffic Safety Administration (NHTSA) vocational vehicle standards, https://www.dieselnet.com/standards/us/fe_hd.php
EPA Fuel Economy report: https://www.epa.gov/fueleconomy/trends-report
California Annual Retail Fuel Outlet Report Results (CEC-A15) Spreadsheets http://www.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html
U.S. Department of Energy, Average Fuel Economy of Major Vehicle Categories. https://www.afdc.energy.gov/data/10310

APPENDIX C-10

CEQA Impact Evaluations – Assumptions and Calculations

Construction (Facility 5)

Appendix C
CEQA Construction Impact Evaluations - Facility 5
(10/12/2018 rev)

Criteria Pollutant Emissions - Facility 1 SCR Catalyst Replacement

PAR 1135 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
1 SCR Catalyst Replacement	0.4	5.0	3.1	0.0	0.3	0.2
7 SCR Catalyst Replacement	3.0	35.3	21.4	0.0	1.9	1.6
Daily Peak Construction Emissions	0.4	5.0	3.1	0.0	0.3	0.2
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 - Facility 1 SCR Catalyst Replacement

PAR 1135 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr		
1 SCR Catalyst Replacement	1.36	0.00	0.00	1.37		
7 SCR Catalyst Replacement	6.8	0.0	0.0	6.9		
Total Emissions During Construction	6.8	0.0	0.0	6.9	0.23	Amortized Over 30 Years

Notes:
1. The emissions are estimated using CalEEMod.

Gasoline Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
LDA/LDT1/LDT2				21.6	4.1			
MDT				6.6	13.8			
				TOTAL	17.9	1.78685E-05	6,997	0.0000026% Gasoline

Diesel Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
HDT				5.85	6.84			
				TOTAL	6.84	6.83819E-06	749	0.0000009% Diesel

Diesel Fuel Usage Estimations

Off-Road Equipment Type	Amount	Daily Usage Hours	HP	gal/hr	gals	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
Forklift	1	4	89	0.85	3.4			
Aerial Lift	1	4	97	1.23	4.9			
Cranes	1	4	231	3.30	13.2			
				TOTAL	21.6	2.15659E-05	749	0.0000029% Diesel

References:

National Highway Traffic Safety Administration (NHTSA) vocational vehicle standards, https://www.dieselnet.com/standards/us/fe_hd.php
EPA Fuel Economy report: https://www.epa.gov/fueleconomy/trends-report
California Annual Retail Fuel Outlet Report Results (CEC-A15) Spreadsheets http://www.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html
U.S. Department of Energy, Average Fuel Economy of Major Vehicle Categories. https://www.afdc.energy.gov/data/10310
Fuel estimates (gal/hr) from EMFAC2017.

APPENDIX C-11

CEQA Impact Evaluations – Assumptions and Calculations

Operation (Facility 5)

Appendix C
CEQA Impact Evaluations - Assumptions and Calculations
(10/12/2018 rev)

Operational Emissions Summary - Facility 5

PAR 1135	CO, lb/day	NOx, lb/day	PM10, lb/day	PM2.5, lb/day	VOC, lb/day	SOX, lb/day
Increased Delivery Trucks	0.34	0.52	0.03	0.02	0.08	0.00
Total	0.34	0.52	0.03	0.02	0.08	0.00

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	All sites Max. # used/day	All sites Max. # day used/yr
Diesel Delivery Trucks (T6 Construction Truck)	0.34	0.52	0.03	0.02	0.08	0.00	0.98	0.00	0.00	0.98	1	11
Total	0.34	0.52	0.03	0.02	0.08	0.00	0.98	0.00	0.00	0.98		

Note:
1. Peak daily trips assume one new ammonia delivery occurs at Facility 5. Truck trip distances to deliver ammonia are assumed to be 100 miles round-trip.
2. No additional employees are anticipated to be needed to operate the replaced SCR catalyst; the existing work force at Facility 1 is expected to be sufficient. As such, no workers' travel emissions are anticipated from the operation of the replaced SCR catalyst.
3. It is assumed medium-heavy duty diesel instate construction trucks would be used to deliver ammonia and catalyst.

