

BOARD MEETING DATE: April 5, 2019

AGENDA NO. 24

**PROPOSAL:** Certify Final Subsequent Environmental Assessment and Amend Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines

**SYNOPSIS:** The adoption Resolution of the Final 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 1134 applies to RECLAIM and non-RECLAIM stationary gas turbines and is being amended to update NOx emission limits to reflect current BARCT, establish ammonia emission limits, and provide implementation timeframes to facilitate the transition of the NOx RECLAIM program to a command-and-control regulatory structure. The proposed amended rule also establishes provisions for monitoring, reporting, and recordkeeping. Other provisions are incorporated to remove obsolete provisions and provide clarifications.

**COMMITTEE:** Stationary Source, February 15, 2019, Reviewed

**RECOMMENDED ACTIONS:**

Adopt the attached Resolution:

1. Certifying the Final Subsequent Environmental Assessment for Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines; and
2. Amending Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines.

Wayne Natri  
Executive Officer

## **Background**

Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines, was adopted in 1989 and currently applies to stationary gas turbines rated at 0.3 MW and larger that were issued a permit to operate by the SCAQMD prior to August 4, 1989. When the RECLAIM program was adopted in 1993, many facilities that owned or operated turbines entered the RECLAIM program and were no longer subject to Rule 1134. Non-RECLAIM facilities with gas turbines remained subject to Rule 1134.

Rule 1134 was subsequently amended three times; each to provide regulatory flexibility.

- In December 1995, Rule 1134 was amended to exempt gas turbines located on San Clemente Island and the South East Desert Air Basin.
- In April 1997, Rule 1134 was amended to increase the NO<sub>x</sub> concentration limit for turbines utilizing sewage digester gas.
- In August 1997, Rule 1134 was amended to clarify the need for continuous emission monitoring systems (CEMS) on turbines with a power output of 2.9 MW or larger.

Proposed Amended Rule (PAR) 1134 updates NO<sub>x</sub> emission limits and will facilitate the transition of the NO<sub>x</sub> RECLAIM program to a command-and-control regulatory structure. Amendments apply to RECLAIM and non-RECLAIM facilities.

## **Public Process**

Development of PAR 1134 was conducted through a public process. Staff held four working group meetings at SCAQMD: February 22, 2018, April 26, 2018, June 13, 2018, and August 10, 2018. A Public Workshop was held on December 18, 2018. In addition, staff met individually with numerous facility operators.

## **Proposed Amendments**

PAR 1134 updates and lowers NO<sub>x</sub> emission limits to reflect current BARCT and provides implementation timeframes. Table 1 summarizes PAR 1134 NO<sub>x</sub> and ammonia emission limits and effective compliance dates for stationary gas turbines by category and fuel type, and those turbines located on the Outer Continental Shelf.

**Table 1**  
**PAR 1134 Emission Limits for Stationary Gas Turbines**  
**(Oxygen Correction 15%, dry)**

Equipment Type	NO <sub>x</sub> (ppmv)	Ammonia (ppmv)	Effective Date
Natural Gas Combined Cycle Gas Turbine	2	5	Jan. 1, 2024
Natural Gas Simple Cycle Gas Turbine	2.5	5	Jan. 1, 2024
Natural Gas Simple Cycle Compressor Gas Turbine	3.5	10	Jan. 1, 2024 - See Below
Produced Gas Turbine	9	5	Jan. 1, 2024
Outer Continental Shelf Produced Gas Turbine	15	5	Jan. 1, 2024
Outer Continental Shelf Liquid Fuel Turbine	30	5	Jan. 1, 2024
Other Gas Turbine	12.5	5	Jan. 1, 2024

PAR 1134 provides possible extensions for compressor gas turbines to extend the effective date by one year for the NO<sub>x</sub> emission limit, provided other NO<sub>x</sub> emission reductions are implemented; and up to three years for the ammonia emission limit, provided an ammonia continuous emissions monitoring system is installed and other criteria are met.

PAR 1134 also includes an exemption from the NO<sub>x</sub> emission limits for low-use equipment that is permitted below a specified capacity factor and units that are permitted near the proposed NO<sub>x</sub> concentration limits as these two scenarios far exceed the cost-effectiveness threshold of \$50,000 per ton of NO<sub>x</sub> reduced.

Regarding monitoring, reporting, and recordkeeping requirements, PAR 1134 will continue to implement Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for NO<sub>x</sub> Emissions for RECLAIM facilities. Former RECLAIM facilities will continue to implement portions of Rule 2012, and non-RECLAIM facilities will continue complying with Rule 218 – Continuous Emission Monitoring. Monitoring requirements remain the same for all facilities.

**Emission Reductions**

Implementation of PAR 1134 is expected to reduce NO<sub>x</sub> emissions by 2.8 tons per day.

## **Key Issues**

Through the rulemaking process, staff worked with stakeholders to address comments and resolve a number of key issues. Staff received a letter from the Regulatory Flexibility Group and the Western States Petroleum Association commenting on PAR 1134 and issues related to the transition of RECLAIM to a command-and-control regulatory program. The five key comments are discussed below.

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

Staff believes that the statutory definition of BARCT supports a broad interpretation, including replacement. In addition 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.

### *Consideration of Other Pollutants, Including Particulate Matter*

The staff report includes a discussion of applicable ammonia emission limits and particulate matter emissions increases.

### *Availability of Information that Forms the Bases of BARCT Recommendations*

Staff has provided detailed information regarding how the technology assessment was conducted and the conclusions derived. This information was presented in the working group meetings and is included in the staff report. Information on turbines, limits from other agencies, and other documents that staff relied on are included in the staff report and reference section.

### *Resolve New Source Review Issues Before Adopting or Amending BARCT Rules*

Rule 2002 - Allocations for Oxides of Nitrogen (NO<sub>x</sub>) and Oxides of Sulfur (SO<sub>x</sub>), allows a facility to stay in RECLAIM if they receive a Final Determination to exit RECLAIM. Staff has committed to not propose requiring RECLAIM facilities to exit the program until New Source Review (NSR) issues are resolved. Staff continues to work with U.S. EPA and stakeholders to resolve NSR issues.

### *CEQA and Socioeconomic Impacts are Piecemealed*

The CEQA and socioeconomic documents for the 2016 AQMP contain the programmatic analyses of the overall effects of SCAQMD's clean air plan. The CEQA and socioeconomic impact analyses include the changes in PAR 1134, consistent with analyses for other rule projects.

## **California Environmental Quality Act**

PAR 1134 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 Subsequent Environmental Assessment (SEA) for PAR 1134 which relies on the March 2017 Final Program Environmental Impact Report

(EIR) for the 2016 AQMP. Staff has also prepared Findings pursuant to CEQA Guidelines 15091, a Statement of Overriding Considerations pursuant to CEQA Guidelines Section 15093, and a Mitigation, Monitoring, and Reporting Plan pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097.

**Socioeconomic Analysis**

There are 35 facilities that are potentially impacted by PAR 1134. There are 73 turbines at these 35 facilities: six turbines already operate at the proposed emissions limits, 23 would be exempt, and 11 would qualify for the low-use provisions. The remaining 33 turbines will need to be replaced, repowered, or retrofitted to come into compliance with PAR 1134. These 33 turbines are located in 19 facilities. The average cost-effectiveness is provided in Table 2.

**Table 2  
PAR 1134 Cost-Effectiveness**

<b>Equipment Type</b>	<b>Cost-Effectiveness (Cost per ton of NOx reduced)</b>
Combined Cycle Turbines	\$11,500
Simple Cycle Turbines	\$8,400
Produced Gas Turbines	\$0*
Outer Continental Shelf Gas Turbines	\$3,600
Compressor Gas Turbines	\$4,900

\*All Produced Gas Turbines meet the proposed 9 ppmv at 15% oxygen on a dry basis

The main requirements of PAR 1134 include one-time costs and annual recurring costs. The one-time costs would include the capital costs of Selective Catalytic Reduction (SCR) retrofits and one-time permit modification fees. Annual recurring cost estimates include the annual operating cost of SCRs including reagent, catalyst replacement, electricity, and maintenance costs. The average annual total cost of PAR 1134 is projected to be \$5.5 - \$6.7 million (in 2018 dollars) between 2019 and 2045, for 1% and 4% real interest rate scenarios, respectively. Average annual capital cost is estimated to be \$3.2 - \$4.4 million per year, and average annual recurring costs are estimated to be \$2.3 million across all affected facilities. As a result of the direct costs required to comply with PAR 1134, it is projected that 33 - 46 jobs will be forgone annually, on average, between 2019 and 2045. The projected job loss impacts represent 0.00029% – 0.00041% of total employment in the Basin.

There are three CEQA alternatives associated with the proposed amendments to Rule 1134. Assuming a 4% real interest rate, average annual compliance costs for the CEQA alternatives range from \$6.9 - \$7.0 million between 2019 and 2045. Average annual jobs forgone for the CEQA alternatives, other than the no project alternative, range from 48 - 50 between 2019 and 2045.

### **AQMP and Legal Mandates**

Pursuant to Health & Safety Code Section 40460 (a), the SCAQMD is required to adopt an 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 1134 is part of a control measure (CMB-05) in the 2016 AQMP and will reduce NOx emissions and facilitate the transition of 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 1134
- H. Final Staff Report
- I. Final Socioeconomic Impact Assessment
- J. Final Subsequent Environmental Assessment
- K. Board Meeting Presentation

## ATTACHMENT A

### SUMMARY OF PROPOSAL

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

##### Applicability

- Applies to stationary gas turbines, regardless of installation date, excluding electricity generating facilities, petroleum refineries, publicly owned treatment works, landfills, and turbines fueled with landfill gas
- Applies to RECLAIM and non-RECLAIM facilities

##### Emissions Limits (effective January 1, 2024)

- Establishes NO<sub>x</sub> and ammonia emission limits for combined cycle gas turbines and associated duct burners, simple cycle gas turbines, produced gas turbines, turbines located on the outer continental shelf, compressor gas turbines, and other gas turbines
- Includes an alternative compliance date for compressor gas turbines provided the facility demonstrates 25% or more NO<sub>x</sub> emission reductions beginning December 31, 2023
- Includes an extension of up to 36 months to comply with ammonia emission limits provided an ammonia continuous emissions monitoring system is installed and the turbine operates less than one thousand hours per year

##### Monitoring, Recordkeeping, and Reporting

- RECLAIM facilities will continue to comply with SCAQMD Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NO<sub>x</sub>) Emissions
- Former RECLAIM facilities will comply with SCAQMD Rule 2012, excluding reporting requirements
- Non-RECLAIM facilities will comply with SCAQMD Rule 218 – Continuous Emission Monitoring

##### Exemptions

- Exemption provisions included for low-use turbines where it is not cost-effective to retrofit or replace
- Exemption provisions included for turbines that are near the proposed NO<sub>x</sub> emission limit where it is not cost-effective to retrofit or replace

## ATTACHMENT B

### KEY ISSUES AND RESPONSES

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

Through the rulemaking process, staff has worked with stakeholders to address comments and resolve a number of key issues. Staff received a letter from the Regulatory Flexibility Group and the Western States Petroleum Association commenting on PAR 1134 and issues related to the transition of RECLAIM to a command-and-control regulatory program. The five key comments are discussed below.

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

Staff believes that the statutory definition of BARCT supports a broad interpretation, including replacement. In addition 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.

#### *Consideration of Other Pollutants, Including Particulate Matter*

The staff report includes a discussion of applicable ammonia emission limits and particulate matter emissions increases.

#### *Availability of Information that Forms the Bases of BARCT Recommendations*

Staff has provided detailed information regarding how the technology assessment was conducted and the conclusions derived. This information was presented in the working group meetings and staff report. Information on turbines, limits from other agencies, and other documents that staff relied on are included in the staff report and reference section.

#### *Resolve New Source Review Issues Before Adopting or Amending BARCT Rules*

Rule 2002 - Allocations for Oxides of Nitrogen (NO<sub>x</sub>) and Oxides of Sulfur (SO<sub>x</sub>), allows a facility to stay in RECLAIM if they receive a Final Determination to exit RECLAIM. Staff has committed to not requiring RECLAIM facilities to exit the program until NSR issues are resolved. Staff continues to work with U.S. EPA and stakeholders to resolve NSR issues.

#### *CEQA and Socioeconomic Impacts are Piecemealed*

The CEQA and Socioeconomic documents for the 2016 AQMP, contain the programmatic analyses of the overall effects of SCAQMD's clean air plan. The CEQA and socioeconomic impact analyses include the changes in PAR 1134, consistent with analyses for other rule projects.

## ATTACHMENT C

### RULE DEVELOPMENT PROCESS

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



**Sixteen (16) months spent in rule development.**

**One (1) Public Workshop.**

**One (1) Stationary Source Committee Meeting.**

**Four (4) Working Group Meetings.**

**ATTACHMENT D**  
**KEY CONTACTS LIST**

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

AECOM	Los Angeles Internal Services
AES Corporation	M&C TechGroup North America
Almega	Miratech
Andeavor	Montrose Air Quality Services
B Braun Medical	New Indy Containerboard
Beta Offshore	NRG Energy
Broadrock	OLS Energy
Burbank Water and Power	Paramount Petroleum
California Air Resources Board	Pasadena Water and Power
California Council for Environmental and Economic Balance	Phillips66 Refinery
California Resources Corporation	Pod Technologies
Cemtek KVB-Enertec	Ramboll
City of Anaheim	Sanitation Districts of Los Angeles County
City of Glendale	Signal Hill Petroleum
City of Riverside	Southern California Air Quality Alliance
Chevron	Southern California Edison
Colton Power	Southern California Gas Company
Environmental Management Professionals	Southwest Generation Operating Company
Harbor Cogeneration	Sunshine Gas Producers
Heorot Power Management	U.S. Environmental Protection Agency
Los Angeles World Airports	University of California at Los Angeles
Los Angeles Department of Water & Power	Western States Petroleum Association
	Yorke Engineering

**ATTACHMENT E**

**RESOLUTION NO. 19-\_\_\_\_**

**A Resolution of the Governing Board of the South Coast Air Quality Management District (SCAQMD) certifying the Final Subsequent Environmental Assessment (SEA) for Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines.**

**A Resolution of the SCAQMD Governing Board amending Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines.**

**WHEREAS**, the SCAQMD Governing Board finds and determines with certainty that Proposed Amended Rule 1134 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 1134 pursuant to such program (SCAQMD Rule 110); and

**WHEREAS**, the SCAQMD Governing Board has determined that the requirements for a Subsequent Environmental Impact Report have been triggered pursuant to its certified regulatory program and CEQA Guidelines Section 15162(b), and that a Subsequent Environmental Assessment (SEA), a substitute document allowed pursuant CEQA Guidelines Section 15252 and SCAQMD’s certified regulatory program, is appropriate; and

**WHEREAS**, the SCAQMD staff has prepared a Draft SEA pursuant to its certified regulatory program and CEQA Guidelines Sections 15251, 15252, and 15162, setting forth the potential environmental consequences of Proposed Amended Rule 1134 and determined that the proposed project would have the potential to generate significant adverse environmental impacts after mitigation measures are applied; and

**WHEREAS**, the Draft SEA was circulated for a 45-day public review and comment period, from January 29, 2019 to March 15, 2019, and four comment letters were received; and

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

**WHEREAS**, it is necessary that the SCAQMD Governing Board review the Final 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 1134, including the responses to the comments received relative to the Draft SEA; and

**WHEREAS**, pursuant to CEQA Guidelines Section 15252(a)(2)(A), significant adverse impacts were identified such that alternatives and mitigation measures are required for project approval; 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**, while mitigation measures are imposed to reduce significant impacts, no feasible mitigation measures were identified that would reduce or eliminate the significant adverse hazards and hazardous materials impacts to less than significant levels; and

**WHEREAS**, it is necessary that the SCAQMD prepare Findings pursuant to CEQA Guidelines Section 15091, and a Statement of Overriding Considerations pursuant to CEQA Guidelines Section 15093, regarding potentially significant adverse environmental impacts that cannot be mitigated to less than significant levels; and

**WHEREAS**, Findings, a Statement of Overriding Considerations, and a Mitigation, Monitoring, and Reporting Plan are included in Attachment 1 to this Resolution, which is attached and incorporated herein by reference; and

**WHEREAS**, the SCAQMD Governing Board voting to adopt Proposed Amended Rule 1134 has reviewed and considered the information contained in the Final SEA, including the responses to the comment letters, the Mitigation, Monitoring, and Reporting Plan, the Findings, the Statement of Overriding Considerations, and all other supporting documentation, prior to its certification, and has determined that the Final SEA, including the responses to the comment letters received, has been completed in compliance with CEQA; and

**WHEREAS**, Proposed Amended Rule 1134 and supporting documentation, including but not limited to, the Final SEA, 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 SEA reflects the independent judgment of the SCAQMD; and

**WHEREAS**, the SCAQMD Governing Board finds and determines that all changes made in the Final SEA after the public notice of availability of the Draft 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 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 subdivision (b) and paragraphs (c)(3), (c)(6), (c)(21), (d)(4), (d)(6), (d)(9), and (f)(3) of Proposed Amended Rule 1134 since the notice of public hearing was published add clarity that meet the same air quality objective as the version of 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 effects of Proposed Amended Rule 1134 do not exceed the effects of the range of alternatives analyzed in the CEQA document; and

**WHEREAS**, Proposed Amended Rule 1134 will be submitted for inclusion into the State Implementation Plan; and

**WHEREAS**, the SCAQMD staff conducted a combined Public Workshop and CEQA Scoping regarding Proposed Amended Rule 1134 on December 18, 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 1134 is needed to transition stationary gas turbines 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 to implement BARCT for related sources; and

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

**WHEREAS**, the SCAQMD Governing Board has determined that Proposed Amended Rule 1134 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 1134 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 1134 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 1134, references the following statutes which the SCAQMD hereby implements, interprets, or makes specific: Health and Safety Code Sections 39002, 40000, 40001, 40702, 40406 (BARCT), 40440(a), and 40725 through 40728.5, and Clean Air Act Section 172 (c)(1) (reasonably available control technology); and

**WHEREAS**, the SCAQMD Governing Board has determined that the Socioeconomic Impact Assessment of Proposed Amended Rule 1134 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 1134 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 finds and determines that SCAQMD staff identified additional control options, calculated the incremental cost-effectiveness between each progressively more stringent option, and finds the more stringent control option exceeds the cost-effectiveness threshold established for this rule, and so was not selected; 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 (NO<sub>x</sub>) and Oxides of Sulfur (SO<sub>x</sub>) provides an option for facilities to remain in RECLAIM if they receive an Initial 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 1134 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 SEA for Proposed Amended Rule 1134 together with all comments received during the public review period, and, on the basis of the whole record before it, the SCAQMD Governing Board: 1) finds that the Final SEA, including responses to comments, was completed in compliance with CEQA and the SCAQMD's Certified Regulatory Program, 2) finds that the Final SEA and all supporting documents was 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 1134, and 3) certifies the Final SEA; and

**BE IT FURTHER RESOLVED**, that the SCAQMD Governing Board does hereby adopt Findings pursuant to CEQA Guidelines Section 15091, a Statement of Overriding Considerations pursuant to CEQA Guidelines 15093, and a Mitigation, Monitoring, and Reporting Plan pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097, as required by CEQA, and which are 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 1134 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 1134 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 1134 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 Subsequent Environmental Assessment for Proposed Amended Rule 1134 – Emissions  
of Oxides of Nitrogen from Stationary Gas Turbines**

**Findings, Statement of Overriding Considerations, and Mitigation, Monitoring, and  
Reporting Plan**

**SCAQMD No. 01292019RB**

**State Clearinghouse No: 2016071006**

**March 2019**

**Executive Officer**  
Wayne Nastri

**Deputy Executive Officer**  
**Planning, Rule Development and Area Sources**  
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Barbara Baird Chief Deputy Counsel  
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**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
GOVERNING BOARD**

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Speaker of the Assembly Appointee

**VICE CHAIRMAN:** DR. CLARK E. PARKER, SR.  
Senate Rules Committee Appointee

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County of Riverside

DWIGHT ROBINSON  
Council Member, Lake Forest  
Cities of Orange County

JANICE RUTHERFORD  
Supervisor, Second District  
County of San Bernardino

**EXECUTIVE OFFICER:**  
WAYNE NASTRI

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## **INTRODUCTION**

As a result of control measure CMB-05 - Further NO<sub>x</sub> 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 facilities subject to SCAQMD Regulation XX – Regional Clean Air Incentives Market (RECLAIM) for emissions of oxides of nitrogen (NO<sub>x</sub>) from to an equipment-based command-and-control regulatory structure per SCAQMD Regulation XI – Source Specific Standards. SCAQMD staff conducted a programmatic analysis of the NO<sub>x</sub> RECLAIM equipment at each facility to determine if there are appropriate and up-to-date Best Available Retrofit Control Technology (BARCT) NO<sub>x</sub> 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 NO<sub>x</sub> emitting equipment is subject to an adopted BARCT rule.

As such, SCAQMD staff has proposed amendments to Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines. Proposed Amended Rule (PAR) 1134 applies to stationary gas turbines that are not subject to SCAQMD Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities, or located at petroleum refineries. Specifically, if adopted, PAR 1134 would: 1) expand its applicability to include stationary gas turbines that were not previously required to comply with Rule 1134; 2) update the NO<sub>x</sub> and ammonia emission limits for stationary gas turbines to comply with Best Available Retrofit Control Technology (BARCT); 3) establish new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; 4) provide relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NO<sub>x</sub> emissions; and 5) revise existing exemptions to remove obsolete provisions.

Implementation of the proposed project is estimated to reduce NO<sub>x</sub> emissions by 2.8 tons per day after implementation of the BARCT limits.

PAR 1134 is considered a “project” as defined by the California Environmental Quality Act (CEQA) (Public Resources Code Sections 21000 et seq.). The SCAQMD, as Lead Agency for the proposed project, prepared a Subsequent Environmental Assessment (SEA) which analyzes the potential adverse environmental impacts that could be generated as a result of the proposed project. Analysis of the proposed project in the SEA indicated that while the project will reduce NO<sub>x</sub> emissions, complying with PAR 1134 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 in the topic area of hazards and hazardous materials. For example, in order to comply with the proposed emission limits, owners/operators may need to retrofit existing stationary gas turbines with air pollution control equipment (e.g., selective catalytic reduction (SCR) technology/system installations), or repowering or replacing existing stationary gas turbines.

The SEA identified and analyzed activities associated with installing new or modifying existing air pollution control equipment, or repowering, or replacing existing stationary gas turbines in order to reduce NO<sub>x</sub> emissions. Thus, the analysis in the SEA concluded that 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 if the project is implemented.

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 to reduce the severity of the potentially significant adverse hazards and hazardous materials impacts. However, even after mitigation measures are applied, the potentially significant adverse environmental impacts cannot be fully mitigated to less than significant levels. In addition, because there are remaining significant impacts to the topic of hazards and hazardous materials after mitigation measures are applied, project alternatives are also required. An alternatives analysis was included in the Chapter 5 of the Final SEA; however, no project alternative was identified that would reduce these impacts to insignificance while achieving the project's goals and objectives. No other environmental topic areas were identified in the SEA as having potentially significant adverse impacts.

A Draft SEA was circulated for a 45-day public review and comment period from January 29, 2019 to March 15, 2019 and four comment letters were received. Subsequent to release of the Draft SEA for public review and comment, minor modifications were made to PAR 1134. Staff has reviewed the modifications to PAR 1134 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 SEA. In addition, revisions to the proposed project in response to verbal or written comments during the rule development process would not create new, avoidable significant effects. As a result, these revisions do not require recirculation of the Draft SEA pursuant to CEQA Guidelines Sections 15073.5 and 15088.5. The Draft SEA has been revised to include the aforementioned modifications such that it is now the Final SEA. The comment letters and responses relative to the Draft SEA have been included in Appendix G of the Final SEA.

### **SIGNIFICANT ADVERSE IMPACTS WHICH CAN BE REDUCED BELOW A SIGNIFICANT LEVEL OR WERE CONCLUDED TO BE INSIGNIFICANT**

The Final SEA for PAR 1134 relies on the previous CEQA analysis in the March 2017 Final Program Environmental Impact Report (EIR) for the 2016 AQMP<sup>1</sup>. As such, the Final SEA relies on the conclusions reached in that document as evidence for environmental areas where impacts were found not to be significant. The previous CEQA document reviewed approximately 17 environmental topic areas and analyzed whether the respective project would create potentially significant adverse impacts. The analysis in the March 2017 Final Program EIR for the 2016 AQMP concluded that significant and unavoidable adverse environmental impacts from the project are expected to occur after implementing mitigation measures for the following environmental topic areas: 1) aesthetics from increased glare and from the construction and operation of catenary lines and use of bonnet technology for ships; 2) construction air quality and GHGs; 3) energy (due to increased electricity demand); 4) hazards and hazardous materials due to: (a) increased flammability of solvents; (b) storage, accidental release and transportation of ammonia; (c) storage and transportation of liquefied natural gas (LNG); and (d) proximity to schools; 5) hydrology (water demand); 6) construction noise and vibration; 7) solid construction waste and operational waste from vehicle and equipment scrapping; and, 8) transportation and traffic during construction

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<sup>1</sup> March 2017 Final Program EIR for the 2016 AQMP: <http://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmd-projects/scaqmd-projects---year-2017>

and during operation on roadways with catenary lines and at the harbors. It is important to note, however, that for these environmental topic areas, not all of the conclusions of significance are applicable to this currently proposed project, PAR 1134. Table 1 summarizes the significant and unavoidable adverse environmental impacts identified in the March 2017 Final Program EIR and identifies which topic area applies to PAR 1134.

**Table 1**  
**Applicability of Significant Impacts Identified in the March 2017 Final Program EIR to Proposed Project (PAR 1134)**

<b>CONCLUSION OF SIGNIFICANT IMPACTS IN MARCH 2017 FINAL PROGRAM EIR</b>	<b>APPLICABLE TO/SIGNIFICANT FOR THE PROPOSED PROJECT (PAR 1134)?</b>	<b>EXPLANATION</b>
Aesthetics from increased glare and from the construction and operation of catenary lines and use of bonnet technology for ships	No	This environmental topic area is not applicable to PAR 1134 because neither catenary lines nor the use of bonnet technology for ships are applicable to stationary gas turbines and the corresponding NOx emission controls (e.g., SCR technology). Therefore, this conclusion is not applicable to the proposed project.
Construction air quality and GHGs	No	These environmental topic areas are applicable to the proposed project. The impacts for these environmental topics areas are analyzed in the SEA (see SEA pp. 4-3 to 4-18 for construction air quality and GHGs), and the analysis concluded less than significant impacts.
Energy due to increased electricity demand	No	While the use of SCR technology will require some electricity to operate, the amount of electricity that would be needed to install SCR technology for PAR 1134 would be less than significant.
Hazards and hazardous materials due the increased flammability of solvents	No	Stationary gas turbines and the corresponding NOx emission controls (e.g. SCR technology) do not utilize solvents for their operation. Therefore, this conclusion is not applicable to the proposed project.
Hazards and hazardous materials due to the storage, accidental release and transportation of ammonia	Yes	This environmental topic area is applicable to the proposed project because SCR technology utilizes ammonia. The impacts for this environmental topic area are analyzed in the Final SEA for PAR 1134 (see pp. 4-19 to 4-27). The analysis concluded significant impacts for the storage and accidental release of ammonia and less than significant impacts for the transportation of ammonia.
Hazards and hazardous materials due to the storage and transportation of LNG	No	Stationary gas turbines and the corresponding NOx emission controls (e.g. SCRs) do not utilize LNG for their operation. Therefore, this conclusion is not applicable to the proposed project.
Hazards and hazardous materials due to proximity to schools	Yes	This conclusion is applicable to the proposed project because some of the affected facilities that are expected to install new SCR systems are located near schools. The impacts for this environmental topic area are analyzed in the Final SEA for PAR 1134 (see pp. 4-19 to 4-27).

**Table 1 (concluded)  
Applicability of Significant Impacts in March 2017 Final Program EIR  
to Proposed Project (PAR 1134)**

CONCLUSION OF SIGNIFICANT IMPACTS IN MARCH 2017 FINAL PROGRAM EIR	APPLICABLE TO/SIGNIFICANT FOR THE PROPOSED PROJECT (PAR 1134)?	EXPLANATION
Hydrology (water demand)	No	Stationary gas turbines and the corresponding NOx emission controls (e.g., SCR technology) do not utilize water for their operation. Therefore, this conclusion is not applicable to the proposed project.
Construction noise and vibration	No	While the construction activities associated with installing new SCR technology for affected stationary gas turbines may create some noise and vibration, the existing noise environment at each facility is typically dominated by noise from existing equipment on-site, vehicular traffic around the facilities, and trucks entering and existing facility premises. Operation of the construction equipment would be expected to comply with all existing noise control laws and ordinances. Further, since the facilities are located in industrial or commercial land use areas, the noise generated during construction will likely be indistinguishable from the background noise levels at the property line. Therefore, the potential noise increases are expected to be within the allowable noise levels established by the local noise ordinances for industrial areas, and thus are expected to be less than significant.
Solid construction waste and operational waste from vehicle and equipment scrapping	No	Vehicle scrapping is not applicable to stationary gas turbines and the corresponding NOx emission controls (e.g. SCR technology). Therefore, this conclusion is not applicable to the proposed project.
Transportation and traffic during construction and during operation on roadways with catenary lines and at the harbors	No	Catenary lines and the associated transportation and traffic impacts on roadways and at the harbors are not applicable to stationary gas turbines and the corresponding NOx emission controls (e.g., SCR technology). Therefore, this conclusion is not applicable to the proposed project.

PAR 1134 is expected to have: 1) significant effects that were not discussed in the previous March 2017 Final Program EIR for the 2016 AQMP (CEQA Guidelines Section 15162(a)(3)(A)); and 2) significant effects that were previously examined that will be substantially more severe than what was discussed in the March 2017 Final Program EIR for the 2016 AQMP (CEQA Guidelines Section 15162(a)(3)(B)).

As summarized in Table 1, the topic of hazards and hazardous materials is the only environmental topic area that would be affected by PAR 1134 due to the storage and use of aqueous ammonia in proximity to sensitive receptors at some affected facilities.

Aside from the topic of hazards and hazardous materials due to the storage and use of aqueous ammonia, the conclusions reached for the other environmental topic areas in the Final SEA are consistent with the conclusions reached in the March 2017 Final Program EIR for the 2016 AQMP such that there would be no other significant adverse effects from the implementation of the proposed project. Thus, the proposed project would either have no impact or less than significant direct or indirect adverse effects on the following environmental topic areas:

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

#### **POTENTIAL SIGNIFICANT ADVERSE IMPACTS THAT CANNOT BE REDUCED BELOW A SIGNIFICANT LEVEL**

The Final SEA identified the topic of hazards and hazardous materials due to the storage and use of aqueous ammonia resulting from the installation of SCR systems as the only area that may be significantly adversely affected by the proposed project. The analysis in the Final SEA also concluded that the hazards and hazardous materials impacts due to the proximity of facilities to schools (as well as other sensitive receptors) was entirely dependent upon whether the affected facilities would be expected to install SCR systems. Further, the number of aqueous ammonia storage tanks to be installed per facility, the location of the tanks to be installed on each property relative to any nearby schools or other sensitive receptors, and the capacity of the storage tanks, all factor into the overarching conclusion of significant for hazards and hazardous materials due to the storage and use of aqueous ammonia needed for SCR systems.

If significant adverse environmental impacts are identified in a CEQA document, the CEQA document shall describe feasible measures that could minimize or eliminate the impacts of the proposed project. SCR systems which require the use of ammonia are the most likely air pollution control equipment currently available on the market that is capable of reducing NOx emissions to the levels prescribed in PAR 1134. Thus, the Final SEA identified the topic of hazards and hazardous materials due to the storage and use of aqueous ammonia for SCR systems as having potentially significant adverse impacts that cannot be reduced below a significant level.

The Final SEA contains mitigation measures to address these potentially significant adverse impacts. While it is entirely possible that individual facilities installing a SCR system may find that implementing the prescribed mitigation measures will effectively reduce or eliminate the risk of offsite consequences of exposure to aqueous ammonia to less than significant levels at the facility level, because of the varying operational needs and locations of the affected facilities that may install SCR systems and their proximity to sensitive receptors as a result of the proposed project, the Final SEA could not conclusively determine for every facility that installs one or more SCR systems that the significant adverse hazards and hazardous materials impacts for the storage and use of aqueous ammonia would be able to be fully eliminated or reduced to less than significant levels. For this reason, the Final SEA concluded that the hazards and hazardous materials impacts due to the storage and use of aqueous ammonia for SCR systems would remain significant if PAR 1134 is implemented, even after mitigation measures are applied.

## **FINDINGS**

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 SEA and summarized above, the proposed project has the potential to create significant adverse hazards and hazardous materials impacts for the storage and use of aqueous ammonia; therefore, findings are required. The SCAQMD Governing Board, therefore, makes the following findings regarding the proposed project. The findings are supported by substantial evidence in the record as explained in each finding. These findings will be included in the record of project approval and will also be noted in the Notice of Decision. The findings made by the SCAQMD Governing Board are based on the following significant adverse impact identified in the Final SEA.

**Based on the analysis, the potential location(s) of the aqueous ammonia storage tanks at some facilities and their proximity to sensitive receptors could potentially have a significant impact from hazards and hazardous materials that cannot be mitigated to insignificance.**

### Finding and Explanation:

As explained earlier, PAR 1134 is concluded to result in significant adverse hazards and hazardous materials impacts for the storage and use of aqueous ammonia. The Governing Board finds that mitigation measures have been identified, but there are no feasible mitigation measures that would eliminate or reduce the aforementioned significant adverse hazards and hazardous materials impacts to less than significant levels. No other feasible mitigation measures have been identified. CEQA defines "feasible" as "capable of being accomplished in a successful manner within a

reasonable period of time, taking into account economic, environmental, social, and technological factors." [Public Resources Code Section 21061.1 and CEQA Guidelines Section 15364].

The Governing Board finds further that the Final SEA considered alternatives pursuant to CEQA Guidelines Section 15126.6, but aside from the No Project Alternative (identified as Alternative A in Chapter 5 of the Final SEA), there are no other alternatives that would reduce to insignificant levels the significant hazards and hazardous materials impacts identified for the proposed project and still achieve the objectives of the proposed project because under Alternative A, no facilities would have equipment meeting BARCT level equivalency.

### Conclusion

The Governing Board finds that the findings required by CEQA Guidelines Section 15091(a) are supported by substantial evidence in the record. The administrative record for the CEQA document and adoption of PAR 1134 is maintained by the Office of Planning, Rule Development and Area Sources. The record of approval for this project may be found in the SCAQMD's Clerk of the Board's Office located at SCAQMD headquarters in Diamond Bar, California.

### **STATEMENT OF OVERRIDING CONSIDERATIONS**

If significant adverse impacts of a proposed project remain after incorporating mitigation measures or no measures or alternatives to mitigate the significant 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, including region-wide or statewide environmental 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, including region-wide or statewide environmental benefits, of a proposed project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered "acceptable" [CEQA Guidelines Section 15093(a)]. Accordingly, a Statement of Overriding Considerations regarding the potentially significant adverse operational NO<sub>x</sub> air quality impacts resulting from the proposed project has been prepared. This Statement of Overriding Considerations is included as part of the record of the project approval for the proposed project. Pursuant to CEQA Guidelines Section 15093(c), the Statement of Overriding Considerations will also be noted in the Notice of Decision for the proposed project.

Despite incorporating mitigation measures into the proposed project, the mitigation measures cannot reduce or eliminate the potentially significant adverse hazards and hazardous material impacts to a level of insignificance; the SCAQMD's Governing Board finds that the following benefits and considerations outweigh the significant unavoidable adverse environmental impacts:

1. The analysis of potential adverse environmental impacts incorporates a "worst-case" approach. This entails the premise that whenever the analysis requires that assumptions be made, those assumptions that result in the greatest adverse impacts are typically chosen. The analysis in the Final SEA contained conservative assumptions that the implementation of PAR 1134 would result in multiple facilities installing one or more SCR systems with an accompanying ammonia storage tank even though each facility could consider other factors (e.g., age of the stationary gas turbine, cost, etc.) and instead, some facilities with applicable stationary gas turbines, could replace an entire turbine with new equipment capable of meeting the NO<sub>x</sub>

emission limits without needing a SCR system. The analysis in the Final SEA also assumed that for any facility anticipated to install multiple SCR systems, one ammonia storage tank with a sufficient capacity to service all SCR systems would also be installed. Depending on the quantity of aqueous ammonia that may be needed for each SCR system, the locations of each SCR system and aqueous ammonia tank, the availability of space at each facility, and/or cost, multiple, smaller aqueous ammonia storage tanks could be installed instead of one large ammonia storage tank. However, to conduct a “worst-case” analysis of the potential for creating significant adverse hazards and hazardous materials impacts from the catastrophic failure of an aqueous ammonia storage tank, the largest sized aqueous ammonia tank and the distance of each aqueous ammonia tank to nearby sensitive receptors was relied upon to determine whether the toxic endpoint (calculated using EPA RMP\*Comp) would create a significant offsite consequence. In the analysis, the EPA RMP\*Comp model only has the capability of evaluating the hazard potential of 20 percent aqueous ammonia. Therefore, the potentially significant adverse impacts from the storage and use aqueous ammonia was evaluated based on the 20 percent aqueous ammonia. However, to minimize the hazards associated with using aqueous ammonia, it is the policy of the SCAQMD to require the use of 19 percent by volume aqueous ammonia in air pollution control equipment for the following reasons: 1) 19 percent aqueous ammonia does not travel as a dense gas like anhydrous ammonia; and 2) 19 percent aqueous ammonia is not on any acutely hazardous materials lists unlike anhydrous ammonia or aqueous ammonia at higher percentages. As such, SCAQMD staff does not 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. Thus, the offsite consequence analysis for an aqueous ammonia release at a 20 percent concentration likely overestimates the risk.

2. Although the prescribed mitigation measures may be able to reduce or eliminate the hazards and hazardous impacts to levels of insignificance at some individual facilities, because of the varying operational needs and locations of the affected facilities that may install SCR systems and their proximity to sensitive receptors as a result of the proposed project, the Final SEA could not conclusively determine for every facility that installs a SCR system that each one would be able to fully eliminate or reduce the significant adverse hazards and hazardous materials impacts for the storage and use of aqueous ammonia to less than significant levels. At the time each affected facility submits an application for a Permit to Construct for a SCR system and corresponding aqueous ammonia storage tank in response to the proposed project, SCAQMD staff will evaluate each facility-specific project to determine if the project is covered by the analysis in the Final SEA and whether the mitigation measures could reduce or fully eliminate the hazards or hazardous materials impacts to less than significant levels. In the event that the evaluation of the application for a Permit to Construct for a SCR system and corresponding aqueous ammonia storage tank does not conform to the analysis in the Final SEA, an additional facility-specific CEQA analysis may be required.
3. Although the hazards and hazardous materials impacts are shown to be significant from the implementation of PAR 1134, only the use and storage of aqueous ammonia for SCR systems is expected to be significant. The Final SEA concluded that the potential impacts due to an accidental release of aqueous ammonia from transportation and delivery activities is less than significant.

4. Although the proposed project could result in significant adverse hazards and hazardous materials impacts from the storage and use of aqueous ammonia, overall implementation of the proposed project will achieve substantial NO<sub>x</sub> emission reductions and improve air quality; thus, providing human health benefits by reducing population exposures to existing NO<sub>x</sub> emissions. Based on regional modeling analyses performed for the 2016 AQMP, implementing control measures contained in the 2016 AQMP, in addition to the air quality benefits of the existing rules, is anticipated to bring the District into attainment with all national and most state ambient air quality standards. The 2016 AQMP also predicts to achieving the ozone 8-hour standard by 2023.
5. The Governor approved Assembly Bill (AB) 617 on July 26, 2017, which addresses non-vehicular air pollution including criteria pollutants and TACs. AB 617 is a companion legislation to approved AB 398, which extends California’s cap-and-trade program for reducing GHG emissions from stationary sources. AB 398 requires Air Districts to develop by January 1, 2019 an expedited schedule for the implementation of BARCT by December 31, 2023 for cap-and-trade facilities. A subset of the affected facilities will be subject to the requirements of ABs 617 and 398. The implementation of the proposed project would achieve BARCT level equivalency for these stationary gas turbines.

The SCAQMD’s Governing Board finds that the aforementioned considerations outweigh the unavoidable significant effects to the environment as a result of the proposed project.