Delivery Trucks (Ammonia and Catalyst) - T6 instate construction heavy (T6) - each

	CO	NOx	PM10	PM2.5	VOC	SOX	CO2	CH4	N2O	CO2e	VMT, mile/day
lb/mile	0.0034	0.0052	0.0003	0.0002	0.0008	0.00002	1.97	0.00		1.97	100.0
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	

Emission Factors: from EMFAC2017, EPA AP-42 . 0.0030 Amortized over 30 Years

Diesel Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
HDT				5.9	376			
				TOTAL	376	0.00037607	749	0.000502% Diesel

References:
National Highway Traffic Safety Administration (NHTSA) vocational vehicle standards, https://www.dieselnet.com/standards/us/fe_hd.php
EPA Fuel Economy report: https://www.epa.gov/fueleconomy/trends-report
California Annual Retail Fuel Outlet Report Results (CEC-A15) Spreadsheets http://www.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html
U.S. Department of Energy, Average Fuel Economy of Major Vehicle Categories. https://www.afdc.energy.gov/data/10310

APPENDIX C-12

CEQA Impact Evaluations – Assumptions and Calculations

Construction (Facility6)

Appendix C
CEQA Construction Impact Evaluations - Facility 6
(10/12/2018 rev)

Criteria Pollutant Emissions - Facility 6 SCR Catalyst Replacement

PAR 1135 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
1 SCR Catalyst Replacement	0.4	5.0	3.1	0.0	0.3	0.2
Daily Peak Construction Emissions	0.4	5.0	3.1	0.0	0.3	0.2
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 - Facility 6 SCR Catalyst Replacement

PAR 1135 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr		
1 SCR Catalyst Replacement	1.36	0.00	0.00	1.37		
Total Emissions During Construction	1.4	0.0	0.0	1.4	0.05	Amortized Over 30 Years

Notes:

1. The emissions are estimated using CalEEMod.

Gasoline Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
LDA/LDT1/LDT2				21.6	4.1			
MDT				6.6	13.8			
				TOTAL	17.9	1.78685E-05	6,997	0.0000026% Gasoline

Diesel Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
HDT				5.85	6.84			
				TOTAL	6.84	6.83819E-06	749	0.0000009% Diesel

Diesel Fuel Usage Estimations

Off-Road Equipment Type	Amount	Daily Usage Hours	HP	gal/hr	gals	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
Forklift	1	4	89	0.85	3.4			
Aerial Lift	1	4	97	1.23	4.9			
Cranes	1	4	231	3.30	13.2			
				TOTAL	21.6	2.15659E-05	749	0.0000029% Diesel

References:

National Highway Traffic Safety Administration (NHTSA) vocational vehicle standards, https://www.dieselnet.com/standards/us/fe_hd.php
EPA Fuel Economy report: https://www.epa.gov/fueleconomy/trends-report
California Annual Retail Fuel Outlet Report Results (CEC-A15) Spreadsheets http://www.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html
U.S. Department of Energy, Average Fuel Economy of Major Vehicle Categories. https://www.afdc.energy.gov/data/10310
Fuel estimates (gal/hr) from EMFAC2017.

APPENDIX C-13

CEQA Impact Evaluations – Assumptions and Calculations

Operation (Facility 6)

Appendix C
CEQA Impact Evaluations - Assumptions and Calculations
(10/12/2018 rev)

Operational Emissions Summary - Facility 6

PAR 1135	CO, lb/day	NOx, lb/day	PM10, lb/day	PM2.5, lb/day	VOC, lb/day	SOX, lb/day
Increased Delivery Trucks	0.34	0.52	0.03	0.02	0.08	0.00
Total	0.34	0.52	0.03	0.02	0.08	0.00

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	0.13	0.00	0.00	0.13
Total	0.34	0.52	0.03	0.02	0.08	0.00	0.13	0.00	0.00	0.13

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

Note:
1. Peak daily trips assume one new ammonia delivery occurs at Facility 4. Truck trip distances to deliver ammonia are assumed to be 100 miles round-trip.
2. No additional employees are anticipated to be needed to operate the replaced SCR catalyst; the existing work force at Facility 4 is expected to be sufficient. As such, no workers' travel emissions are anticipated from the operation of the replaced SCR catalyst.
3. It is assumed medium-heavy duty diesel instate construction trucks would be used to deliver ammonia and catalyst.