#### **MITIGATION, MONITORING, AND REPORTING PLAN**

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 to reduce the severity of the potentially significant adverse hazards and hazardous materials impacts. When making findings as required by Public Resources Code Section 21081 and CEQA Guidelines Section 15091, the lead agency must adopt a reporting or monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment. [Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097(a)]. Although SCAQMD identified mitigation measures that may be effective in reducing or eliminating the significant adverse impacts from hazards and hazardous materials due to the storage and use of aqueous ammonia at individual facilities, because of the varying operational needs and locations of the affected facilities that may install SCR systems and their proximity to sensitive receptors as a result of the proposed project, the Final SEA could not conclusively determine for every facility that installs a SCR system that they would be able to fully eliminate or reduce the significant adverse hazards and hazardous materials impacts for the storage and use of aqueous ammonia to less than significant levels. For this reason, the Final SEA concluded that the hazards and hazardous materials impacts due to the storage and use of aqueous ammonia needed for operation of SCR systems would remain significant if PAR 1134 is implemented, even after mitigation measures are applied. Thus, a mitigation, monitoring, and reporting plan has been developed for PAR 1134.

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 significant adverse hazards and hazardous materials impacts

that may result from implementing PAR 1134. 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 1134 could create a significant adverse hazards and hazardous materials impact to the public due to the 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 Safety Data Sheet (SDS) 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 aqueous 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 SCR systems, the proposed project 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 SEA only identified the storage and use of aqueous ammonia as having potentially significant adverse hazards and hazardous materials impacts requiring mitigation measures. Further, the Final 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 for this activity.

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, somewhat reducing a potential significant hazards and hazardous materials impact due to storage and use of aqueous ammonia. The analysis conducted in the Final SEA made a conservative assumption that some of the facilities’ affected by the proposed project would likely retrofit their stationary gas

turbines with a SCR system which would require an ammonia storage tank for operation. Although the mitigation measures would reduce the potential impacts for hazards and hazardous materials for facilities choosing to install a SCR system with an accompanying aqueous ammonia storage tank, without knowing the exact location of each storage tank, number of ammonia storage tanks and/or corresponding size of the ammonia storage tank at each facility; it is still conservatively estimated that the proposed project will result in significant impacts of hazards and hazardous materials through the storage and use of aqueous ammonia.

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 percent aqueous ammonia, which contains approximately 81 percent 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 the proposed project.

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.

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 needed to support to a new SCR system 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 which did not result in a significant hazards impact to sensitive receptors, the facility operator would not be required to implement the following feasible mitigation measures. However, if the analysis were to determine a significant hazards impact to sensitive receptors (such as in this Final SEA), the facility operator would be required at a minimum to implement the following feasible mitigation measures to reduce the severity of the impacts 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 Final 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.

#### Hazards and Hazardous Materials

- HZ-1 Require the use of aqueous ammonia at concentrations less than or equal to 19 percent by volume for all facilities regulated by Rule 1134.
- 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 minimize the offsite hazards impacts to the maximum extent feasible in the event of an accidental release during transfer of aqueous ammonia.
- HZ-6 Install tertiary containment that is capable of evacuating 110 percent 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 minimize the offsite hazards impacts to the maximum extent feasible 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 an underground gravity drain that flows to a large on-site retention basin to provide sufficient ammonia dilution to minimize the offsite hazards impacts to the maximum extent feasible in the event of an accidental release during transfer of aqueous ammonia. 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**

Based on a “worst-case” analysis, the potential adverse hazards and hazardous materials impacts from the adoption and implementation of PAR 1134 is considered significant and unavoidable. Some feasible mitigation measures have been identified that would somewhat reduce the level of significant adverse hazards and hazardous materials impacts associated with implementing the PAR 1134; however, the mitigation measures cannot be guaranteed to reduce the entire project to less than significant levels. Further, no project alternatives have been identified that would reduce these impacts to insignificance while achieving the project’s goals and objectives of NOx emissions reductions and BARCT level equivalency.

## ATTACHMENT G

(Adopted August 4, 1989)(Amended December 7, 1995)  
(Amended April 11, 1997)(Amended August 8, 1997)  
(PAR 1134 April 5, 2019)

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

(a) Purpose

The purpose of this rule is to reduce emissions of oxides of nitrogen (NO<sub>x</sub>) from stationary gas turbines.

(b) Applicability

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

(c) Definitions

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

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

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

(3) COMBINED CYCLE GAS TURBINE UNIT is a gas turbine, including cogeneration gas turbines, unit that operates both for the production of electrical energy from shaft work and the useful energy produced from heat recovered from its exhaust gases recovers heat from the gas turbine exhaust

- ~~gases for use in a heat recovery steam generator to generate additional electricity.~~
- (4) COMPRESSOR GAS TURBINE is a stationary gas turbine used to transport gases or liquids in a pipeline.
- (5) DUCT BURNER is a device located in the heat recovery steam generator of a gas turbine that combusts fuel and adds heat energy to the turbine exhaust to increase the output of the heat recovery steam generator.
- (46) EMERGENCY STANDBY GAS TURBINE UNIT is a gas turbine ~~unit~~ that operates only as a ~~mechanical or electrical~~ power source for a facility when the primary power source has been rendered inoperable, except it may not be used for ~~due to~~ power interruption pursuant to an interruptible power supply agreement. This does not include utility company electrical power plant units.
- (5) ~~EMISSION CONTROL PLAN is a plan that shall contain at a minimum District permit or identification number; name of gas turbine manufacturer; model designation; rated brake horsepower; heat rate (BTU/KW-HR), corrected to the HHV for each type of fueling (liquid/gas); type of liquid fuel and/or type of gaseous fuel; hours of operation in the previous one-year period; fuel consumption (cubic feet of gas or gallons of liquid) for the previous one-year period; and a list of all gas turbine units required to be controlled identifying the type of emission control to be applied to such gas turbine units along with documentation showing existing emissions of NO<sub>x</sub> and CO.~~
- (67) EXHAUST AFTER-TREATMENT ~~means is~~ a control method for the post-combustion reduction of NO<sub>x</sub> emissions, such as selective catalytic reduction (SCR).
- (78) EXISTING GAS TURBINE UNIT is a stationary gas turbine ~~unit~~ that is located at a non-RECLAIM NO<sub>x</sub> facility and met the following criteria prior to August 4, 1989:
- (A) Had been issued a valid permit to construct or operate by the ~~District~~SCAQMD, or
- (B) Was in operation pursuant to the provisions of ~~District~~SCAQMD Rule 219(b)(1).
- (9) FORMER RECLAIM NO<sub>x</sub> FACILITY is a facility, or any of its successors, that was in the Regional Clean Air Incentives Market (RECLAIM) as of January 5, 2018, as established in Regulation XX, that has received a final

- determination notification from the Executive Officer or the owner or operator opts-out of RECLAIM, and is no longer in the RECLAIM program.
- ~~(8) HHV – HIGHER HEATING VALUE OF FUEL.~~
- (10) LANDFILL is an entire disposal facility in a contiguous geographical space where solid waste is placed in or on land. A landfill may be active, inactive, or closed.
- ~~(9) LHV – LOWER HEATING VALUE OF FUEL.~~
- ~~(10) PEAKING GAS TURBINE UNIT is a gas turbine unit that is used intermittently to produce energy on a demand basis.~~
- (11) NATURAL GAS is a mixture of gaseous hydrocarbons, with at least 80 percent methane (by volume), and of pipeline quality, such as the gas sold or distributed by any utility company regulated by the California Public Utilities Commission.
- (12) NON-RECLAIM NO<sub>x</sub> FACILITY is a facility, or any of its successors, that was not in the Regional Clean Air Incentives Market as of January 5, 2018, as established in Regulation XX.
- (13) OXIDES OF NITROGEN (NO<sub>x</sub>) EMISSIONS is the sum of nitric oxides and nitrogen dioxides emitted, collectively expressed as nitrogen dioxide emissions.
- (14) OUTER CONTINENTAL SHELF is as defined in 40 CFR, Part 55 – Outer Continental Shelf Air Regulations.
- (15) PETROLEUM REFINERY is a facility identified by the North American Industry Classification System Code 324110, Petroleum Refineries.
- ~~(14) PIPELINE GAS TURBINE UNIT is a stationary gas turbine unit used to transport gases or liquids in a pipeline.~~
- (12) POWER AUGMENTATION is the increase in the gas turbine shaft output and/or the decrease in gas turbine fuel consumption by the addition of energy recovered from exhaust heat.
- (17) PUBLICLY OWNED TREATMENT WORKS are wastewater treatment or reclamation plants owned and operated by a public entity, including all operations within the boundaries of the wastewater and sludge treatment plant.
- (18) PRODUCED GAS is made up of organic compounds that are gaseous at standard temperature and pressure and are associated with the production, gathering, separation, or processing of crude oil.

- ~~(1319)~~ RATING OF A GAS TURBINE UNIT is the continuous MW (megawatt) rating or mechanical equivalent by a manufacturer for a gas turbine unit(s) without power augmentation.
- (20) RECLAIM NO<sub>x</sub> FACILITY is a facility or its successor that was in the Regional Clean Air Incentives Market as of January 5, 2018, as established in Regulation XX and is still in RECLAIM on the relevant date.
- ~~(2144)~~ SEWAGE DIGESTER GAS is any gas derived from anaerobic decomposition of organic sewage.
- ~~(224)~~ SHUTDOWN is the time period that begins when a stationary gas turbine reduces load and which ends in a period of zero fuel flow, or as otherwise defined in the SCAQMD permit to operate.
- ~~(232)~~ SIMPLE CYCLE GAS TURBINE is any stationary combustion turbine that does not recover heat from the combustion turbine exhaust gases to heat water or generate steam.
- ~~(243)~~ START-UP is the time period that begins when a stationary gas turbine combusts fuel after a period of zero fuel flow and which ends when the stationary gas turbine generates electricity for sale or for any other purpose including on-site use, or as otherwise defined in the SCAQMD permit to operate.
- ~~(15)~~ SOUTHEAST DESERT AIR BASIN (SEDAB) means the portion of the air basin containing specific desert portions of Los Angeles, Riverside and San Bernardino counties, as defined in Title 17, California Code of Regulations, Section 60109, within the jurisdiction of the District.
- ~~(16254)~~ STATIONARY GAS TURBINE UNIT is any gas turbine unit that is gas and/or liquid fueled with or without power augmentation. This gas turbine unit is either attached to a foundation at a facility or is portable equipment operated at a specific facility for more than 90 days in any 12-month period that will reside at the same location for more than 12 consecutive months. Two or more gas turbines units powering one shaft shall be treated as one gas turbine unit.
- ~~(17265)~~ THERMAL STABILIZATION PERIOD is the two-hour start up time necessary for NO<sub>x</sub> control purposes in cogeneration cycle, combined cycle, or any other applicable stationary gas turbines units.
- ~~(276)~~ TUNING is adjusting, optimizing, rebalancing, or other similar operations to a stationary gas turbine or an associated control device or otherwise as

defined in the SCAQMD permit to operate. Tuning does not include normal operations to meet load fluctuations.

(ed) Emissions Limitations

- (1) Until the existing gas turbine operates in compliance with subparagraph (d)(3), but no later than December 31, 2023, The the owner or operator of any existing stationary gas turbine unit shall not operate such unit under load conditions, excluding the thermal stabilization period or other time period specified in the Permit to Construct or the Permit to Operate issued prior to August 4, 1989, which result in the discharge of oxides of nitrogen (NO<sub>x</sub>) emissions, directly or indirectly, into the atmosphere at concentrations in excess of the following as measured pursuant to subdivision (ef):

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

Where:

Compliance Limit = allowable NO<sub>x</sub> emissions (ppm by volume).

Reference Limit = the NO<sub>x</sub> emission limit (ppm by volume) is corrected to 15 percent oxygen on a dry basis, and averaged over 15 consecutive minutes. These limits for various megawatt ratings (continuous rating by the manufacturer without power augmentation) are as follows:

REFERENCE NO<sub>x</sub> LIMITS, PPM

<del>Unit</del> Stationary Gas Turbine Size Megawatt (MW) Rating	Effective 12-31-95
0.3 to Less Than 2.9 MW	25
2.9 to Less Than 10.0 MW	9
2.9 to Less Than 10.0 MW No SCR	15
10.0 MW and Over	9

10.0 MW and Over No SCR	12
60 MW and Over Combined Cycle No SCR	15
60 MW and Over Combined Cycle	9
	Effective 4/11/97
2.9 to Less Than 10.0 MW Utilizing Fuel Containing a Minimum of 60% Sewage Digester Gas by Volume on a Daily Average	25

And,

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

or,

$$EFF = \frac{(\text{Manufacturer's Rated Efficiency at Lower Heating Value (LHV)}) \times \frac{LHV}{HHV}}{1}$$

or

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

(2) The operator of any existing gas turbine ~~unit~~ subject to this rule shall also be subject to Regulation XIII if carbon monoxide (CO) emissions increase as a result of the application of NO<sub>x</sub> controls.

(3) Notwithstanding the exemptions contained in Rule 2001 – Applicability, Table I – Rules Not Applicable to RECLAIM Facilities for Requirements

Pertaining to NO<sub>x</sub> Emissions, on and after January 1, 2024, or when required by a permit to operate, whichever occurs first, the owner or operator of any stationary gas turbine, excluding compressor gas turbines, shall not operate such unit under load conditions, excluding start-up, shutdown, and tuning periods, which result in the discharge of NO<sub>x</sub> and ammonia emissions, directly or indirectly, into the atmosphere at concentrations in excess of the following emissions limits listed in Table I.

**Table I: Emissions Limits for Stationary Gas Turbines**

(Corrected to 15% oxygen on a dry basis)

<u>Fuel Type</u>	<u>NO<sub>x</sub> (ppmv)</u>	<u>Ammonia (ppmv)</u>
<u>Liquid Fuel – Turbines Located on Outer Continental Shelf</u>	<u>30</u>	<u>5</u>
<u>Natural Gas – Combined Cycle Turbine</u>	<u>2</u>	<u>5</u>
<u>Natural Gas – Simple Cycle Turbine</u>	<u>2.5</u>	<u>5</u>
<u>Produced Gas</u>	<u>9</u>	<u>5</u>
<u>Produced Gas – Turbines Located on Outer Continental Shelf</u>	<u>15</u>	<u>5</u>
<u>Other</u>	<u>12.5</u>	<u>5</u>

- (4) Notwithstanding the exemptions contained in Rule 2001 – Applicability, Table I – Rules Not Applicable to RECLAIM Facilities for Requirements Pertaining to NO<sub>x</sub> Emissions, 24 months after a permit to construct is issued by the Executive Officer, or 36 months after a permit to construct is issued by the Executive Officer if the application was submitted by July 1, 2021, the owner or operator of a compressor gas turbine, shall not operate such unit under load conditions, excluding start-up, shutdown, and tuning periods, which result in the discharge of NO<sub>x</sub> and ammonia emissions, directly or indirectly, into the atmosphere at concentrations in excess of the following emissions limits listed in Table II.

**Table II: Emissions Limits for Compressor Gas Turbines**(Corrected to 15% oxygen on a dry basis)

<u>Fuel Type</u>	<u>NO<sub>x</sub></u> <u>(ppmv)</u>	<u>Ammonia</u> <u>(ppmv)</u>
<u>Natural Gas – Compressor Gas Turbine</u>	<u>3.5</u>	<u>10</u>

- (5) Start-Up, Shutdown, and Tuning  
The owner or operator of a stationary gas turbine shall meet start-up, shutdown, and tuning requirements in the SCAQMD permit to operate. On and after January 1, 2024, the SCAQMD permit to operate shall include limitations for duration, mass emissions, and number of start-ups, shutdowns, and tunings.
- (6) Averaging Time
- (A) Stationary gas turbines installed prior to [Date of Adoption] shall comply with the averaging time requirements specified on the SCAQMD permit to operate as of [Date of Adoption], not to exceed 3 hours.
- (B) Stationary gas turbines installed after [Date of Adoption] shall average the NO<sub>x</sub>, and ammonia emissions limits in Table I and Table H over a 60-minute rolling average.
- (C) Stationary compressor gas turbines installed after [Date of Adoption] shall average the NO<sub>x</sub> and ammonia emissions limits in Table II over a three-hour rolling average.
- (7) Prohibition of Liquid Fuel  
An owner or operator of a stationary gas turbine shall not burn liquid fuel in a stationary gas turbine except for those located in the Outer Continental Shelf.
- (8) On or before July 1, 2022, the owner or operator of a stationary gas turbine shall submit an application for a permit to construct or change of permit conditions to reconcile the permit to operate with Rule 1134.
- (9) The owner or operator of a compressor gas turbine may submit a request to the Executive Officer for approval of an extension of up to 12 months to meet the NO<sub>x</sub> limits specified in paragraph (d)(4) and up to an additional 36 months to meet the ammonia emissions limits specified in paragraph

(d)(4); (such request shall be considered a plan for purposes of Rules 216 – Appeals and Rule 221 – Plans).

(A) The owner or operator that elects to submit a request for a time extension shall submit the request at least 30 days before the compliance deadline specified in paragraph (d)(4).

(B) 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 compressor gas turbines;

(iv) The length of time requested;

(v) A demonstration that actual facility NOx emissions will decrease by at least an average of 25% in the two years prior to the extension request ~~by December 31, 2023~~ in comparison to 2017 facility emissions.

(vi) Installation of an ammonia continuous emission monitoring system certified under an approved SCAQMD protocol if an extension is requested beyond 12 months to comply with the ammonia emission limits in paragraph (d)(4).

(vii) A demonstration that use of a turbine is less than 1,000 hours annually if an extension is requested beyond 24 months to comply with the ammonia emission limits in paragraph (d)(4).

(C) 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)(9)(A) and (d)(9)(B); 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, test results, and purchase orders.

(D) The owner or operator may appeal the rejection of the extension to the Hearing Board under Rule 216 – Appeals. If the Hearing Board denies the appeal, the emissions limits must be complied with by the compliance deadline specified in paragraph (d)(4) or 30 days after the Hearing Board denial, whichever is later.

(de) Monitoring and Source Testing

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

(1) ~~For cogeneration and combined-cycle gas turbines units~~ 2.9 MW and larger (continuous rating by the manufacturer without power augmentation) located at a non-RECLAIM NO<sub>x</sub> facility, install, operate, and maintain in calibration a continuous in-stack NO<sub>x</sub> and oxygen monitoring system which meets the requirements of SCAQMD Rule 218 – Continuous Emission Monitoring ~~40 CFR Part 60, Appendix B, Spec. 2, for NO<sub>x</sub>, Spec. 3 for oxygen (except the alternative RA procedures for Spec. 2 shall not apply), the 2 and 24 hour calibration spec. of Rule 218, and 40 CFR Part 60, Appendix F~~ to demonstrate compliance with the emission limits of this rule. ~~The continuous emissions monitoring system shall have data gathering and retrieval capability which meets the reporting requirements of 40 CFR part 60.7(c), 60.7(d), and 60.13.~~ This system shall include equipment that measures and records the following:

(A) Flow rate of liquids or gases and the ratio of water or steam to fuel added to the combustion chamber or to the exhaust for the reduction of NO<sub>x</sub> emissions, as applicable;

(B) Elapsed time of operation; and

(C) Turbine output in MW.

(2) Source Testing

(A) The owner or operator of any existing gas turbine located at a non-RECLAIM NO<sub>x</sub> facility operating without a continuous emission monitoring system, Provide shall provide source test information regarding the gas turbine's ~~unit's~~ exhaust gas NO<sub>x</sub> concentration,

and the demonstrated percent efficiency (EFF), or the manufacturer's rated EFF, if the Executive Officer determines that it is representative of the unit's EFF, and the carbon monoxide concentration as specified pursuant to paragraph (ef)(1). NO<sub>x</sub> and carbon monoxide concentrations shall be in ppm by volume, corrected to 15 percent oxygen on a dry basis.

(B) The owner or operator of each stationary gas turbine with a catalytic control device shall conduct source testing pursuant to clause (e)(2)(C)(iii) or utilize an ammonia continuous emission monitoring system certified under an approved SCAQMD protocol to demonstrate compliance with the ammonia emission limit.

(BC) Source Test Frequency

(i) The owner or operator of each stationary gas turbine operating without a continuous emission monitoring system and Units emitting 25 tons or more of NO<sub>x</sub> per calendar year shall be perform source tested to demonstrate compliance with the NO<sub>x</sub> emission limits; at least once every 12 monthscalendar year.

(ii) All other The owner or operator of each stationary gas turbine operating without a continuous emission monitoring system and emitting less than 25 tons existing units shall be perform source tested within 90 days after every 8,400 hours of operation to demonstrate compliance with the NO<sub>x</sub> emission limits at least once every three calendar years.

(iii) The owner or operator of each stationary gas turbine with a catalytic control device not utilizing an ammonia continuous emission monitoring system shall conduct source tests quarterly to demonstrate compliance during the first twelve months of operation of the catalytic control device and every calendar year thereafter when four consecutive source tests demonstrate compliance with the ammonia emission limit. If a source test is failed, four consecutive quarterly source tests shall demonstrate compliance with the ammonia emissions limits prior to resuming source tests annually.

(3) The owner or operator of each stationary gas turbine subject to Rule 1134 located at a RECLAIM NO<sub>x</sub> facility shall comply with SCAQMD Rule

2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NO<sub>x</sub>) Emissions to demonstrate compliance with the NO<sub>x</sub> emissions limits of this rule.

- (4) The owner or operator of each stationary gas turbine subject to Rule 1134 located at a former RECLAIM NO<sub>x</sub> facility shall conduct monitoring and recordkeeping pursuant to SCAQMD Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NO<sub>x</sub>) Emissions, excluding the following:
- (A) Rule 2012 paragraphs (c)(3) through (c)(8), reporting and Super Compliant facilities;
  - (B) Rule 2012 subparagraphs (d)(2)(B) through (d)(2)(E), reporting and emission factors;
  - (C) Rule 2012 subdivision (e), NO<sub>x</sub> Process Units;
  - (D) Rule 2012 paragraphs (g)(5) through (g)(8), reporting;
  - (E) Rule 2012 paragraphs (h)(1), (h)(2), and (h)(4) through (h)(6), reporting and mass emissions;
  - (F) Rule 2012 subdivisions, (i), (k), and (l), Recordkeeping, Exemptions, and Appeals; and
  - (G) Reported Data and Transmitting/Reporting Frequency requirements from Rule 2012 Appendix A – “Protocol for Monitoring, Reporting and Recordkeeping for Oxides of Nitrogen (NO<sub>x</sub>) Emissions.”

(ef) Test Methods

The following may be used by the Executive Officer to verify the concentrations of NO<sub>x</sub>, ammonia, carbon monoxide (CO), and oxygen subject to the provisions of this rule. Emissions determined to exceed any limits established by this rule through either of the following shall constitute a violation of this rule.

- (1) ~~District~~ SCAQMD Test Methods 3.1, 5.3, 7.1, 10.1, and 100.1, and 207.1, and EPA Test Methods 10 and 17, or any method deemed to be equivalent by the Executive Officer and approved by CARB and EPA.
- (2) Data obtained from a continuous emissions monitoring system, which is installed and properly operated according to paragraph ~~(d)~~(1) of this rule and as approved by the Executive Officer.
- (3) Emissions determined to exceed any limits established by this rule through the use of any of the above-referenced test methods shall constitute a violation of the rule.

## (fg) Recordkeeping

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

- (1) All records shall be maintained at the facility for a period of two years and made available to ~~District~~ SCAQMD staff upon request.
- (2) Maintain a gas turbine operating log that includes, on a daily basis, the actual ~~Pacific Standard Time~~ start-up and ~~stop~~ shut-down times; total hours of operation; type and quantity of fuel used (liquid/gas); cumulative hours of operation to date for the calendar year; ~~and if applicable the cumulative hours of operation since the last source test required by subparagraph (de)(2)(A).~~
- (3) ~~A monthly summary of emissions pursuant to paragraph (d)(1) shall be submitted to the District on or before the last day of the following calendar month.~~ Install, operate, and maintain a data acquisition system (DAS) to demonstrate compliance with the provisions subdivisions (d) and (h) of this rule.
- (4) The results of source tests shall be submitted to the ~~District~~ SCAQMD in a form and manner as specified by the Executive Officer within ~~30~~ 60 days after source testing is completed.
- (5) Any person using an emission control system as a means of complying with this rule shall maintain daily records of system operation and maintenance which will demonstrate continuous operation and compliance of the emission control device during periods of emission producing activities.

## (gh) Exemptions

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

- (1) All provisions of this rule shall not apply to the following:
  - (A) Laboratory gas turbines ~~units~~ used in research and testing; and
  - (B) Gas turbines ~~units~~ operated exclusively for ~~fire fighting~~ firefighting and/or flood control.
  - ~~(C) Chemical processing gas turbine units.~~
  - ~~(D) All existing pipeline gas turbine units located in the Southeast Desert Air Basin (SEDAB).~~

- (2) Emergency Standby Gas Turbines
- (A) The owner or operator of an emergency standby gas turbine shall not be subject to The provisions of subdivisions (ed) and (de), and paragraphs (fg)(3), (fg)(4), and (fg)(5) for that turbine, provided that the owner or operator of the emergency standby gas turbine shall not apply to the following:
- (i) (A) Install and maintain in proper operation a non-resettable engine hour meter; and
- (ii) Emergency standby and peaking gas turbine units Demonstrated to operate less than 200 hours of operation per calendar year; which have installed and maintained in proper operation a non-resettable engine hour meter.
- (B) ~~All existing gas turbine units located in the Southeast Desert Air Basin (SEDAB) which are rated below 4 MW and operate less than 877 hours per year.~~
- (C) ~~All existing gas turbine units located on San Clemente Island which are rated below 4 MW and operate less than 877 hours per year.~~
- (B) However, if the hour-per-year limit is exceeded, the exemption shall be automatically and permanently withdrawn. The owner or operator of any stationary gas turbine unit exempt under this subparagraph (h)(2)(A) must shall:
- (i) Notify the Executive Officer within seven days of the date the hour-per-year limit is exceeded; and
- (ii) Within 30 days after the date the hour-per-year limit is exceeded, the operator must submit a permit application for modification to equipment to meet the applicable compliance limit within 24 months of the date the hour-per-year limit is exceeded. Included with this permit application, the owner or operator must shall submit an emission control plan including a schedule of increments of progress for the installation of the required control equipment. This plan and schedule shall be subject to the review and approval of the Executive Officer.

(3) Combined Cycle Gas Turbines

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

- (A) The SCAQMD permit to operate as of [Date of Adoption] includes a condition limiting the NO<sub>x</sub> concentration to 2.5 ppmv NO<sub>x</sub> at 15% oxygen on a dry basis; and
- (B) The NO<sub>x</sub> and ammonia limits, averaging times, and start-up, shutdown, and tuning requirements specified on the SCAQMD permit to operate as of [Date of Adoption] are retained.

(4) Low-Use

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

- (i) The stationary gas turbine maintains an annual capacity factor of less than twenty-five percent each calendar year;
- (ii) The stationary gas turbine maintains an annual capacity factor of less than ten percent averaged over three consecutive calendar years on a rolling basis;
- (iii) The stationary gas turbine retains the NO<sub>x</sub> and ammonia limits, averaging times, and start-up, shutdown, and tuning requirements specified on the SCAQMD permit to operate as of [Date of Adoption];
- (iv) The NO<sub>x</sub> limit shall not exceed 12 ppmv at 15% oxygen on a dry basis and the ammonia limit shall not exceed 10 ppmv at 15% oxygen on a dry basis; and
- (v) The low-use exemption is a condition of the SCAQMD permit.

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

(C) The owner or operator shall determine eligibility of the low-use exemption for each stationary gas turbine annually and reported to

the Executive Officer no later than March 1 following each reporting year.

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

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

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

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

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

# ATTACHMENT H

## SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

### **Final Staff Report**

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

**April 2019**

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WAYNE NASTRI

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## **CHAPTER 1: BACKGROUND**

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**INTRODUCTION**

**BACKGROUND**

**REGULATORY BACKGROUND**

**PUBLIC PROCESS**

## 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 NO<sub>x</sub> 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. In addition, California State Assembly Bill 617 (AB 617), which was signed by the Governor on July 26, 2017 and affects RECLAIM facilities that are also in the California Greenhouse Gas Cap and Trade program, requires implementation of Best Available Retrofit Control Technology (BARCT) no later than December 31, 2023, with priority given to older, higher polluting units.

Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (Rule 1134) was adopted in 1989. Proposed Amended Rule (PAR) 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines will facilitate the transition of the NO<sub>x</sub> RECLAIM program to a command-and-control regulatory structure and to implement Control Measure CMB-05 – Further NO<sub>x</sub> Reductions from RECLAIM Assessment (Control Measure CMB-05) of the 2016 AQMP. PAR 1134 applies to stationary gas turbines that are located at RECLAIM and non-RECLAIM facilities. PAR 1134 does not apply to gas turbines that are subject to Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities (Rule 1135), turbines located at landfills, petroleum refineries, or publicly owned treatment works, or turbines fueled by landfill gas.

## BACKGROUND

The SCAQMD Governing Board adopted the RECLAIM program in October 1993. The purpose of RECLAIM is to reduce NO<sub>x</sub> and SO<sub>x</sub> 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 regulatory approach. Regulation XX – Regional Clean Air Incentives Market (RECLAIM) (Regulation XX) includes a series of rules that specify the applicability and procedures for determining NO<sub>x</sub> and SO<sub>x</sub> 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 NO<sub>x</sub> 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. On January 5, 2018, Regulation XX, Rule 2001 – Applicability (Rule 2001) and Rule 2002 – Allocations for Oxides of Nitrogen (NO<sub>x</sub>) and Oxides of Sulfur (SO<sub>x</sub>) (Rule 2002), were amended to commence the initial steps to transition RECLAIM facilities to a command-and-control regulatory approach. On October 5, 2018, Rules 2001 and 2002 were amended to support ongoing efforts for transitioning RECLAIM facilities. Rule 2001 includes a provision to allow facilities to opt-out of RECLAIM if certain criteria are met. Rule 2002 provides an option for facilities that receive an initial determination notification to stay in RECLAIM for a limited time while complying with applicable command-and-control

requirements. Additionally, Rule 2002 establishes a provision that precludes any former RECLAIM facility from obtaining offsets from the SCAQMD internal bank.

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 NO<sub>x</sub> 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 NO<sub>x</sub> 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 NO<sub>x</sub> 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. 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 Districts 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.

## **REGULATORY BACKGROUND**

Rule 1134 was adopted in 1989. The rule applies to stationary gas turbines rated at 0.3 MW and larger that were issued a permit to operate by the SCAQMD prior to August 4, 1989. The origin of the rule can be traced to a 1979 United States Environmental Protection Agency (EPA) New Source Performance Standard for Stationary Gas Turbines. In 1981, the California Air Resources Board (CARB) adopted a Suggested Control Measure for this same equipment. Rule 1134 was subsequently amended three times; each to provide regulatory flexibility.

- In December 1995, Rule 1134 was amended to exempt gas turbines located on San Clemente Island and the South East Desert Air Basin.
- In April 1997, Rule 1134 was amended to increase the NO<sub>x</sub> concentration limit for turbines utilizing sewage digester gas.
- In August 1997, Rule 1134 was amended to clarify the need for continuous emission monitoring systems (CEMS) on turbines with a power output of 2.9 MW or larger.

EPA approved Rule 1134 into the SIP on August 1, 2000.

### **Stationary Gas Turbines and RECLAIM**

Beginning in 1994, a large number of utilities and third-party-owned cogeneration facilities were included in the RECLAIM program and as such were not required to meet the NO<sub>x</sub> concentration limits imposed by Rule 1134 which had effective dates post 1994. However, gas turbines permitted prior to August 4, 1989 that were used at publicly-owned treatment works, landfills,

hospitals, and other public facilities, were not included in RECLAIM and were required to meet the concentration limits in Rule 1134. PAR 1134 will apply to all stationary gas turbines located at non-RECLAIM and RECLAIM facilities (excluding those subject to Rule 1135, located at a petroleum refineries, landfills, or publicly owned treatment works), or turbines fueled with landfill gas, regardless of the date they were permitted.

## **PUBLIC PROCESS**

Development of Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines was conducted through a public process. SCAQMD has held four working group meetings at the SCAQMD Headquarters in Diamond Bar on February 22, 2018, April 26, 2018, June 13, 2018, and August 10, 2018. The Working Group is composed of representatives from 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 ~~will be~~ was held at the SCAQMD Headquarters in Diamond Bar on December 18, 2018.

## **CHAPTER 2: BARCT ASSESSMENT**

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**INTRODUCTION**

**BARCT – RETROFIT VERSUS REPLACEMENT**

**BARCT ANALYSIS APPROACH**

## INTRODUCTION

Staff conducted an assessment of Best Available Retrofit Control Technology (BARCT) for stationary gas turbines. 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 NO<sub>x</sub> 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.

As explained in detail below, BARCT may certainly include the replacement of equipment. However, PAR 1134 does not require equipment replacement. The following discussion addresses comments raised in connection with this rule even though it does not require replacements. 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 was part of Proposed Amended Rule 1135 (PAR 1135), which has already been adopted. This demonstrates how public policy supports SCAQMD’s interpretation. Moreover, as we explained in the PAR 1135 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 statute 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~~ adopted in Rule 1135 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.*

While PAR 1134 does not require replacement of any equipment as BARCT, in the recently amended Rule 1135, replacement of certain equipment was required as BARCT. In that rule, the proposal to require replacement of five out of the six internal combustion engines at Santa Catalina Island was 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 (PAR 1135 Final Staff Report, Table 4-3, 9 MWhr divided by 15,904 MWhr). But they account for 5.7% of the emissions inventory from electricity generating facilities (PAR 1135 Staff Report, Table 4-4, 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. 4<sup>th</sup> 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. 4<sup>th</sup> 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. 4<sup>th</sup> 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. 4<sup>th</sup> 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.

Contrary to the commenter's argument, The 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](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(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 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, which 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, in the case of recently amended Rule 1135, to replace old diesel internal combustion engines with diesel internal combustion engines meeting EPA’s Tier IV standards. Therefore, section 40920.6 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 only 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]he 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. *Id.* 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. 4th 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**

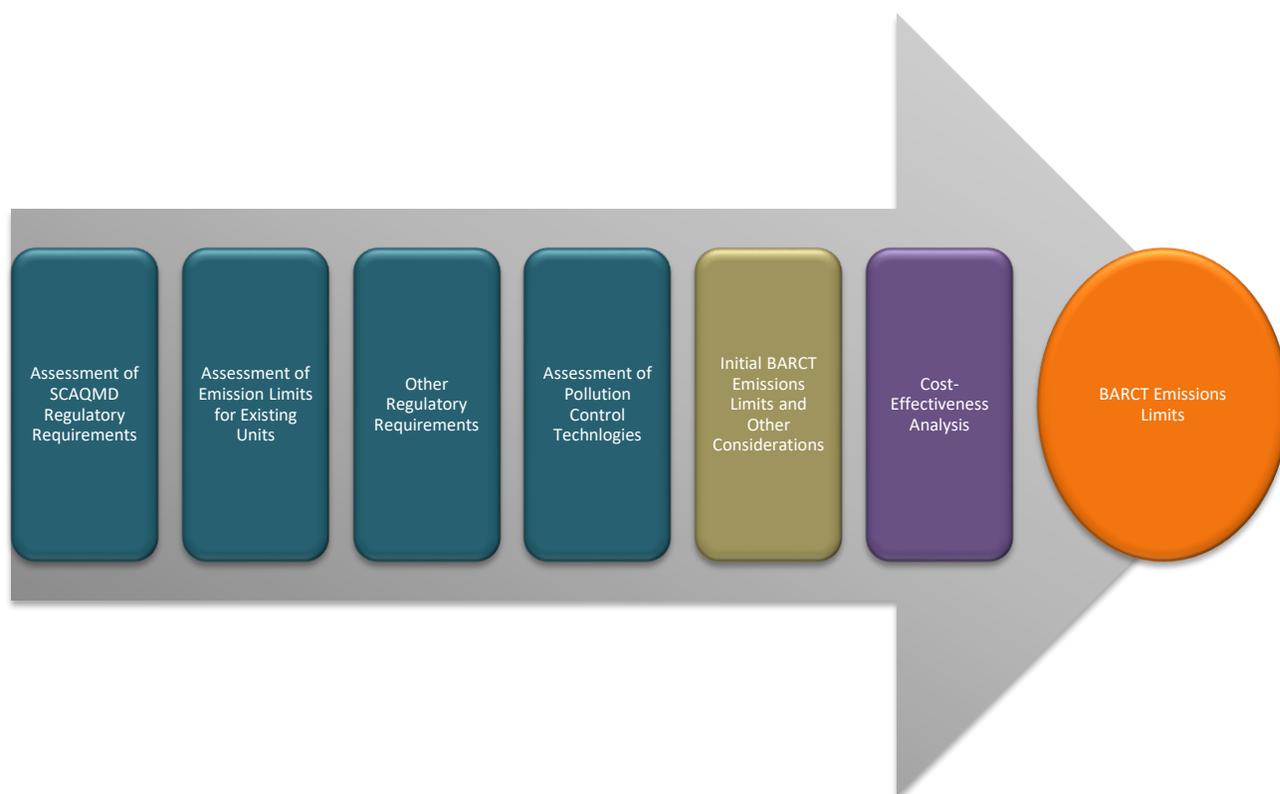
SCAQMD has the authority to require equipment replacement as a BARCT requirement as long as the requirement meets the statutory definition of BARCT. But even if BARCT were to exclude equipment replacement, the SCAQMD would still have the authority to require replacement, as long as the replacement is not arbitrary and capricious.

### **BARCT ANALYSIS APPROACH**

The BARCT analysis approach follows a series of steps conducted for each equipment category and fuel type. For Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (PAR 1134), stationary gas turbines were analyzed by process and fuel type.

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 Emissions Limits and Other Considerations
- Cost-Effectiveness Analysis
- Final BARCT Emissions Limits



### Assessment of SCAQMD Regulatory Requirements

As part of the BARCT assessment, staff reviewed existing SCAQMD regulatory requirements that affect NO<sub>x</sub> emissions from stationary gas turbines. NO<sub>x</sub> emissions from stationary gas turbines permitted prior to August 4, 1989 located at non-RECLAIM facilities are regulated under Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (Rule 1134). Under Rule 1134, the NO<sub>x</sub> emission concentration limits are as follows in Table 2-1 below.

**Table 2-1 – Current Rule 1134 NO<sub>x</sub> Concentration Limits**

Unit Size (MW)	NO <sub>x</sub> Reference Limit (ppmv at 15% oxygen, dry)
No Selective Catalytic Reduction	
0.3 to < 2.9	25
2.9 to < 10	15
2.9 to < 10 (Sewage Digester Gas)	25
10 and Over	12
60 and Over (Combined Cycle)	15
With Selective Catalytic Reductions	
2.9 to < 10	9
10 and Over	9
60 and Over (Combined Cycle)	9

### Assessment of Emission Limit for Existing Units

Staff examined all of the current non-emergency stationary gas turbines, excluding those subject to Rule 1135, located at a petroleum refinery, landfill, or publicly owned treatment work, or powered by landfill gas to assess the emission rate of equipment located in SCAQMD. 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. Stationary gas turbines installed after August 4, 1989 and not located at a RECLAIM facility (existing units) only have emissions limits established at the time of permitting. Permit limits for NOx concentrations were identified for all equipment to identify what is already being done in practice. Currently, there are approximately 73 turbines at 39 facilities: 40 natural gas turbines at 27 facilities; 3 produced gas turbines at two facilities; 7 compressor gas turbines at two facilities, six produced gas turbines at two offshore facilities; and 17 emergency standby gas turbines at six facilities.

#### Natural Gas Combined Cycle Gas Turbines

For natural gas combined cycle gas turbines, one of eighteen units ~~are~~ is permitted at 2 ppmv NOx at 15% oxygen on a dry basis. Six natural gas combined cycle gas turbines are permitted at 2.5 ppmv NOx at 15% oxygen on a dry basis. These seven units were replacement units installed in 2009 or later. Units that were permitted at 2 ppmv or 2.5 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 in SCAQMD is 2 ppmv at 15% oxygen on a dry basis. Table 2-2 lists the information regarding natural gas combined cycle gas turbines.