Delivery Trucks (Ammonia and Catalyst) - T6 instate construction heavy (T6) - each

	CO	NOx	PM10	PM2.5	VOC	SOX	CO2	CH4	N2O	CO2e
lb/mile	0.0034	0.0052	0.0003	0.0002	0.0008	0.00002	1.97	0.00		1.97
lb/day, MT/day for GHG	0.34	0.52	0.03	0.02	0.08	0.002	0.09	0.00	0.00	0.09

VMT, mile/day
100.0

Emission Factors: from EMFAC2017, EPA AP-42 . 0.0030 Amortized over 30 Years

Diesel Fuel Usage Estimations

Category	EPA/NHTSA Fuel Consumption gal/1,000 ton-mile	ton	1ton-m/g	mpg	gallon fuel consumed per year due to PAR 1135	mmgal	Baseline Year 2016 Estimated Basin Fuel Demand mmgal/yr	Total % Above Baseline
HDT				5.9	68			
				TOTAL	68	6.8376E-05	749	0.000091% Diesel

References:
National Highway Traffic Safety Administration (NHTSA) vocational vehicle standards, https://www.dieselnet.com/standards/us/fe_hd.php
EPA Fuel Economy report: https://www.epa.gov/fueleconomy/trends-report
California Annual Retail Fuel Outlet Report Results (CEC-A15) Spreadsheets http://www.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html
U.S. Department of Energy, Average Fuel Economy of Major Vehicle Categories. https://www.afdc.energy.gov/data/10310

APPENDIX D

PAR 1135 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?
4477	So Cal Edison Co	1 Pebbly Beach Rd. Avalon CA 90704	No	1720	150	No
14502	City of Vernon, Vernon Gas & Electric	4990 Seville Ave. Vernon CA 90058	No	830	340	No
17104	SCE, Norwalk	10601 E Firestone Blvd Norwalk CA 90650	No	280	<1	No
25638	Burbank City, Burbank Water & Power	164 W Magnolia Blvd Burbank CA 91502	Yes	500	180	No
51003	SCE, Ontario	13568B Hamner Ave. Ontario CA 91761	No	1000	630	No
51475	SCE, Stanton	10670 Dale Ave. Stanton CA 90680	No	50	20	No
56940	City Of Anaheim/Comb Turbine Gen Station	1144 N. Kraemer Blvd Anaheim CA 92806	No	1300	880	No
115314	Long Beach Generation, LLC	2665 Pier S Ln Long Beach CA 90802	Yes	1930	1930	No
115315	NRG California South LP, Etiwanda Gen St	8996 Etiwanda Ave Rancho Cucamonga CA 91739	Yes	2920	770	No
115389	AES Huntington Beach, LLC	21730 Newland St Huntington Beach CA 92646	Yes	570	570	No
115394	AES Alamitos, LLC	690 N Studebaker Rd Long Beach CA 90803	No	140	140	No
115536	AES Redondo Beach, LLC	1100 N Harbor Dr Redondo Beach CA 90277	Yes	760	40	No
115663	El Segundo Power, LLC	301 Vista Del Mar El Segundo CA 90245	Yes	1600	700	Yes
127299	Wildflower Energy LP/Indigo Gen., LLC	63500 19th Ave North Palm Springs CA 92258	No	5300	1280	No
128243	Burbank City, Burbank Water & Power, SCPPA	164 W Magnolia Blvd Burbank CA 91502-1720	Yes	500	180	No
129810	City of Riverside Public Utilities Dept	2221 Eastridge Ave. Riverside CA 92507	No	920	520	No
129816	Inland Empire Energy Center, LLC	26226 Antelope Road Menifee CA 92585	No	120	240	No
139796	City of Riverside Public Utilities Dept	5901 Payton Riverside CA 92504	No	890	690	No
146536	Walnut Creek Energy, LLC	911 Bixby Dr City Of Industry CA 91745	Yes	770	320	No
149620	SCE, Rancho Cucamonga	12408 6th Street Rancho Cucamonga CA 91739	Yes	2570	1240	No
152707	Sentinel Energy Center LLC	15775 Melissa Lane Road North Palm Springs CA 92258	No	5480	720	No
153992	City of Anaheim / Canyon Power Plant	3071 E Miraloma Ave. Anaheim CA 92806	No	580	580	No
155474	Bicent (California) Malburg LLC	4963 S Soto St Vernon CA 90058-2911	No	810	750	No
160437	Southern California Edison	2492 W San Bernardino Ave Redlands CA 92374	Yes	780	20	No
172077	City of Colton	2040 Agua Mansa Rd Colton CA 92324	No	2810	1160	No
800074	LA City, DWP Haynes Generating Station	6801 2nd Street Long Beach CA 90803	No	690	50	No
800075	LA City, DWP Scattergood Generating Stn	12700 Vista Del Mar Playa Del Rey CA 90293	No	500	<1	Yes
800168	Pasadena City, DWP	72 E Glenarm St Pasadena CA 91105-3418	Yes	30	30	No
800170	LA City, DWP Harbor Generating Station	161 N Island Ave Wilmington CA 90744	No	30	30	No
800193	LA City, DWP Valley Generating Station	11801 Sheldon Street Sun Valley CA 91352	Yes	500	80	Yes
800327	Glendale City, Glendale Water And Power	800 Air Way Glendale CA 91201	No	820	60	No