**Table 2-2 – Natural Gas Combined Cycle Gas Turbines**

Unit	Size (MMBTU/HR)	MW Rating	Install Year	Control <sup>1</sup>	NOx Permit Limit <sup>2</sup> (ppmv @ 15% oxygen, dry)	Ammonia Permit Limit (ppmv @ 15% oxygen, dry)	2015 NOx Emissions (tons)
NG CS10 <sup>3</sup>	410	60	1996	SCR	102 <sup>4</sup>	5	192.7
NG CS3	16	1.1	1989	Water injection	41	Not applicable	2.4
NG CS1	59	2.9	1989	Water injection	25	Not applicable	10.8
NG CS2	59	2.9	1989	Water injection	25	Not applicable	4.0
NG CS8 <sup>3</sup>	59	6	1993	Water injection/Low NOx duct burner	21	Not applicable	26.2
NG CS9 <sup>3</sup>	59	6	1993	Water injection/Low NOx duct burner	21	Not applicable	24.1
NG CS4	234	23.6	1989	Steam or water injection/SCR/Vaporization system	12	None	33.3
NG CS6 <sup>3</sup>	46	2.8	1992	Water injection	9	Not applicable	5.3
NG CS7	49	2.9	1992	Water injection	9	Not applicable	5.6
NG CS17	446	48.2	1987	SCR/Water Injection	9	None	10.2
NG CS5	221	21.7	1990	SCR/Water Injection	9	5	45.4
NG CS18	350	30	2010	SCR/Water Injection	2.5	5	1.0
NG CS11 <sup>3</sup>	57	5	2009	SCR	2.5	5	0.6

NG CS12 <sup>3</sup>	57	5	2009	SCR	2.5	5	0.2
NG CS13	162	13.4	2010	SCR	2.5	5	3.5
NG CS15	114	5.6	2015	SCR	2.5	5	0.4
NG CS16	114	5.6	2015	SCR	2.5	5	0.4
NG CS14	173	13.5	2013	SCR	2	5	0.9

<sup>1</sup> – SCR: Selective Catalytic Reduction

<sup>2</sup> – Actual NO<sub>x</sub> concentrations emitted are generally lower than the NO<sub>x</sub> permit limit

<sup>3</sup> – Natural Gas Combined Cycle Gas Turbine with Associated Duct Burner

<sup>4</sup> – Actual NO<sub>x</sub> concentration emitted are much lower than NO<sub>x</sub> permit limit

### Natural Gas Simple Cycle Gas Turbines

For natural gas simple cycle gas turbines, two of twenty-two units are permitted at 2.5 ppmv NO<sub>x</sub> at 15% oxygen on a dry basis. Some simple cycle gas turbines have permitted ammonia concentrations of 5 ppmv at 15% oxygen on a dry basis. However, many have no limits whatsoever because the addition of ammonia limits is a relatively recent addition. Table 2-3 lists the information regarding natural gas simple cycle turbines.

**Table 2-3 – Natural Gas Simple Cycle Gas Turbines**

Unit	Size (MMBTU/HR)	Output (MW)	Install Year	Control <sup>1</sup>	NO <sub>x</sub> Permit Limit <sup>2</sup> (ppmv at 15% oxygen, dry)	Ammonia (ppmv at 15% oxygen, dry)	2015 NO <sub>x</sub> Emissions (tons)
NG SS13	246	23	1987	Steam injection	42	Not applicable	26.1
NG SS14	466	42	1987	Steam injection	42	Not applicable	279.2
NG SS8	50	4	1988	Steam injection	40	Not applicable	29.3
NG SS9	50	4	1989	Steam injection	40	Not applicable	29.3
NG SS10	229	22.4		SCR/Steam injection	9	20	32.4
NG SS11	250.6	23.1	2002	SCR/Steam injection	9	20	27.3
NG SS 28	221	21.8	1989	SCR	9	20	19.0
NG SS 29	221	21.8	1989	SCR	9	20	23.1
NG SS12	1080	158	2009	Steam injection	7.5	Not applicable	4.9
NG SS19	530.2	43.8	2008	SCR/Steam injection	7	20	0
NG SS15	472.5	39		SCR/Steam injection	5	5	4.8
NG SS17	43.8	4.6	2009	Lean pre-mix combustor	5	Not applicable	3.2
NG SS20	136.5	10.5	2001	SCR	5	5	0
NG SS21	136.5	10.5	2001	SCR	5	5	0
NG SS22	136.5	10.5	2001	SCR	5	5	0
NG SS23	136.5	10.5	2001	SCR	5	5	0
NG SS24	136.5	10.5	2001	SCR	5	5	0.1
NG SS25	136.5	10.5	2001	SCR	5	5	0
NG SS26	136.5	10.5	2001	SCR	5	5	0
NG SS27	136.5	10.5	2001	SCR	5	5	0
NG SS16	126	10	2008	SCR	2.5	None	8.7
NG SS18	407.7	39		SCR	2.5	10	1.7

<sup>1</sup> – SCR: Selective Catalytic Reductions

<sup>2</sup> – Actual NO<sub>x</sub> concentration emitted are generally lower than the NO<sub>x</sub> permit limit

### Produced Gas Turbines

Currently there are three non-Outer Continental Shelf (OCS) produced gas turbines subject to PAR 1134. One produced gas turbine is permitted at 5 ppmv NO<sub>x</sub> and 5 ppmv ammonia at 15% oxygen on a dry basis. Table 2-4 lists the information regarding the non-OCS produced gas turbines.

**Table 2-4 – Produced Gas Turbines (Non-OCS)**

Unit	Size (MMBTU/HR)	Output (MW)	Install Year	Control <sup>1</sup>	NO <sub>x</sub> Permit Limit <sup>2</sup> (ppmv at 15% oxygen, dry)	Ammonia (ppmv at 15% oxygen, dry)	2016 NO <sub>x</sub> Emissions (tons)
PGT2	49	4.8	2001	SCR	9	10	4.0
PGT3	49	4.8	2001	SCR	9	10	1.5
PGT5	63	5.7	2003	SCR	5	5	4.6

<sup>1</sup> – SCR: Selective Catalytic Reduction

<sup>2</sup> – Actual NO<sub>x</sub> concentration emitted are generally lower than the NO<sub>x</sub> permit limit

### Outer Continental Shelf Produced Gas and Liquid Fueled Turbines

Currently there are six OCS produced gas turbines subject to PAR 1134. They also have the capability to burn liquid fuel when produced gas is not available. The turbines are permitted between 65 and 140 ppmv NO<sub>x</sub> at 15% oxygen on a dry basis. Table 2-5 lists the information regarding the OCS produced gas turbines.

**Table 2-5 – Outer Continental Shelf Produced Gas Turbines**

Unit	Size (MMBTU/HR)	Output (MW)	Install Year	Control	NO <sub>x</sub> Permit Limit <sup>1</sup> (ppmv at 15% oxygen, dry)	Ammonia (ppmv at 15% oxygen, dry)	2016 NO <sub>x</sub> Emissions (tons)
PGOCST1	29	2.5	1984	N/A	140	Not applicable	47.7
PGOCST2	29	2.5	1984	N/A	140	Not applicable	42.3
PGOCST3	29	2.5	1984	N/A	130	Not applicable	40.1
PGOCST4	42	2.5	1984	N/A	65	Not applicable	7.2
PGOCST5	42	2.5	1984	N/A	65	Not applicable	3.0
PGOCST6	42	2.5	1984	N/A	65	Not applicable	8.9

<sup>1</sup> – Actual NO<sub>x</sub> concentration emitted are generally lower than the NO<sub>x</sub> permit limit

### Compressor Gas Turbines

Currently there are seven compressor gas turbines subject to PAR 1134. The turbines are permitted between 64 and 81 ppmv NO<sub>x</sub> at 15% oxygen on a dry basis. Table 2-6 lists the information regarding the compressor gas turbines.

**Table 2-6 – Compressor Gas Turbines**

Unit	Size (MMBTU/HR)	Output (MW)	Install Year	Control	NOx Permit Limit <sup>1</sup> (ppmv at 15% oxygen, dry)	Ammonia (ppmv at 15% oxygen, dry)	2015 NOx Emissions (tons)
NG SS1 <sup>2</sup>	150	11	1980	None	81	Not applicable	58.1
NG SS2 <sup>2</sup>	150	11	1980	None	81	Not applicable	54.3
NG SS3 <sup>2</sup>	150	11	1980	None	81	Not applicable	52.4
NG SS4	13.11	0.9	<del>1980</del> 1972	None	68	Not applicable	3.7
NG SS6	13.11	0.9	<del>1990</del> 1972	None	68	Not applicable	3.9
NG SS5	13.11	0.9	<del>2002</del> 1972	None	67	Not applicable	4.3
NG SS7	13.11	0.9	<del>1987</del> 1972	None	64	Not applicable	3.7

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

2 – Equipment replaced in 2018

### Summary

A summary of permitted limits in SCAQMD for the five types of stationary gas turbines is provided in Table 2-7.

**Table 2-7 – 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
Natural Gas Combined Cycle Gas Turbine	2 ppmv at 15% oxygen, dry	1 unit	Selective Catalytic Reduction (Replacement)
Natural Gas Simple Cycle Gas Turbine	2.5 ppmv at 15% oxygen, dry	2 units	Selective Catalytic Reduction (Replacement)
Produced Gas Turbines	5 ppmv at 15% oxygen, dry	1 unit	Selective Catalytic Reduction (Replacement)
Outer Continental Shelf Produced Gas Turbines	65 ppmv at 15% oxygen, dry	3 units	None
Compressor Gas Turbines	64 ppmv at 15% oxygen, dry	1 unit	None

### Other Regulatory Requirements

As part of the BARCT assessment, staff examined NOx limits for stationary gas turbines promulgated by Bay Area Air Quality Management District (BAAQMD) and San Joaquin Valley Air Pollution Control District (SJVAPCD). BAAQMD Regulation 9, Rule 9 – Nitrogen Oxides and Carbon Monoxide from Stationary Gas Turbines and SJVAPCD Rule 4703 – Stationary Gas

Turbines were reviewed. Table 2-8 below notes the NO<sub>x</sub> limits in the two air districts for stationary gas turbines.

**Table 2-8 – Stationary Gas Turbine Limits in Other Air Districts**

Agency	Rule Adoption Date	Rule Effective Date	Capacity (MMBTU/HR)	Output (MW)	NO <sub>x</sub> Limit (ppmv @ 15% oxygen, dry)
BAAQMD <sup>1</sup>	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 <sup>2</sup>	<3	25
			>35 – 130 <sup>2</sup>	>3 – 10	25
			>35 – 130 <sup>2</sup>	>3 – 10	8 steady and 12 transition (Pipeline/Compressor)
			>130 <sup>2</sup>	>10	25-42

<sup>1</sup> – Currently under review

<sup>2</sup> – Non-regulatory, converted for comparison purposes only

For natural gas turbines, the NO<sub>x</sub> concentration limits in other Air District regulations were higher than existing units located in SCAQMD. The exception is the SJVAPCD compressor gas turbine limit.

### Assessment of Pollution Control Technologies

As part of the BARCT assessment, staff conducted a technology assessment to evaluate NO<sub>x</sub> pollution control technologies for stationary gas turbines. Staff reviewed scientific literature, vendor information, and strategies utilized in practice. The documents that staff relied upon are listed in this report's references section, including U.S. EPA's "Catalog of CHP Technologies" and "Air Pollution Control Cost Estimation Spreadsheet for Selective Catalytic Reduction". Reference is included for the Office of Energy Efficiency and Renewable Energy's "Catalytic Combustion". The technologies are presented below and the applicability for use with various stationary gas turbines is noted. In most cases, post-combustion technologies may be utilized in conjunction with pre-combustion technologies.

#### Pre-Combustion Technologies

##### *Dry Low-NO<sub>x</sub> or Lean Premix Emission Combustors (Natural Gas, Produced Gas Turbines, Compressor)*

Prior to combustion, gaseous fuel and compressed air are pre-mixed, minimizing localized hot spots that produce elevated combustion temperatures and therefore, less NO<sub>x</sub> 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 NO<sub>x</sub> formation, as very lean conditions cannot produce the high temperatures that create thermal NO<sub>x</sub>. Using this technology, NO<sub>x</sub> emissions, without further controls, have been demonstrated at single digits (< 9 ppmv at 15% oxygen, dry). The technology is engineered into the combustor that becomes an intrinsic part of

the turbine design. Fuel staging or air staging is utilized to keep the flame within its operating boundaries. It is not available as a “retrofit” technology and must be designed for each turbine application.

*Water or Steam Injection (Natural Gas, Produced Gas Turbines, Compressor)*

Demineralized water is injected into the combustor through the fuel nozzles to lower flame temperature and reduce NO<sub>x</sub> emissions. Water or steam provides a heat sink that lowers flame temperature. Imprecise application leads to some hot zones so NO<sub>x</sub> is still created. NO<sub>x</sub> 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, Produced Gas Turbines, Compressor)*

A catalytic process is used instead of a flame to combust the natural gas. Flameless combustion lowers combustion temperature resulting in reduced NO<sub>x</sub> formation. The overriding constraints are operating efficiency over a wide operating range of the turbine. Initial engine demonstrations have shown that catalytic combustion reduces NO<sub>x</sub> emissions. In its first commercial installation, NO<sub>x</sub> 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.

### Post-Combustion Technologies

*Selective Catalytic Reduction (Natural Gas, Produced Gas Turbines, Compressor)*

Selective catalytic reduction is the primary post-combustion technology for NO<sub>x</sub> reduction and is widely used in turbines. The technology can reduce NO<sub>x</sub> emissions 95% or greater. In many cases the NO<sub>x</sub> reduction is limited by the release of other pollutants (ammonia and carbon monoxide), space constraints, or reaches the practical limit of the NO<sub>x</sub> measuring device. Many stationary gas turbines already utilize selective catalytic reduction. Further reductions could be possible by adding catalyst modules. From observations made during site visits, not all turbines have space readily available to add catalyst modules and would require construction.

Ammonia is injected into the flue gas and reacts with NO<sub>x</sub> to form nitrogen and water. Catalysts are made from ceramic materials and active catalytic components of base metals, zeolites, or precious metals. The catalyst may be configured into plates but many new systems are configured into honeycombs to ensure uniform dispersion and reduce ammonia emissions to below 5 ppmv. The reductant, ammonia, is available as anhydrous ammonia, aqueous ammonia, or urea. Anhydrous ammonia is toxic and SCAQMD does not permit new installations of anhydrous ammonia storage tanks. Urea is an alternative but requires conversion to ammonia to be used. Most new selective catalytic reduction installations utilize aqueous ammonia in a 19 percent solution.

To perform optimally, the gas temperature in the control device should be between 400°F and 800°F. During start-up and shutdown, the temperature will be below optimal range greatly reducing the effectiveness. Thus, NO<sub>x</sub> concentration limits are generally not applicable during

start-up or shutdown. Newer stationary gas turbines reduce the low temperature periods where emissions are out of control.

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

#### *Catalytic Absorption Systems (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 NO<sub>x</sub> concentration levels achieved by the various technologies assessed were consistent with the NO<sub>x</sub> concentration levels found in existing stationary gas turbines located in SCAQMD.

#### **Initial BARCT Emission Limit and Other Considerations**

The recommendation for the NO<sub>x</sub> 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~~ existing units are considered. Existing units are turbines that were installed after 1989 and not subject to Rule 1134. These units would only have been subject to Best Available Control Technology (BACT) at the time of installation.

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.

#### Natural Gas Combined Cycle Gas Turbines

Natural gas combined cycle gas turbines have been ~~new installations~~ existing units. The lowest NO<sub>x</sub> concentration limit for ~~new installations~~ existing units in SCAQMD is 2 ppmv at 15% oxygen on a dry basis. Other air districts limit NO<sub>x</sub> 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~~ existing units. 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 NO<sub>x</sub> at 15% oxygen on a dry basis. The initial BARCT recommendation

for both existing units ~~new installations~~ and retrofits of natural gas combined cycle gas turbines is 2 ppmv NOx at 15% oxygen on a dry basis.

**Table 2-9 – 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
<del>New Installation</del> Existing Units	2	2-25	2	2

#### Natural Gas Simple Cycle Gas Turbines

For ~~new installation~~existing units, 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~~retrofits 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 installation~~existing units and retrofits of natural gas simple cycle gas turbines is 2.5 ppmv NOx at 15% oxygen on a dry basis.

**Table 2-10 – 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
<del>New Installation</del> Existing Units	2.5	2.5-25	2.5	2.5

#### Produced Gas Turbines

One produced gas turbines has a NOx concentration limit of 5 ppmv at 15% oxygen on a dry basis. Other air districts do not have specific limits for produced gas turbine NOx emissions. They default to natural gas limits based on the size of the turbine. In this case (3-10 MW or 50-150 MMBtu/hr) the limit ranges between 25-42 ppmv at 15% oxygen on a dry basis. The technology assessment found that a combination of pre-combustion technology and post-combustion control can meet a concentration of 5 ppmv NOx at 15% oxygen on a dry basis. The initial BARCT recommendation for both ~~new installation~~existing units and retrofits of produced gas turbines is 5 ppmv NOx at 15% oxygen on a dry basis.

**Table 2-11 – Initial BARCT Recommendation for Produce 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	25	5	5
New Install Existing Units	5	25	5	5

#### Outer Continental Shelf Produced Gas and Liquid Turbines

Three OCS produced gas turbines have a NO<sub>x</sub> concentration limit of 65 ppmv at 15% oxygen on a dry basis. Other air districts do not have specific NO<sub>x</sub> emissions limits for OCS produced gas turbine; they default to natural gas limits based on the size of the turbine. In this case (< 3 MW or < 50 MMBtu/hr) the limit ranges between 25-42 ppmv at 15% oxygen on a dry basis. The technology assessment found that pre-combustion technology can meet a concentration of 15 ppmv NO<sub>x</sub> at 15% oxygen on a dry basis<sup>1</sup>. When firing on liquid fuel, the technology assessment found that pre-combustion technology can meet a concentration of 30 ppmv NO<sub>x</sub> at 15% oxygen on a dry basis. The initial BARCT recommendation for both ~~new installations~~existing units and retrofits of OCS produced gas turbines is 15 ppmv NO<sub>x</sub> at 15% oxygen on a dry basis.

**Table 2-12 – Initial BARCT Recommendation for Produce 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	65	25	15	15
New Install Existing Units	65	25	15	15

#### Compressor Gas Turbines

Two new installations have permitted limits of 3.5 ppmv NO<sub>x</sub> at 15% oxygen on a dry basis in other air districts<sup>2</sup>. Other air districts have a limit of 8 ppmv NO<sub>x</sub> during normal operations and 12 ppmv during transitional operations at 15% oxygen on a dry basis. The technology assessment found that that a combination of pre-combustion technology and post-combustion control can meet a concentration of 3.5 ppmv NO<sub>x</sub> at 15% oxygen on a dry basis. The initial BARCT recommendation for compressor gas turbines is 3.5 ppmv NO<sub>x</sub> at 15% oxygen on a dry basis.

<sup>1</sup> [https://www.solarturbines.com/en\\_US/products/power-generation-packages/centaur-50.html](https://www.solarturbines.com/en_US/products/power-generation-packages/centaur-50.html)

<sup>2</sup> [https://www.deq.virginia.gov/Portals/0/DEQ/Air/BuckinghamCompressorStation/May\\_25\\_2018\\_Updated\\_Application.pdf](https://www.deq.virginia.gov/Portals/0/DEQ/Air/BuckinghamCompressorStation/May_25_2018_Updated_Application.pdf)  
<https://mde.state.md.us/programs/Permits/AirManagementPermits/Documents/dom%20air%20dispersion%20supplement.pdf>

**Table 2-13 – Initial BARCT Recommendation for Compressor 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	64	50	3.5	3.5
New Install Existing Units	64 3.5	50	3.5	3.5

### Other Gas Turbines

The BARCT assessment provided above analyzed existing gas turbines. However, the rule may apply to gas turbines using a fuel besides those listed above. The most likely alternative fuel is biogas that will have contaminant issues such as hydrogen sulfide and siloxanes, which will limit the ability to utilize post-combustion technologies. The technology assessment found that the use of pre-combustion technology can meet a concentration of 12.5 ppmv NO<sub>x</sub> at 15% oxygen on a dry basis. The initial BARCT recommendation for other gas turbines is 12.5 ppmv at 15% oxygen on a dry basis.

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
Natural Gas Combined Cycle Gas Turbine	2 ppmv @ 15% oxygen, dry
Natural Gas Simple Cycle Gas Turbine	2.5 ppmv @ 15% oxygen, dry
Compressor Gas Turbine	3.5 ppmv @ 15% oxygen, dry
Produced Gas Turbine	5 ppmv @ 15% oxygen, dry
Outer Continental Shelf Produced Gas Turbine	15 ppmv @ 15% oxygen, dry
Outer Continental Shelf Liquid Fuel Turbine	30 ppmv @ 15% oxygen, dry
Other Gas Turbine	12.5 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 specified in the 2016 Air Quality Management Plan (AQMP), then the control method is considered to be cost-effective. The 2016 ~~Air Quality Management Plan (AQMP)~~ Air Quality Management Plan (AQMP) establishes a cost-effectiveness threshold of \$50,000 per ton of NO<sub>x</sub> 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 percent 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. Proposed Amended 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (PAR 1134) emissions are determined by using reported fuel consumption and the proposed emission limit. Emission reductions are the difference between baseline emissions and PAR 1134 emissions.

Costs for retrofitting stationary 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 2015 reported fuel usage. Values are reported in 2015 dollars. Cost-effectiveness is not reported for turbines that already meet the proposed BARCT emission limits.

#### Natural Gas Combined Cycle Gas Turbines

All but one of the eighteen 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. Six units are permitted at 2.5 ppmv NOx at 15% oxygen on a dry basis. The remaining eleven units are permitted at 9 ppmv NOx at 15% oxygen on a dry basis or above. The cost-effectiveness for natural gas combined cycle gas turbines is presented below in Table 2-15 below.

**Table 2-15 – Natural Gas Combined Cycle Gas Turbine<sup>1</sup> Cost-Effectiveness**

Unit	Input (MMBTU/HR)	Output (MW)	2015 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
NG CS10	410	60	192.7	7,500	1.4%	102	\$7.21	\$0.49	188.9	\$3,229	0.1%
NG CS3	16	1	2.4	4,800	49.8%	41	\$0.54	\$0.04	2.3	\$21,064	21.0%
NG CS1	59	3	10.8	22,800	90.1%	25	\$1.00	\$0.09	9.9	\$9,802	17.7%
NG CS2	59	3	4	22,800	90.1%	25	\$1.00	\$0.09	3.7	\$26,465	47.7%
NG CS8	59	6	26.2	47,000	89.4%	21	\$1.61	\$0.14	23.7	\$6,477	11.6%
NG CS9	59	6	24.1	44,000	83.7%	21	\$1.61	\$0.14	21.8	\$7,042	11.8%
NG CS4	234	24	33.3	75,000	36.3%	12	\$3.93	\$0.29	27.8	\$12,516	9.1%
NG CS6	46	3	5.3	18,000	68.4%	9	\$0.98	\$0.07	4.1	\$42,269	57.8%
NG CS7	49	3	5.6	19,000	72.3%	9	\$0.98	\$0.07	4.4	\$40,256	58.2%
NG CS17	446	48	10.2	75,000	17.7%	9	\$6.25	\$0.44	8.0	\$67,219	23.8%
NG CS5	221	21	19.2	140,000	76.1%	9	\$3.72	\$0.30	14.8	\$23,418	35.6%
NG CS18	350	30	1	6,000	2.3%	2.5	\$4.59	\$0.33	0.2	\$1,826,656	84.0%
NG CS11	57	5	0.6	20,000	45.7%	2.5	\$1.43	\$0.11	0.1	\$1,094,878	999.9%
NG CS12	57	5	0.2	10,000	22.8%	2.5	\$1.43	\$0.11	0.0	\$3,284,635	1499.8%
NG CS13	162	13	3.5	100,000	85.2%	2.5	\$2.72	\$0.22	0.6	\$422,044	719.1%
NG CS15	114	6	0.4	44,000	89.7%	2.5	\$1.54	\$0.11	0.1	\$1,668,033	2992.2%
NG CS16	114	6	0.4	44,000	89.7%	2.5	\$1.54	\$0.11	0.1	\$1,668,033	2992.2%

**Average Cost-Effectiveness (Excluding Near-Limit (2.5 ppmv NOx) Turbines): \$11,500**

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

For the natural gas combined cycle gas turbines as a class permitted at 2.5 ppmv NOx at 15% oxygen on a dry basis (near-limit turbines), the cost-effectiveness threshold of \$50,000 per ton reduced is never reached, even when used at 100% annual capacity factor. Those six 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. Otherwise, it is cost-effective for the combined cycle natural gas turbines to meet the proposed 2 ppmv NOx at 15% oxygen on a dry basis.

#### Natural Gas Simple Cycle Gas Turbines

Twenty of twenty-two 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. Ten of 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 or are no longer in use. The cost-effectiveness for natural gas simple cycle gas turbines is presented below in Table 2-16 below.

**Table 2-16 – Natural Gas Simple Cycle Gas Turbine Cost-Effectiveness**

Unit	Input (MMBTU/HR)	Output (MW)	2015 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
NG SS13	246	23	26.1	22,000	10.9%	42	\$3.87	\$0.33	24.5	\$15,067	3.3%
NG SS14	466	42	279.2	250,000	67.9%	42	\$5.72	\$0.69	262.4	\$2,586	3.5%
NG SS8	50	4	29.3	31,500	89.9%	40	\$1.24	\$0.12	27.5	\$4,675	8.4%
NG SS9	50	4	29.3	31,500	89.9%	40	\$1.24	\$0.12	27.5	\$4,675	8.4%
NG SS10	229	22.4	32.4	75,000	38.2%	9	\$3.80	\$0.34	23.4	\$15,927	12.2%
NG SS11	250.6	23.1	27.3	190,000	94.1	9	\$3.88	\$0.32	19.7	\$18,352	34.5%
NG SS28	221	21.8	19.0	140,000	73.3%	9	\$3.72	\$0.29	14.8	\$23,418	65.7%
NG SS29	221	21.8	23.1	160,000	83.7%	9	\$3.72	\$0.30	18.2	\$19,043	55.5%
NG SS12	1080	158	4.9	20,000	1.4%	8	\$13.53	\$1.02	3.3	\$376,566	10.5%
NG SS19	530.2	43.8	0.0	0	0.0%	7	\$5.88	\$0.43	0.0	N/A	17.1%
NG SS15	472.5	39	32.6	340,000	99.5%	5	\$12.70	\$0.45	16.3	\$49,026	99.0%
NG SS17	43.8	4.6	7.0	4,000	9.9%	5	\$1.36	\$0.11	1.6	\$78,135	15.5%
NG SS20	136.5	10.5	0.0	0	0%	5	\$2.3	\$0.15	0	N/A	34.0%
NG SS21	136.5	10.5	0.0	0	0%	5	\$2.3	\$0.15	0	N/A	34.0%
NG SS22	136.5	10.5	0.0	0	0%	5	\$2.3	\$0.15	0	N/A	34.0%
NG SS23	136.5	10.5	0.0	0	0%	5	\$2.3	\$0.15	0	N/A	34.0%
NG SS24	136.5	10.5	0.1	100	0.1%	5	\$2.3	\$0.15	0	N/A	34.0%
NG SS25	136.5	10.5	0.0	0	0%	5	\$2.3	\$0.15	0	N/A	34.0%
NG SS26	136.5	10.5	0.0	0	0%	5	\$2.3	\$0.15	0	N/A	34.0%
NG SS27	136.5	10.5	0.0	0	0%	5	\$2.3	\$0.15	0	N/A	34.0%

**Average Cost-Effectiveness (Excluding Low-Use Turbines): \$8,400**

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. Otherwise, it is cost-effective for the simple cycle natural gas turbines to meet the proposed 2.5 ppmv NOx at 15% oxygen on a dry basis.

#### Produced Gas Turbines

There are nine produced gas turbines employed in oil and gas production; six are OCS turbines. These do not include turbines used for refining of oil or gas which will be subject to Proposed Rule 1109.1 when it is adopted. Produced gas turbines use the gas released from oil fields. Because the flow of gas from oil fields is inconsistent, there is significant variation in the operating load level of the turbines. In some cases, the gas may be supplemented with natural gas. In the case of OCS turbines, natural gas is unavailable and the produced gas may be supplemented with diesel fuel. One of the three non-OCS produced gas turbines currently meets the proposed BARCT limit of 5 ppmv at 15% oxygen on a dry basis.

**Table 2-17 – Produced Gas Turbine Cost-Effectiveness**

Unit	Input (MMBTU/HR)	Output (MW)	2015 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
PGT2	49	4.8	4.0	30,000	71.4%	9	\$1.24	\$0.09	1.8	\$47,213	67.4%
PGT3	49	4.8	1.5	15,000	35.7%	9	\$1.24	\$0.07	0.7	\$136,500	97.5%

**Average Cost-Effectiveness: \$81,400**

As a class, produced gas turbines cannot cost-effectively meet the proposed BARCT limit of 5 ppmv at 15% oxygen on a dry basis.

**Table 2-18 – Outer Continental Shelf Produced Gas Turbine Cost-Effectiveness**

Unit	Input (MMBTU/HR)	Output (MW)	2015 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
PGOCST1	29	2.5	53.8	20,000	91.3%	65	\$0.91	\$0.09	46.3	\$2,012	3.7%
PGOCST2	29	2.5	47.8	20,000	91.3%	65	\$0.91	\$0.09	41.1	\$2,267	4.1%
PGOCST3	29	2.5	45.2	20,000	91.3%	65	\$0.91	\$0.09	38.9	\$2,395	4.4%
PGOCST4	42	2.5	8.0	3,500	16.0%	140	\$0.91	\$0.07	7	\$11,481	3.7%
PGOCST5	42	2.5	3.4	1,500	6.8%	140	\$0.91	\$0.07	2.9	\$27,351	3.7%
PGOCST6	42	2.5	9.2	4,300	19.6%	130	\$0.91	\$0.07	8.6	\$9,804	3.9%

**Average Cost-Effectiveness: \$3,600**

As a class, OCS produced gas turbines can cost-effectively meet the proposed BARCT limit of 15 ppmv at 15% oxygen on a dry basis. Cost-effectiveness is not calculated for liquid fuel use on outer continental shelf produced gas turbines because the emissions concentration that can be met is twice the value of the produced gas limit.

#### Compressor Gas Turbines

There are seven compressor gas turbines; all are permitted over the proposed BARCT limit of 3.5 ppmv NOx at 15% oxygen on a dry bases. The cost-effectiveness for compressor gas turbines is presented below in Table 2-19 below.

**Table 2-19 – Compressor Gas Turbine Cost-Effectiveness**

Unit	Input (MMBTU/HR)	Output (MW)	2015 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
NG CG1 <sup>1</sup>	150 <sup>1</sup>	11	62.1	48,000	49.8%	81	\$2.39	\$0.24	59.6	\$ 4,230	4.3%
NG CG2 <sup>1</sup>	150 <sup>1</sup>	11	61.7	44,000	45.7%	81	\$2.39	\$0.24	59.2	\$ 4,258	4.3%
NG CG3 <sup>1</sup>	150 <sup>1</sup>	11	60.0	42,000	43.6%	81	\$2.39	\$0.24	57.5	\$ 4,384	4.4%
NG CG4	13.11	0.9	4.3	2,500	31.7%	68	\$0.47	\$0.04	4.1	\$ 10,946	4.5%
NG CG6	13.11	0.9	3.9	1,800	22.8%	68	\$0.47	\$0.04	3.7	\$ 12,130	5.1%
NG CG5	13.11	0.9	3.9	1,800	22.8%	67	\$0.47	\$0.04	3.7	\$ 12,130	5.1%
NG CG7	13.11	0.9	3.7	1,700	21.6%	64	\$0.47	\$0.04	3.5	\$ 12,823	7.6%

**Average Cost-Effectiveness: \$4,900<sup>2</sup>**

<sup>1</sup> – Equipment replaced in 2018

<sup>2</sup> – Average cost-effectiveness of four remaining active compressor gas turbines is \$12,000 per ton of NOx reduced

As a class, compressor gas turbines can cost-effectively meet the proposed BARCT limit of 3.5 ppmv at 15% oxygen on a dry basis.

#### **BARCT Emission Limit Recommendation**

In all categories, the technology is available to meet the Initial BARCT NOx concentration limits. Low-use and near-limit provisions are included in the rule to address units that are not cost-

effective. 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 turbines 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 2-20.

**Table 2-20 – Summary of BARCT Recommendation**

<b>Equipment</b>	<b>Final BARCT Recommendation</b>
Natural Gas Combined Cycle Gas Turbine	2 ppmv @ 15% oxygen, dry
Natural Gas Simple Cycle Gas Turbine	2.5 ppmv @ 15% oxygen, dry
Natural Gas Simple Cycle Compressor Gas Turbine	3.5 ppmv @ 15% oxygen, dry
Produced Gas Turbine	9 ppmv @ 15% oxygen, dry
Outer Continental Shelf Produced Gas Turbine	15 ppmv @ 15% oxygen, dry
Outer Continental Shelf Liquid Fuel Turbine	30 ppmv @ 15% oxygen, dry
Other Gas Turbine	12.5 ppmv @ 15% oxygen, dry

## **CHAPTER 3: SUMMARY OF PROPOSALS**

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**INTRODUCTION**

**TITLE**

**PURPOSE (Subdivision (a))**

**APPLICABILITY (Subdivision (b))**

**DEFINITIONS (Subdivision (c))**

**EMISSIONS LIMITS (Subdivision (d))**

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

**TEST METHODS (Subdivision (f))**

**RECORDKEEPING (Subdivision (g))**

**EXEMPTIONS (Subdivision (h))**

## INTRODUCTION

Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (PAR 1134) establishes NO<sub>x</sub> and ammonia emission limits gas turbines. Additionally, PAR 1134 establishes provisions for monitoring, reporting, and recordkeeping, and establishes exemptions from specific provisions.

### PURPOSE (Subdivision (a))

Purpose (subdivision (a)) is added to PAR 1134 to be consistent with the structure of current SCAQMD rules. The purpose of PAR 1134 is to reduce emissions of oxides of nitrogen from stationary gas turbines.

### APPLICABILITY (Subdivision (b))

While there is no specific language in Rule 1134 excluding RECLAIM facilities from current Rule 1134, a few turbines are currently subject to Rule 1134. Many turbines are included in the RECLAIM program and as such are not required to meet the NO<sub>x</sub> concentration limits imposed by Rule 1134. However, gas turbines existing as of August 4, 1989 and used at publicly-owned treatment works, landfills, hospitals and other public facilities, and sources which were not covered under RECLAIM, were still required to meet the concentration limits in Rule 1134 through application of various control technologies. New turbines installed at non-RECLAIM facilities after August 4, 1989 are not subject to Rule 1134. PAR 1134 will apply to all stationary gas turbines located at non-RECLAIM and RECLAIM facilities, regardless of the date they were permitted. NO<sub>x</sub> generating equipment located at petroleum refineries and refinery associated facilities will be subject to forthcoming Proposed Rule 1109.1 – Refinery Equipment. Similarly, NO<sub>x</sub> generating equipment located at landfills or fueled with landfill gas will be subject to Proposed Rule 1150.3 – NO<sub>x</sub> Emission Reduction from Combustion Equipment at Landfills and NO<sub>x</sub> generating equipment located at publicly owned treatment works will be subject to Proposed Rule 1179.1 – NO<sub>x</sub> Emission Reduction from Combustion Equipment at Publicly Owned Treatment Work Facilities. In the interim, those facilities subject to Rule 1134 or having permit conditions referencing Rule 1134 will remain subject to those conditions until the new source-specific rules are adopted.

### DEFINITIONS (Subdivision (c))

PAR 1134 adds and modifies definition to clarify and explain key concepts and removes obsolete definitions. Please refer to PAR 1134 for each definition.

Proposed Deleted Definitions:

- Chemical Processing Gas Turbine
- Emission Control Plan
- Higher Heating Value of Fuel (HHV)
- Lower Heating Value of Fuel (LLV)
- Peaking Gas Turbine Unit
- Sewage Digester Gas
- Southeast Desert Air Basin (SEDAB)

Proposed Modified Definitions: Cogeneration Gas Turbine  
Combined Cycle Gas Turbine  
Compressor Gas Turbine (formerly Pipeline Gas Turbine Unit)  
Emergency Standby Gas Turbine  
Existing Gas Turbine  
Stationary Gas Turbine

Proposed Added Definitions: Annual Capacity Factor  
Duct Burner  
Former RECLAIM NO<sub>x</sub> Facility  
Landfill  
Natural Gas  
Non-RECLAIM NO<sub>x</sub> Facility  
Oxides of Nitrogen (NO<sub>x</sub>) Emissions  
Outer Continental Shelf  
Petroleum Refinery  
Produced Gas  
Publicly Owned Treatment Works  
RECLAIM NO<sub>x</sub> Facility  
Shutdown  
Simple Cycle Gas Turbine  
Start-Up  
Tuning

### **EMISSIONS LIMITS (Subdivision (d))**

The emissions limits in paragraph (d)(1) will be applicable to existing turbines currently subject to Rule 1134. The emissions limits in (d)(1) are applicable in the interim until the turbine can comply with emissions limits in Table I of paragraph (d)(3) or December 31, 2023, whichever comes first. Turbines that are located at a RECLAIM NO<sub>x</sub> facility or a former RECLAIM NO<sub>x</sub> facility are not subject to (d)(1).

The emission limits in Tables I of PAR 1134 are based on the BARCT assessment presented in Chapter 2 – BARCT Assessment. The effective date is January 1, 2024.

**PAR 1134, Table I: Emissions Limits for Stationary Gas Turbines**

Fuel Type	NO <sub>x</sub> <sup>1</sup> (ppmv)	Ammonia (ppmv)	Oxygen Correction (%, dry)
Liquid – Outer Continental Shelf	30	5	15
Natural Gas – Combined Cycle	2	5	15
Natural Gas – Simple Cycle	2.5	5	15
Produced Gas	9	5	15
Produced Gas – Outer Continental Shelf	15	5	15
Other	12.5	5	15

<sup>1</sup> – The NO<sub>x</sub> emission limits in Table 1 shall not apply during start-up, shutdown, and tuning.

The emission limits in Table II of PAR 1134 also reflect the BARCT assessment presented in Chapter 2 – BARCT Assessment. The effective date for compressor gas turbines is two years after a permit to construct is issued by the Executive Officer or three years after a permit to construct is issued if the permit application is submitted before July 1, 2021. ~~The application must be submitted to SCAQMD by July 1, 2022 as required in paragraph (d)(8).~~

**PAR 1134, Table II: Emissions Limits for Compressor Gas Turbines**

Fuel Type	NO <sub>x</sub> <sup>1</sup> (ppmv)	Ammonia (ppmv)	Oxygen Correction (%, dry)
Natural Gas – Compressor Gas Turbine	3.5	10	15

<sup>1</sup> – The NO<sub>x</sub> emission limits in Table 1 shall not apply during start-up, shutdown, and tuning.

Subparagraph (d)(5) states that requirements for start-up, shutdown, and tuning periods will be included in each stationary gas turbine's permit. The requirements will specify duration, mass emissions, and number of start-ups, shutdowns, and, if applicable, tunings. Requirements for start-up, shutdown, and tuning of existing stationary gas turbines are currently in the operating permits for that equipment. Additionally, start-up, shutdown, and tuning are unique to each unit and evaluated during the permitting process.

Subparagraph (d)(6)(B) requires the emissions limits of turbines that are installed after [*Date of Adoption*] to be averaged over a 60-minute rolling average. Compressor Gas Turbines installed after [*Date of Adoption*] shall be averaged over a three-hour rolling average. For stationary gas turbines installed before [*Date of Adoption*], subparagraph (d)(6)(A) requires turbines to retain their current averaging time. The averaging times for these units were evaluated during the permitting process and shall be maintained.

Paragraph (d)(7) prohibits the use of liquid fuel in a stationary gas turbine except for outer continental shelf gas turbines which do not have access to natural gas.

Paragraph (d)(8) requires that by July 1, 2022 facilities must submit applications for a permit to construct or to reconcile their permits with Rule 1134. As facilities transition out of RECLAIM to Rule 1134, their permits will need to be revised to remove references to RECLAIM rules and include references to Rule 1134.

To address the technology forcing nature of the compressor gas turbine emissions limits, an extension of up to one year for compliance with the NO<sub>x</sub> ~~and ammonia emissions limits~~ in Table II is included and a three year extension for compliance with the ammonia emissions limits in Table II. The one year extension is allowed to address permitting, land acquisition, or some other extenuating circumstance that prevents the implementation of the lower emitting technology. The three year extension is to allow time to confirm that ammonia limits can be complied with at various load conditions. The request for time extension must be submitted at least 30 days before the compliance deadlines and must include: which units need a time extension, the reason(s) an extension is needed, the progress to date of the project, and the length of time requested. The facility must also demonstrate that at least 25% of NO<sub>x</sub> emission reductions, averaged over a two-year period, will be realized by December 31, 2023 in the two-year period prior to the submittal of the extension request in comparison to 2017 NO<sub>x</sub> emissions. If an extension greater than 12 months is requested for compliance with the ammonia emission limits, the turbine must be equipped with an ammonia continuous emission monitoring system certified under an approved SCAQMD protocol. If an extension greater than 24 months is requested for compliance with the ammonia emission limits, the facility must demonstrate that the turbine is operating less than 1,000 hours per year. 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 includes, but is not limited to engineering designs, construction plans, land acquisition contracts, permit applications, test results, and purchase orders that impact scheduling.

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

Staff is currently working on ~~adopting Rule 113 – Monitoring, Reporting, and Recordkeeping (MRR) Requirements for NO<sub>x</sub> and SO<sub>x</sub> Sources~~ amending Rule 218 – Continuous Emission Monitoring (Rule 218) and Rule 218.1 – Continuous Emission Monitoring Performance Specifications. ~~Once Rule 113 is adopted,~~ these amendments are adopted, all Rule 1134 equipment will transition to ~~Rule 113~~ those rules for MRR. For the interim period, the intention of the PAR 1134 MRR is to maintain current MRR for all facilities and streamline reporting requirements for former RECLAIM NO<sub>x</sub> facilities. Turbines that are non-RECLAIM NO<sub>x</sub> sources already comply with Rule 218 ~~– Continuous Emission Monitoring (Rule 218)~~ in addition to other MRR requirements. Therefore, requiring compliance with Rule 218 will not affect these units.

Paragraph (e)(1) requires that turbines 2.9 MW and larger located at non-RECLAIM NO<sub>x</sub> facilities retain their continuous emission monitoring systems (CEMS).

Subparagraph (e)(2)(A) requires turbines smaller than 2.9 MW and located at a non-RECLAIM NO<sub>x</sub> facility to conduct a source test to demonstrate compliance with NO<sub>x</sub> and carbon monoxide concentrations and demonstrated percent efficiency (EFF), if applicable.

Subparagraph (e)(2)(B) requires stationary gas turbines operating with a catalytic control device to conduct source testing to determine compliance with the ammonia concentration emission limit. Alternatively, a certified ammonia CEMS may be used to determine compliance in lieu of source testing. 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 1134.

Source tests to determine compliance with NO<sub>x</sub> concentration limits for turbines not equipped with NO<sub>x</sub> CEMS shall be conducted every calendar year according to clause (e)(2)(C)(i). Clause (e)(2)(C)(ii) states that turbines emitting less than 25 tons per year of NO<sub>x</sub> may source test at least once every three calendar years. Additionally, clause (e)(2)(C)(iii) requires turbines not equipped with ammonia CEMS to source test quarterly when initially installed and after an annual test is failed. After four consecutive compliant ammonia source tests, source testing of ammonia may be conducted every calendar year. Turbines currently testing for ammonia annually may retain that schedule until an annual test is failed.

Paragraph (e)(3) applies to RECLAIM NO<sub>x</sub> facilities and requires that current MRR be maintained until the facility leaves RECLAIM.

Paragraph (e)(4) applies to former RECLAIM NO<sub>x</sub> facilities. To demonstrate compliance with the NO<sub>x</sub> emissions limits, these facilities will be required to comply with SCAQMD Rule 2012 with the exception of the following provisions that reference reporting requirements or that do not apply to stationary gas turbines:

- Rule 2012 (c)(3) – facility permit holder of a major NO<sub>x</sub> source
- Rule 2012 (c)(4) – Super Compliant Facilities
- Rule 2012 (c)(5) – facility Permit holder of a facility which is provisionally approved for NO<sub>x</sub> Super Compliant status
- Rule 2012 (c)(6) – after final approval of Super Compliant status
- Rule 2012 (c)(7) – facility designated as a NO<sub>x</sub> Super Compliant Facility
- Rule 2012 (c)(8) – super Compliant Facility exceeds its adjusted allocations
- Rule 2012 (d)(2)(B) – install, maintain and operate a modem
- Rule 2012 (d)(2)(C) – equipment-specific emission rate or concentration limit
- Rule 2012 (d)(2)(D) – monitor one or more measured variables as specified in Appendix A
- Rule 2012 (d)(2)(E) – comply with all applicable provisions of subdivision (f)
- Rule 2012 (e) – NO<sub>x</sub> Process Unit
- Rule 2012 (g)(5) – system is inadequate to accurately determine mass emissions
- Rule 2012 (g)(6) – sharing of totalizing fuel meters

- Rule 2012 (g)(7) – equipment which is exempt from permit requirements pursuant to Rule 219 - Equipment Not Requiring A Written Permit Pursuant to Regulation II
- Rule 2012 (g)(8) – rule 2012 and Appendix A
- Rule 2012 (h)(1) – facilities with existing CEMS and fuel meters as of October 15, 1993
- Rule 2012 (h)(2) – interim emission reports
- Rule 2012 (h)(4) – installation of all required or elected monitoring and reporting systems
- Rule 2012 (h)(5) – existing or new facility which elects to enter RECLAIM or a facility which is required to enter RECLAIM
- Rule 2012 (h)(6) – new major NOx source at an existing facility
- Rule 2012 (i) – Recordkeeping
- Rule 2012 (k) – Exemption
- Rule 2012 (l) – Appeals
- Reported Data and Transmitting/Reporting Frequency requirements from Rule 2012 Appendix A – “Protocol for Monitoring, Reporting and Recordkeeping for Oxides of Nitrogen (NOx) Emissions”

### **TEST METHODS (Subdivision (f))**

SCAQMD Method 207.1 is included to determine ammonia concentration during source testing.

### **RECORDKEEPING (Subdivision (g))**

The recordkeeping provisions in subdivision (g) are maintained with two minor changes. Paragraph (g)(3) will require the use of a data acquisition system as a replacement for monthly reporting for units that require CEMS. Also, results from source tests shall be submitted within 60 days after source testing is completed.

### **EXEMPTIONS (Subdivision (h))**

The current exemption for chemical processing gas turbine units in subparagraph (h)(1)(C) has been removed and those units must comply with applicable limits in Proposed Rule 1109.1 – Refinery Equipment when it is adopted. The current exemptions in subparagraph (h)(1)(D) and (h)(2)(B) have been removed, these exemptions are no longer necessary because the units located in the Southeast Desert Air Basin which were subject to these exemptions have been removed. Any units installed in the future in this area of the SCAQMD will be subject to this rule. ~~Southeast Desert Air Basin is located outside the SCAQMD.~~ There are no turbines located on San Clemente Island and therefore the exemption in subparagraph (h)(2)(C) is unnecessary.

Rule 1134 will be amended to include several new exemptions. The first new exemption, subparagraph (h)(3), exempts existing combined cycle gas turbines at 2.5 ppmv NOx at 15% oxygen on a dry basis from the emissions limitations in paragraph (d)(3), with the condition that the units keep their NOx and ammonia limits, start-up, shutdown, and tuning requirements, and averaging times on the current permit. 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.

To address low-use stationary gas turbines, a low-use provision, paragraph (h)(4) is included in PAR 1134. 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 NO<sub>x</sub> and ammonia limits, start-up, shutdown, and tuning requirements, and averaging times on their current permit. The annual capacity factor, paragraph (c)(1), is defined as the ratio between the actual annual input and the annual maximum heat input if operated continuously over one year. The annual capacity factor limits for gas turbines in subparagraph (h)(4)(A) is less than twenty-five percent in one calendar year and less than ten percent averaged over three years. In order to obtain the low-use exemption, subparagraph (h)(4)(B) requires that an application for the low-use exemption be submitted by July 1, 2022. Subparagraph (h)(4)(C) requires that annual capacity factor to be determined annually and submitted to the Executive Officer no later than March 1 following the reporting year. If a unit exceeds the annual capacity factor, subparagraph (h)(4)(D) states the owner or operator is subject to a notice of violation for each year of exceedance and for each annual and/or three-year exceedance. Clause (h)(4)(D)(iii) requires that after two years of the date of reported exceedance, the unit must come into compliance with the emissions limits in Table I. There are also interim milestone requirements in clauses (h)(4)(D)(i) and (h)(4)(D)(ii): submitting a permit application within six months from the date of reported exceedance and a CEMS plan within six months from the date of permit application submittal.

If a stationary gas turbine is not using selective catalytic reduction or other processes that add ammonia into the exhaust gas, then paragraph (h)(5) exempts those turbines from ammonia concentration limits and source testing requirements.

## **CHAPTER 4: IMPACT ASSESSMENT**

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**POTENTIALLY IMPACTED FACILITIES**

**EMISSIONS INVENTORY AND EMISSION REDUCTIONS**

**COST-EFFECTIVENESS**

**INCREMENTAL COST-EFFECTIVENESS**

**RULE ADOPTION RELATIVE TO COST-EFFECTIVENESS**

**SOCIOECONOMIC ASSESSMENT**

**CALIFORNIA ENVIRONMENTAL QUALITY ACT**

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SECTION 40727**

**COMPARATIVE ANALYSIS**

## POTENTIALLY IMPACTED FACILITIES

There are 39 facilities that are potentially impacted by Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (PAR 1134). Of these 39 facilities, 24 are currently in the NO<sub>x</sub> RECLAIM program. The remaining facilities are not in the RECLAIM program and eight of these are currently subject to SCAQMD Rule 1134. Seven facilities are not subject to RECLAIM nor Rule 1134 because of the applicability requirements of RECLAIM and Rule 1134 (i.e., the turbines were built after 1989).

There are approximately 73 turbines at these 39 facilities: 6 are at the proposed emissions limits, 17 are emergency standby gas turbines, 6 are exempt, and 11 qualify for the low-use provisions. The remaining 33 turbines will need to be replaced, repowered, or retrofitted to come into compliance with PAR 1134.

The seven exempt units are exempt from emissions limits in PAR 1134 Table I because of the near-limit exemption in paragraph (h)(3) and listed in Table 4-1 below.

**Table 4-1: Combined Cycle Turbines Exempt Due to PAR 1134 Paragraph (h)(3)**

Facility	SCAQMD Permit	Current NO <sub>x</sub> Permit Limit (ppmv at 15% oxygen, dry)
City of Riverside, Public Utilities Department	Turbine D1	2.5
MillerCoors USA	F99403	2.5
MillerCoors USA	F99402	2.5
Kimberly-Clark Worldwide	G33192	2.5
Orange County, Central Utility Facility	G35244	2.5
Orange County, Central Utility Facility	G35245	2.5
University of California at Irvine	G46888	2.5

Assuming similar usage as in 2015, 11 turbines would qualify for the low-use provisions, as summarized in Table 4-2.

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

Facility	SCAQMD Permit	Current NOx Permit Limit (ppmv at 15% oxygen, dry)
Harbor Cogeneration	G48131	8
CES Placerita	F96765	7
California State University, Fullerton	G20025	5
Colton Power	Turbine D1	5
Colton Power	Turbine D8	5
Colton Power	Turbine D15	5
Colton Power	Turbine D22	5
Colton Power	Turbine D1	5
Colton Power	Turbine D8	5
Colton Power	Turbine D15	5
Colton Power	Turbine D22	5

#### **Analysis of Facilities with PAR 1134 Equipment and Other Landing Rules**

Staff has reviewed permits for all PAR 1134 units, and identified the number of non-PAR 1134 combustion units a facility has that will require retrofit or replacement because of revisions to BARCT. Eight facilities had between one and five boilers subject to Rule 1146 or Rule 1146.1 which were amended in fall 2018. Two facilities have more than five internal combustion engines that will be subject to Rule 1110.2 that is scheduled to be amended in summer 2019. One of the two facilities already has indicated that they will have completed retrofit or replacement by December 31, 2023. The second facility has requested that more time be allotted to conduct retrofits and replacement. That corporation also has three other facilities with equipment likely to require retrofit or replacement from PAR 1110.2. The emissions from internal combustion engines significantly exceeds the emissions from the turbines. However, the facility is considering replacing some internal combustion engines with turbines. Additional time has been allotted for that facility as contained in paragraphs (d)(4) and (d)(9).

#### **EMISSION INVENTORY AND EMISSION REDUCTIONS**

The NOx emission inventory for turbines subject to PAR 1134 is 3.2 tons per day in 2015 as seen in Table 4-3 below.

**Table 4-3 – NO<sub>x</sub> Emission Inventory and MWh Capacity**

<b>Equipment Type</b>	<b>2015 NO<sub>x</sub> Emission Inventory (tons per day)</b>	<b>MWh Capacity</b>
Combined Cycle Turbines	0.9	258
Simple Cycle Turbines	1.2	540
Produced Gas Turbines	< 0.1	161
Outer Continental Shelf Gas Turbines	0.5	15
Compressor Gas Turbines	0.6	37
<b>Total</b>	<b>3.2</b>	<b>1,011</b>

After the implementation of the BARCT limits, 2.8 tons per day of NO<sub>x</sub> emission reductions will be realized as seen in Table 4-4 below.

**Table 4-4 – NO<sub>x</sub> Emission Reductions**

<b>Equipment Type</b>	<b>2015 NO<sub>x</sub> Emission Inventory (tons per day)</b>	<b>2015 NO<sub>x</sub> Emissions Reductions (tons per day)</b>
Combined Cycle Turbines	0.9	0.8
Simple Cycle Turbines	1.2	1.1
Produced Gas Turbines	< 0.1	0.0
Outer Continental Shelf Gas Turbines	0.5	0.4
Compressor Gas Turbines	0.6	0.5
<b>Total</b>	<b>3.2</b>	<b>2.8</b>

The use of ammonia in the selective catalytic reduction (SCR) process results in an increase of particulate matter emissions. There are 7 turbines that already utilize SCR but will increase their ammonia usage by an estimated 30% to meet the proposed emissions limits. The particulate matter increase is 9,900 pounds annually or 0.01 tons per day. Twenty-three turbines do not currently utilize SCR. The particulate matter increase from incorporating SCR into their process is expected to increase particulate matter emissions by approximately 112,000 pounds annually or 0.15 tons per day.

### **COST-EFFECTIVENESS**

Cost-effectiveness is examined for each equipment category type. Cost-effectiveness is measured in terms of control costs (dollars) per air emissions reduced (tons). The 2016 Air Quality Management Plan (AQMP) establishes a cost-effectiveness threshold of \$50,000 per ton of NO<sub>x</sub> reduced. Costs for retrofitting stationary 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, NO<sub>x</sub> removal efficiency, reagent consumption rate, and catalyst costs. Fuel consumption is based on 2015 reported fuel usage. Values are reported in 2015 dollars in Table 4-5 below.

Equipment Type	Cost-Effectiveness (Cost per ton of NO <sub>x</sub> reduced)
Combined Cycle Turbines	\$11,500
Simple Cycle Turbines	\$8,400
Produced Gas Turbines	\$81,400
Outer Continental Shelf Gas Turbines	\$3,600
Compressor Gas Turbines	\$4,900

For Produced Gas Turbines, the high cost-effectiveness is addressed by establishing a NO<sub>x</sub> emission limit of 9 ppmv at 15% oxygen on a dry basis which all produced gas turbines currently meet.

### 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, sulfur 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:

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

Where:

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

Paragraph (h)(3) exempts natural gas combined cycle gas turbines meeting 2.5 ppmv NO<sub>x</sub> at 15% oxygen on a dry basis from the proposed NO<sub>x</sub> 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 at 15% oxygen on a dry basis NO<sub>x</sub> limit. The present worth value of the proposed control option is \$44,400,000 and the emission reductions are 1,923 tons over 25 years. The present worth value of the alternative control option is \$63,300,000 and the emission reductions of the alternative control option is 1,978 tons over 25 years. The incremental cost-effectiveness for removing the exemption for natural gas combined cycle gas turbines meeting 2.5 ppmv NO<sub>x</sub> at 15% oxygen on a dry basis is \$343,600 per ton of NO<sub>x</sub> reduced as calculated below.

$$\text{Incremental cost-effectiveness} = (\$63,300,000 - \$44,400,000) / (1,978 - 1,923) = \$343,600 \text{ per ton of NOx reduced}$$

The proposed rule also includes low-use provisions, paragraph (h)(4), for 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 \$117,000,000 and the emission reductions are 15,228 tons over 25 years. The present worth value of the alternative control option is \$195,700,000 and the emission reductions of the alternative control option is 15,350 tons over 25 years. The incremental cost-effectiveness for removing the exemption for low-use gas turbines is \$687,000 per ton of NOx reduced as calculated below.

$$\text{Incremental cost-effectiveness} = (\$195,700,000 - \$117,000,000) / (15,350 - 15,228) = \$687,000 \text{ per ton of NOx reduced}$$

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 1134 helps 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 ~~was~~will be released at least 30 days prior to the SCAQMD Governing Board Hearing on PAR 1134, which is anticipated to be heard on April 5, 2019.

## **CALIFORNIA ENVIRONMENTAL QUALITY ACT**

PAR 1134 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, prepared a Draft Subsequent Environmental Assessment (SEA) for PAR 1134 which was released for a 45-day public review and comment period from January 29, 2019 to March 15, 2019. ~~As of the publication date of this Draft Staff Report, one~~Four comment letters ~~were~~was received relative to the Draft SEA. The Draft SEA indicated that while reducing NOx emissions is an environmental benefit, secondary significant adverse environmental impacts are also expected for the topic area of hazards and hazardous materials. Since significant adverse impacts were identified, an

alternatives analysis and mitigation measures are required and are included in the Draft SEA. [CEQA Guidelines Section 15252].

The proposed project may have statewide, regional, or area-wide significance; therefore, a CEQA scoping meeting was required (pursuant to Public Resources Code section 21083.9(a)(2)) and held at the SCAQMD's Headquarters in conjunction with the Public Workshop on December 18, 2019. No comments were made at the CEQA scoping meeting related to CEQA. All comment letters received relative to the Draft SEA and the responses to the comments will be included in Appendix G of the Final SEA.

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

## **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 1134 is needed to establish BARCT requirements for stationary gas turbines, including stationary gas turbines at 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 1134 pursuant to the California Health and Safety Code Sections 39002, 40000, 40001, 40440, 40702, 40725 through 40728, and 41508, ~~and 41508~~.

#### **Clarity**

Proposed Amended Rule 1134 is written or displayed so that its meaning can be easily understood by the persons directly affected by it.

#### **Consistency**

Proposed Amended Rule 1134 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 1134 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 1134, the following statutes which the SCAQMD hereby implements, interprets or makes specific are referenced: Health and Safety Code sections 39002, 40000, 40001, 40406

(BARCT), 40702, 40440(a), and 40725 through 40728.5, and Clean Air Act Section 172 (c)(1) (reasonably available control technology).

### **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.

Table 4-6: PAR 1134 Comparative Analysis

Rule Element	PAR 1134	RECLAIM	40 CFR Part 60 GG	40 CFR Part 60 KKKK
<b>Applicability</b>	Turbines with generating capacity greater than 0.3 MW except those located electric generating facilities, landfills, petroleum refineries, and publicly owned treatment works or fueled with landfill gas	Facilities regulated under the NOx RECLAIM program (SCAQMD Reg. XX)	Gas turbines with heat input of $\geq 10$ MMBtu/hr constructed or modified before 2/18/2005	Gas turbines with heat input of $\geq 10$ MMBtu/hr constructed or modified after 2/18/2005
<b>Requirements</b>	Emission limits: <ul style="list-style-type: none"> <li>• Combined Cycle Gas Turbine and Associated Duct Burner: NOx 2 ppmv @ 15% O<sub>2</sub>; Ammonia 5 ppmv @ 15% O<sub>2</sub></li> <li>• Simple Cycle Gas Turbine: NOx 2.5 ppmv @ 15% O<sub>2</sub>; Ammonia 5 ppmv @ 15% O<sub>2</sub></li> <li>• Produced Gas Turbine: NOx 9 ppmv @ 15% O<sub>2</sub>; Ammonia 5 ppmv @ 15% O<sub>2</sub></li> <li>• Outer Continental Shelf Produced Gas Turbine: NOx 15 ppmv @ 15% O<sub>2</sub>; Ammonia 5 ppmv @ 15% O<sub>2</sub></li> <li>• Outer Continental Shelf Produced Gas Turbine (Liquid Fuel): NOx 30 ppmv @ 15% O<sub>2</sub>; Ammonia 5 ppmv @ 15% O<sub>2</sub></li> <li>• Compressor Gas Turbine: NOx 3.5 ppmv @ 15% O<sub>2</sub>; Ammonia 10 ppmv @ 15% O<sub>2</sub></li> <li>• Other Gas Turbine: NOx 12.5 ppmv @ 15% O<sub>2</sub>; Ammonia 5 ppmv @ 15% O<sub>2</sub></li> </ul>	None	NOx limit @ 15% O <sub>2</sub> : $0.0075*(14.4/Y)+F$ where Y = manufacture's rated heat input and F = NOx emission allowance for fuel-bound nitrogen	NOx limit for electric generating units (@ 15% O <sub>2</sub> ): <ul style="list-style-type: none"> <li>• <math>\leq 50</math> MMBtu/hr – 42 ppm when firing natural gas</li> <li>• 50 MMBtu/hr and <math>\leq 850</math> MMBtu/hr – 15 ppm when firing natural gas</li> <li>• <math>&gt;850</math> MBtu/hr – 15 ppm when firing natural gas</li> <li>• <math>\leq 50</math> MMBtu/hr – 96 ppm when firing other fuel</li> <li>• 50 MMBtu/hr and <math>\leq 850</math> MMBtu/hr – 74 ppm when firing other fuel</li> <li>• <math>&gt;850</math> MBtu/hr – 42 ppm when firing natural gas</li> </ul>
<b>Reporting</b>	Annual reporting of NOx emissions	<ul style="list-style-type: none"> <li>• Daily electronic reporting for major sources</li> <li>• Quarterly Certification of Emissions Report and Annual Permit Emissions Program for all units</li> </ul>	Excess emissions and CEMS downtime within 30 days	Excess emissions and CEMS downtime within 30 days; annual performance testing within 60 days
<b>Monitoring</b>	A continuous in-stack NOx monitor for turbines with a capacity of 2.9 MW or greater. Periodic source testing for turbines with a capacity of $< 2.9$ .	A continuous in-stack NOx monitor for major sources	A continuous in-stack NOx monitor	A continuous in-stack NOx monitor
<b>Recordkeeping</b>	Performance testing; emission rates; monitoring data; CEMS audits and checks maintained for five years	<ul style="list-style-type: none"> <li>• <math>&lt; 15</math>-min. data = min. 48 hours; <math>\geq 15</math>-min. data = 3 years (5 years if Title V)</li> <li>• Maintenance &amp; 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)</li> </ul>	Performance testing; emission rates; monitoring data; CEMS audits and checks	Performance testing; emission rates; monitoring data; CEMS audits and checks
<b>Fuel Restrictions</b>	Liquid petroleum fuel limited to Outer Continental Shelf turbines	None	None	None

## REFERENCES

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“Final 2016 Air Quality Management Plan”, South Coast Air Quality Management District, March 2017

“SCAQMD NO<sub>x</sub> RECLAIM – BARCT Feasibility and Analysis Review, Norton Engineering Consultants, Inc., Nov 26, 2014

“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 4703 – Stationary Gas Turbines”, San Joaquin Valley Air Pollution Control District, September 2007

“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

Power Generating Packages – Centaur 50, Solar Turbines,  
[https://www.solarturbines.com/en\\_US/products/power-generation-packages/centaur-50.html](https://www.solarturbines.com/en_US/products/power-generation-packages/centaur-50.html),  
accessed March 2019

**APPENDIX A – COMMENTS AND RESPONSES**

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**Comment Letter 1**

Beta Offshore – January 17, 2019



January 17, 2019

Michael Morris, Program Supervisor  
South Coast Air Quality Management District  
21865 E. Copley Drive,  
Diamond Bar, CA 91765-0830

**Subject: Beta Offshore, OCS Lease Parcels Facility (ID 166073):  
Comments for PAR 1134 Landing Rule**

Dear Mr. Morris:

Thank you for taking the time to meet with Beta Offshore (Beta) to discuss the December 6, 2018 version of Proposed Amended Rule (PAR) 1134. This letter is in response to the e-mail dated January 9, 2019. We appreciate the clarifications and would like to offer some additional information related to paragraph (d)(6).

**Paragraph (d)(6)**

Paragraph (d)(6) currently reads, along with the suggested revision (addition ~~deletion~~):

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

Beta's gas turbines consume either produced gas or liquid fuel (diesel) and would never consume both at the same time. This is not by choice: it is not possible to consume both at the same time.

Under the RECLAIM program, Beta conducts the triennial testing required by Rule 2012(j)(2), when consuming each fuel individually, to demonstrate compliance with the emission limit for each fuel type. Beta appreciates the concern that the gaseous fuel could be supplemented with small amounts of diesel but requests removal of the second sentence. This would make PAR 1134 consistent with the RECLAIM program, i.e., each fuel is used separately, each fuel would have its own emission limit, and compliance with each emission limit would be demonstrated when burning a single fuel.

**Subparagraph (e)(2)(C)**

Thank you for the clarification that the testing frequency for units without a CEMS is based on the emissions per turbine per year.

1-1

**Paragraph (g)(3)**

Thank you for the clarification that the DAS provisions apply only to units with a CEMS.

**Paragraph (g)(4)**

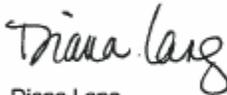
Paragraph (g)(4) currently reads:

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

Thank you for confirmation that this will be changed from 30 days to 60 days.

Thank you for the clarifications and consideration of the suggested revision to paragraph (d)(6). Please let me know if you have any questions or require additional information. I can be reached at (562) 628-1529 or [diana.lang@amplifyenergy.com](mailto:diana.lang@amplifyenergy.com).

Sincerely,



Diana Lang  
HSE Manager

cc: Uyen Uyen Vo – SCAQMD (email)  
Bruce Berwager – Beta Offshore VP (email)  
Jazmin Tostado – Beta Offshore

1-2

Response to Comment 1-1

Staff agrees that liquid and gaseous fuels cannot be combusted in the turbine at the same time and the language has been removed.

Response to Comment 1-2

The length of time to submit source test results has been extended to 60 days and is now consistent with other similar source test report submittal times in other SCAQMD regulations.

## Comment Letter 2



Daniel R. McGivney  
 Environmental Affairs  
 Program Manager  
 Tel: 951-225-2958  
 dmcgivney@semprautilities.com

January 22, 2019

Michael Morris, Program Manager  
 Planning, Rule Development & Area Sources  
 South Coast Air Quality Management District  
 21865 Copley Drive  
 Diamond Bar, CA 91765

**RE: Comments on December 18, 2018 Public Workshop version of draft  
 Proposed Amended Rule 1134 (v120318)**

Dear Mr. Morris:

Southern California Gas Company (SoCalGas) and San Diego Gas and Electric Company (SDG&E; SDG&E and SoCalGas are collectively referred to herein as the Utilities) appreciate the opportunity to provide comments to the South Coast Air Quality Management District (AQMD) regarding AQMD Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (PAR 1134), version 120318, distributed at the December 18, 2018 public workshop.

**Background**

On December 18, 2018, the AQMD held a public workshop regarding PAR 1134. At the workshop, the AQMD distributed a draft rule (version 120318) to facilitate the discussion. The Utilities have existing turbines and are considering installation of new turbines which would be affected by these rule amendments.

**Comments**

After reviewing this proposed draft rule, the Utilities have the following comments and requests:

Alternative Emission Limits

As proposed, PAR 1134 (v120318), section (h) Exemptions, sub-section (6), would allow natural gas pipeline gas turbines to comply with emission limits specified in the turbine permit(s) as of January 1, 2024 (rather than the Table 1 limits proposed in the draft rule), provided the ammonia limit specified in the permit does not exceed 10 parts per million by volume (ppmv). The Utilities support this proposed exemption and requests that it be retained in the final rule.

The AQMD has proposed NO<sub>x</sub> (8 ppm) and NH<sub>3</sub> (5 ppm) limits for pipeline turbines in PAR 1134. During discussions held with rulemaking staff, and in comments submitted to the AQMD (attached), the Utilities presented data detailing both current adopted BARCT (San Joaquin County Air Pollution Control District) for pipeline turbines and the difficulty in meeting lower

2-1

Page 2

NOx concentrations due to the wide range in operational loads (reference attachment, BARCT Technical Justification, page 3) that the Utilities' turbines experience, made especially difficult by the requirement of an ammonia slip limit of 5 ppm. Throughout the development of PAR 1134, the Utilities have noted that pipeline turbine operation differs significantly from other applications (e.g. power generation) due to wide operating ranges, varying from 30-95 percent load. This results in the need for an avenue to develop alternative emission limits should the proposed limits not be achievable across all turbine operating conditions. Emission limits in PAR 1134 should be consistent with those that have been demonstrated by this class and category of turbines (e.g. natural gas pipeline gas turbines). A mechanism should be provided within the rule to remedy potential technological failures that may occur to avoid putting the Utilities' in compliance jeopardy. As proposed, the exemption provided in version 120318, section (h)(6), would provide a path which would ensure the Utilities have an option where it can achieve continuous compliance with AQMD requirements across the equipment's entire operating range.

2-1  
(Cont.)

**Request:** Maintain the current exemption (h)(6), as proposed in PAR 1134 version 120318, in the final Rule 1134.

#### 30-Day Source Test Results Submittal Time Frame

Existing Rule 1134, section (f)(4) [and PAR 1134 versions 120318 & 120618, section (g)(4)], require that source test results be submitted to the AQMD within 30 days after the source test is completed. While Rule 1134 addresses specific turbines (those identified as of August 4, 1989), other existing and future new turbines will be affected by PAR 1134 once adopted. The Utilities are concerned that turbines that have Volatile Organic Compounds (VOC) limits, will have difficulty meeting a 30-day turn-a-round on VOC test results. Currently, a 60-day period is more typical [reference Rule 1110.2 (f)(1)(C)(vi)] for submittal of emissions test results, especially those sources that must test and report VOC data. Considering VOCs have a longer analysis time, data quality assurance/control that must be done, report preparation and review, it will be difficult to meet a 30-day submittal deadline.

2-2

**Request:** The Utilities request that the AQMD modify the current 30-day submittal deadline contained in Rule 1134/PAR 1134 for submittal of emissions test data, to a 60-day period, thereby providing an attainable time frame for the analysis and reporting of constituents (VOCs, etc.) other than NOx.

#### Use of "Pipeline Turbine" Terminology

Early in the development of PAR 1134, the Utilities used the phrase "Natural Gas Pipeline Turbines" to distinguish the use of turbine-driven compressors in the natural gas system (versus other industries) and the use of this terminology by other local air agencies in California. At the time, and currently, these "pipeline" gas turbines are the only units currently operating at the Utilities' facilities within the South Coast air basin, as the turbine-driven compressors previously at the Aliso Canyon natural gas storage facility had been replaced by electric-driven compressors. As part of the Utilities' continued efforts to modernize existing equipment and infrastructure at other facilities, and to reduce emissions in support of the Regional Clean Air Incentives Market (RECLAIM) transition to a command and control program, the use of natural gas turbine-driven compressors is being considered for other facilities. These new turbines may be located at a natural gas storage facility. Although natural gas storage is part of the Utilities' pipeline system, the use of the term "pipeline" turbine may not accurately reflect this use. So,

2-3

Page 3

the Utilities are proposing that the use of “Compressor Turbine” would be more appropriate and cover turbines used at both natural gas transmission and storage facilities.

**Request:** Currently, the AQMD uses the term “Natural Gas – Pipeline Gas Turbine” in PAR 1134. The Utilities request that the AQMD modify this terminology to “Natural Gas – ~~Pipeline~~ **Compressor** Turbine.”

2-3  
(Cont.)

#### Conclusion

The Utilities request that the AQMD consider and adopt the Utilities’ recommendations regarding maintaining current language in version 120318 [e.g. PAR 1134 (h)(6)], providing an alternative option for developing emission limits for natural gas compressor turbines, revising the 30-day emission test results submittal deadline to 60-days, and modifying the existing terminology of “pipeline” turbine to “compressor” turbine.

The Utilities appreciate your consideration of these comments and recommendations. We would be pleased to discuss the above comments and answer any questions. You may contact me at 951-225-2958 or at [dmcgivney@semprautilities.com](mailto:dmcgivney@semprautilities.com).

Sincerely,

*Daniel R. McGivney*

Daniel R. McGivney  
Environmental Affairs Program Manager  
Southern California Gas Company

cc:  
Phil Fine, SCAQMD  
Susan Nakamura, SCAQMD

Response to Comment 2-1

Staff has reviewed compressor turbines in the same class as those referenced in the comment. Two recent installations<sup>1</sup> with concentration limits of 3.5 ppmv NOx and 10 ppmv ammonia corrected to 15% oxygen on a dry basis were identified. Staff is revising the limits to reflect this new information that will further reduce NOx emissions while providing the regulatory flexibility requested. Staff is also including additional time to meet these ~~these technology forcing~~ limits with conditions as specified in paragraph (d)(9) of the proposed rule.

Response to Comment 2-2

The length of time to submit source test results has been extended to 60 days and is now consistent with other similar source test report submittal times in other SCAQMD regulations.~~See comment 1-2.~~

Response to Comment 2-3

Staff has revised the rule language to replace pipeline turbine with compressor turbine.

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<sup>1</sup> [https://www.deq.virginia.gov/Portals/0/DEQ/Air/BuckinghamCompressorStation/May\\_25\\_2018\\_Updated\\_Application.pdf](https://www.deq.virginia.gov/Portals/0/DEQ/Air/BuckinghamCompressorStation/May_25_2018_Updated_Application.pdf)  
<https://mde.state.md.us/programs/Permits/AirManagementPermits/Documents/dom%20air%20dispersion%20supplement.pdf>

## Comment Letter 3



**Bridget McCann**  
 Manager, Technical and Regulatory Affairs

February 28, 2019

Dr. Philip Fine  
 Deputy Executive Officer, Planning and Rules  
 South Coast Air Quality Management District  
 21865 Copley Drive  
 Diamond Bar, CA 91765

sent via email: pfine@aqmd.gov

**Re: WSPA Comments on Proposed Amended Rule 1134, Emissions of Oxides of Nitrogen from Stationary Gas Turbines**

Dear Dr. Fine,

Western States Petroleum Association (WSPA) appreciates this opportunity to provide feedback on the transition of the Regional Clean Air Incentives Market (RECLAIM) program to a command-and-control regulatory structure (RECLAIM Transition Project) and specifically Proposed Amended Rule 1134 (PAR 1134). WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that are within the purview of the RECLAIM program administered by the South Coast Air Quality Management District (District or SCAQMD).

PAR 1134 is intended to reduce emissions of oxides of nitrogen (NO<sub>x</sub>) from stationary gas turbines. While this rule is not intended to apply to stationary gas turbines located at petroleum refineries, as those units would be subject to Proposed Rule 1109.1, NO<sub>x</sub> Emission Reductions for Refinery Equipment (PR 1109.1), the Best Available Retrofit Control Technology (BARCT) determinations made under PAR 1134 could be relevant to the PR 1109.1 rulemaking as it pertains to turbines at refineries. As such, we respectfully offer the following comments on PAR 1134 and the BARCT determinations therein.

- 1. The District is obligated to demonstrate that proposed BARCT requirements are both technically feasible and cost effective. To that end, the District needs to provide stakeholders with the technical and economic information and analyses upon which the demonstration is based.**

The California Health and Safety Code defines BARCT as follows:

3-1

Dr. Philip Fine  
February 28, 2019  
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*"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."*<sup>1</sup>

Health & Safety Code §40440.8 requires the District to conduct a socioeconomic assessment of any proposed rule, including rule amendments that will significantly affect air quality or emissions limitations, such as a BARCT amendment.<sup>2</sup>

Furthermore, Section 40920.6 of the Health & Safety Code requires the District to conduct an incremental cost-effectiveness analysis. In order to complete this analysis, the District must identify feasible control options, assess the cost-effectiveness of the option, calculate the incremental cost-effectiveness between the control options, and consider the effectiveness, cost-effectiveness and incremental cost-effectiveness between the control options.<sup>3</sup>

In short, prior to adopting updated BARCT requirements, the District Governing Board must find that the proposed emission limitation is both: (a) achievable; and (b) cost effective. These findings must be based on information and analyses contained in the rulemaking record.<sup>4</sup> The evaluations must be provided to the public a minimum of 30 days before any hearing.<sup>5</sup> This must include technical information concerning emissions performance, energy impacts, and environmental effects, as well as information concerning the capital and operating costs associated with the proposed BARCT. However, in order to ensure an open rulemaking process that allows the decision maker all the necessary data on which to base an informed decision, we encourage staff to provide such detailed information, as long as the data is not confidential business information (CBI), to Working Group stakeholders as early as possible so they have the opportunity to understand and evaluate the basis for Staff's recommendations and provide comments as appropriate, thereby making the rulemaking a legally meaningful exercise. High-level summaries in District Staff presentations are generally insufficient for meeting this objective.

With respect to the finding of cost effectiveness, California Health & Safety Code Section 40703 requires that when adopting any regulation "the district shall consider, pursuant to Section 40922, and make available to the public, its findings related to the cost-effectiveness of a control measure, as well as the basis for the findings and the consideration involved." Thus, the District is required by statute, unless the information is CBI, to make public the basis of its findings that the proposed and adopted BARCT standards are cost-effective.

3-1  
(Cont.)

## 2. Mandating equipment replacement exceeds the SCAQMD's authority.

The Preliminary Draft Staff Report for PAR 1134<sup>6</sup> includes a lengthy SCAQMD discussion which argues that "BARCT may certainly include the replacement of equipment." As WSPA

3-2

<sup>1</sup> Health & Saf. Code §40406.

<sup>2</sup> Health & Saf. Code §40440.8.

<sup>3</sup> Health & Saf. Code §40920.6.

<sup>4</sup> Health & Saf. Code §40728(c).

<sup>5</sup> Health & Saf. Code §40440.5

<sup>6</sup> SCAQMD, Preliminary Draft Staff Report, Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines, December 2018, see Chapter 2.

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February 28, 2019  
Page 3

has noted in several prior comment letters, mandating replacement of basic equipment exceeds the authority of the SCAQMD to adopt BARCT standards for existing sources, as set forth in the California Health & Safety Code, and therefore runs afoul of the well-established legal principle that a regulatory agency must act within the scope of the authority delegated to it by the legislature.

Citing the *American Coatings* case, Staff has taken the position that the agency's authority is essentially unbounded as long as the requirement is not arbitrary and capricious, or without some reasonable or rational basis, or lacking in evidentiary support. We do not believe that the *American Coatings* decision expands the District's authority in the manner in which staff desires. However, as the cases relied upon in *American Coatings* make clear, a critical consideration in evaluating whether or not an agency action meets this standard is whether or not the action is within the scope of the agency's delegated authority. As stated in *Yamaha Corp. of America v. State Bd. of Equalization* (1998) 19 Cal.4<sup>th</sup> 1, citing *Wallace Berri & Co. v. State Bd. of Equalization* (1985) 40 Cal.3d 60, 65: "[I]n reviewing the legality of a regulation adopted pursuant to a delegation of legislative power, the judicial function is limited to determining whether the regulation (1) is 'within the scope of the authority conferred' [citation] and (2) is 'reasonably necessary to effectuate the purpose of the statute' [citation]. [Citation.]"

This issue was previously addressed in the following WSPA comments letters which are incorporated herein by reference.

- Attachment 1: July 3, 2018 comments from WSPA
- Attachment 2: August 15, 2018 comments from Latham & Watkins LLP on behalf of WSPA
- Attachment 3: November 1, 2018 comments from Latham & Watkins LLP on behalf of WSPA

### 3. New Source Review (NSR) issues must be fully addressed before Title V facilities are transitioned out of RECLAIM program.

WSPA continues to actively participate in the working groups for the RECLAIM transition as well as the individual BARCT rulemakings. In these forums the District has indicated that it is continuing discussions with U.S. Environmental Protection Agency (USEPA) staff regarding a variety of NSR issues. These include issues that will impact RECLAIM facilities both during the transition of their permits from the RECLAIM program (i.e., SCAQMD Regulation XX) to the District's command-and-control NSR program (i.e., Regulation XIII), and also affect how future NSR actions are regulated. At the present time, neither Regulation XX nor Regulation XIII includes USEPA-approved provisions to address these issues for RECLAIM facilities.

Since permits for Title V facilities are federally enforceable, and Regulation XX is USEPA-approved under the District's State Implementation Plan (SIP), Title V facilities will likely need to continue operating under the Regulation XX RECLAIM program at least until such time that the RECLAIM transition rules have been formally approved by USEPA into the District's SIP and the replaced Regulation XX provisions are rescinded. This would require an effective date for RECLAIM transition tied to the USEPA's approval which will be sometime after the Governing

3-2  
(Cont.)

3-3

Dr. Philip Fine  
February 28, 2019  
Page 4

Board's adoption of the transition rules. Otherwise, Title V facilities could be left having to comply simultaneously with two different, and mutually exclusive, programs.