Note: Distances between facilities and sensitive receptors were estimated using Google Maps from parcel line to parcel line and were rounded to the nearest tenth.

Appendix D: NAICS Codes for PAR 1135 Affected Industry

Description of Industry	NAICS Codes	Number of Units
Electric power generation, fossil fuel (e.g., coal, oil, gas)	221112	31

APPENDIX E

Hazards Analysis

RMP*Comp

RMP*Comp

Estimated Distance Calculation

Estimated distance to toxic endpoint: 0.1 miles (0.2 kilometers)

This is the downwind distance to the toxic endpoint specified for this regulated substance under the RMP Rule. Report all distances shorter than 0.1 mile as 0.1 mile, and all distances longer than 25 miles as 25 miles.

Scenario Summary

Chemical: Ammonia (water solution)

Initial concentration: 20 %

CAS number: 7664-41-7

Threat type: Toxic Liquid

Scenario type: Worst-case

Liquid temperature: 77 F

Quantity released: 12000 gallons

Mitigation measures:

Diked area: 519.75 square feet

Dike height: 4.5 feet

Release rate to outside air: 10.9 pounds per minute

Surrounding terrain type: Urban surroundings (many obstacles in the immediate area)

Toxic endpoint: 0.14 mg/L; basis: ERPG-2

Assumptions about this scenario

Wind speed: 1.5 meters/second (3.4 miles/hour)

Stability class: F

Air temperature: 77 degrees F (25 degrees C)

https://cdxnodengn.epa.gov/cdx-rmp-maintain/action/rmp-comp/toxicLiquid

APPENDIX F

Comment Letter Received on the Draft Mitigated SEA and Response to Comment

Comment Letter #1: Victoria Martin/Augustine Band of Cahuilla Indians

Comment Letter #1

AUGUSTINE BAND OF CAHUILLA INDIANS
PO Box 846 84-481 Avenue 54 Coachella CA 92236
Telephone: (760) 398-4722
Fax (760) 369-7161
Tribal Chairperson: Amanda Vance
Tribal Vice-Chairperson: William Vance
Tribal Secretary: Victoria Martin

September 24, 2018

Ryan Banuelos
South Coast AQMD
21865 Copley Drive
Diamond Bar, CA 91765

Re: **Notice of Completion of a draft mitigated subsequent environmental assessment and Opportunity for public comment**
PROJECT TITLE: Proposed Amended Rule 1135- Emissions of Oxides of Nitrogen From Electricity Generating Facilities

Dear Mr. Banuelos–

Thank you for the opportunity to offer input concerning the development of the above-identified project. We appreciate your sensitivity to the cultural resources that may be impacted by your project, and the importance of these cultural resources to the Native American peoples that have occupied the land surrounding the area of your project for thousands of years. Unfortunately, increased development and lack of sensitivity to cultural resources has resulted in many significant cultural resources being destroyed or substantially altered and impacted. Your invitation to consult on this project is greatly appreciated.