**4. RECLAIM facilities subject to PAR 1134 will need to continue under the RECLAIM Monitoring, Reporting and Recordkeeping (MRR) requirements found in Rules 2011 and 2012 until such time as USEPA approves new Proposed Rule 113 to the SIP.**

The sequencing issue discussed above will also be relevant to the proposed transition of RECLAIM facilities from the RECLAIM Monitoring, Reporting and Recordkeeping (MRR) requirements codified in Rules 2011 and 2012, towards future requirements of Proposed Rule 113 (Monitoring, Reporting, and Recordkeeping (MRR) Requirements for NO<sub>x</sub> and SO<sub>x</sub> Sources). RECLAIM facilities will likely need to continue MRR under the provisions of R2011/2012 at least until such time as PR113 has been approved by USEPA into the SIP as a replacement to R2011/2012. Otherwise, RECLAIM facilities subject to PAR 1134 could be caught trying to simultaneously comply with two different MRR programs. As PR 113 has not been drafted or adopted, it is unknown at this time whether such a feat would be possible.

3-4

**5. The California Environmental Quality Act (CEQA) analysis for the RECLAIM transition project has been piecemealed.**

It is a fundamental principle of California Environmental Quality Act (CEQA) review that environmental effects for the whole of a project must be analyzed together. In this case, the "project" is the RECLAIM transition project as a whole as required by Control Measure CMB-05 as adopted in the 2016 Air Quality Management Plan (AQMP). Yet, staff has continued to conduct CEQA review of RECLAIM transition rules, including PAR 1134,<sup>7</sup> through a series of Supplemental or Subsequent Environmental Assessments (SEAs) that analyze only the impacts associated with individual BARCT "landing" rules. Staff argues that this approach is acceptable because each SEA "tiers off" the March 2017 Final Program Environmental Impact Report (EIR) for the 2016 AQMP and several other earlier certified CEQA documents. However, the March 2017 Final Program EIR for the 2016 AQMP, which was completed in January 2018, did not analyze the transition of the RECLAIM program because the transition was not even part of CMB-05 as proposed at that time. Therefore, tiering off the earlier CEQA documents to support rule amendments that seek to implement the transition is not possible (or valid) because there was no comprehensive analysis in the earlier documents. In the absence of a program level CEQA analysis that includes the whole of the RECLAIM transition project, Staff's segmented analysis of each proposed rulemaking action constitutes classic "piecemealing" in violation of CEQA. This issue was addressed in more detail in the following attachments which are incorporated herein by reference

3-5

- Attachment 4: May 1, 2018 comments from WSPA
- Attachment 5: September 7, 2018 comments from Latham & Watkins LLP on behalf of WSPA

<sup>7</sup> SCAQMD, Draft Subsequent Environmental Assessment for Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines, January 2019.

Dr. Philip Fine  
February 28, 2019  
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Thank you for considering these comments. We look forward to continuing to work with you and your Staff on the RECLAIM rulemakings which are critically important to stakeholders as well as the regional economy. If you have any questions, please contact me at (310) 808-2146 or via e-mail at [bridget@wspa.org](mailto:bridget@wspa.org).

Sincerely,



Bridget McCann  
Manager, Technical and Regulatory Affairs

Cc: Wayne Nastri, SCAQMD  
Susan Nakamura, SCAQMD  
Michael Morris, SCAQMD  
Tom Umenhofer, WSPA  
Patty Senecal, WSPA



July 3, 2018

Dr. Philip Fine  
Deputy Executive Officer  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765

Via e-mail at: [pfine@aqmd.gov](mailto:pfine@aqmd.gov)

*Re: WSPA Comments on RECLAIM Transition Project Rules*

- *Proposed Amended Rule 1135 (NO<sub>x</sub> Emissions from Electric Power Generating Systems)*
- *Proposed Amended Rule 1134 (NO<sub>x</sub> Emissions from Stationary Gas Turbines)*
- *Proposed Rule 1109.1 (Refinery Equipment)*

Dear Dr. Fine:

Western States Petroleum Association (WSPA) appreciates this opportunity to provide feedback on the transition of the Regional Clean Air Incentives Market (RECLAIM) program to a command-and-control regulatory structure (RECLAIM Transition Project). WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that are within the purview of the RECLAIM program administered by the South Coast Air Quality Management District (District or SCAQMD) and they will be impacted by the RECLAIM Transition Project. We have several comments concerning pending rulemakings to implement new Best Available Retrofit Control Technology (BARCT) requirements.

WSPA and its members are active participants in the working groups related to the RECLAIM Transition Project. We respectfully offer the following comments on Proposed Amended Rule (PAR) 1135, NO<sub>x</sub> Emissions from Electric Power Generating Systems, PAR 1134, NO<sub>x</sub> Emissions from Stationary Gas Turbines, and Proposed Rule (PR) 1109.1, Refinery Equipment.

- 1. BARCT must be established, for each class and category of equipment. BARCT determinations for one class may be different than another class. Caution should be exercised when referencing or applying BARCT determinations from other classes within a category.**

1

The California Health and Safety Code (CHSC) defines BARCT as follows:

*"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."<sup>1</sup> [Emphasis added]*

Under District BARCT rules, an equipment category may consist of multiple classes. These classes may be defined by different design criteria or operational factors. Examples might include throughput ratings, duty cycles, or usage level (e.g., low v. high use). Such classifications within a category are necessary to establish what is technologically feasible and cost effective as required in the determination of BARCT.

The District is presently considering BARCT rules for a number of equipment types within the RECLAIM Transition Project. Due to their inclusion in the RECLAIM program, many of these equipment types have not undergone an evaluation for command-and-control BARCT since the RECLAIM program's launch in 1993, at least with respect to equipment situated at RECLAIM facilities. In many cases, an equipment category is comprised of several different classes and therefore addressed under several different rules. Some notable examples include:

- Stationary gas turbines, which will be covered under a number of different classes pursuant to PAR 1134, PAR 1135 and PR 1109.1.
- Process heaters and boilers, which will be addressed under a number of different classes pursuant to PAR 1146, PAR 1146.1, PAR 1146.2, and PR 1109.1.

Despite similarities within the broader categories, BARCT determinations must be conducted specific to each class of equipment within a category. Take for example a stationary gas turbine; a given make/model of turbine might be deployed in a refinery cogeneration system, or an electric generating facility (EGF). However, operational design differences would place this equipment in different classes. That classification could be defined based on differences in fuel type (e.g., refinery fuel gas and/or utility quality natural gas), or duty (e.g., baseload vs. demand response, etc.).

We appreciate that the District is in the process of conducting a thorough BARCT analysis for these sources across the different proposed rules including PR 1109.1. Such BARCT analyses for refinery sources must be specific to refinery applications and BARCT determinations for similar types of equipment in non-refinery application may not be relevant because what is technologically feasible and cost effective in one application may not be in another application. For this reason, caution should be exercised when referencing or applying BARCT determinations from other classes within a category.

2. If a technically feasible endpoint is not cost effective, it cannot be considered BARCT since cost effectiveness is a fundamental requirement of BARCT. Some

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<sup>1</sup> CHSC §40406.

endpoints presented by SCAQMD Staff to recent RECLAIM landing rule working groups exceed the District's \$50,000 per ton NO<sub>x</sub> reduced cost effectiveness threshold.<sup>2</sup>

In establishing BARCT, a district must do all of the following:<sup>3</sup>

- 1) Identify one or more potential control options which achieves the emission reduction objectives for the regulation.
- 2) Review the information developed to assess the cost-effectiveness of the potential control option. For purposes of this paragraph, "cost-effectiveness" means the cost, in dollars, of the potential control option divided by emission reduction potential, in tons, of the potential control option.
- 3) Calculate the incremental cost-effectiveness for the potential control options. To determine the incremental cost-effectiveness under this paragraph, the district shall calculate 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.
- 4) Consider the effectiveness of the proposed control option, the cost-effectiveness of each potential control option, and the incremental cost-effectiveness between the potential control options.

In short, BARCT must represent an emission limitation which is both technologically feasible and cost effective.

We note that District Staff recently presented at least one preliminary BARCT recommendation which Staff's (preliminary) analysis indicated was not cost effective. Staff presented the PAR 1135 Working Group with a "BARCT Recommendation" for "Combined-Cycle Turbines" as 2 ppm NO<sub>x</sub>, despite data suggesting that every affected unit in the class would exceed the District's cost effectiveness threshold.<sup>4</sup> Given that data, BARCT cannot be 2 ppm NO<sub>x</sub> for the class/category and the District's BARCT recommendation would require revision.

3. **BARCT must be established at a class/category level. Device-level limitations are not appropriate unless the source class/category is classified to include a single device.**

As noted above, BARCT must represent an emission limitation which is both technologically feasible and cost effective for each class/category of source.<sup>5</sup> In one instance, the District Staff presented a working group with a preliminary BARCT recommendation that would effectively establish device-level throughput limits as part of the BARCT rule.<sup>6</sup> The District Staff's analysis for the category (i.e., EGF Utility Boilers) clearly indicated that the Staff's proposed BARCT level was not cost effective for the class/category. As part of that (preliminary) determination, Staff proposed "low use

<sup>2</sup> SCAQMD presentation to Proposed Amended Rule 1135 Working Group Meeting, 13 June 2018. Slides 30-46

<sup>3</sup> CHSC §40920.6.

<sup>4</sup> SCAQMD presentation to Proposed Amended Rule 1135 Working Group Meeting, 13 June 2018. Slides 27 and 30

<sup>5</sup> CHSC §40406.

<sup>6</sup> SCAQMD presentation to Proposed Amended Rule 1135 Working Group Meeting, 13 June 2018. Slides 40-43.

exemptions” would be imposed in the form of new operating limits for each of the individual devices to be calculated as a function of cost effectiveness. Such device-level limitations are not appropriate for a BARCT determination when the class/category consists of multiple devices. If the District wishes to establish a low-use exemption, it must set a class/category threshold above which the BARCT recommendation would be cost effective for the class/category.

- 4. Requirements which effectively force retirement of basic equipment must be accounted for in the cost effectiveness analysis for the proposed rule. Such a requirement would also need to be accounted for in the District’s socioeconomic analysis for the Proposed Rule.**

In the recent working group meetings for PAR 1135 and PAR 1134, District Staff indicated they are considering a “replacement requirement” for older equipment.<sup>7,8</sup> In both cases, the concept of a replacement requirement appeared to be driven by Staff’s desire to impose a control level that was not demonstrated to be cost effective. BARCT is by definition a retrofit standard that applies to existing sources. The requirement that BARCT standards be both technologically achievable and cost effective is an acknowledgement that it may not be possible to achieve the same level of control on an existing source as might be possible with a new source. If there are no more stringent controls that are cost effective for a class or category of source, then that source is at BARCT and the analysis is concluded. To instead require replacement of that source (perhaps without any regard to the technological feasibility or cost effectiveness) with a new source (presumably equipped with best available control technology) renders the technological feasibility and cost effectiveness limitations in the BARCT definition meaningless. The Health and Safety Code grants the District authority to impose best available control technology (BACT) on new and modified sources and BARCT on existing sources.<sup>9</sup> We are not aware of any authority that allows the District to compel replacement of an existing source when it finds that there are no cost effective retrofit controls. We do, however, support measures that would make it easier for a facility to replace aging equipment if it elects to do so on a voluntary basis, including streamlined new source review and available sources of emission offsets.

- 5. The timetable for transition to command-and-control BARCT could materially affect what is achievable, and whether it is cost effective.**

Under RECLAIM’s market-based design, covered facilities have successfully reduced aggregate program emissions for NO<sub>x</sub> and SO<sub>x</sub> in accordance with the program’s declining RTC caps. Facilities have implemented custom compliance strategies to meet these caps, which included installing emissions controls on equipment where it was cost effective and using the compliance market where physical changes were not cost effective. The District is now planning to transition RECLAIM facilities to command-and-control (under various directives).

Due to program design, RECLAIM facilities within a given sector may have pursued widely varied strategies and now find themselves in widely varied situations with respect

<sup>7</sup> SCAQMD presentation to Proposed Amended Rule 1135 Working Group Meeting, 13 June 2018. Slide 48.

<sup>8</sup> SCAQMD presentation to Proposed Amended Rule 1134 Working Group Meeting, 13 June 2018. Slide 42.

<sup>9</sup> CHSC §40440(b)(1).

to their basic equipment and currently installed emissions controls. The investments and construction needed to achieve command-and-control BARCT limits have not yet been defined. Given these varied starting points, the implementation schedule for command-and-control BARCT rules could be an important factor in defining what is achievable or cost effective as BARCT. We recommend that BARCT discussions need to include consideration of both what will be required (i.e., the emission limit) and when (i.e., the schedule). This is especially true for refinery sector facilities where such investments must be coordinated with turnaround schedules and capital projects that require long planning and engineering timetables.

Thank you for considering these comments. We look forward to continuing to work with you and your Staff on these rulemakings which are critically important to stakeholders as well as the regional economy.

If you have any questions, please contact me at (310) 808-2146 or by email at [bmccann@wspa.org](mailto:bmccann@wspa.org).

Sincerely,



cc: Wayne Nastri, SCAQMD  
Susan Nakamura, SCAQMD  
Michael Morris, SCAQMD  
Michael Krause, SCAQMD  
Patty Senecal, WSPA

**LATHAM & WATKINS LLP**

August 15, 2018

**VIA EMAIL**

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Re: SCAQMD Staff Proposal to Require Equipment Replacement as BARCT

Dear Dr. Fine:

We are submitting these comments on behalf of our client Western States Petroleum Association ("WSPA") on an important issue that has arisen in connection with the transition of the Regional Clean Air Incentives Market ("RECLAIM") program to a command-and-control regulatory structure. WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that will be impacted by the transition out of the RECLAIM program.

South Coast Air Quality Management District ("SCAQMD") staff has recently taken the position that a best available retrofit control technology ("BARCT") standard may require total replacement of the emitting piece of equipment. SCAQMD staff has articulated this position in various meetings and documents produced in connection with the RECLAIM transition. The most detailed explanation of the staff's position of which we are aware is contained in the July 2018 Draft Staff Report in support of proposed amendments to SCAQMD Rule 1135 ("Rule 1135 Staff Report") at pages 2-1 through 2-2.

In the Rule 1135 Staff Report, staff makes two arguments in support of its position. First, it cites to dictionary definitions of "retrofit" and concludes that "replacement" is not specifically excluded from those definitions. Second, it cites to a California Supreme Court case, *American Coatings Ass'n v. South Coast Air Quality Mgt. Dist.*, 54 Cal 4<sup>th</sup> 446 (2012), for the proposition that a BARCT standard may require replacement of the emitting equipment in its entirety. We provide a response to each of these arguments below.

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#### **“Common Sense Definition” Argument**

The SCAQMD’s “common sense definition” argument is flawed in that it focuses on whether or not “replacements” are specifically excluded from the definitions of “retrofits,” as opposed to whether or not they are included within the definition. The SCAQMD’s backward approach to interpreting dictionary definitions is non-sensical. Under this approach, because the definition of “apple” does not specifically exclude “orange,” an orange may be an apple notwithstanding the fact that the definition of apple clearly does not include orange. When one focuses on what is included within the definitions of “retrofit,” as opposed to what is not excluded, it is clear that while replacement of certain elements of any particular object may be a “retrofit,” replacement of the object in its entirety is not.

One of the definitions relied upon by the SCAQMD is the following from the on-line Merriam-Webster Dictionary:

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.

This definition makes clear that a “retrofit” involves an existing object – “(something, such as a computer, airplane, or building)” – upon which the act of retrofitting occurs, and which continues to exist following that action. The Rule 1135 Staff Report states: “This definition does not preclude the use of *replacement parts* as a retrofit.” (emphasis added). This statement is true, but it does not support the position taken by the SCAQMD that a retrofit may include the replacement of the entire object that is the subject of the retrofit. Note that in the case of BARCT, we are discussing retrofitting a piece of equipment and thus, the second of the definitions in Merriam Webster, “to install (new or modified parts or equipment) in something previously manufactured or constructed,” is the most applicable definition. When one retrofits equipment, such as a heater, the parts, such as a burner, may be updated, but the original heater itself remains.

It becomes even more clear that the staff’s interpretation of the term “retrofit” is incorrect when one considers the definition of the term “replace” from the same source:

2: to take the place of especially as a substitute or successor.

The distinction between these two terms is clear – in the case of “retrofit,” the pre-existing object that is the subject of the action continues to exist following the action, but in an altered state; whereas, in the case of “replace,” the pre-existing object of the action no longer exists following the action. So, if you replace a heater, the original heater no longer exists.

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The other definition relied upon by the staff is from the on-line Dictionary.com:

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.

Again, this definition makes clear that a retrofit involves the modification of existing equipment (e.g., airplane, automobile, factory), which continues to exist following such action. To the extent that the term “replacement” is used in the definition, it clearly refers to the replacement of *some element* of that object (e.g., parts of an airplane, equipment in a factory), and not to replacement of the entire object altogether.

And again, the distinction between the two terms becomes even clearer when one considers the definition of “replace” from the same source:

1: to assume the former role, position, or function of; substitute for (a person or thing), 2: to provide a substitute or equivalent in the place of.

“Replace” and “retrofit” are different terms with different meanings, and to suggest that the use of one term somehow includes the other, without some explicit statement of intent to do so, simply ignores the distinction between the two terms.

Furthermore, both “retrofit” and “replace” or “replacement” are terms commonly used in air quality statutes and regulations, and the difference between the terms is well understood. When a statute or regulation is intended to require, or apply to, “replacements,” that intention is typically clear on its face. When a legislative body means “replacement,” it says so explicitly, and to suggest that the California legislature intended to include “replacement” within the scope of a definition that uses the term “retrofit,” flies in the face of the distinction between these two terms that is embodied throughout the universe of air quality statutes and regulations. If the legislature had intended that equipment be replaced, they would have used the word “replacement” (best available replacement control technology). The SCAQMD staff cannot ignore the word “retrofit” in the term “best available retrofit control technology.” It is a fundamental principle of statutory interpretation that each term be given meaning.

#### **“American Coatings” Argument**

Neither the language from the *American Coatings* decision quoted in the Rule 1135 Staff Report, nor anything else in the decision, supports the proposition that a BARCT standard may require the replacement of the primary emitting equipment to which the standard is being applied. In fact, this issue is not even addressed in the case.

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The *American Coatings* case addresses the issue of whether or not there are certain circumstances where an adopted BARCT standard may be more stringent than the currently applicable best available control technology ("BACT") standard for the same class or category of source. The court concludes that it is acceptable for an adopted BARCT standard *with a future compliance date* to be more stringent than the BACT standard that exists at the time the more stringent BARCT standard is adopted. *American Coatings*, 467. In explaining its decision, the court pointed out that a BARCT standard with a future compliance date need not be met until some point in the future after which advances in technology have occurred; whereas, a BACT standard must be met immediately in order for a source to obtain a pre-construction permit. The court also pointed out that BARCT standards with future compliance dates that could not be achieved as of the date of adoption are consistent with the concept that BARCT standards may be "technology-forcing."

The Rule 1135 Staff Report correctly articulates the *American Coatings* holdings described above but does not contain any analysis to support the staff's position that a BARCT standard can require the complete replacement of the emission unit. It simply includes the following conclusory statement: "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 . . ." Rule 1135 Staff Report, p. 2-2. The staff report is devoid of any legal analysis or authority, including the *American Coatings* decision, that supports this conclusion.

Thank you for considering these comments. We look forward to continuing to work with you on these rulemakings which are critically important to stakeholders as well as the regional economy. If you have any questions, please contact me at (714) 401-8105 or by email at michael.carroll@lw.com, or Bridgit McCann of WSPA at (310) 808-2146 or by email at bmccann@wspa.org.

Sincerely,



Michael J. Carroll  
of LATHAM & WATKINS LLP

cc: Cathy Reheis-Boyd, WSPA  
Patty Senecal, WSPA  
Bridgit McCann, WSPA  
Wayne Nastri, SCAQMD  
Barbara Baird, SCAQMD

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018282-0000/033950-0005

November 1, 2018

**VIA EMAIL**

Bayron T. Gilchrist, General Counsel  
 Barbara Baird, Chief Deputy Counsel  
 South Coast Air Quality Management District  
 21865 Copley Drive  
 Diamond Bar, CA 91765

Re: SCAQMD Staff Proposal to Require Equipment Replacement as BARCT

Dear Bayron and Barbara:

Thank you for your October 3, 2018 letter responding to our August 15, 2018 comments submitted on behalf of the Western States Petroleum Association ("WSPA"), and our August 24, 2018 comments submitted on behalf of the Regulatory Flexibility Group ("RFG"), regarding South Coast Air Quality Management District ("SCAQMD") staff's position that a best available retrofit control technology ("BARCT") standard may require total replacement of the emitting piece of equipment. Portions of your response reassert arguments that staff has made in the past in support of its position; namely, that neither the statutory definition of BARCT nor common dictionary definitions of "retrofit" specifically exclude replacements, and that the *American Coatings Ass'n v. South Coast Air Quality Mgt. Dist.*, 54 Cal 4<sup>th</sup> 446 (2012) case ("*American Coatings*") is supportive of staff's position. We responded to those arguments in our previous comment letters and will not revisit them here. This letter responds on behalf of WSPA and RFG to your assertions that the staff's position is supported by public policy considerations, and that we have failed to present any policy rationale for our position.

Staff asserts that requiring replacements under certain circumstances is supported by policy justifications, and, therefore, public policy supports an expansive interpretation of its authority that would include the authority to mandate replacements. This reasoning is contrary to two important public policies that are also well enshrined in administrative law. The first is that regulatory agencies must act within the scope of the authority delegated to them by the legislature, even if that means the agency may not undertake certain actions that it might otherwise view as sound public policy. The second is that public agencies may not substitute their own judgment for that of the legislature as reflected in the statutory grant of authority. These public policies and legal requirements support our position that staff cannot mandate replacements as BARCT.

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***Public policy and well established law dictate that the SCAQMD act within the scope of authority granted to it by the legislature.***

An agency can adopt, administer or enforce a regulation only if it is within the scope of authority conferred on it by other provisions of law. Cal Gov. Code § 11342.1. No regulation is valid unless it is consistent and not in conflict with the statute conferring authority to the agency. Cal Gov. Code § 11342.2. As explained in our previous comment letters, the statutory provisions defining BARCT and the SCAQMD's authority to adopt and implement BARCT standards are clear. "In the construction of a statute or instrument, the office of the Judge is simply to ascertain and declare what is in terms or in substance contained therein, *not to insert what has been omitted*, or to omit what has been inserted . . ." Cal. Civ. Proc. Code § 1858 (emphasis added). The role of an agency charged with implementing a statute is no different. In this case, staff seeks to insert what has been omitted by arguing that the term "retrofit" encompasses replacement, notwithstanding that there are numerous examples of the distinction between those terms throughout the statute.

Finding ambiguity where there is none, staff then invokes "public policy" to support an expansive interpretation of its authority. Relying on the example of replacing engines on Santa Catalina Island, staff argues that because the replacements would further the broader statutory purpose of reducing emissions, a mandate to do so is sound public policy, and, therefore, public policy supports an expansive interpretation of the agency's authority to impose such a mandate.

According to staff's reasoning, the scope of the agency's authority should be interpreted to encompass any action which the agency deems sound public policy, regardless of the specific language contained in the statutory grant of authority. In fact, you argue in your letter, citing *American Coatings*, that the agency's authority is essentially unbounded as long as the requirement is not arbitrary and capricious, or without reasonable or rational basis, or lacking in evidentiary support. However, as the cases relied upon in *American Coatings* make clear, a critical consideration in evaluating whether or not an agency action meets this standard is whether or not the action is within the scope of the agency's delegated authority. As stated in *Yamaha Corp. of America v. State Bd. of Equalization* (1998) 19 Cal.4<sup>th</sup> 1, citing *Wallace Berri & Co. v. State Bd. of Equalization* (1985) 40 Cal.3d 60, 65: "[I]n reviewing the legality of a regulation adopted pursuant to a delegation of legislative power, the judicial function is limited to determining whether the regulation (1) is "within the scope of the authority conferred" [citation] and (2) is "reasonably necessary to effectuate the purpose of the statute" [citation].' [Citation.]"

The scope of authority delegated to an agency may not authorize it to take any and all actions that the agency deems sound public policy in light of its overall mission. In fact, acting as it does from a broader perspective, and balancing a broader range of policy considerations, the very reason the legislature imposes limitations on the authority of regulatory agencies is to prevent them from undertaking actions that they might otherwise be inclined to take because they deem them sound public policy. The fact that a proposed action may reflect sound public policy in the view of the agency does not mean that it is within the scope of the authority granted by the legislature.

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***Staff's position is contrary to the legislature's policy considerations embedded in the relevant statutory provisions.***

By including economic impacts as one of the factors in the definition of BARCT, and by specifying the process for evaluating the cost-effectiveness of proposed BARCT standards, it is clear that one of the policies of the legislature was to balance the goal of achieving additional emission reductions from existing sources against the costs of achieving those reductions, and to impose limits on the costs that would be borne by existing sources to further control emissions.<sup>1</sup> The legislature determined that stationary sources should bear the cost of implementing cost-effective retrofits. If cost-effective retrofits are determined to be unavailable, then that is the end of the inquiry. There may be specific cases where the outcome results in foregone emission reductions, but it was the judgment of the legislature that this regulatory scheme struck the proper public policy balance between achieving air quality goals and imposing additional costs on regulated sources. It is not the place of the agency to substitute its own public policy considerations for those of the legislature when the language of the statute is clear, as it is here.

Furthermore, the fact that a replacement project may be cost-effective in a situation where available retrofits are not is irrelevant. Staff seems to suggest that if a replacement project would cost no more than a cost-effective retrofit project (if one existed), then the cost to the source is no greater than what the legislature intended, and, therefore, requiring replacement in such situations does not undercut any economic considerations that the legislature may have had in mind when adopting the statute. However, in situations where there are no available cost-effective retrofits, the legislature determined that the cost to the source for installing additional controls would be zero. Therefore, staff's determination that it can mandate replacement when there are no cost-effective retrofits, as long as the replacement is cost-effective, imposes costs on existing sources that go beyond what the legislature contemplated. The fact that the cost of a replacement may be less than, or more cost-effective than, available retrofits does not mean that the agency is entitled to mandate replacements.

***Conclusion***

SCAQMD staff is attempting to use policy rationale to read something into the statute that simply is not there. That approach is not only poor public policy, it is contrary to the law. Whether or not a particular course of action may be good public policy in the judgment of the agency does not mean it is within the authority of the agency to mandate it. Furthermore, in this case, that rationale elevates the judgment of the agency over that of the legislature with regards to the appropriate balance between furthering air quality objectives and maintaining a viable economy. There are limits on the rulemaking authority of the SCAQMD, and those limits may well preclude it from pursuing what it might otherwise view as good public policy in order to accomplish the broader policy objectives of the legislature.

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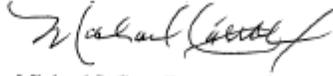
<sup>1</sup> Health & Safety Code Sections 40406 and 40920.6.

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Thank you for considering these comments. We look forward to continuing to work with you on these rulemakings which are critically important to stakeholders as well as the regional economy. If you have any questions, please contact me at (714) 755-8105 or by email at [michael.carroll@lw.com](mailto:michael.carroll@lw.com).

Sincerely,



Michael J. Carroll  
of LATHAM & WATKINS LLP

cc: Robert Wyman, Latham & Watkins LLP  
John Heintz, Latham & Watkins LLP  
RFG Members  
Bridget McCann, WSPA

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Western States Petroleum Association  
Credible Solutions • Responsive Service • Since 1907

Oyango A. Snell, Esq.  
General Counsel

May 1, 2018

Dr. Philip Fine  
Deputy Executive Officer, Planning and Rules  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765

Via e-mail at: [pfine@aqmd.gov](mailto:pfine@aqmd.gov)

Re: WSPA concerns with Proposed Amended Rules 1146, 1146.1 and 1146.2 and RECLAIM Landing Rules

Dear Dr. Fine:

Western States Petroleum Association (WSPA) appreciates the ability to participate in working groups related to the transition of the Regional Clean Air Incentives Market (RECLAIM) program and Proposed Amended Rules (PAR) 1146, 1146.1 and 1146.2 and the opportunity to make comments. WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that are within the purview of the RECLAIM Program administered by the South Coast Air Quality Management District (AQMD or District).

PAR 1146, 1146.1 and 1146.2 represent essential "landing rules" which, if adopted, would apply to many WSPA member and non-member facilities which stand to be transitioned from RECLAIM's market-based structure into new command-and-control Best Available Retrofit Control Technology (BARCT) requirements. We have several comments and concerns with the District's current proposals for these PARs.

1. Staff has not conducted a BARCT assessment for the boilers, steam generators, or process heaters at facilities that would be transitioning from RECLAIM under PAR 1146, 1146.1 and 1146.2.

State law defines BARCT 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." (Health & Saf. Code § 40406). Under the current proposal, District Staff has not conducted a BARCT assessment for boilers, steam generators, or process heaters located at facilities transitioning from RECLAIM to command and control. Rather, the current Staff proposal would simply extend the requirements of existing Rules 1146, 1146.1 and 1146.2 to this large number of facilities. These RECLAIM facilities were not part of the universe of facilities or equipment considered when the District adopted the BARCT requirements currently found in Rules 1146, 1146.1, or 1146.2. Therefore, the District has not analyzed the environmental, energy, and economic impacts for the entire class or category of source. The District cannot simply extend existing requirements to a new universe of facilities and equipment without first conducting new (or supplementary)

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Dr. Philip Fine  
 May 1, 2018  
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BARCT determinations to demonstrate that proposed emission limitations and/or other requirements are both technically feasible and cost effective. Such a demonstration is required under California Health & Safety Code Section 40406.

RECLAIM facilities have been subject to market-based emissions control requirements since 1994. For this reason, the boilers, steam generators, and process heaters at these facilities will widely vary in terms of their physical configurations (e.g., basic equipment, emissions controls) and their emissions performance. Furthermore, many of the compliance requirements (e.g., averaging periods) in these rules differ from RECLAIM and cannot readily be applied to RECLAIM equipment and facilities. It is inappropriate to assume that the BARCT requirements, and supporting technical feasibility and cost effectiveness analyses, can apply equally and equitably to facility equipment that was not part of the original BARCT analysis. The District needs to demonstrate that those requirements or alternative BARCT requirements are both technically feasible and cost effective for this new group of facilities being transitioned from RECLAIM where they have operated for two plus decades.

**2. The environmental and socioeconomic impacts for PAR 1146, 1146.1 and 1146.2 should be considered in CEQA and Socioeconomic Assessments for the entire RECLAIM Transition Project.**

Under the California Environmental Quality Act (CEQA), CEQA Guidelines and SCAQMD Rule 110, the SCAQMD Governing Board (as the lead agency under its certified regulatory program) is required to identify and evaluate environmental impacts of its rulemaking activities, as well as feasible means and alternatives to reduce, avoid or eliminate significant impacts. More specifically, "an accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR." (*County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 193.) The entire project being proposed must be described in the EIR, and the project description must not minimize project impacts. (*City of Santee v. County of San Diego* (1989) 214 Cal.App.3d 1438, 1450.) Furthermore, CEQA forbids piecemealing<sup>1</sup> and the Court has explicitly found that it is inappropriate to divide a project into small segments in order to avoid preparing an EIR. (*Bozung v. Local Agency Formation Com.* (1975) 13 Cal.3d 263, 283-284.)

The California Supreme Court has also held that EIRs may need to address future environmental effects of a proposed project. In *Laurel Heights I*, the court set forth the standards for determining whether reasonably foreseeable future activities must be included in an EIR project description and for determining whether the impacts of those activities must be analyzed in the EIR:

"We hold that an EIR must include an analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects." (*Laurel Heights Improvement Assn. v. Regents of the University of California ("Laurel Heights I")* (1988) 47 Cal.3d 376, 396.)

<sup>1</sup> "Piecemealing" or "segmenting" means dividing a project into two or more pieces and evaluating each piece in a separate environmental document. The rule of forbidding piecemealing arises from the definition of "project" under CEQA, where "project" is defined as "the whole of an action." (14 Cal. Code Regs. § 15378(a).)

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As previously noted, PAR 1146, 1146.1 and 1146.2 are part of the District's larger effort to transition RECLAIM program facilities from RECLAIM's market-based design to a command-and-control design. This has been described to the Working Group, and documented in the District's staff report:

"The proposed amendments in Rules 1146, 1146.1 and 1146.2 initiate the transition of the NOx RECLAIM program to a command-and-control regulatory structure."<sup>2</sup>

This transition is also noted in the District's preliminary environmental assessment, which was drafted for compliance with the California Environmental Quality Act (CEQA):

"As a result of control measure CMB-05 from the 2016 AQMP and ABs 617 and 398, SCAQMD staff has been directed by the Governing Board to begin the process of transitioning equipment at NOx RECLAIM facilities from a facility permit structure to an equipment-based command-and-control regulatory structure per SCAQMD Regulation XI – Source Specific Standards. SCAQMD has begun this transition process by proposing amendments to Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; Rule 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; and Rule 1146.2 – Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters. Proposed Amended Rules (PAR) 1146, 1146.1, and 1146.2 (collectively referred to herein as the PAR 1146 series) will be the first set of rules to be amended to initiate the transition of equipment from the NOx RECLAIM program to a command-and-control regulatory structure while achieving BARCT."<sup>3</sup>

We believe the District needs to prepare an environmental assessment that considers the entire RECLAIM Transition Project, its rulemakings and its other associated components, across impacted facilities and equipment. While the District prepared a Final Program Environmental Impact Report (Final Program EIR) regarding the 2016 AQMP (certified in March 2017), the analysis focused solely on the implementation of CMB-05. CMB-05 was a general directive from the 2016 AQMP, requiring an assessment of further NOx reductions from the RECLAIM program. (Final Program EIR for the 2016 Air Quality Management Plan (January 2017) p. 2-17.) More specifically, the Final Program EIR describes CMB-05 as "identif[ying] a series of approaches, assessments, and analyses *that can be explored* to make the program more effective..." (Emphasis added. Final Program EIR at p. 2-17.) The Final Program EIR lists the control methodology of CMB-05 as "re-examination of the RECLAIM program, including voluntary opt-out and the additional control equipment and SCR/SNCR equipment." (Final Program EIR at p. 4.1-2.) Additionally, the Final Program EIR also sets forth the air quality impact, as it relates to CMB-05, as "potential emissions as a result of construction to install new equipment, generation of ammonia emissions from the operations of SCR/SNCR equipment, and potential air quality and GHG emissions from electricity to operate equipment." (Final Program EIR at p. 4.1-2.) The Final Program EIR never addresses the concept of, much less the impacts related to, sunsetting the RECLAIM program.

As shown above, CMB-05 lacks the specifications set forth in the RECLAIM Transition Project and its rulemakings. More importantly, the RECLAIM Transition Project had not yet even been created when CMB-05 was conceived or evaluated under the Final Program EIR. In fact, the RECLAIM Transition Project is still

<sup>2</sup> SCAQMD Preliminary Draft Staff Report for Proposed Amended Rule (PAR) 1146, PAR 1146.1, PAR 1146.2 and Proposed Rule 1100, January 2018, see page 3.

<sup>3</sup> SCAQMD Draft Subsequent Environmental Assessment for PAR 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; 1146.2 - Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters; and PR 1100 – Implementation Schedule for NOx Facilities, March 2018, page 1-2.

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currently under development on an ongoing basis, as District Staff continues to determine how to approach the applicability of several landing rules and whether some rules will even be included in the Project. Given the Final Program EIR's reliance on general directives like CMB-05 and the RECLAIM Transition Project not yet existing at the time of assessment, the Final Program EIR fails to properly evaluate the potential environmental impacts specifically related to the RECLAIM Transition Project and its rulemakings.

As prior amendments to the Regulation XX program were considered under CEQA, we believe the overall group of RECLAIM Transition rulemakings<sup>4</sup> needs to be collectively considered under CEQA, as well. Rules to advance the RECLAIM Transition Project, including these proposed amendments to the 1146 series rules, should not be adopted and facilities should not be removed from RECLAIM until the District has completed and certified a CEQA assessment that evaluates the entire Project. Undertaking these RECLAIM Transition Project rulemakings in a fragmented manner constitutes a piecemealing of the project, which is explicitly forbidden by CEQA as described above. Given that the 1146 series rules are clearly part of the larger RECLAIM Transition Project, we believe the District's current draft CEQA document is improperly scoped.

Additionally, Health & Safety Code Section 40440.8 requires that "[w]henver the south coast district intends to propose the adoption, amendment, or repeal of a rule or regulation that will significantly affect air quality or emissions limitations, the district . . . shall perform an assessment of the socioeconomic impacts of the adoption, amendment, or repeal of the rule or regulation." (Health & Saf. Code § 40440.8(a)). One of the specific factors that the Board is to take into consideration is the "availability and cost-effectiveness of alternatives to the rule or regulation . . ." (Health & Saf. Code § 40440.8(b)(4)). Health & Safety Code Section 40728.5 sets forth substantively identical requirements for all air districts. Similarly, Health & Safety Code Section 40440.5(c)(3) requires that if an environmental assessment is prepared in connection with a proposal to adopt, amend or repeal any rule or regulation, "the staff report shall also include social, economic, and public health analyses." Stakeholders have not yet seen the District's draft socioeconomic assessment for these proposed rules, but we similarly recommend that the District conduct a program-level socioeconomic assessment that considers the socioeconomic effects of the overall RECLAIM Transition Project, including all associated Regulation XI rulemakings, and the 1146 series rules. This should be completed to support related Governing Board rule adoptions prior to the District transitioning individual RECLAIM facilities out of the program.

WSPA continues to be concerned that the RECLAIM transition could cause significant negative impacts to Southern California businesses, air quality and the regional economy. Similar to the Final Program EIR described above, the Final Socioeconomic Report for the 2016 AQMP analyzed the socioeconomic impacts for the 2016 AQMP, which focused solely on CMB-05. As discussed above, CMB-05 did not include a transition of the RECLAIM program to a command-and-control scheme like that described in the RECLAIM Transition Project or in the Project's associated rulemakings. Given that fact, the RECLAIM Transition rulemaking proposals cannot rely on the 2016 AQMP's Socioeconomic Assessment to cover the RECLAIM Transition Project.

**3. The District needs to resolve critical questions about New Source Review (NSR) requirements and Federal NSR equivalency before transitioning individual RECLAIM facilities out of the program.**

Under PAR 1146, 1146.1 and 1146.2, Staff has proposed that RECLAIM facilities covered by these rules would begin to be transitioned out of the RECLAIM program after the rules' adoption. This raises a number of serious concerns due to the lack of transition framework, particularly on the topic of NSR. There remain a number of complex questions (legal and otherwise) over how the District will satisfy EPA requirements to demonstrate equivalency with the Federal NSR program. Since a transition model has not been agreed upon between EPA and

<sup>4</sup> At this time, RECLAIM Transition project includes proposed amendments to Regulation XX rules, as well as PAR 301, PAR 1109 and/or PR 1109.1, PAR 1110.2, PAR 1118.1, PAR 1134, PAR 1135, PAR 1146, 1146.1, and 1146.2, and PAR 1147, 1147.1, and 1147.2.

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the District, facilities are left with uncertainty regarding their permit transition requirements and how future permit changes will impact their operations. RECLAIM facilities should not be transitioned from the program until SCAQMD has resolved these key NSR issues with EPA.

In light of these important issues, PAR 1146, 1146.1 and 1146.2 are not ready for the Governing Board's consideration. Any scheduled or proposed hearing should be delayed until these issues have been adequately addressed.

Thank you for considering these comments. We look forward to continuing to work with you and your Staff on this rulemaking which is critically important to stakeholders, as well as the regional air quality and economy.

If you have any questions, please contact me at (916) 325-3115, or by email at [osnell@wspa.org](mailto:osnell@wspa.org).

Sincerely,



cc: Cathy Reheis-Boyd, WSPA  
Patty Senecal, WSPA  
Bridget McCann, WSPA  
Wayne Nastri, SCAQMD  
Clerk of the Board, SCAQMD

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**LATHAM & WATKINS LLP**

September 7, 2018

**VIA EMAIL**

Dr. Philip Fine  
 Deputy Executive Officer  
 South Coast Air Quality Management District  
 21865 Copley Drive  
 Diamond Bar, CA 91765

Re: Proposed Amended Rules 2001 and 2002

Dear Dr. Fine:

We are submitting these comments on behalf of our client Western States Petroleum Association ("WSPA") on the most recent round of proposed amendments to South Coast Air Quality Management District ("SCAQMD") Rules 2001 and 2002. The amendments are being proposed in connection with the transition of the Regional Clean Air Incentives Market ("RECLAIM") program to a command-and-control regulatory structure. WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that will be impacted by the transition out of the RECLAIM program.

**General Comments**

The proposed amendments to Rules 2001 and 2002 are primarily interim measures intended to establish new eligibility criteria for exiting RECLAIM, provide opt-out procedures, and address, on a temporary basis, unresolved issues surrounding compliance of new source review ("NSR") for former RECLAIM facilities once they have transitioned out of the RECLAIM program. As WSPA and others have expressed in numerous meetings, workshops and hearings conducted in connection with the RECLAIM transition, we have serious concerns about the lack of clarity surrounding NSR in a post-RECLAIM regime.

We believe current SCAQMD staff's ("staff") proposed approach is premature, as staff has not addressed all of the underlying issues surrounding a RECLAIM sunset. RECLAIM is a comprehensive, complex program that was adopted as a whole. In the development of RECLAIM, staff not only determined current and future effective best available retrofit control

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technology (“BARCT”), but also examined and addressed NSR, reviewed socioeconomic impacts, mitigated implications of emissions trading, resolved enforcement and monitoring issues, and understood a host of other consequences of adopting such a program. This comprehensive approach ensured the overwhelming success of the RECLAIM program as it was designed. In contrast for this rulemaking, staff is dismantling the RECLAIM program without analyzing any of the consequences of the proposed approach. Most importantly, staff has not addressed NSR, nor the environmental and socioeconomic impacts of a RECLAIM sunset.

Our strong preference is that staff prioritizes resolution of the NSR issues and conduct an analysis of the entire RECLAIM transition project comparable with the same full analysis that was done during the implementation of RECLAIM before initiating rulemaking. There is no evidence that this has been done to date. We believe that addressing fundamental programmatic issues that will affect all former RECLAIM facilities, such as NSR, early in the transition process, and then moving on to the more narrowly applicable landing rules, would result in a more orderly and efficient transition in the following ways:

- It would provide facilities with an understanding of the NSR requirements and procedures that will apply to modifications required to comply with updated BARCT rules. It is not possible to develop a final and comprehensive plan for implementing new BARCT requirements without knowing the NSR requirements and procedures and how those will impact post-RECLAIM operating permits.
- It would result in a more efficient use of staff resources. For example, the proposed amendments to Rules 2001 and 2002 are essentially “stop-gap” measures that are necessary because the NSR and other programmatic issues remain unresolved. If the NSR and other programmatic issues were addressed, it would not be necessary to develop and implement such measures.
- It would avoid the current ad hoc, piecemeal approach to the RECLAIM Transition Project which results in additional confusion and uncertainty. This is illustrated by the fact that staff’s positions with respect to certain issues related to the proposed amendments to Rules 2001 and 2002 are quite different than positions taken when these two rules were amended in January of this year in what we view as a rush to get the RECLAIM transition process underway.
- It would avoid legal vulnerabilities that we believe are inherent in the current ad hoc, piecemeal approach because the environmental and socioeconomic assessments of incremental rulemaking are disjointed and incomplete.

Should the District continue with this piecemeal approach, we offer the comments set forth below on the proposed amendments:

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**Specific Comments on Proposed Amended Rule 2002(f)(11) – “Stay-In” Provision**

The proposed amendments to Rule 2002 would allow facilities to remain in the RECLAIM program, and thereby avail themselves of the RECLAIM NSR program set forth in SCAQMD Rule 2005 for some period of time. Our understanding, which was confirmed by staff during the RECLAIM Working Group meeting on August 9, 2018, is that the decision of whether or not to remain in the RECLAIM program is completely within the discretion of the facility (assuming the facility meets the specified criteria). Some of the language in the proposed amendments could be read to grant the Executive Officer discretion (beyond merely confirming that the facility meets the specified criteria) to decide whether or not the facility may remain in the program. The following proposed changes are intended to better reflect staff’s intent.

- (11) An owner ~~of or~~ operator of a RECLAIM facility that receives an initial determination notification may elect ~~that~~ **for the facility to remain in RECLAIM by submitting** ~~if a~~ request to the Executive Officer to remain in RECLAIM is submitted, **together with including** any equipment information required pursuant to paragraph (f)(6).
- (A) Upon ~~receiving a request to remain in~~ **RECLAIM and any equipment information required pursuant to paragraph (f)(6),** written approval by the Executive Officer **shall notify the owner or operator in writing** that the facility shall remain in RECLAIM **subject to the following:**
- (i) The facility shall remain in RECLAIM until a subsequent notification is issued to the facility that it must exit by a date no later than December 31, 2023.
  - (ii) The facility is required to submit any updated information within 30 days of the date of the subsequent notification.
  - (iii) The facility shall comply with all requirements of any non-RECLAIM rule that does not exempt NOx emissions from RECLAIM facilities.

**Specific Comments on Proposed Amended Rule 2002(f)(10) – “Opt-Out” Provision**

Proposed Amended Rule 2002 includes an “opt-out” provision for those facilities that may be ready to voluntarily exit RECLAIM prior to the time that they might otherwise be transitioned out. The current staff proposal differs from previous proposals in that it places

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certain restrictions on facilities after they have exited the program that we believe are unfair and unwarranted. Specifically, proposed paragraph (f)(10)(B) would prohibit such facilities from taking advantage of otherwise available offset exemptions in SCAQMD Rule 1304. In the event that an NSR event requiring offsets were to occur after the facility exited the RECLAIM program, it would be required to obtain emission reduction credits on the open market, which the staff acknowledges are “scarce.” (July 20 Preliminary Draft Staff Report, p. 8).<sup>1</sup> We believe that it is unnecessary, unfair, and possibly contrary to state law, to deny former RECLAIM facilities advantages that they would otherwise be entitled to and that are available to all other non-RECLAIM facilities.

The Preliminary Draft Staff Report expresses concern that the potential impacts associated with emission increases from facilities that might exit the RECLAIM program, even if limited to the 37 facilities the staff initially identified as eligible to exit, could impose a demand on Rule 1304 offset exemptions that could approach or surpass the cumulative emissions increase thresholds of SCAQMD Rule 1315. (Preliminary Draft Staff Report, p. 8). In other words, staff is concerned that if former RECLAIM facilities were permitted to utilize Rule 1304 offset exemptions, the demand on the SCAQMD’s internal emission offset bank, which supports the offset exemptions, might exceed previously analyzed levels. This concern seems inconsistent with positions taken by staff in connection with the January 2018 amendments to these two rules, and with more recent statements by staff suggesting that it believes the internal emission offset bank is the most viable source of emission offsets for former RECLAIM facilities on a long-term basis.

The January 2018 amendments established the criteria and procedures pursuant to which eligible facilities would be identified and exited from RECLAIM. According to the Final Staff Report, “. . . the proposed amendments would remove approximately 38 facilities from NOx RECLAIM.” (January 5 Final Staff Report, p. 2).<sup>2</sup> Staff determined that the impact of exiting the initial round of facilities, including impacts associated with reduced demand for RTCs, would be minimal:

Given the analysis above and the fact that the 38 facilities—which are potentially ready to exit out of the NOx RECLAIM program into command-and-control—account for about one percent of NOx emissions and NOx RTC holdings in the NOx RECLAIM universe, staff concludes that the potential impact of PAR 2002 on the demand and supply of NOx RTC market is expected to be

<sup>1</sup> References herein to “July 20 Preliminary Draft Staff Report” refer to the Preliminary Draft Staff Report, Proposed Amendments to Regulation XX- Regional Clean Air Incentives Market (RECLAIM), Proposed Amended Rules 2001 – Applicability and 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), dated July 20, 2018.

<sup>2</sup> References herein to “January 5 Final Staff Report” refer to the Final Staff Report Proposed Amendments to Regulation XX – Regional Clean Air Incentives Market (RECLAIM) Proposed Amended Rules 2001 – Applicability and 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), dated January 5, 2018.

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minimal and large price fluctuations in the NOx RTC market are unlikely to result directly from the potential exit of the 38 directly affected facilities out of the NOx RECLAIM program. Therefore, PAR 2002 would have minimal impacts on the existing facilities that are not yet ready to exit the NOx RECLAIM program. (January 5 Final Staff Report, p. 12.)

To support its conclusion that exiting the initial round of facilities from the program would have minimal impacts as a result of foregone market demand for RTCs, staff analyzed three scenarios in which NOx emissions from the subject facilities were: i) 5% below 2015 NOx emissions; ii) the same as 2015 NOx emissions; and iii) 5% above 2015 NOx emissions. (January 5 Final Staff Report, p. 11). Staff determined that foregone market demand for RTCs associated with exiting the initial group of facilities under each of the three scenarios would be 0.073 tons per day (TPD), 0.080 TPD, and 0.086 TPD, respectively. Based on this analysis, staff concluded that the anticipated future demand for NOx RTCs associated with the exiting facilities was minimal, and that eliminating that demand would not materially impact the remaining market. In other words, staff concluded that the exiting facilities would have a negligible demand for RTCs in the future, including RTCs required to satisfy NSR requirements. As stated in the Summary of the Proposal:

Considering the past market behavior by these facilities, staff concludes that the potential impact of PAR 2002 on the demand and supply of NOx RTC market is expected to be minimal and large price fluctuations in the NOx RTC market are unlikely to result directly from the potential exit of these facilities out of the NOx RECLAIM program. (Summary of Proposal, Agenda Item No. 18, January 5, 2018, p. 3.)

Notably, staff did not even address the impact that the January 2018 amendments might have on the internal bank even though those amendments were intended to result in precisely the situation about which staff is now expressing concern – the removal of 38 facilities from the RECLAIM program that would then be eligible to take advantage of offset exemptions in Rule 1304 like any other RECLAIM facility.

In contrast with the January 2018 Final Staff Report, the July 2018 Preliminary Draft Staff Report expresses serious concerns about the potential for increased NOx emissions from facilities exiting the program, stating that “[e]ven among the first 37 facilities identified that may be eligible to exit, any impacts from potential emissions increases are unknown and if significant enough, can approach or surpass the cumulative emissions increase thresholds of Rule 1315.” (July 2018 Preliminary Draft Staff Report, p. 8).

Clearly, the conclusions reached by staff in the January 2018 Final Staff Report, upon which the Governing Board relied when it adopted the current versions of Rules 2001 and 2002, are inconsistent with the concerns being raised by staff in the current proposal. Either staff erred in January by underestimating the impacts on the RECLAIM market and failing to even analyze

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the 2016 AQMP and the potential environmental impacts associated with the 2016 AQMP, including CMB-05, were analyzed in the Final Program EIR certified in March 2017. This Draft SEA relies on the analysis in the March 2017 Final Program EIR for the 2016 AQMP.” (Draft SEA, p. 2-5).

The proposed amendments to Rules 2001 and 2002 implement that portion of control measure CMB-05, written after the Governing Board’s adoption of the 2016 AQMP that calls for the transition of the RECLAIM program to a command and control regulatory structure. As stated in the July 2018 Preliminary Draft Staff Report, “Proposed Amended Rules 2001 and 2002 will continue the efforts to transition RECLAIM facilities to a command-and-control regulatory structure . . .” (July 2018 Preliminary Draft Staff Report, p. 2). The problem with the proposal to tier the CEQA analysis for the currently proposed amendments to Rules 2001 and 2002 off from the March 2017 Final Program EIR for the 2016 AQMP is that control measure CMB-05 as proposed at the time the March 2017 Final Program EIR was prepared did not include a transition out of the RECLAIM program. That language was added well after the CEQA analysis was complete. Furthermore, no additional CEQA analysis was conducted to address the changes to CMB-05.

The Final Draft 2016 AQMP, which was ultimately presented to the SCAQMD Governing Board, was released in December 2016. Control measure CMB-05 called for an additional five tons per day of NOx reductions from sources covered by the RECLAIM program by the year 2031. CMB-05 also called for convening a Working Group to consider replacing the RECLAIM program with a more traditional command-and-control regulatory program, but did not include a mandate to undertake such a transition. SCAQMD Governing Board action on the Final Draft 2016 AQMP was noticed for February 3, 2017. When the 2016 AQMP item came up on the agenda, SCAQMD staff made a presentation, as is typical. No substantive questions were asked of the staff by Board Members, and no Board Members indicated an intention to offer amendments to the staff proposal. The public was then provided an opportunity to comment, and approximately five hours of public comment ensued.

Following the close of the public comment period, Board Member Mitchell stated her intention to introduce amendments to the staff proposal for control measure CMB-05 that would: i) accelerate the additional five TPD of reductions to 2025 from 2031; and ii) transition to a command-and-control program as soon as practicable. Board Member Mitchell did not provide any specific proposed language and did not make a formal motion to amend the staff proposal. For reasons that are not relevant here, action on the item was continued to the March 3, 2017 Governing Board hearing. The Governing Board stated its intention not to take additional public comment on the item at the March 3, 2017 hearing.

At the hearing on March 3, 2017, Board Member Mitchell introduced the following amendments to CMB-05 that included a direction to staff to develop a transition out of the RECLAIM program:

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BE IT FURTHER RESOLVED, that the SCAQMD Governing Board does hereby direct staff to modify the 2016 AQMP NOx RECLAIM measure (CMB-05) to achieve the five (5) tons per day NOx emission reduction commitment as soon as feasible, and 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 and to request staff to return in 60 days to report feasible target dates for sunseting the RECLAIM program.

There was no Board Member discussion of the proposed amendments, and they were approved on a vote of 7-6.

The CEQA analysis supporting the 2016 AQMP commenced with a Notice of Preparation of a Draft Environmental Impact Report ("EIR") released on July 5, 2016. The Draft EIR was released on September 16, 2016, with the comment period closing on November 15, 2016. In mid-November 2016, four public hearings related to the AQMP were held in each of the four counties within the SCAQMD territory, at which comments on the Draft EIR were taken. After incorporating comments and making minor textual changes, the Final EIR was released in January 2017. No material changes or additional analysis were undertaken subsequent to the release of the Final EIR, which was certified by the Governing Board on March 3, 2017 as the March 2017 Final Program Environmental Impact Report for the 2016 AQMP, upon which staff now seeks to rely.

Thus, the transition out of the RECLAIM program, which the currently proposed amendments to Rules 2001 and 2002 seek to implement, was not included in the version of CMB-05 presented to the Governing Board as part of the 2016 AQMP. The March 2017 Final Program EIR for the 2016 AQMP, which was completed in January 2018, did not analyze the transition of the RECLAIM program because that was not prescribed by the CMB-05 measure at that time. Therefore, tiering off of the March 2017 Final Program EIR for the 2016 AQMP to support rule amendments that seek to implement the transition is not possible since there is no analysis from which to tier off. In the absence of a program level CEQA analysis that includes the RECLAIM transition, staff's segmented analysis of each proposed rulemaking action in the transition process constitutes classic "piecemealing" contrary to the requirements of CEQA.

Staff's attempt to tier without having completed a programmatic analysis of the RECLAIM Transition Project ignores the fact that RECLAIM is a comprehensive program that includes an assessment of BARCT for all of the sources in the program. It was adopted as a whole, a single package, not as a series of individual rules and regulations. There are no separate BARCT regulations in the RECLAIM program. Because RECLAIM allows for BARCT to be implemented on an aggregate basis, all BARCT determinations had to be made together. Furthermore, all RECLAIM rules are dependent upon one another, and none of these can stand alone. By attempting to analyze the impact of a single RECLAIM rule, i.e., BARCT determination, staff is ignoring the interdependency of the program, and thus, improperly disregarding the impacts of the comprehensive program.

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In the draft SEA, staff claims that it is speculative to determine what BARCT may be for all the various sources under the RECLAIM program. This underscores the fact that a comprehensive program transitioning RECLAIM sources to command and control rules was never developed or analyzed. Rather, staff is piecemealing the analysis of the RECLAIM transition. Such an approach has been rejected by the courts: “Instead of itself providing an analytically complete and coherent explanation, the FEIR notes that a full analysis of the planned conjunctive use program must await environmental review of the Water Agency’s zone 40 master plan update, which was pending at the time the FEIR was released. The Board’s findings repeat this explanation. To the extent the FEIR attempted, in effect, to tier from a *future* environmental document, we reject its approach as legally improper under CEQA.” *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 440 [emphasis in original].

Furthermore, RECLAIM is an emissions trading program. It allows facilities to choose to implement specific controls or to purchase emissions credits. Staff’s piecemealing of the analysis does not account for those facilities that have implemented other means to comply with the program and the additional impacts the transition to individual command and control rules may have on these facilities. Additionally, these impacts cannot be captured in a single rule analysis. Rather, staff’s piecemealing further ignores the impacts on facilities that are subject to multiple BARCT determinations.

#### **Health & Safety Code Section 39616**

The current staff proposal for amending Rule 2002 to prevent former RECLAIM facilities from accessing offset exemptions in Rule 1304 would place former RECLAIM facilities at a significant disadvantage relative to other non-RECLAIM facilities. California Health & Safety Code Section 39616(c)(7) prohibits imposing disproportionate impacts, measured on an aggregate basis, on those stationary sources included in the RECLAIM program compared to other permitted stationary sources. Creating a new category of sources without access to either RTCs or Rule 1304 offset exemptions to satisfy NSR requirements runs afoul of this prohibition.

#### **Statement Pertaining to SCAQMD Rule 1306**

The July 2018 Preliminary Draft Staff Report contains the following statement: “Moreover, Rule 1306 – Emission Calculations would calculate emission increases of exiting RECLAIM facilities based on actual to potential emissions, thereby further exacerbating the need for offsets.” (Preliminary Draft Staff Report, p. 8). It is not clear why this would be the case. Furthermore, it is premature to make such assertions outside the context of an overall analysis of what the NSR requirements for former RECLAIM facilities might be. This is a critical issue that must be addressed in the overall development of the NSR program for former RECLAIM facilities.

Dr. Philip Fine  
September 7, 2018  
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**Conclusion**

Thank you for considering these comments. We look forward to continuing to work with you on these rulemakings which are critically important to stakeholders as well as the regional economy. If you have any questions, please contact me at (714) 401-8105 or by email at michael.carroll@lw.com or Bridget McCann of WSPA at (310) 808-2146 or by email at bmccann@wspa.org.

Sincerely,

  
Michael J. Carroll *fine*  
of LATHAM & WATKINS LLP

cc: Cathy Reheis-Boyd, WSPA  
Patty Senecal, WSPA  
Bridget McCann, WSPA  
Wayne Nastri, SCAQMD  
Barbara Baird, SCAQMD  
Michael Krause, SCAQMD

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**Response to Comment 3-1**

Detailed technical and economic information and analyses upon which the technical feasibility and cost-effectiveness are provided in chapters 2 and 4 of the staff report. Incremental cost-effectiveness between control options is included in chapter 4 of the staff report. This information is presented in this report which is released at least 30 days before any hearing. The other documents that staff relied upon are noted and contained in this report's references section, including U.S. EPA's "Catalog of CHP Technologies" and "Air Pollution Control Cost Estimation Spreadsheet for Selective Catalytic Reduction" and the Office of Energy Efficiency and Renewable Energy's "Catalytic Combustion". ~~This information is presented in this report which is released at least 30 days before any hearing.~~ Cost-effectiveness and technical feasibility information has been identified and presented during working group meetings and the Public Workshop during rule development as well.

**Response to Comment 3-2**

A detailed response to this comment is included in chapter 2 of the staff report.

**Response to Comment 3-3**

Staff has found it necessary to continue with the approach of amending command-and-control NOx rules concurrently with addressing NSR issues. The reason for this approach is to avoid delay in adopting implementation schedules for BARCT to give facilities adequate time to comply with command-and-control NOx emission limits. Based on AB 617, many RECLAIM facilities must implement BARCT before 2024. Resolving NSR is a significant issue as it requires involvement and approval from U.S. EPA. In the interim, facilities have two options. A facility that receives an initial determination notification can remain in RECLAIM, and if there are emission increases that would trigger a New Source Review event, the facility would comply with RECLAIM NSR. Staff is committed to not exit facilities from RECLAIM until the NSR issues are resolved. If however, a facility decides to exit before NSR issues are resolved, and later had an emissions increase that would trigger a New Source Review event, the facility would need to purchase offsets in the open market.~~SCAQMD staff responded to a similar comment in the staff report for PARs 2001 and 2002, which were adopted by the Governing Board at the October 5, 2018 Governing Board Meeting.~~

**Response to Comment 3-4**

Monitoring and reporting requirements are contained in subdivision (e) of the proposed rule, and recordkeeping requirements are contained in subdivision (g). RECLAIM facilities will be required to continue monitoring, reporting, and recordkeeping practices under the provisions of Rule 2012 until they exit RECLAIM. Upon exit from RECLAIM the facility will be required to meet the monitoring and reporting requirements contained in paragraph (e)(4). The proposed rule does not specifically reference Proposed Rule 113 because it has not yet been adopted. The concern raised in this comment regarding complying with MRR requirements in Rule 113 is premature as ~~that Rule is not being considered at this time~~the specific requirements of that rule have not been determined. During any period in which existing RECLAIM MRR provisions are still part of the SIP, a facility may continue to comply with them if it is concerned about U.S. EPA or citizen enforcement, which is very rare.

**Response to Comment 3-5**

Comments about piecemealing CEQA and socioeconomic impacts were addressed in SCAQMD's response letter to BizFed on April 25, 2018, a copy of which is attached below.~~SCAQMD staff responded to a similar comment in the staff report for PARs 2001 and 2002, which were adopted by the Governing Board at the October 5, 2018 Governing Board Meeting.~~

SCAQMD Response to BizFed (Response to Comment 3-4)

*Office of the Executive Officer*  
*Wayne Nastri*  
909.396.2100, fax 909.396.3340

April 25, 2018

Hilary Norton, et. al  
Biz Fed Chair  
Los Angeles County Business Federation  
6055 E. Washington Blvd., #260  
Commerce, CA 90040

Re: CEQA Analysis and Socioeconomic Analysis for RECLAIM Rulemaking

Dear Ms. Norton,

Thank you for your comment letter and participation during the rulemaking effort to transition facilities in the Regional Clean Air Incentives Market (RECLAIM or Regulation XX) to source-specific command and control rules pursuant to the 2016 Air Quality Management Plan (AQMP) approved by the South Coast Air Quality Management District (SCAQMD) Governing Board as control measure CMB-05 in the 2016 AQMP.

CMB-05 described equipment from all facilities in RECLAIM, including fluid catalytic cracking units, boilers, heaters, and furnaces, among others. The control measure identified a series of approaches that could be taken to ensure equivalency with command and control regulations implementing BARCT, with the expectation that there would be a 5 tpd NOx emission reduction commitment as soon as feasible, but no later than 2025.

The potential environmental impacts associated with the 2016 AQMP, including CMB-05, were analyzed in Program Environmental Impact Report (PEIR), certified in March, 2017. The 2016 AQMP PEIR determined that the overall implementation of CMB-05 has the potential to generate adverse environmental impacts to seven topic areas – air quality, energy, hazards and hazardous materials, hydrology and water quality, noise, solid and hazardous waste, and transportation. More specifically, the PEIR evaluated the impacts from installation and operation of additional control equipment and SCR or 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

Hilary Norton

April 25, 2018

volume. In other words, the environmental impacts of the entire RECLAIM Transition project, as referenced by the commenter, were analyzed in the 2016 AQMP and the associated PEIR, which was a program level analysis. The commentator has not identified any additional impact areas, mitigation, or project alternatives from the RECLAIM Transition that were excluded from analysis in the 2016 AQMP PEIR. In any event, the time to challenge the 2016 AQMP PEIR has passed. (Pub. Res. Code §§ 21167, 21167.2.)

Since the SCAQMD has already prepared a program-level CEQA analysis for the 2016 AQMP, including the RECLAIM Transition, no additional program-level analysis is required and further analysis will be tiered off the 2016 AQMP PEIR. (CEQA Guidelines § 15168; *Al Larson Boat Shop, Inc. v. Board of Harbor Commissioners* (1993) 18 Cal.App.4th 729, 740-41.) The SCAQMD has and will continue to evaluate each individual RECLAIM Transition rule that is developed pursuant to the 2016 AQMP, to determine if any additional CEQA review is required. (CEQA Guidelines § 15168.) Additional analysis could include the preparation of a project-level EIR or Subsequent EIR to the 2016 AQMP PEIR. (CEQA Guidelines §§ 15161, 15162.) Streamlined environmental review pursuant to a Program EIR is expressly allowed in CEQA and is not considered piecemealing. (CEQA Guidelines §§ 15165, 15168.) Furthermore, any such review would include consideration of potential cumulative impacts with other RECLAIM Transition rules, as well as other activities. (CEQA Guidelines § 15355.)

Similarly, the Final Socioeconomic Report for the 2016 AQMP fully analyzed the socioeconomic impacts for the 2016 AQMP, including the entire RECLAIM Transition project. The commenter notes that a single 2016 AQMP policy directive controls the entire RECLAIM transition project. That policy directive, CMB-05, was presented in the socioeconomic report where the potential cost of reducing 5 tpd NOx emissions were estimated and the associated regional economic impacts projected. Specifically, the costs presented were scaled from a thorough BARCT assessment conducted as part of the 2015 NOx RECLAIM Amendments, and the analysis conservatively assumed that the estimated cost per ton of NOx emission reduction would be 50 percent higher than the cost-per-ton estimate of installing all BARCT control equipment identified in the 2015 NOx RECLAIM Amendments. The analysis comports with applicable Governing Board resolutions and statutory requirements.

If you have any questions or would like to discuss these issues, please contact me at 909-396-3131, [wnastri@aqmd.gov](mailto:wnastri@aqmd.gov), or Dr. Philip Fine, Deputy Executive Officer, Planning, Rule Development and Area Sources, at 909-396-2239, [pfine@aqmd.gov](mailto:pfine@aqmd.gov).

Sincerely,



Wayne Natri  
Executive Officer

Hilary Norton

April 25, 2018

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Susan Nakamura, SCAQMD  
Michael Krause, SCAQMD

WN:JW:PMF:SN:MK

**Comment Letter 4****LATHAM & WATKINS LLP**

March 13, 2019

**VIA E-MAIL** (see attached distribution)

Governing Board  
 South Coast Air Quality Management District  
 21865 Copley Drive  
 Diamond Bar, CA 91765

Re: Proposed Amended Rule 1134

Dear SCAQMD Governing Board Member:

We are submitting these comments on behalf of our client the Regulatory Flexibility Group ("RFG") regarding Proposed Amended Rule 1134 ("PAR 1134"). The RFG is an industry coalition comprised of companies in the refining, utility and aerospace sectors that operate facilities within the jurisdiction of the South Coast Air Quality Management District ("SCAQMD"). RFG member facilities are subject to the Regional Clean Air Incentives Market ("RECLAIM") program and will be seriously affected by the transition to a command-and-control regulatory structure that is currently underway. The RFG participated in the development of the RECLAIM program from its inception and has been an active participant in all major amendments to the program, including those currently underway.

The PAR 1134 rulemaking raises a number of issues that have been raised previously with staff and Governing Board members in written and verbal comments at working group meetings, public workshops and hearings. Nevertheless, staff continues to proceed with RECLAIM transition rulemaking in the same flawed manner. Following is a brief summary of each of the issues about which we have concerns, and attached to this letter are more detailed comment letters previously submitted to the SCAQMD on these issues.

***Mandating Equipment Replacement Exceeds The SCAQMD's Authority***

As it has in previous rulemakings, SCAQMD staff takes the position that a best available retrofit control technology ("BARCT") standard may require total replacement of the emitting piece of equipment.<sup>1</sup> As we have explained in previously filed comments, mandating replacement projects exceeds the authority of the SCAQMD to adopt BARCT standards for

4-1

<sup>1</sup> PAR 1134 Draft Staff Report, March 2019, Chapter 2.

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*existing* sources, as set forth in the California Health & Safety Code, and, therefore, runs afoul of the well-established legal principle that a regulatory agency must act within the scope of the authority delegated to it by the legislature.

As illustrated by PAR 1134, staff's interpretation that a BARCT standard may require complete replacement of the subject equipment leads to nonsensical results. With respect to four out of the six equipment categories identified in PAR 1134, the Draft Staff Report describes the proposed standards as "[t]he initial BARCT recommendation for both new installations and retrofits . . ."<sup>2</sup> It does not make any sense to establish a BARCT standard for new installations because BARCT does not apply to new installations. New installations are subject to "best available control technology" (BACT) requirements. As explained elsewhere in the Draft Staff Report:

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."<sup>3</sup>

4-1  
(cont.)

Thus, it is not at all clear what staff means when it refers to BARCT for new installations. New installations will be subject to BACT requirements that will be determined at the time the new installation is permitted and which may or may not be the same as the proposed BARCT standards "for new installations" contained in the Draft Staff Report. Furthermore, this confusing approach masks the true costs of compliance for those units that must be replaced. Staff's cost-effectiveness analysis looks only at the costs of installing selective catalytic reduction ("SCR") to meet the proposed BARCT standards. The costs of installing an entirely new piece of equipment that meets BACT standards that could be more stringent than the proposed BARCT standards could be much higher.

Our concerns regarding the BARCT update process to compel installation of new emissions units are addressed in more detail in the following attachments:

- August 24, 2018 comments from Latham & Watkins LLP on behalf of RFG
- November 1, 2018 comments from Latham & Watkins LLP on behalf of RFG

<sup>2</sup> Draft Staff Report, Chapter 2.

<sup>3</sup> Draft Staff Report, Chapter 2.

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***Staff's Proposed NOx BARCT Standards Do Not Adequately Consider Other Pollutants***

Staff's BARCT analysis focuses almost exclusively on proposed standards for NOx, including what is currently being achieved, and what might be achieved with identified control technologies. What staff often fails to adequately consider are trade-offs that can occur in terms of emissions of other pollutants, including particulate matter resulting from ammonia emissions. Use of ammonia in selective catalytic reduction ("SCR"), which is the preferred approach for achieving the NOx standards in PAR 1134, results in ammonia emissions that form particulates. Furthermore, the more stringent the NOx standard is, the more difficult it becomes to limit ammonia slip. In its evaluation of what is currently being achieved, staff often fails to acknowledge that the lowest emissions of NOx are being achieved with units that have high or non-existent limits on ammonia slip. Staff is then recommending NOx standards that are at or below the lowest levels currently being achieved, and then, to avoid impacts associated with increases in particulate emissions, is imposing stringent limits on ammonia. This approach ignores the inherent technological trade-off between these two pollutants and results in combinations of standards that may not be achievable, and certainly not at the costs identified by staff.

4-2

***Staff Has Failed To Provide Information That Forms The Bases Of Its BARCT Recommendations***

We are deeply concerned that staff is not making available to the public certain information upon which it is relying as the basis of its proposed BARCT standards. This is a significant deviation from the manner in which the SCAQMD has conducted BARCT determinations in the past and contrary to California Health & Safety Code ("H&S Code") requirements. H&S Code Section 40440(e) makes H&S Code Section 40703 applicable to SCAQMD rulemaking and requires that when adopting any regulation "the district shall consider, pursuant to Section 40922, and make available to the public, its findings related to the cost-effectiveness of a control measure, as well as the basis for the findings and the consideration involved." (emphasis added). Thus, the SCAQMD is required by statute, to make public the basis of its findings that the proposed and adopted BARCT standards are cost-effective.

4-3

It is not possible for the public to critically evaluate the basis of staff's recommendations if it does not have access to the information upon which staff is relying. Conclusory assertions contained in staff reports, without access to the underlying information that purportedly supports the assertions, is not sufficient to provide for meaningful evaluation and comment. Furthermore, because this information is not contained in the public record, it is not clear that it is being provided to the Governing Board. As a result, not only are certain staff recommendations unsupported by anything in the record, Governing Board action on those recommendations are equally unsupported.

When describing the technology assessment undertaken by staff, the PAR Draft Staff Report Staff states simply that staff "reviewed scientific literature, vendor information, and

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strategies utilized in practice.”<sup>4</sup> Not all of the information reviewed by staff is included in the PAR Draft Staff Report, and there are no specific references or citations to the sources of the information. It is impossible for the public to know precisely what staff has reviewed, or to critically evaluate the information in any way. This is particularly troubling because, in virtually every case, staff has proposed standards that are as stringent or more stringent than the most stringent existing standards, and well below the emission rates currently being met by most or all of the existing units in the class of equipment. Throughout the Draft Staff Report, staff justifies its proposals with the simple phrase “the technology assessment found.” Thus, staff’s recommendations are being driven primarily by information that is currently unavailable to the public.

4-3  
(cont.)

We have addressed this concern regarding the adequacy of the rulemaking record in more detail in the following comments:

- March 4, 2019 comments from Latham & Watkins LLP on behalf of RFG and WSPA

***New Source Review Issues Must Be Addressed Comprehensively And Expeditiously***

While there has been additional discussion of new source review (“NSR”) issues in recent RECLAIM Working Group meetings, none of the fundamental issues have yet been resolved. Furthermore, although SCAQMD staff has indicated that it is communicating with U.S. Environmental Protection Agency (“USEPA”) staff regarding the nature of the NSR program that will apply to RECLAIM facilities once they exit the program, we are not aware of the specifics of those communications. Addressing fundamental programmatic issues, such as NSR, early in the transition process will result in a more orderly and efficient transition. This issue is addressed in more detail in the following attachment:

4-4

- September 7, 2018 comments from Latham & Watkins LLP on behalf of WSPA

***The California Environmental Quality Act Analysis For The Transition Project Is Piecemealed***

It is a fundamental principle of California Environmental Quality Act (“CEQA”) review that all environmental impacts for the whole of the project be analyzed together. In this case, the “project” is the RECLAIM transition as a whole as required by Control Measure CMB-05 as adopted in the 2016 AQMP. Yet, staff is conducting the CEQA review through a series of Supplemental Environmental Assessments (“SEA”) that analyze only the impacts associated with the particular landing rule under consideration. Staff argues that this approach is acceptable because each SEA “tiers off” the March 2017 Final Program Environmental Impact Report for the 2016 AQMP and several other earlier certified CEQA documents, which analyzed the transition as a whole. However, the March 2017 Final Program EIR for the 2016 AQMP, which was completed in January 2018, did not analyze the transition of the RECLAIM program because the transition was not part of Control Measure CMB-05 as proposed at that time.

4-5

<sup>4</sup> PAR 1134 Draft Staff Report, March 2019, Chapter 2.

SCAQMD Governing Board Members  
March 13, 2019  
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Therefore, tiering off of the earlier CEQA documents to support rule amendments that seek to implement the transition is not possible because there is no comprehensive analysis in the earlier documents. In the absence of a program level CEQA analysis that includes the whole of the RECLAIM transition, staff's segmented analysis of each proposed rulemaking action constitutes classic "piecemealing" in violation of CEQA. This issue is addressed in more detail in the following attachment:

4-5  
(cont.)

- September 7, 2018 comments from Latham & Watkins LLP on behalf of WSPA

***Incremental Socioeconomic Assessment***

By analyzing the socioeconomic impacts associated with the transition in an incremental fashion in the context of each rulemaking, as opposed to a comprehensive analysis of the entire transition, staff is either underestimating the cumulative impacts or failing to identify them at all. An illustration of this problem can be found in the two sets of amendments to Rules 2001 and 2002 in 2018. In the January 2018 amendments to these rules, staff did not even address the impact that the removal of 38 facilities from the RECLAIM program that would then be eligible to take advantage of offset exemptions in Rule 1304 might have on the internal offset bank. In contrast, the Staff Report supporting the October 2018 amendments to these same rules expressed serious concerns about the potential impacts to the internal bank. Either staff erred in January by failing to analyze the potential impacts on the internal bank, or it overstated the potential impacts associated with the October amendments. In either case, this inconsistency illustrates the problem with undertaking analysis of the impacts associated with the RECLAIM transition in an incremental fashion. This issue is addressed in more detail in the following attachment:

4-6

- September 7, 2018 comments from Latham & Watkins LLP on behalf of WSPA

***Inappropriate Cost-Effectiveness Methodology***

RFG objects to certain aspects of the cost-effectiveness methodology that SCAQMD staff is using to determine BARCT requirements for the landing rules currently under development. First, staff typically assumes a useful life for equipment of 25 years even though rulemaking requires replacement of technology much sooner. Use of a 25-year assumption makes the control equipment appear more cost-effective by diluting the significant capital costs of required projects over a much longer time period than is likely to occur. Second, staff utilizes the discounted cash flow ("DCF") method instead of the levelized cash flow ("LCF") method as used by several other air districts. The LCF method is a better representation of cost-effectiveness than the DCF method. Finally, staff utilizes a \$50,000 per ton cost-effectiveness threshold for determining BARCT, which is much higher than that applied by other air quality agencies, and, in some cases, staff has concluded that controls with a cost-effectiveness above \$50,000 per ton constitute BARCT. This issue is addressed in more detail in the following attachment:

4-7

- July 3, 2018 comments from WSPA

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SCAQMD Governing Board Members  
March 13, 2019  
Page 6

LATHAM & WATKINS LLP

Thank you for your attention to these comments. We are available to discuss these issues with you and/or your Governing Board Assistant at any time.

Best regards,

  
Michael J. Carroll  
of LATHAM & WATKINS LLP

Attachments

cc: Clerk of the Boards, SCAQMD  
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Philip Fine, SCAQMD  
Barbara Baird, SCAQMD  
Robert Wyman, Latham & Watkins LLP  
John Heintz, Latham & Watkins LLP  
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{ Remaining attachments to letter to be inserted }

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AUGUST 24, 2018  
ATTACHMENT

**LATHAM & WATKINS** LLP

August 24, 2018

**VIA EMAIL**

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Re: SCAQMD Staff Proposal to Require Equipment Replacement as BARCT

Dear Dr. Fine:

We are submitting these comments on behalf of our client the Regulatory Flexibility Group ("RFG"). The RFG is an industry coalition comprised of companies in the refining, utility and aerospace sectors that operate facilities within the jurisdiction of the South Coast Air Quality Management District ("SCAQMD"). RFG member facilities are subject to the Regional Clean Air Incentives Market ("RECLAIM") program, and will be seriously affected by the transition to a command-and-control regulatory structure that is currently underway. The RFG participated in the development of the RECLAIM program from its inception, and has been an active participant in all major amendments to the program, including those currently underway.

**Introduction**

These comments are focused on recent assertions by SCAQMD staff that a best available retrofit control technology ("BARCT") standard may require total replacement of the emitting piece of equipment. SCAQMD staff has asserted this position in various meetings and documents pertaining to the RECLAIM transition and development of command-and-control BARCT rules. The most detailed explanation of the staff's position that we are aware of is contained in the July 2018 Draft Staff Report in support of proposed amendments to SCAQMD Rule 1135 ("Rule 1135 Staff Report") at pages 2-1 through 2-2, wherein staff makes two arguments in support of its position. First, it cites to dictionary definitions of "retrofit" and concludes that "replacement" is not specifically excluded from those definitions. Second, it cites to a California Supreme Court case, *American Coatings Ass'n v. South Coast Air Quality Mgt. Dist.*, 54 Cal 4<sup>th</sup> 446 (2012), for the proposition that a BARCT standard may require replacement of the emitting equipment in its entirety.

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Dr. Phillip Fine  
August 24, 2018  
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The RFG concurs with the comments of the Western States Petroleum Association (“WSPA”) submitted on August 15, 2018 pertaining to this issue (“WSPA Comments”). We hereby supplement those comments with further analysis of the relevant statutory provisions, which illustrates that the staff’s interpretation is inconsistent with the whole of Division 26 of the California Health & Safety Code, which addresses Air Resources, and runs contrary to standard principles of statutory construction. In addition, we provide additional analysis distinguishing SCAQMD Rule 1113, which is the subject of the *American Coatings* case, from the BARCT rules currently under development to replace the RECLAIM program.

**Relevant Statutory Provisions**

At question is the scope of the SCAQMD’s authority to require the use of BARCT for existing sources. That authority is both granted and limited by Health & Safety Code Section 40440(b)(1), which provides, in relevant part:

(b) The rules and regulations adopted pursuant to subdivision (a) [authorizing SCAQMD board to adopt rules and regulations to carry out air quality management plan] shall do all of the following:

(1) Require the use of best available control technology for new and modified sources and the use of best available retrofit control technology for existing sources.

Health & Safety Code Section 40406 defines BARCT as follows:

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.

Finally, Health & Safety Code Section 40920.6, specifies the procedures the SCAQMD is required to follow when establishing a BARCT standard, and provides, in part:

(a) Prior to adopting rules or regulations to meet the requirement for best available retrofit control technology pursuant to Sections 40918, 40919, 40920 and 40920.5, or for a feasible measure pursuant to Section 40914, districts shall, in addition to other requirements of this division, do all of the following:

(1) Identify one or more potential control options which achieves the emission reduction objectives for the regulation.

(2) Review the information developed to assess the cost-effectiveness of the potential control option. For purposes of this paragraph, “cost-effectiveness” means the cost, in dollars, of

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the potential control option divided by emission reduction potential, in tons, of the potential control option.

(3) Calculate the incremental cost-effectiveness for the potential control options identified in paragraph (1). To determine the incremental cost-effectiveness under this paragraph, the district shall calculate 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.

(4) Consider, and review in a public meeting, all of the following:

(A) The effectiveness of the proposed control option in meeting the requirements of this chapter and the requirements adopted by the state board pursuant to subdivision (b) of Section 39610.