At this time we are unaware of specific cultural resources that may be affected by the proposed 1-1
project. We encourage you to contact other Native American Tribes and individuals within the immediate vicinity of the project site that may have specific information concerning cultural resources that may be located in the area. We also encourage you to contract with a monitor who is qualified in Native American cultural resources identification and who is able to be present on-site full-time during the pre-construction and construction phase of the project. Please notify us immediately should you discover any cultural resources during the development of this project.

Very truly yours,

Victoria Martin
Tribal Secretary

Response to Comment Letter #1

Response 1-1
As part of releasing the Draft Mitigated SEA for public review and comment, the SCAQMD also provided a formal notice of the proposed project to all California Native American Tribes (Tribes) that requested to be on the Native American Heritage Commission's (NAHC) notification list. This notice provided an opportunity for Tribes to request a consultation with the SCAQMD in accordance with the requirements in Public Resources Code Section 21080.3.1. The SCAQMD did not receive any consultation requests from Tribes relative to PAR 1135.

ATTACHMENT K

Proposed Amended Rule 1135

Emissions of Oxides of Nitrogen from Electricity Generating Facilities

Governing Board Meeting

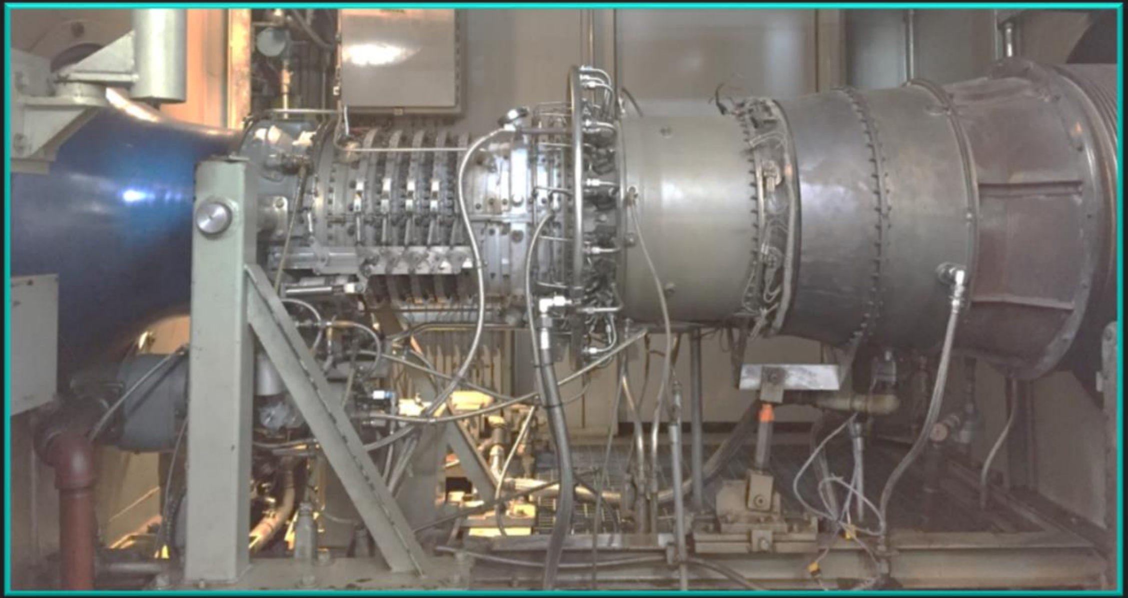
November 2, 2018

Background

- Rule 1135 was adopted in 1989 – applies to electric power generating systems
- Most electricity generating facilities entered RECLAIM in 1993
- In 2001, in response to the power crisis, Rule 2009 was adopted
  - Required installation of Best Available Retrofit Control Technology (BARCT) through compliance plans
  - More than 35 units repowered/replaced with new gas turbines resulting in 16 tons per day of NOx reduced
  - Units at Santa Catalina Island are in RECLAIM, but not included in Rule 2009

Applicability

- Industry-specific rule
- Applies to 31 electricity generating facilities
  - 26 RECLAIM facilities and 5 non-RECLAIM facilities
- Covers the following combustion equipment:
  - Boilers
  - Combined cycle gas turbines
  - Simple cycle gas turbines
  - Diesel internal combustion engines (located on Santa Catalina Island)



Proposed Emission Limits

Boilers	5 ppmv NOx; 5 ppmv ammonia* (@ 3% O_2)
Turbines – Combined Cycle and Duct Burners	2 ppmv NOx; 5 ppmv ammonia* (@ 15% O_2)
Turbines – Simple Cycle	2.5 ppmv NOx; 5 ppmv ammonia* (@ 15% O_2)
Diesel Internal Combustion Engines	45 ppmv NOx; 5 ppmv ammonia* (@ 15% O_2)

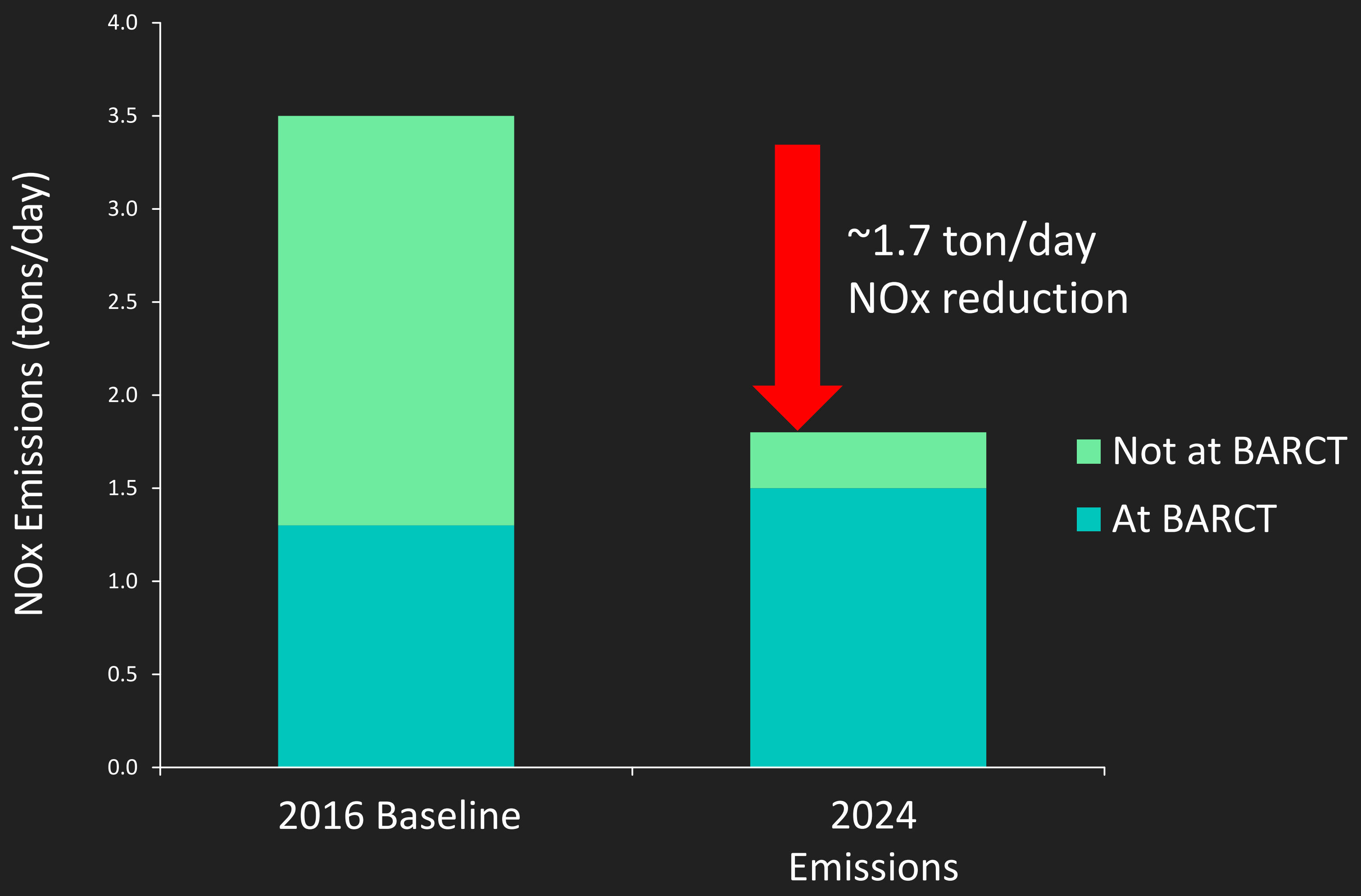
* With Selective Catalytic Reduction

- For internal combustion engines – incorporate VOC, CO, and PM emission limits
- Effective date: January 1, 2024