(B) The cost-effectiveness of each potential control option as assessed pursuant to paragraph (2).

(C) The incremental cost-effectiveness between the potential control options as calculated pursuant to paragraph (3).

(5) Make findings at the public hearing at which the regulation is adopted stating the reasons for the district's adoption of the proposed control option or options.

#### **Interpreting The Meaning Of BARCT**

##### ***Staff's "Common Sense Definition" Argument Is Flawed***

In the Rule 1135 Staff Report, staff sets forth what it refers to as a "common sense definition" argument in which it reaches the conclusion that the term "retrofit" as used in Section 40406 encompasses "replacement" because "replacement" is not specifically excluded from the cited definitions of "retrofits." At first blush, this argument appears similar to a basic rule of statutory construction known as the "plain meaning rule," which means giving words their ordinary meaning. However, the staff's "common sense definition" argument is directly contrary to the "plain meaning rule" which is codified in the California Code of Civil Procedure as follows: "In the construction of a statute or instrument, the office of the Judge is simply to ascertain and declare what is in terms or in substance contained therein, *not to insert what has been omitted*, or to omit what has been inserted . . ." See Cal. Civ. Proc. Code § 1858 (emphasis added). "Replacement" has been very clearly and specifically omitted from Section 40406, and that ends the analysis under the "plain meaning rule." Staff's argument violates that rule by seeking to insert "replacement" where it simply does not exist.

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***“Control Options” Connote “Retrofits;” Not “Replacements”***

Use of the phrases “control option” and “control options” in Health & Safety Code Section 40920.6 is informative. Those phrases are used elsewhere in Health & Safety Code Division 26, which pertains to Air Resources, in ways that make it clear that they refer to emission controls to be applied to the underlying source (i.e., retrofits). For example, Section 40440.11(a) provides:

“In establishing the best available control technology . . . the south coast district shall consider only *control options* or emission limits *to be applied to the basic production or process equipment* existing in that source category or a similar source category.” (emphasis added).

Thus, when Health & Safety Code Section 40920.6 uses the phrases “control option” and “control options” repeatedly to specify the procedures the SCAQMD is required to follow when establishing a BARCT standard it is referring to measures *to be applied to* the emitting source, not replacement of the emitting source in its entirety.

***When The Legislature Means “Replacement,” It Says “Replacement”***

There are many provisions in Division 26 where the terms “replace” or “replacement” are used, indicating that when the legislature means “replace” it states so explicitly. Furthermore, the terms “replace” or “replacement” are frequently used in conjunction with “retrofit” or terms similar to “retrofit,” such as “modify” or “alter” (or variations thereof). This makes it clear that there is a distinction between actions that result in changes to an existing emissions source, and actions that result in its elimination altogether.

For example, Section 43021(a) provides:

“. . . the retirement, *replacement*, *retrofit*, or repower of a self-propelled commercial motor vehicle . . . shall not be required until the later of the following:” (emphasis added).

Similarly, Section 44281(a) which identifies projects eligible to participate in the Carl Moyer Program, provides:

“Emission-reducing *retrofit* of covered engines, *or replacement* of old engines powering covered sources with newer engines . . .” (emphasis added).

Use of the term “replacement” in the provisions cited above illustrates that when the legislature means “replacement” it states so explicitly. Furthermore, use of both “replacement”

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and “retrofit” illustrates that the legislature intends to distinguish between the two terms, and that that “retrofit” does not encompass “replacement” as suggested by staff’s interpretation of the definition of BARCT in Section 40406. If staff’s interpretation was correct, then the use of both terms in the cited provisions would be redundant. Generally, if the legislature chose to include language, it must be given some meaning, and statutes are to be interpreted in a manner that avoids rendering some words surplusage, null or absurd. See *Ingredient Communications Council, Inc. v. Lungren*, 2 Cal. App. 4th 1480, 1492, 4 Cal. Rptr. 2d 216, 224 (3d Dist. 1992), rev. denied (April 23, 1992).

***The Legislature Has Defined “Retrofit” And Distinguished It From “Replacement”***

Finally, Division 26 includes a specific definition of “retrofit” in Sections 44275(a)(19) and 44299.80(o), which provide:

“Retrofit” means making modifications to the engine and fuel system so that the retrofitted engine does not have the same specifications as the original engine.

This definition makes clear that in the case of a “retrofit,” the existing emissions source continues to exist following the retrofit, but in an altered state. Furthermore, while Division 26 does not include a definition of “replacement,” it frequently makes distinctions between the terms “retrofit” and “repower,” which is defined in Sections 44274(a)(18) and 44299.80(n) (immediately preceding the definitions of “retrofit”) as follows:

“Repower” means *replacing* an engine with a different engine.”

Thus, in the context of Division 26, “repower” and “replace” are synonymous, and very specifically and explicitly distinguished from “retrofit.” The legislature was very deliberate in its use of these terms throughout the air quality statute. To suggest, as staff does, that “retrofit” as used in Section 40406, implicitly encompasses “replacement” flies in the face of the numerous distinctions between these terms made in the statute, and violates accepted rules of statutory construction.

***Distinguishing American Coatings***

As correctly pointed out in the WSPA comments, there is nothing in the holdings of the *American Coatings* decision that supports the proposition that BARCT may include replacement of the emitting equipment in its entirety; that question wasn’t even before the court. Furthermore, even if the decision supported staff’s position, which it does not, it would be distinguishable based on the fundamental differences between SCAQMD Rule 1113, which was the subject of the case, and the BARCT rules currently under development to replace the RECLAIM program.

SCAQMD Rule 1113 regulates architectural coatings, and the control strategy is reformulation of the covered coatings over time to reduce the VOC content. The rule does not impose limits on emitting equipment, and emission control equipment (i.e., hardware) is not required by, or even mentioned in the rule. In contrast, the BARCT rules currently under

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development to replace the RECLAIM program would impose emission limits on process or production equipment to be achieved through add-on emission control equipment (or, according to staff's current theory, replacement of the process of production equipment). There are fundamental differences between these two types of rules that make it impossible to draw any parallels between them. Thus, even if there was something in the *American Coatings* decision that supported staff's position, and again there is not, it would be of no relevance to the rules currently under development.

In the case of coatings reformulation, the control strategy involves research and development that can be undertaken completely independent of ongoing production. The work is undertaken in laboratories, and ongoing production processes and equipment are unaffected. Once the reformulated coating has been developed, production switches to the new coating with no need to modify the production equipment, and in most cases, no lost production time. Thus, there is little or no risk to ongoing production while the control strategy is implemented or if the control strategy proves to be infeasible (i.e., effective reformulations that meet the lower limits cannot be developed). Furthermore, while coating reformulation can require a significant investment of time and money, it does not typically involve the manufacture of modified production equipment or new add-on controls, permitting required to modify or install emitting or control equipment, and physical installation of modified or new equipment.

By contrast, control strategies that rely on physical modification of emitting equipment and/or installation of new add-on control equipment, which also typically involve a research and development stage, also require the manufacture of new equipment, permitting prior to commencing installation of the new equipment, and a physical modification or installation process. Thus, the lead times and costs associated with implementing this type of control strategy are typically much longer and higher. Furthermore, implementation of such strategies can seldom be accomplished without significant disruption to the operation of the facility, particularly at complicated facilities such as those currently covered by the RECLAIM program. And if the control strategy proves to be ineffective in achieving desired emission levels, significant investments of time, money, and lost production may have been for naught.

Trying to draw any parallels between a "technology-forcing" reformulation rule, such as SCAQMD Rule 1113, and the "landing rules" currently under development misses the fundamental differences between these two types of BARCT rules. Furthermore, as stated at the outset, staff has not drawn any parallels that would support its position that BARCT standards may compel replacement of the underlying production equipment even if such parallels could be drawn.

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Thank you for considering these comments. We look forward to continuing to work with you on these rulemakings which are critically important to stakeholders as well as the regional economy. If you have any questions, please contact me at (714) 401-8105 or by email at [michael.carroll@lw.com](mailto:michael.carroll@lw.com).

Sincerely,



Michael J. Carroll  
Of LATHAM & WATKINS LLP

cc: Robert Wyman, L&W  
John Heintz, L&W  
RFG Members

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NOVEMBER 1, 2018  
ATTACHMENT

**LATHAM & WATKINS** LLP

November 1, 2018

**VIA EMAIL**

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018282-0000/033950-0005

Re: SCAQMD Staff Proposal to Require Equipment Replacement as BARCT

Dear Bayron and Barbara:

Thank you for your October 3, 2018 letter responding to our August 15, 2018 comments submitted on behalf of the Western States Petroleum Association ("WSPA"), and our August 24, 2018 comments submitted on behalf of the Regulatory Flexibility Group ("RFG"), regarding South Coast Air Quality Management District ("SCAQMD") staff's position that a best available retrofit control technology ("BARCT") standard may require total replacement of the emitting piece of equipment. Portions of your response reassert arguments that staff has made in the past in support of its position; namely, that neither the statutory definition of BARCT nor common dictionary definitions of "retrofit" specifically exclude replacements, and that the *American Coatings Ass'n v. South Coast Air Quality Mgt. Dist.*, 54 Cal 4<sup>th</sup> 446 (2012) case ("*American Coatings*") is supportive of staff's position. We responded to those arguments in our previous comment letters and will not revisit them here. This letter responds on behalf of WSPA and RFG to your assertions that the staff's position is supported by public policy considerations, and that we have failed to present any policy rationale for our position.

Staff asserts that requiring replacements under certain circumstances is supported by policy justifications, and, therefore, public policy supports an expansive interpretation of its authority that would include the authority to mandate replacements. This reasoning is contrary to two important public policies that are also well enshrined in administrative law. The first is that regulatory agencies must act within the scope of the authority delegated to them by the legislature, even if that means the agency may not undertake certain actions that it might otherwise view as sound public policy. The second is that public agencies may not substitute their own judgment for that of the legislature as reflected in the statutory grant of authority. These public policies and legal requirements support our position that staff cannot mandate replacements as BARCT.

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*Public policy and well established law dictate that the SCAQMD act within the scope of authority granted to it by the legislature.*

An agency can adopt, administer or enforce a regulation only if it is within the scope of authority conferred on it by other provisions of law. Cal Gov. Code § 11342.1. No regulation is valid unless it is consistent and not in conflict with the statute conferring authority to the agency. Cal Gov. Code § 11342.2. As explained in our previous comment letters, the statutory provisions defining BARCT and the SCAQMD's authority to adopt and implement BARCT standards are clear. "In the construction of a statute or instrument, the office of the Judge is simply to ascertain and declare what is in terms or in substance contained therein, *not to insert what has been omitted*, or to omit what has been inserted . . ." Cal. Civ. Proc. Code § 1858 (emphasis added). The role of an agency charged with implementing a statute is no different. In this case, staff seeks to insert what has been omitted by arguing that the term "retrofit" encompasses replacement, notwithstanding that there are numerous examples of the distinction between those terms throughout the statute.

Finding ambiguity where there is none, staff then invokes "public policy" to support an expansive interpretation of its authority. Relying on the example of replacing engines on Santa Catalina Island, staff argues that because the replacements would further the broader statutory purpose of reducing emissions, a mandate to do so is sound public policy, and, therefore, public policy supports an expansive interpretation of the agency's authority to impose such a mandate.

According to staff's reasoning, the scope of the agency's authority should be interpreted to encompass any action which the agency deems sound public policy, regardless of the specific language contained in the statutory grant of authority. In fact, you argue in your letter, citing *American Coatings*, that the agency's authority is essentially unbounded as long as the requirement is not arbitrary and capricious, or without reasonable or rational basis, or lacking in evidentiary support. However, as the cases relied upon in *American Coatings* make clear, a critical consideration in evaluating whether or not an agency action meets this standard is whether or not the action is within the scope of the agency's delegated authority. As stated in *Yamaha Corp. of America v. State Bd. of Equalization* (1998) 19 Cal.4<sup>th</sup> 1, citing *Wallace Berri & Co. v. State Bd. of Equalization* (1985) 40 Cal.3d 60, 65: "[I]n reviewing the legality of a regulation adopted pursuant to a delegation of legislative power, the judicial function is limited to determining whether the regulation (1) is "within the scope of the authority conferred" [citation] and (2) is "reasonably necessary to effectuate the purpose of the statute" [citation].' [Citation.]"

The scope of authority delegated to an agency may not authorize it to take any and all actions that the agency deems sound public policy in light of its overall mission. In fact, acting as it does from a broader perspective, and balancing a broader range of policy considerations, the very reason the legislature imposes limitations on the authority of regulatory agencies is to prevent them from undertaking actions that they might otherwise be inclined to take because they deem them sound public policy. The fact that a proposed action may reflect sound public policy in the view of the agency does not mean that it is within the scope of the authority granted by the legislature.

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*Staff's position is contrary to the legislature's policy considerations embedded in the relevant statutory provisions.*

By including economic impacts as one of the factors in the definition of BARCT, and by specifying the process for evaluating the cost-effectiveness of proposed BARCT standards, it is clear that one of the policies of the legislature was to balance the goal of achieving additional emission reductions from existing sources against the costs of achieving those reductions, and to impose limits on the costs that would be borne by existing sources to further control emissions.<sup>1</sup> The legislature determined that stationary sources should bear the cost of implementing cost-effective retrofits. If cost-effective retrofits are determined to be unavailable, then that is the end of the inquiry. There may be specific cases where the outcome results in foregone emission reductions, but it was the judgment of the legislature that this regulatory scheme struck the proper public policy balance between achieving air quality goals and imposing additional costs on regulated sources. It is not the place of the agency to substitute its own public policy considerations for those of the legislature when the language of the statute is clear, as it is here.

Furthermore, the fact that a replacement project may be cost-effective in a situation where available retrofits are not is irrelevant. Staff seems to suggest that if a replacement project would cost no more than a cost-effective retrofit project (if one existed), then the cost to the source is no greater than what the legislature intended, and, therefore, requiring replacement in such situations does not undercut any economic considerations that the legislature may have had in mind when adopting the statute. However, in situations where there are no available cost-effective retrofits, the legislature determined that the cost to the source for installing additional controls would be zero. Therefore, staff's determination that it can mandate replacement when there are no cost-effective retrofits, as long as the replacement is cost-effective, imposes costs on existing sources that go beyond what the legislature contemplated. The fact that the cost of a replacement may be less than, or more cost-effective than, available retrofits does not mean that the agency is entitled to mandate replacements.

### **Conclusion**

SCAQMD staff is attempting to use policy rationale to read something into the statute that simply is not there. That approach is not only poor public policy, it is contrary to the law. Whether or not a particular course of action may be good public policy in the judgment of the agency does not mean it is within the authority of the agency to mandate it. Furthermore, in this case, that rationale elevates the judgment of the agency over that of the legislature with regards to the appropriate balance between furthering air quality objectives and maintaining a viable economy. There are limits on the rulemaking authority of the SCAQMD, and those limits may well preclude it from pursuing what it might otherwise view as good public policy in order to accomplish the broader policy objectives of the legislature.

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<sup>1</sup> Health & Safety Code Sections 40406 and 40920.6.

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Thank you for considering these comments. We look forward to continuing to work with you on these rulemakings which are critically important to stakeholders as well as the regional economy. If you have any questions, please contact me at (714) 755-8105 or by email at [michael.carroll@lw.com](mailto:michael.carroll@lw.com).

Sincerely,



Michael J. Carroll  
of LATHAM & WATKINS LLP

cc: Robert Wyman, Latham & Watkins LLP  
John Heintz, Latham & Watkins LLP  
RFG Members  
Bridget McCann, WSPA

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MARCH 4, 2019  
ATTACHMENT

**LATHAM & WATKINS LLP**

March 4, 2019

**VIA EMAIL**

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018282-0000/033950-0005

Re: Availability Of Information Relied Upon To Support RECLAIM Rulemaking

Dear Dr. Fine:

We are submitting these comments on behalf of our clients the Regulatory Flexibility Group ("RFG") and the Western States Petroleum Association ("WSPA").

The RFG is an industry coalition comprised of companies in the refining, utility and aerospace sectors that operate facilities within the jurisdiction of the South Coast Air Quality Management District ("SCAQMD"). RFG member facilities are subject to the Regional Clean Air Incentives Market ("RECLAIM") program and will be seriously affected by the transition to a command-and-control regulatory structure that is currently underway. The RFG participated in the development of the RECLAIM program from its inception and has been an active participant in all major amendments to the program, including those currently underway.

WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in five western states, including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that will be impacted by the transition out of the RECLAIM program.

The RFG and WSPA are deeply concerned that staff is not making available to the public certain information upon which it is relying as the basis of its proposed best available retrofit control technology ("BARCT") standards. This is a significant deviation from the manner in which the SCAQMD has conducted BARCT determinations in the past and contrary to California Health & Safety Code ("H&S Code") requirements. H&S Code Section 40440(e) makes H&S Code Section 40703 applicable to SCAQMD rulemaking and requires that when adopting any regulation "the district shall consider, pursuant to Section 40922, and make available to the public, its findings related to the cost-effectiveness of a control measure, as well

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as the basis for the findings and the consideration involved." (emphasis added). Thus, the SCAQMD is required by statute, to make public the basis of its findings that the proposed and adopted BARCT standards are cost-effective.

It is not possible for the public to critically evaluate the basis of staff's recommendations if it does not have access to the information upon which staff is relying. Conclusory assertions contained in staff reports, without access to the underlying information that purportedly supports the assertions, is not sufficient to provide for meaningful evaluation and comment. Furthermore, because this information is not contained in the public record, it is not clear that it is being provided to the Governing Board. As a result, not only are certain staff recommendations unsupported by anything in the record, Governing Board action on those recommendations are equally unsupported.

The recent adoption of amendments to the Rule 1146 series of rules is illustrative of the problem identified above. Draft staff reports contained numerous references to information upon which staff relied in making its proposed BARCT recommendations, but the referenced information was not included in the staff report. Among the types of information referenced was vendor data and data from facilities located within and outside of SCAQMD. When industry representatives requested the subject information, they were told that it could only be obtained by filing California Public Records Act ("CPRA") requests. This is highly unusual, and the SCAQMD has not taken this position in the hundreds of BARCT rules it has adopted in the past.

In response, the consulting firm Ramboll filed eight CPRA requests on November 8, 2018 seeking the following information:

1. PAR1146 WGM#7 Slide 7 states that "980 units located within SJVAPCD are able to comply with 7 ppm limit without use of mitigation fee option." Please provide copies of all data and any District analyses used to support this finding. Please include control type for each unit reviewed.
2. PAR1146 WGM#7 Slide 7 states that ">1000 ST results from both SCAQMD and SJVAPCD support the feasibility of 7 ppm BARCT." Please provide copies of all data and any District analyses used to support this finding. Please include control type (ex. SCR, ULNB) for each unit reviewed.
3. The Draft Staff Report for PAR1146, 1146.1 and 1146.2 states: "Permit limits from thermal fluid heaters located within SCAQMD were also analyzed.... From analysis of existing permitted limits, the unit with the lowest permitted emission limit was identified to be located in SJVAPCD with a permitted limit of 5 ppm utilizing only ULNB technology. The unit was permitted as new equipment subject to BACT. The analysis was able to show that the lowest achieved controlled emission from thermal fluid heaters utilizing burner replacements was 12 ppm." (page 2-4). Please provide copies of all data and the District analysis referenced by this statement.

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4. The Draft Staff Report for PAR1146, 1146.1 and 1146.2 states: "From vendor provided installation lists and source test data, one new natural gas fired unit was identified in SJVAPCD with a permitted limit of 5 ppm with only ULNB. One new natural gas fired unit was identified within SCAQMD with permit limit of 7 ppm utilizing only ULNB as control technology." (page 2-3). Please provide copies of all data and any District analyses referenced by this statement.
5. The Draft Staff Report for PAR1146, 1146.1 and 1146.2 states: "Facility submitted source test results were analyzed to determine the technical feasibility of establishing a lower BARCT limit. Within SCAQMD, there is a total of 1,072 non-RECLAIM units subject to Rule 1146.1, 1,068 non-RECLAIM units subject to Rule 1146, and 259 units subject to RECLAIM rules. A total of 196 units was surveyed for real world emissions via facility submitted source test reports. Total units surveyed make up for 8.2% of total units located in SCAQMD with 105 units from the non-RECLAIM universe and 91 units from the RECLAIM universe. Source tests were obtained from SCAQMD database which consists of reports submitted by facilities to demonstrate compliance to various monitoring and testing requirements. SCAQMD requires equipment source tests to be conducted in an "as found" condition and emissions results are an average of the testing period. Some source test are conducted at different "loads" at a set time span. To account for source tests conducted at multiple load settings, the highest emission result was used for the analysis." (Page 2-4). Please provide copies of the referenced source test reports and any District analyses of such source test reports which were used to support the above statements and/or conclusions.
6. The Draft Staff Report for PAR1146, 1146.1 and 1146.2 states: "Results displayed in Table 2 show that it is technically feasible for Rule 1146 Group III and Group II units to achieve an emission limit of 7 ppm with burner replacements; and Rule 1146 units equipped with SCR to achieve an emission limit of 4 ppm, both providing a 10% buffer for possible compliance demonstration. Table 2 also shows that it is not technically feasible for Rule 1146 atmospheric units to achieve an emission level of 9 ppm with burner replacements." (Page 2-5). Please provide copies of the source data referenced in Table 2, as well as any District analyses of that data used to support the above statements and/or conclusions.
7. The Draft Staff Report for PAR1146, 1146.1 and 1146.2 states: "Based on the information obtained through vendor discussions, lower NOx emissions with ultra-low NOx burners are feasible for burner replacements and new installations. For certain applications and for new installations, achieving 5 ppm NOx limit with an ultra-low NOx burner without SCR is feasible. Based on discussions with three vendors, burner replacements on existing units could potentially meet 7 ppm or less. With the exception of one vendor, 7 ppm or less with ultra-low NOx burners are limited to fire-tube boilers and not currently available for water-tube boilers. The difference between water-tube and fire-tube boilers is that a water-tube boiler circulates water through a series of tubes, the tubes are heated externally by the combustion gas, and the surrounding hot gases heat the water in the steam-generating tubes; whereas a fire-tube boiler passes combustion

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gases inside a series of tubes that are surrounded by a closed vessel of water that is heated to produce steam. Two of the three vendors stated they would be able to provide 7 ppm ultra-low NOx burner replacements for existing units with a rated heat input capacity greater than 2 MMBtu/hr and up to 30 MMBtu/hr for one vendor and 60 MMBtu/hr for the other. The third vendor that could provide 7 ppm ultra-low NOx burner replacements specified a rated heat input capacity of at least 8.4 MMBtu/hr, since a minimum furnace size would be required, and up to 50 MMBtu/hr. In addition to these size requirements, based on discussions with the third vendor, the proper back and steam pressure, as well as the age of the unit would be factors in whether an existing unit could achieve a NOx emission limit of 7 ppm or less with a burner replacement. Additionally, for existing units to achieve 7 ppm or less with ultra-low NOx burner replacements additional controls, such as variable frequency drive (VFD) and oxygen trim are also needed. In addition to the information gather from vendor discussions, the source test results summarized above show that it is technically feasible for existing Rule 1146 Group II and Group III and Rule 1146.1 units to achieve an emission limit of 7 ppm or less with burner replacements.” (Pages 2-11 and 2-12). Please provide the following information:

- A. Data or other information “obtained through vendor discussions” concerning ULNB burners which was used to support the above statements and/or conclusions.
  - B. Data or other information and/or District analysis which was used to support the District’s statement that “burner replacements on existing units could potentially meet 7 ppm or less,” including any information concerning performance differences between water-tube boilers versus fire-tube boilers.
  - C. Data or other information and/or District analysis related to the following statement: “Two of the three vendors stated they would be able to provide 7 ppm ultra-low NOx burner replacements for existing units with a rated heat input capacity greater than 2 MMBtu/hr and up to 30 MMBtu/hr for one vendor and 60 MMBtu/hr for the other. The third vendor that could provide 7 ppm ultra-low NOx burner replacements specified a rated heat input capacity of at least 8.4 MMBtu/hr, since a minimum furnace size would be required, and up to 50 MMBtu/hr. In addition to these size requirements, based on discussions with the third vendor, the proper back and steam pressure, as well as the age of the unit would be factors in whether an existing unit could achieve a NOx emission limit of 7 ppm or less with a burner replacement. Additionally, for existing units to achieve 7 ppm or less with ultra-low NOx burner replacements additional controls, such as variable frequency drive (VFD) and oxygen trim are also needed. In addition to the information gather from vendor discussions, the source test results summarized above show that it is technically feasible for existing Rule 1146 Group II and Group III and Rule 1146.1 units to achieve an emission limit of 7 ppm or less with burner replacements.”
8. Concerning the Draft Staff Report for PAR1146, 1146.1 and 1146.2, please provide copies of all data, information and/or the District analyses concerning the cost effectiveness of Ultra Low NOx Burner (ULNB) technology used to support the

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March 4, 2019  
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District's cost effectiveness analysis as summarized in the Draft Staff Report. Please include both capital cost estimates and installation cost estimates for all sizes of units assessed.

As of the date of Governing Board adoption of the staff recommendations on the Rule 1146 series, December 7, 2018, none of the requested information had been made available to the public. It was not until January 9, 2019, more than one month after Governing Board adoption of the staff proposal, that staff responded to the CPRA requests. Obviously, any information that might have been provided at that point would have been of limited value since the rulemaking action was already complete. However, staff failed to provide any substantive information in response to any of the CPRA requests. Staff indicated that the information requested in CPRA request #1 above would not be provided because the subject documents belonged to the San Joaquin Valley Air Pollution Control District, and SCAQMD did not have authority to release documents belonging to a sister agency.<sup>1</sup> With respect to CPRA requests #2 through #8 above, staff responded that all of the requested information was exempt from disclosure based on assertions of confidentiality.<sup>2</sup> Staff's BARCT recommendations, and the Governing Board's adoption thereof, are based on determinations regarding the maximum level of control that meets the cost-effectiveness threshold. All of the information sought in the CPRA requests identified above pertains to the basis of those findings of cost-effectiveness. This lack of transparency and failure to create a public record that supports staff's recommendations and Governing Board action is deeply troubling and contrary to applicable law.

We respect that some of the information on which SCAQMD relied during the Rule 1146 series rulemaking, including some of the information requested in requests #2 through #8 above, is considered confidential business information. While it may require some effort, we respectfully request that SCAQMD review all documents relied upon in its Rule 1146 series rulemaking and provide to the public all information that is not confidential.

Draft staff reports for future proposed rulemaking contain references to information relied upon by staff that are similar to those identified above with respect to the Rule 1146 series amendments, and for which the underlying information has not been made public. We have no reason to believe that staff will proceed in a manner that is in any way different than it did in the case of the Rule 1146 series amendments, or that the Governing Board will insist on supporting information being made public before it acts on staff recommendations. As evidenced by what occurred with respect to the Rule 1146 series amendments, because of timing issues, the CPRA process is not an adequate remedy to address this serious deficiency in the rulemaking process. If staff intends to require CPRA requests to obtain supporting documents, then it must build sufficient time into the rulemaking schedule to allow the CPRA process to play out, including resolution of any claims that requested information is exempt from disclosure according to the SCAQMD's Guidelines for Implementing the California Public Records Act.

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<sup>1</sup> E-mail communication from Stacey Walkowiak, SCAQMD Public Records Act Office, January 9, 2019.

<sup>2</sup> E-mails and personal communications between Stacey Walkowiak, SCAQMD Public Records Office, and Ramboll, January 9 and 17, 2019.

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We are hopeful that in future RECLAIM rulemakings staff will publicly disclose all non-confidential information upon which it relies in arriving at proposed BARCT determinations as it is required to do by law. If you would like to discuss our concerns, please contact me at (714) 755-8105 or by email at [michael.carroll@lw.com](mailto:michael.carroll@lw.com).

Sincerely,



Michael J. Carroll  
of LATHAM & WATKINS LLP

cc: Wayne Nastri, SCAQMD  
Barbara Baird, SCAQMD  
SCAQMD Governing Board  
SCAQMD Clerk of the Board  
RFG Members  
Bridget McCann, WSPA  
Tom Umenhofer, WSPA  
Patty Senecal, WSPA  
Robert Wyman, Latham & Watkins LLP  
John Heintz, Latham & Watkins LLP

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SEPTEMBER 7, 2018  
ATTACHMENT

**LATHAM & WATKINS<sup>LLP</sup>**

September 7, 2018

**VIA EMAIL**

Dr. Philip Fine  
Deputy Executive Officer  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765

Re: Proposed Amended Rules 2001 and 2002

Dear Dr. Fine:

We are submitting these comments on behalf of our client Western States Petroleum Association (“WSPA”) on the most recent round of proposed amendments to South Coast Air Quality Management District (“SCAQMD”) Rules 2001 and 2002. The amendments are being proposed in connection with the transition of the Regional Clean Air Incentives Market (“RECLAIM”) program to a command-and-control regulatory structure. WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that will be impacted by the transition out of the RECLAIM program.

**General Comments**

The proposed amendments to Rules 2001 and 2002 are primarily interim measures intended to establish new eligibility criteria for exiting RECLAIM, provide opt-out procedures, and address, on a temporary basis, unresolved issues surrounding compliance of new source review (“NSR”) for former RECLAIM facilities once they have transitioned out of the RECLAIM program. As WSPA and others have expressed in numerous meetings, workshops and hearings conducted in connection with the RECLAIM transition, we have serious concerns about the lack of clarity surrounding NSR in a post-RECLAIM regime.

We believe current SCAQMD staff’s (“staff”) proposed approach is premature, as staff has not addressed all of the underlying issues surrounding a RECLAIM sunset. RECLAIM is a comprehensive, complex program that was adopted as a whole. In the development of RECLAIM, staff not only determined current and future effective best available retrofit control

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**Specific Comments on Proposed Amended Rule 2002(f)(11) – “Stav-In” Provision**

The proposed amendments to Rule 2002 would allow facilities to remain in the RECLAIM program, and thereby avail themselves of the RECLAIM NSR program set forth in SCAQMD Rule 2005 for some period of time. Our understanding, which was confirmed by staff during the RECLAIM Working Group meeting on August 9, 2018, is that the decision of whether or not to remain in the RECLAIM program is completely within the discretion of the facility (assuming the facility meets the specified criteria). Some of the language in the proposed amendments could be read to grant the Executive Officer discretion (beyond merely confirming that the facility meets the specified criteria) to decide whether or not the facility may remain in the program. The following proposed changes are intended to better reflect staff’s intent.

- (11) An owner ~~of~~ or operator of a RECLAIM facility that receives an initial determination notification may elect ~~that~~ for the facility to remain in RECLAIM by submitting if a request to the Executive Officer to remain in RECLAIM is submitted, together with including any equipment information required pursuant to paragraph (f)(6).
- (A) Upon receiving a request to remain in RECLAIM and any equipment information required pursuant to paragraph (f)(6), written approval by the Executive Officer shall notify the owner or operator in writing that the facility shall remain in RECLAIM subject to the following:
- (i) The facility shall remain in RECLAIM until a subsequent notification is issued to the facility that it must exit by a date no later than December 31, 2023.
  - (ii) The facility is required to submit any updated information within 30 days of the date of the subsequent notification.
  - (iii) The facility shall comply with all requirements of any non-RECLAIM rule that does not exempt NOx emissions from RECLAIM facilities.

**Specific Comments on Proposed Amended Rule 2002(f)(10) – “Opt-Out” Provision**

Proposed Amended Rule 2002 includes an “opt-out” provision for those facilities that may be ready to voluntarily exit RECLAIM prior to the time that they might otherwise be transitioned out. The current staff proposal differs from previous proposals in that it places

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minimal and large price fluctuations in the NOx RTC market are unlikely to result directly from the potential exit of the 38 directly affected facilities out of the NOx RECLAIM program. Therefore, PAR 2002 would have minimal impacts on the existing facilities that are not yet ready to exit the NOx RECLAIM program. (January 5 Final Staff Report, p. 12.)

To support its conclusion that exiting the initial round of facilities from the program would have minimal impacts as a result of foregone market demand for RTCs, staff analyzed three scenarios in which NOx emissions from the subject facilities were: i) 5% below 2015 NOx emissions; ii) the same as 2015 NOx emissions; and iii) 5% above 2015 NOx emissions. (January 5 Final Staff Report, p. 11). Staff determined that foregone market demand for RTCs associated with exiting the initial group of facilities under each of the three scenarios would be 0.073 tons per day (TPD), 0.080 TPD, and 0.086 TPD, respectively. Based on this analysis, staff concluded that the anticipated future demand for NOx RTCs associated with the exiting facilities was minimal, and that eliminating that demand would not materially impact the remaining market. In other words, staff concluded that the exiting facilities would have a negligible demand for RTCs in the future, including RTCs required to satisfy NSR requirements. As stated in the Summary of the Proposal:

Considering the past market behavior by these facilities, staff concludes that the potential impact of PAR 2002 on the demand and supply of NOx RTC market is expected to be minimal and large price fluctuations in the NOx RTC market are unlikely to result directly from the potential exit of these facilities out of the NOx RECLAIM program. (Summary of Proposal, Agenda Item No. 18, January 5, 2018, p. 3.)

Notably, staff did not even address the impact that the January 2018 amendments might have on the internal bank even though those amendments were intended to result in precisely the situation about which staff is now expressing concern – the removal of 38 facilities from the RECLAIM program that would then be eligible to take advantage of offset exemptions in Rule 1304 like any other RECLAIM facility.

In contrast with the January 2018 Final Staff Report, the July 2018 Preliminary Draft Staff Report expresses serious concerns about the potential for increased NOx emissions from facilities exiting the program, stating that “[e]ven among the first 37 facilities identified that may be eligible to exit, any impacts from potential emissions increases are unknown and if significant enough, can approach or surpass the cumulative emissions increase thresholds of Rule 1315.” (July 2018 Preliminary Draft Staff Report, p. 8).

Clearly, the conclusions reached by staff in the January 2018 Final Staff Report, upon which the Governing Board relied when it adopted the current versions of Rules 2001 and 2002, are inconsistent with the concerns being raised by staff in the current proposal. Either staff erred in January by underestimating the impacts on the RECLAIM market and failing to even analyze

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the 2016 AQMP and the potential environmental impacts associated with the 2016 AQMP, including CMB-05, were analyzed in the Final Program EIR certified in March 2017. This Draft SEA relies on the analysis in the March 2017 Final Program EIR for the 2016 AQMP.” (Draft SEA, p. 2-5).

The proposed amendments to Rules 2001 and 2002 implement that portion of control measure CMB-05, written after the Governing Board’s adoption of the 2016 AQMP that calls for the transition of the RECLAIM program to a command and control regulatory structure. As stated in the July 2018 Preliminary Draft Staff Report, “Proposed Amended Rules 2001 and 2002 will continue the efforts to transition RECLAIM facilities to a command-and-control regulatory structure . . .” (July 2018 Preliminary Draft Staff Report, p. 2). The problem with the proposal to tier the CEQA analysis for the currently proposed amendments to Rules 2001 and 2002 off from the March 2017 Final Program EIR for the 2016 AQMP is that control measure CMB-05 as proposed at the time the March 2017 Final Program EIR was prepared did not include a transition out of the RECLAIM program. That language was added well after the CEQA analysis was complete. Furthermore, no additional CEQA analysis was conducted to address the changes to CMB-05.

The Final Draft 2016 AQMP, which was ultimately presented to the SCAQMD Governing Board, was released in December 2016. Control measure CMB-05 called for an additional five tons per day of NO<sub>x</sub> reductions from sources covered by the RECLAIM program by the year 2031. CMB-05 also called for convening a Working Group to consider replacing the RECLAIM program with a more traditional command-and-control regulatory program, but did not include a mandate to undertake such a transition. SCAQMD Governing Board action on the Final Draft 2016 AQMP was noticed for February 3, 2017. When the 2016 AQMP item came up on the agenda, SCAQMD staff made a presentation, as is typical. No substantive questions were asked of the staff by Board Members, and no Board Members indicated an intention to offer amendments to the staff proposal. The public was then provided an opportunity to comment, and approximately five hours of public comment ensued.

Following the close of the public comment period, Board Member Mitchell stated her intention to introduce amendments to the staff proposal for control measure CMB-05 that would: i) accelerate the additional five TPD of reductions to 2025 from 2031; and ii) transition to a command-and-control program as soon as practicable. Board Member Mitchell did not provide any specific proposed language and did not make a formal motion to amend the staff proposal. For reasons that are not relevant here, action on the item was continued to the March 3, 2017 Governing Board hearing. The Governing Board stated its intention not to take additional public comment on the item at the March 3, 2017 hearing.

At the hearing on March 3, 2017, Board Member Mitchell introduced the following amendments to CMB-05 that included a direction to staff to develop a transition out of the RECLAIM program:

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In the draft SEA, staff claims that it is speculative to determine what BARCT may be for all the various sources under the RECLAIM program. This underscores the fact that a comprehensive program transitioning RECLAIM sources to command and control rules was never developed or analyzed. Rather, staff is piecemealing the analysis of the RECLAIM transition. Such an approach has been rejected by the courts: “Instead of itself providing an analytically complete and coherent explanation, the FEIR notes that a full analysis of the planned conjunctive use program must await environmental review of the Water Agency’s zone 40 master plan update, which was pending at the time the FEIR was released. The Board’s findings repeat this explanation. To the extent the FEIR attempted, in effect, to tier from a *future* environmental document, we reject its approach as legally improper under CEQA.” *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 440 [emphasis in original].

Furthermore, RECLAIM is an emissions trading program. It allows facilities to choose to implement specific controls or to purchase emissions credits. Staff’s piecemealing of the analysis does not account for those facilities that have implemented other means to comply with the program and the additional impacts the transition to individual command and control rules may have on these facilities. Additionally, these impacts cannot be captured in a single rule analysis. Rather, staff’s piecemealing further ignores the impacts on facilities that are subject to multiple BARCT determinations.

#### **Health & Safety Code Section 39616**

The current staff proposal for amending Rule 2002 to prevent former RECLAIM facilities from accessing offset exemptions in Rule 1304 would place former RECLAIM facilities at a significant disadvantage relative to other non-RECLAIM facilities. California Health & Safety Code Section 39616(c)(7) prohibits imposing disproportionate impacts, measured on an aggregate basis, on those stationary sources included in the RECLAIM program compared to other permitted stationary sources. Creating a new category of sources without access to either RTCs or Rule 1304 offset exemptions to satisfy NSR requirements runs afoul of this prohibition.

#### **Statement Pertaining to SCAQMD Rule 1306**

The July 2018 Preliminary Draft Staff Report contains the following statement: “Moreover, Rule 1306 – Emission Calculations would calculate emission increases of exiting RECLAIM facilities based on actual to potential emissions, thereby further exacerbating the need for offsets.” (Preliminary Draft Staff Report, p. 8). It is not clear why this would be the case. Furthermore, it is premature to make such assertions outside the context of an overall analysis of what the NSR requirements for former RECLAIM facilities might be. This is a critical issue that must be addressed in the overall development of the NSR program for former RECLAIM facilities.

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JULY 3, 2018  
ATTACHMENT



July 3, 2018

Dr. Philip Fine  
Deputy Executive Officer  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765

Via e-mail at: [pfine@aqmd.gov](mailto:pfine@aqmd.gov)

**Re: WSPA Comments on RECLAIM Transition Project Rules**

- **Proposed Amended Rule 1135 (NO<sub>x</sub> Emissions from Electric Power Generating Systems)**
- **Proposed Amended Rule 1134 (NO<sub>x</sub> Emissions from Stationary Gas Turbines)**
- **Proposed Rule 1109.1 (Refinery Equipment)**

Dear Dr. Fine:

Western States Petroleum Association (WSPA) appreciates this opportunity to provide feedback on the transition of the Regional Clean Air Incentives Market (RECLAIM) program to a command-and-control regulatory structure (RECLAIM Transition Project). WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that are within the purview of the RECLAIM program administered by the South Coast Air Quality Management District (District or SCAQMD) and they will be impacted by the RECLAIM Transition Project. We have several comments concerning pending rulemakings to implement new Best Available Retrofit Control Technology (BARCT) requirements.

WSPA and its members are active participants in the working groups related to the RECLAIM Transition Project. We respectfully offer the following comments on Proposed Amended Rule (PAR) 1135, NO<sub>x</sub> Emissions from Electric Power Generating Systems, PAR 1134, NO<sub>x</sub> Emissions from Stationary Gas Turbines, and Proposed Rule (PR) 1109.1, Refinery Equipment.