Additional Provisions

- Units near Rule 1135 NOx emissions limits
  - Units will be exempt from Rule 1135 NOx emission limit, but must retain their current emission limit
- Low-use provisions
  - Units must remain below annual capacity thresholds and must incorporate low-use threshold in permit
- Internal combustion engines
  - To incentivize cleaner technologies, diesel internal combustion engines have an alternative compliance approach and a time extension of up to three years
  - Allows up to 8 - 10 years to meet emissions limits

Emission Reductions

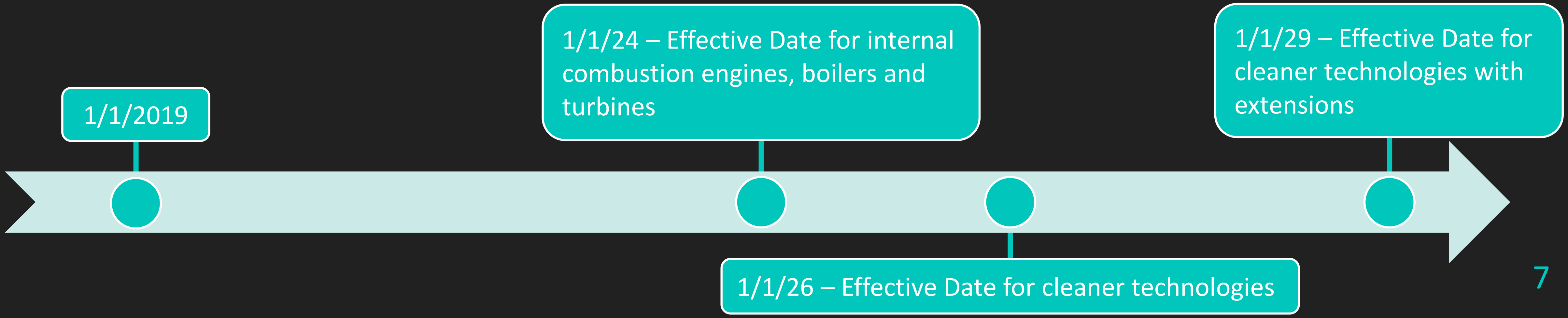


- EGFs emitted 3.5 tons per day of NOx in 2016*
  - 1.3 tons per day from equipment already at BARCT
- PAR 1135 will reduce about 1.7 tons per day
  - 1.6 tons per day from boilers
  - 0.1 tons per day from internal combustion engines

* Based on 2016 fuel usage and permit limits

Key Issue #1

- Southern California Edison: implementation schedule for Santa Catalina Island limits their compliance option to the installation of new diesel internal combustion engines – other cleaner technologies will require more time
- Response:
  - PAR 1135 allows up to 10 years to install cleaner technologies



Key Issue #2

- SCAQMD does not have the authority to require replacement as BARCT
- Response
  - BARCT can include the replacement of equipment
  - Statutory definition of BARCT supports a broad interpretation
  - Dictionary definitions do not preclude the view that BARCT can include equipment replacement
  - BARCT is not a limitation on SCAQMD’s authority to adopt emission control requirements for stationary sources

Key Issue #3

- Facilities should not exit and BARCT rule amendments should be delayed until New Source Review (NSR) is resolved
  - Rule 2002 allows facilities to remain in RECLAIM until NSR is resolved
  - Rule 2001 allows facilities to exit RECLAIM before NSR is resolved provided that they meet the criteria to exit
    - Some stakeholders want to exit RECLAIM before NSR is resolved
  - Facilities can remain in RECLAIM to offset new and modified sources under RECLAIM NSR

Recommended Actions

- Adopt the Resolution:
  - Certifying Final Mitigated Subsequent Environmental Assessment
  - Amending Rule 1135