- 1. BARCT must be established, for each class and category of equipment. BARCT determinations for one class may be different than another class. Caution should be exercised when referencing or applying BARCT determinations from other classes within a category.**

1

The California Health and Safety Code (CHSC) defines BARCT as follows:

*"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."<sup>1</sup> [Emphasis added]*

Under District BARCT rules, an equipment category may consist of multiple classes. These classes may be defined by different design criteria or operational factors. Examples might include throughput ratings, duty cycles, or usage level (e.g., low v. high use). Such classifications within a category are necessary to establish what is technologically feasible and cost effective as required in the determination of BARCT.

The District is presently considering BARCT rules for a number of equipment types within the RECLAIM Transition Project. Due to their inclusion in the RECLAIM program, many of these equipment types have not undergone an evaluation for command-and-control BARCT since the RECLAIM program's launch in 1993, at least with respect to equipment situated at RECLAIM facilities. In many cases, an equipment category is comprised of several different classes and therefore addressed under several different rules. Some notable examples include:

- Stationary gas turbines, which will be covered under a number of different classes pursuant to PAR 1134, PAR 1135 and PR 1109.1.
- Process heaters and boilers, which will be addressed under a number of different classes pursuant to PAR 1146, PAR 1146.1, PAR 1146.2, and PR 1109.1.

Despite similarities within the broader categories, BARCT determinations must be conducted specific to each class of equipment within a category. Take for example a stationary gas turbine; a given make/model of turbine might be deployed in a refinery cogeneration system, or an electric generating facility (EGF). However, operational design differences would place this equipment in different classes. That classification could be defined based on differences in fuel type (e.g., refinery fuel gas and/or utility quality natural gas), or duty (e.g., baseload vs. demand response, etc.).

We appreciate that the District is in the process of conducting a thorough BARCT analysis for these sources across the different proposed rules including PR 1109.1. Such BARCT analyses for refinery sources must be specific to refinery applications and BARCT determinations for similar types of equipment in non-refinery application may not be relevant because what is technologically feasible and cost effective in one application may not be in another application. For this reason, caution should be exercised when referencing or applying BARCT determinations from other classes within a category.

2. **If a technically feasible endpoint is not cost effective, it cannot be considered BARCT since cost effectiveness is a fundamental requirement of BARCT. Some**

<sup>1</sup> CHSC §40406.

endpoints presented by SCAQMD Staff to recent RECLAIM landing rule working groups exceed the District's \$50,000 per ton NO<sub>x</sub> reduced cost effectiveness threshold.<sup>2</sup>

In establishing BARCT, a district must do all of the following:<sup>3</sup>

- 1) Identify one or more potential control options which achieves the emission reduction objectives for the regulation.
- 2) Review the information developed to assess the cost-effectiveness of the potential control option. For purposes of this paragraph, "cost-effectiveness" means the cost, in dollars, of the potential control option divided by emission reduction potential, in tons, of the potential control option.
- 3) Calculate the incremental cost-effectiveness for the potential control options. To determine the incremental cost-effectiveness under this paragraph, the district shall calculate 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.
- 4) Consider the effectiveness of the proposed control option, the cost-effectiveness of each potential control option, and the incremental cost-effectiveness between the potential control options.

In short, BARCT must represent an emission limitation which is both technologically feasible and cost effective.

We note that District Staff recently presented at least one preliminary BARCT recommendation which Staff's (preliminary) analysis indicated was not cost effective. Staff presented the PAR 1135 Working Group with a "BARCT Recommendation" for "Combined-Cycle Turbines" as 2 ppm NO<sub>x</sub>, despite data suggesting that every affected unit in the class would exceed the District's cost effectiveness threshold.<sup>4</sup> Given that data, BARCT cannot be 2 ppm NO<sub>x</sub> for the class/category and the District's BARCT recommendation would require revision.

**3. BARCT must be established at a class/category level. Device-level limitations are not appropriate unless the source class/category is classified to include a single device.**

As noted above, BARCT must represent an emission limitation which is both technologically feasible and cost effective for each class/category of source.<sup>5</sup> In one instance, the District Staff presented a working group with a preliminary BARCT recommendation that would effectively establish device-level throughput limits as part of the BARCT rule.<sup>6</sup> The District Staff's analysis for the category (i.e., EGF Utility Boilers) clearly indicated that the Staff's proposed BARCT level was not cost effective for the class/category. As part of that (preliminary) determination, Staff proposed "low use

<sup>2</sup> SCAQMD presentation to Proposed Amended Rule 1135 Working Group Meeting, 13 June 2018. Slides 30-46

<sup>3</sup> CHSC §40920.6.

<sup>4</sup> SCAQMD presentation to Proposed Amended Rule 1135 Working Group Meeting, 13 June 2018. Slides 27 and 30

<sup>5</sup> CHSC §40406.

<sup>6</sup> SCAQMD presentation to Proposed Amended Rule 1135 Working Group Meeting, 13 June 2018. Slides 40-43.

exemptions" would be imposed in the form of new operating limits for each of the individual devices to be calculated as a function of cost effectiveness. Such device-level limitations are not appropriate for a BARCT determination when the class/category consists of multiple devices. If the District wishes to establish a low-use exemption, it must set a class/category threshold above which the BARCT recommendation would be cost effective for the class/category.

- 4. Requirements which effectively force retirement of basic equipment must be accounted for in the cost effectiveness analysis for the proposed rule. Such a requirement would also need to be accounted for in the District's socioeconomic analysis for the Proposed Rule.**

In the recent working group meetings for PAR 1135 and PAR 1134, District Staff indicated they are considering a "replacement requirement" for older equipment.<sup>7,8</sup> In both cases, the concept of a replacement requirement appeared to be driven by Staff's desire to impose a control level that was not demonstrated to be cost effective. BARCT is by definition a retrofit standard that applies to existing sources. The requirement that BARCT standards be both technologically achievable and cost effective is an acknowledgement that it may not be possible to achieve the same level of control on an existing source as might be possible with a new source. If there are no more stringent controls that are cost effective for a class or category of source, then that source is at BARCT and the analysis is concluded. To instead require replacement of that source (perhaps without any regard to the technological feasibility or cost effectiveness) with a new source (presumably equipped with best available control technology) renders the technological feasibility and cost effectiveness limitations in the BARCT definition meaningless. The Health and Safety Code grants the District authority to impose best available control technology (BACT) on new and modified sources and BARCT on existing sources.<sup>9</sup> We are not aware of any authority that allows the District to compel replacement of an existing source when it finds that there are no cost effective retrofit controls. We do, however, support measures that would make it easier for a facility to replace aging equipment if it elects to do so on a voluntary basis, including streamlined new source review and available sources of emission offsets.

- 5. The timetable for transition to command-and-control BARCT could materially affect what is achievable, and whether it is cost effective.**

Under RECLAIM's market-based design, covered facilities have successfully reduced aggregate program emissions for NOx and SOx in accordance with the program's declining RTC caps. Facilities have implemented custom compliance strategies to meet these caps, which included installing emissions controls on equipment where it was cost effective and using the compliance market where physical changes were not cost effective. The District is now planning to transition RECLAIM facilities to command-and-control (under various directives).

Due to program design, RECLAIM facilities within a given sector may have pursued widely varied strategies and now find themselves in widely varied situations with respect

<sup>7</sup> SCAQMD presentation to Proposed Amended Rule 1135 Working Group Meeting, 13 June 2018. Slide 48.

<sup>8</sup> SCAQMD presentation to Proposed Amended Rule 1134 Working Group Meeting, 13 June 2018. Slide 42.

<sup>9</sup> CHSC §40440(b)(1).

to their basic equipment and currently installed emissions controls. The investments and construction needed to achieve command-and-control BARCT limits have not yet been defined. Given these varied starting points, the implementation schedule for command-and-control BARCT rules could be an important factor in defining what is achievable or cost effective as BARCT. We recommend that BARCT discussions need to include consideration of both what will be required (i.e., the emission limit) and when (i.e., the schedule). This is especially true for refinery sector facilities where such investments must be coordinated with turnaround schedules and capital projects that require long planning and engineering timetables.

Thank you for considering these comments. We look forward to continuing to work with you and your Staff on these rulemakings which are critically important to stakeholders as well as the regional economy.

If you have any questions, please contact me at (310) 808-2146 or by email at [bmccann@wspa.org](mailto:bmccann@wspa.org).

Sincerely,



cc: Wayne Nastri, SCAQMD  
Susan Nakamura, SCAQMD  
Michael Morris, SCAQMD  
Michael Krause, SCAQMD  
Patty Senecal, WSPA

**Response to Comment 4-1**

See Response to Comment 3-2. Detailed technical and economic information and analyses upon which the technical feasibility and cost-effectiveness are provided in chapters 2 and 4 of the staff report. The other documents that staff relied upon are noted and contained in this report's references section, including U.S. EPA's "Catalog of CHP Technologies" and "Air Pollution Control Cost Estimation Spreadsheet for Selective Catalytic Reduction" and the Office of Energy Efficiency and Renewable Energy's "Catalytic Combustion". See also Response to Comment 4-4. Incremental cost-effectiveness between control options is included in chapter 4 of the staff report. This information is presented in this report which is released at least 30 days before any hearing. Cost-effectiveness and technical feasibility information has been identified and presented during working group meetings and the Public Workshop during rule development as well.

**Response to Comment 4-2**

The term "new installations" has been modified to "existing units" to better indicate that these turbines were installed after 1989 and not subject to Rule 1134. Staff originally used the term "new installations" to refer to those newly installed after 1989, which were not subject to Rule 1134, as distinguished from units installed before 1989 which were subject to Rule 1134. However, this term has proved confusing. The commenter is correct that all "new installations" as commonly understood, i.e. units "new" today or in the future would be subject to BACT limits which would at least as stringent as those limits proposed in PAR 1134. "New installations" in the sense of units installed after 1989 would have been subject to BACT at the time they were installed but are now being subject to BARCT as existing sources. The commenter is also correct that BARCT limits will be applicable to retrofits. The language in the staff report had been edited accordingly. A detailed response to requiring replacement as part of the rule development process is included in chapter 2 of the staff report.

**Response to Comment 4-3**

A discussion of a particulate matter increase of 0.16 tons per day as a result of the proposed rule is included in chapter 4 of the staff report. A listing of the applicable ammonia emission limits is included in chapter 2 of the staff report. Staff evaluated the corresponding ammonia limit in conjunction with the proposed NOx limit for each class and category of turbine. In the cases of OCS produced gas turbines and compressor gas turbines, allowances were made ~~for~~ to acknowledge the trade-off. In the case of the OCS produced gas turbine, the NOx limit can be met without having to utilize SCR control equipment because of the difficulty and risk of using ammonia on an offshore platform. For compressor gas turbines, the ammonia limit is 10 ppm reflecting the range and variations of gas flow for that class of turbines.

**Response to Comment 4-4**

Staff has made available the information for which it relies upon in making the BARCT assessment both in working group meetings and as part of the staff report. Information on turbines, including NOx and ammonia permit limits, size, output, and category are included in chapter 2 of this staff report. The limits in BAAQMD and SJVAPCD for similar equipment are also provided in the same chapter. The other documents that staff relied upon are noted and contains in this report's references section, including U.S. EPA's "Catalog of CHP Technologies" and "Air Pollution Control Cost Estimation Spreadsheet for Selective Catalytic Reduction" and the Office of Energy Efficiency and Renewable Energy's "Catalytic

Combustion”. The commenter states that staff’s recommendations are driven by information that is currently unavailable to the public. Staff disagrees and has provided detailed information in chapter 2 clearly depicting how the technology assessment was conducted and the conclusions derived.

**Response to Comment 4-5**

See Response to Comment 3-3

**Response to Comment 4-6**

See Response to Comment 3-5

**Response to Comment 4-7**

See Response to Comment 3-5

**Response to Comment 4-8**

The major parameters in cost-effectiveness include capital and installation costs, operating, and maintenance costs, interest rates, and project life. DCF is based on a conversion of future expenditures (including annual costs) to a present value basis using a present value factor. LCF is different in that fixed capital expenditures are converted into an equivalent annual amount using a capital recovery factor. LCF generally yields numbers that are 20 to 30% higher than DCF. DCF is more versatile than LCF in that DCF can easily deal with non-constant annual operating and maintenance costs and those costs occurring longer than the standard one-year interval (e.g., catalyst replacement every five years). Second, DCF allows non-uniform emission reductions over the project life. Finally, DCF is neutral on how a project is financed by individual businesses.

In addition, the most important criteria in applying a cost-effectiveness methodology is to maintain consistency. That is, if past rulemaking projects are based on DCF, then it would be prudent to continue using DCF for future projects. The Governing Board approved the use of DCF in 1989. Likewise, it has been used for BACT determinations since 1995 and rule development since 1996. Using the LCF method for this analysis would result in the inability to compare cost-effectiveness for new BARCT with past rules.



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March 20, 2019

Mr. Mike Morris  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765

Sent via email: [mmorris@aqmd.gov](mailto:mmorris@aqmd.gov)

**RE: Comments on Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines and Draft Staff Report for Proposed Amended Rule 1134**

Dear Mr. Morris:

We are submitting these comments on behalf of SoCalGas and San Diego Gas and Electric (SDG&E); SoCalGas and SDG&E are collectively referred to herein as the Utilities regulated by the California Public Utility Commission (CPUC). SoCalGas operates a total of seven facilities subject to the Regional Clean Air Incentives Market (RECLAIM) program and is impacted by the transition to a command-and-control regulatory structure. SDG&E owns and SoCalGas operates the Moreno Valley Compressor Station within the jurisdiction of the South Coast Air Quality Management District (SCAQMD). SoCalGas owns and operates the Aliso Canyon Storage Field in the SCAQMD. The Utilities have been actively engaged in the development of Proposed Amended Rule (PAR) 1134 Emissions of Oxides of Nitrogen (NOx) from Stationary Gas Turbines. This letter provides our comments related to PAR 1134 (March 5, 2019 version) and the Draft Staff Report (March 6, 2019 version) for PAR 1134. We have attached copies of our prior comment letters dated January 22, 2019, August 30, 2018, and June 7, 2018.

5-1

***Existing Facility Equipment***

The Utilities have reviewed the Draft Staff Report and noticed that Chapter 2 discusses seven compressor gas turbines and Table 2-6 lists the specific units. The first three units listed in the table (NG SS1, NG SS2, and NG SS3) located at the Aliso Canyon Storage Field were removed from service last year. An administrative permit amendment was filed with the SCAQMD to remove the equipment from the permit with an effective date of November 1, 2018. The three units were rendered non-operational November 1, 2018 and disassembly of the units began in 2018.

5-2

March 20, 2019

Page 2

With this update to Table 2-6, the total actual NOx emissions in 2015 associated with the equipment in this class/category should not include the 164.8 tpy that were associated with NG SS1, NG SS2, and NG SS3 in 2015. Instead, Table 2-6 should only include the existing equipment (NG SS4, NG SS5, NG SS6, and NG SS7) and associated 2015 emissions of 15.6 tpy.

5-2  
cont.

Additionally, the Utilities would like to note that the correct year of installation for the remaining four units located at the Moreno Valley Compressor Station was 1972 for units NG SS4, NG SS5, NG SS6, and NG SS7, rather than 1980, 1990, 2002, and 1987 shown in Table 2-6.

#### *BARCT Emission Limits for Compressor Gas Turbines*

The Draft Staff Report discusses two new installations to support the development of the Best Available Retrofit Control Technology (BARCT) emission limits for NOx and ammonia for compressor gas turbines provided in PAR 1134 Table II. However, neither of these installations on the east coast have been constructed yet and one of the two projects has been cancelled. The proposed project in Virginia has a permit limit of 3.75 parts per million by volume on a dry basis (ppmvd) NOx at 15% oxygen (3-hour average) and no ammonia limit.

Existing equipment in this class/category in other air districts in California have a limit of 8 ppmvd NOx during normal operations and 12 ppmvd during transitional operations at 15% oxygen with ammonia slip limits ranging between 10 and 20 ppm. These NOx emissions limits for existing units in operation in California are based on a 3-hour average. The Utilities documented this information in a letter to SCAQMD dated June 7, 2018.

5-3

For existing units, NG SS4, NG SS5, NG SS6, and NG SS7, the BARCT proposed emission rates are not achievable by retrofitting the equipment. The manufacturer does not have an option for dry low NOx technology so water injection would need to be used in conjunction with selective catalytic reduction (SCR). However, the District is basing BARCT on emission limits which are the equivalent to applying NOx emission reductions of 95% to the permit limits (68 ppm vs. 3.5 ppm NOx at 15% O2). The control device, SCR in conjunction with water injection, has not been demonstrated to achieve 95% NOx reductions on this class/category of units that operate at variable loads including low loads.

The technology assessment details provided by SCAQMD in the Draft Staff Report do not seem to support the PAR 1134 Table II emission limits of 3.5 ppmv NOx at 15% oxygen on a dry basis (60-minute average) and ammonia limit of 10 ppm. As described above, and based on our exhaustive research, these emission limits and averaging times have never been achieved in practice for this class/category and have never been warranted by equipment vendors.

#### *BARCT Cost Effectiveness for Compressor Gas Turbines*

The Draft Staff Report provides the cost effectiveness calculation results associated with the BARCT emission limits for compressor gas turbines in Table 2-19. As mentioned previously, the first three units listed in the table (NG SS1, NG SS2, and NG SS3) were removed from service in 2018 and should not be included in this analysis.

5-4

March 20, 2019

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The cost to retrofit the four existing units, NG SS4, NG SS5, NG SS6, and NG SS7, to achieve the emission limits associated with this class/category in other air districts in California (i.e., 8 ppmvd NOx normal operations and 12 ppmvd transitional operations at 15% oxygen with ammonia slip limit of 15 ppm) would be approximately \$50,000 per ton NOx reduced.

The cost to retrofit the existing four units, NG SS4, NG SS5, NG SS6, and NG SS7, to try to achieve the BARCT limits in PAR 1134 Table II, would increase to approximately \$78,000 per ton of NOx reduced since a dual ammonia injection grid would need to be included and catalysts would need to be replaced about every six months. This would be an experiment since the BARCT limits in PAR 1134 Table II have never been demonstrated for this class/category. The cost effectiveness results for this retrofit are higher than the SCAQMD threshold of \$50,000 per ton of NOx reduced.

To try to achieve the BARCT emission limits proposed in PAR 1134 Table II, that have never been demonstrated for this class/category, the existing compressor gas turbines will need to be replaced. The cost effectiveness calculations in Table 2-19 should represent those associated with the installation of new gas turbine compressors. The replacement costs are much higher than the costs associated with retrofit installation of SCR. The costs provided in Table 2-19 are based only on the installation of SCR on existing units. The cost to replace the four existing units will easily exceed \$100 million due to the associated infrastructure changes that will be required to accommodate the new equipment at the Moreno Valley Compressor Station.

The cost effectiveness results in Table 2-19 are not representative of the costs to replace the existing units, NG SS4, NG SS5, NG SS6, and NG SS7. The cost effectiveness results for replacements will be much higher (over 100 times greater) than the SCAQMD threshold of \$50,000 per ton of NOx reduced. The SCAQMD should include the costs associated with replacement in its cost effectiveness analysis.

The Utilities appreciate your consideration of these comments and recommendations. We would be pleased to discuss the above comments and answer any questions. I can be reached at 805.681.8013 or [kfickerson@semprautilities.com](mailto:kfickerson@semprautilities.com).

Sincerely,



Karin Fickerson  
Air Quality Team Lead

Enclosures: January 22, 2019 letter to Michael Morris, SCAQMD  
August 30, 2018 letter to Michael Morris, SCAQMD  
June 7, 2018 letter to Michael Morris, SCAQMD

cc: Phil Fine, SCAQMD  
Susan Nakamura, SCAQMD  
Darrell Johnson, SoCalGas

5-4  
cont.

**ATTACHMENTS**



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January 22, 2019

Michael Morris, Program Manager  
Planning, Rule Development & Area Sources  
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21865 Copley Drive  
Diamond Bar, CA 91765

**RE: Comments on December 18, 2018 Public Workshop version of draft  
Proposed Amended Rule 1134 (v120318)**

Dear Mr. Morris:

Southern California Gas Company (SoCalGas) and San Diego Gas and Electric Company (SDG&E; SDG&E and SoCalGas are collectively referred to herein as the Utilities) appreciate the opportunity to provide comments to the South Coast Air Quality Management District (AQMD) regarding AQMD Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (PAR 1134), version 120318, distributed at the December 18, 2018 public workshop.

#### **Background**

On December 18, 2018, the AQMD held a public workshop regarding PAR 1134. At the workshop, the AQMD distributed a draft rule (version 120318) to facilitate the discussion. The Utilities have existing turbines and are considering installation of new turbines which would be affected by these rule amendments.

#### **Comments**

After reviewing this proposed draft rule, the Utilities have the following comments and requests:

##### Alternative Emission Limits

As proposed, PAR 1134 (v120318), section (h) Exemptions, sub-section (6), would allow natural gas pipeline gas turbines to comply with emission limits specified in the turbine permit(s) as of January 1, 2024 (rather than the Table 1 limits proposed in the draft rule), provided the ammonia limit specified in the permit does not exceed 10 parts per million by volume (ppmv). The Utilities support this proposed exemption and requests that it be retained in the final rule.

The AQMD has proposed NO<sub>x</sub> (8 ppm) and NH<sub>3</sub> (5 ppm) limits for pipeline turbines in PAR 1134. During discussions held with rulemaking staff, and in comments submitted to the AQMD (attached), the Utilities presented data detailing both current adopted BARCT (San Joaquin County Air Pollution Control District) for pipeline turbines and the difficulty in meeting lower

Page 2

NO<sub>x</sub> concentrations due to the wide range in operational loads (reference attachment, BARCT Technical Justification, page 3) that the Utilities' turbines experience, made especially difficult by the requirement of an ammonia slip limit of 5 ppm. Throughout the development of PAR 1134, the Utilities have noted that pipeline turbine operation differs significantly from other applications (e.g. power generation) due to wide operating ranges, varying from 30-95 percent load. This results in the need for an avenue to develop alternative emission limits should the proposed limits not be achievable across all turbine operating conditions. Emission limits in PAR 1134 should be consistent with those that have been demonstrated by this class and category of turbines (e.g. natural gas pipeline gas turbines). A mechanism should be provided within the rule to remedy potential technological failures that may occur to avoid putting the Utilities' in compliance jeopardy. As proposed, the exemption provided in version 120318, section (h)(6), would provide a path which would ensure the Utilities have an option where it can achieve continuous compliance with AQMD requirements across the equipment's entire operating range.

**Request:** Maintain the current exemption (h)(6), as proposed in PAR 1134 version 120318, in the final Rule 1134.

#### 30-Day Source Test Results Submittal Time Frame

Existing Rule 1134, section (f)(4) [and PAR 1134 versions 120318 & 120618, section (g)(4)], require that source test results be submitted to the AQMD within 30 days after the source test is completed. While Rule 1134 addresses specific turbines (those identified as of August 4, 1989), other existing and future new turbines will be affected by PAR 1134 once adopted. The Utilities are concerned that turbines that have Volatile Organic Compounds (VOC) limits, will have difficulty meeting a 30-day turn-a-round on VOC test results. Currently, a 60-day period is more typical [reference Rule 1110.2 (f)(1)(C)(vi)] for submittal of emissions test results, especially those sources that must test and report VOC data. Considering VOCs have a longer analysis time, data quality assurance/control that must be done, report preparation and review, it will be difficult to meet a 30-day submittal deadline.

**Request:** The Utilities request that the AQMD modify the current 30-day submittal deadline contained in Rule 1134/PAR 1134 for submittal of emissions test data, to a 60-day period, thereby providing an attainable time frame for the analysis and reporting of constituents (VOCs, etc.) other than NO<sub>x</sub>.

#### Use of "Pipeline Turbine" Terminology

Early in the development of PAR 1134, the Utilities used the phrase "Natural Gas Pipeline Turbines" to distinguish the use of turbine-driven compressors in the natural gas system (versus other industries) and the use of this terminology by other local air agencies in California. At the time, and currently, these "pipeline" gas turbines are the only units currently operating at the Utilities' facilities within the South Coast air basin, as the turbine-driven compressors previously at the Aliso Canyon natural gas storage facility had been replaced by electric-driven compressors. As part of the Utilities' continued efforts to modernize existing equipment and infrastructure at other facilities, and to reduce emissions in support of the Regional Clean Air Incentives Market (RECLAIM) transition to a command and control program, the use of natural gas turbine-driven compressors is being considered for other facilities. These new turbines may be located at a natural gas storage facility. Although natural gas storage is part of the Utilities' pipeline system, the use of the term "pipeline" turbine may not accurately reflect this use. So,

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the Utilities are proposing that the use of “Compressor Turbine” would be more appropriate and cover turbines used at both natural gas transmission and storage facilities.

**Request:** Currently, the AQMD uses the term “Natural Gas – Pipeline Gas Turbine” in PAR 1134. The Utilities request that the AQMD modify this terminology to “Natural Gas – ~~Pipeline~~ Compressor Turbine.”

#### Conclusion

The Utilities request that the AQMD consider and adopt the Utilities’ recommendations regarding maintaining current language in version 120318 [e.g. PAR 1134 (h)(6)], providing an alternative option for developing emission limits for natural gas compressor turbines, revising the 30-day emission test results submittal deadline to 60-days, and modifying the existing terminology of “pipeline” turbine to “compressor” turbine.

The Utilities appreciate your consideration of these comments and recommendations. We would be pleased to discuss the above comments and answer any questions. You may contact me at 951-225-2958 or at [dmcgivnev@semprautilities.com](mailto:dmcgivnev@semprautilities.com).

Sincerely,

*Daniel R. McGivney*

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Environmental Affairs Program Manager  
Southern California Gas Company

cc:  
Phil Fine, SCAQMD  
Susan Nakamura, SCAQMD



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August 30, 2018

Michael Morris, Program Manager  
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21865 Copley Drive  
Diamond Bar, CA 91765

**RE: Retrofit & Replacement Cost Effectiveness Analyses for Application of Best Available Retrofit Control Technology to Natural Gas Pipeline Turbines**

Dear Mr. Morris:

Southern California Gas Company (SoCalGas) and San Diego Gas and Electric Company (SDG&E; SDG&E and SoCalGas are collectively referred to herein as the Utilities) appreciate the opportunity to provide to the South Coast Air Quality Management District (AQMD) Best Available Retrofit Control Technology (BARCT) cost effectiveness analyses for both retrofit and replacement options for natural gas pipeline turbines. These analyses are for consideration by AQMD regarding Proposed Amended Rule (PAR) 1134 - Emissions of Oxides of Nitrogen from Stationary Gas Turbines, in determining recommended BARCT oxides of nitrogen (NO<sub>x</sub>) and ammonia (NH<sub>3</sub>) emission limits for natural gas pipeline turbines.

**Background**

SDG&E operates four natural-gas fueled pipeline turbines at its Moreno Valley Compressor Station located east of the City of Moreno Valley (Moreno). In a letter (attached) sent to the AQMD, dated June 7, 2018, the Utilities requested AQMD to establish a new class and category for Natural Gas Pipeline Turbines for inclusion in PAR 1134 and adopt BARCT standards achieved in practice for natural gas pipeline turbines as noted below in Table 1.

Table 1 SoCalGas Proposed BARCT Achieved in Practice Standards for Existing NG Pipeline Turbines		
NO <sub>x</sub> Limit (ppmvd @ 15% O <sub>2</sub> )		NH <sub>3</sub> Slip Limit (ppmvd @ 15% O <sub>2</sub> )
Steady State	Transitional	All Conditions
8	12	15

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**SoCalGas BARCT Cost-Effectiveness Results**

Recently, AQMD requested that SoCalGas prepare cost effectiveness analyses for two scenarios: a retrofit option for the existing Moreno turbines, and a second option involving replacement of the existing turbines with new turbines using Dry Low NOx technology to control NOx emissions to 8 parts per million (ppm).<sup>1</sup> It is the Utilities' understanding that the results from these analyses will be used by AQMD to evaluate incremental cost effectiveness of the retrofit and replacement scenarios.

AQMD requested that both scenarios be based on an NH<sub>3</sub> slip limit of 5 ppm. As noted above, SoCalGas has proposed an NH<sub>3</sub> slip limit of 15 ppm. This 15 ppm limit has been achieved in practice on pipeline turbines and is feasible, while the 5 ppm NH<sub>3</sub> limit has not. If AQMD pursues an NH<sub>3</sub> slip limit of 5 ppm for pipeline turbines in PAR 1134, the Utilities, respectfully request that AQMD provide a regulatory provision for the Utilities to perform a demonstration project to determine either that the AQMD-proposed NOx emission limit contained in the rule is attainable with a 5 ppm NH<sub>3</sub> slip limit, or otherwise demonstrate what NOx emission limit is achievable with a 5 ppm NH<sub>3</sub> slip limit.

In Table 2 below, SoCalGas presents the cost effectiveness results of the two scenarios, along with the incremental cost effectiveness result.

<b>Scenario</b>	<b>Retrofit Option<sup>2</sup></b>	<b>Replacement Option<sup>2</sup></b>
<b>Proposed Emission Limits</b>	NOx - 8 ppm; NH <sub>3</sub> - 5 ppm;	NOx - 8 ppm; NH <sub>3</sub> - 5 ppm;
<b>Cost Effectiveness (S/ton NOx Reduced)</b>	\$60,434	\$190,373
<b>Incremental Cost Effectiveness</b>	<b>\$129,939</b>	

As demonstrated in Table 2, the retrofit cost effectiveness is \$60,434, the replacement option is \$190,373 and the incremental cost effectiveness is \$129,939. These results demonstrate that neither the retrofit option nor the replacement option are cost effective. Furthermore, it should be noted that the replacement option well exceeds any reasonable definition of cost effective or feasible.

<sup>1</sup> SoCalGas is providing these estimates for both retrofit and replacement of the gas turbines in good faith in response to AQMD's request. This analysis should not be interpreted as implicit agreement with AQMD's stated position in Proposed Amended Rule 1135 and other landing rules under development that replacement of equipment can be required as BARCT.

<sup>2</sup> Implementing this option will require a demonstration study to determine achievable NOx emission rates while maintaining a 5 ppm NH<sub>3</sub> slip limit.

Page 3

Pursuant to our previous discussions and communications with AQMD, the Utilities continue to recommend a BARCT standard for pipeline turbines consisting of 8 ppm NO<sub>x</sub> (steady-state) and 12 ppm NO<sub>x</sub> (transitional) with a 15 ppm NH<sub>3</sub> slip limit, as the cost-effective and feasible option.

#### **BARCT Cost Effectiveness Analyses**

In preparing the cost effectiveness analyses, SoCalGas utilized the following:

- the discounted cash flow method (DCF);
- a 25-year equipment life;
- a 4 percent interest rate;
- and a 1.5 multiplier to capital costs to determine engineering, procurement, permitting and construction costs.

The above is consistent with AQMD practices for cost effectiveness analysis.

Below please find additional information regarding the two modeled scenarios:

- SoCalGas used calendar year 2017 data (operating hours, fuel throughput, NO<sub>x</sub> emissions) for the analyses.
- As Solar Saturn turbines are not available with dry low NO<sub>x</sub>, SoCalGas used a larger turbine for the replacement scenario. This larger turbine capacity was large enough to assume the entire brake horsepower output of the existing four turbines.
- Because the new replacement scenario needed only one turbine to replace the output of the existing four units, system reliability is at risk. Currently, if one turbine has a breakdown, there are still three turbines operating, thereby limiting the operational capacity loss to only 25 percent. In the replacement option, if the single turbine breaks down, the loss would be 100 percent of the turbine output. Hence, a second turbine is required to maintain reliability and has been included in the replacement scenario.
- While the new turbines units come equipped with dry low NO<sub>x</sub> enabling these units to attain a NO<sub>x</sub> emission rate in the range of 8-9 ppm, the units cannot maintain this level of control while operating at low load conditions (the Moreno turbines routinely operate at conditions below 50 percent load). Therefore, application of selective catalytic reduction (SCR) was included in the replacement scenario to ensure the ability to maintain emissions control at all operating conditions.
- The addition of a new building and associated infrastructure will be necessary for the replacement scenario, as the existing turbine units would have to remain in service while the new units are built to maintain pipeline reliability and throughput. While the 1.5 multiplier would include some of those related costs, the Utilities believe that it does not include the entire cost.
- Currently, the Moreno facility does not have the additional power supply necessary to support either the retrofit or replacement scenarios. Therefore, on-site power generation was added to both scenarios.
- Maintenance costs were calculated per USEPA cost effectiveness guidance ([https://www.epa.gov/sites/production/files/2017-12/documents/scrcostmanualchapter7thedition\\_2016revisions2017.pdf](https://www.epa.gov/sites/production/files/2017-12/documents/scrcostmanualchapter7thedition_2016revisions2017.pdf)).
- The analyses included costs for performing a demonstration study to identify an achievable NO<sub>x</sub> emission rate while maintaining the AQMD's requested 5 ppm NH<sub>3</sub> slip limit.

Page 4

**Demonstration Study**

As noted in the AQMD's August 10, 2018 PAR 1134 Working Group presentation (slide 17) regarding pipeline turbines, and in the Utilities' June 7, 2018 letter (referenced above), the lowest achieved in practice NOx emission rate for existing pipeline gas turbines (BACT or BARCT) is 8 ppm NOx with an NH<sub>3</sub> slip limit between 10 and 20 ppm. The AQMD has proposed an NH<sub>3</sub> slip limit of 5 ppm for all turbine categories in PAR 1134. Unfortunately, there are no pipeline turbines that have achieved a 5 ppm NH<sub>3</sub> slip limit and there is no data available documenting what NOx emission rate natural gas pipeline turbines can achieve while maintaining this limit.

The Utilities respectfully request that the AQMD condition any PAR 1134 NOx emission rate for natural gas pipeline turbines, that includes an NH<sub>3</sub> slip limit below 15 ppm (currently 5 ppm as proposed by the AQMD), with a regulatory provision requiring a demonstration study to be performed. This demonstration study would result in the identification of an achievable NOx emission rate while maintaining the 5 ppm NH<sub>3</sub> slip limit and under typical turbine operating conditions. Once identified, the initial rule limit would be replaced with the final NOx emission rate identified by the study.

**Conclusion**

Based on the cost effectiveness analyses presented above, the retrofit and replacement turbine options are not cost effective. The Utilities propose a BARCT emission standard of 8 ppm NOx and 15 ppm NH<sub>3</sub> be established for the natural gas pipeline turbine class and category in concert with a regulatory provision to perform a demonstration study to determine final NOx and NH<sub>3</sub> emission limits that can be continuously met through-out the pipeline turbine's entire operational range.

SoCalGas and SDG&E appreciate your consideration of these cost effectiveness analyses and recommendations. We would be pleased to discuss the above analyses and results and answer any questions. You may contact me at 951-225-2958 or at [dmcgivney@semprautilities.com](mailto:dmcgivney@semprautilities.com).

Sincerely,

*Daniel R. McGivney*

Daniel R. McGivney  
Environmental Affairs Program Manager  
Southern California Gas Company

cc:  
Phil Fine, SCAQMD  
Susan Nakamura, SCAQMD



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June 7, 2018

Michael Morris, Program Manager  
Planning, Rule Development & Area Sources  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765

**RE: Best Available Retrofit Control Technology (BARCT) for Natural Gas Pipeline Turbines**

Dear Mr. Morris:

I am writing on behalf of both Southern California Gas Company (SoCalGas) and San Diego Gas and Electric Company (SDG&E). We appreciate the opportunity to provide our assessment of Best Available Retrofit Control Technology (BARCT) for Natural Gas Pipeline Turbines as requested during the workgroup process for the Proposed Amendments to Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (PAR 1134).

SoCalGas and SDG&E operate several natural-gas fueled pipeline turbines at our facilities within the South Coast Air Basin. We have years of experience operating Natural Gas Pipeline Turbines with air pollution equipment like Selective Catalytic Reduction (SCR) to control oxides of nitrogen (NOx). As the South Coast Air Quality Management District (SCAQMD) transitions to command and control rules due to the sunset of the Regional Clean Air Incentives Market (RECLAIM) program, we request that a new class and category for Natural Gas Pipeline Turbines be included in PAR 1134. Natural-gas fueled pipeline turbines have not previously been considered in Rule 1134 rulemakings and these units operate differently than other types of turbines.

There are natural-gas fueled pipeline turbines in California owned and operated by SoCalGas and SDG&E in the SCAQMD and in the San Joaquin Valley Air Pollution Control District (SJVAPCD), and by Pacific Gas & Electric Company (PG&E) in the SJVAPCD. Please note that SJVAPCD has established both Best Available Control Technology (BACT) and BARCT for Natural Gas Pipeline Turbines. The SJVAPCD BACT Guidelines 3.4.1 (Attachment 1), as well as BARCT per SJVAPCD Rule 4703 – Stationary Gas Turbines (Rule 4703), Table 5-3(b) are summarized in Table 1 below. We request that SCAQMD create a specific class and category for Natural Gas Pipeline Turbines, consistent with SJVAPCD Rule 4703 as shown in Table 1:

Pollutant	SJVAPCD BACT (Gas Turbine $\geq$ 47 MMBtu/hr., variable load, without heat recovery)	SJVAPCD BARCT (3 MW to 10 MW pipeline gas turbine)	SoCalGas Proposed SCAQMD BARCT (Natural Gas Pipeline Turbines)
NOx ppmvd (@ 15% O <sub>2</sub> )	8 during steady state and 12 during non-steady state	8 during steady state and 12 during non-steady state	8 during steady state and 12 during non-steady state

BARCT is defined in the Health & Safety Code 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.”<sup>1</sup>

During the workgroup process to date, SCAQMD presented data for seven simple cycle turbines installed in SCAQMD with permitted levels below 10 parts per million (ppm) NO<sub>x</sub><sup>2</sup>, and twelve units with permitted levels greater than 10-ppm NO<sub>x</sub>. It is our understanding the units with permitted NO<sub>x</sub> less than 10-ppm are peaker turbines generally run only during peak-demand periods for electrical generation at power plants. SoCalGas and SDG&E’s Natural Gas Pipeline Turbines, however, operate very differently than peaker turbines at power plants.

We request SCAQMD create a specific class and category for Natural Gas Pipeline Turbines, consistent with SJVAPCD Rule 4703<sup>3</sup>, with the following BARCT emission limits<sup>4</sup>:

- **Steady state:** 8-ppm volume (ppmv) NO<sub>x</sub> at 15 percent oxygen, 3-hour rolling average
- **Non-steady state<sup>5</sup> (transitional):** 12-ppmv NO<sub>x</sub> at 15 percent oxygen, 3-hour rolling average
- **Ammonia slip:** 15-ppmv, 3-hour rolling average

To fully understand why these proposed limits are appropriate, the following is a review of the history of the BACT determination for SoCalGas’ Wheeler Ridge Compressor Station Natural Gas Pipeline Turbines together with technical justification for our requested BARCT.

<sup>1</sup> Cal. Health & Safety Code Section 40406

<sup>2</sup> Permitted limits between 2.5 and 9 parts per million NO<sub>x</sub>

<sup>3</sup> See Table 3-3 (b) in Rule 4703; available at: <https://www.arb.ca.gov/drdbs/sju/curhtml/R4703.PDF>

<sup>4</sup> Based on SJVAPCD BACT Guideline 3.4.1 for Gas Turbines  $\geq$  47 MMBtu/hr., variable load, without heat recovery

<sup>5</sup> SJVAPCD Rule 4703 “Non-Steady State Period: any 15-minute period in which the fuel rate to the turbine differs from the reference fuel rate by more than +/- 3,000 standard cubic feet per 15-minute period, where, a 15-minute Non-Steady State Period shall be zero (0) to 15 minutes after the hour, 15 to 30 minutes after the hour, 30 to 45 minutes after the hour, or 45 to 60 minutes after the hour.” SoCalGas refers to this as transitional.

Page 3

**Wheeler Ridge Compressor Station BACT Determination with EPA Region IX**

From 1994 to 2000, SoCalGas' Wheeler Ridge Compressor Station struggled to meet EPA's BACT Clearinghouse limit of 5-ppmv NO<sub>x</sub> that was established for base-loaded cogeneration turbines utilizing SCR technology. As it turned out, our Natural Gas Pipeline Turbines with high-temperature exhaust, variable loads, and frequent cycling (starts and stops) could not meet the 5-ppmv NO<sub>x</sub> limit.

After using the SCR control system unsuccessfully for six years, necessitating several variances along the way, SoCalGas worked with Engelhard Corporation, SJVAPCD and EPA Region IX on a demonstration project to establish a procedure to predict an achievable limit for this class and category of turbine. It took two years of engineering effort to find a control system that would work effectively in controlling NO<sub>x</sub> emissions from the Natural Gas Pipeline Turbines. Considering the tremendous effort expended to meet the 8-ppmv/12-ppmv tiered NO<sub>x</sub> limits at Wheeler Ridge, we strongly urge SCAQMD to adopt the BARCT limits above as they are the appropriate retrofit emissions levels for this class and category of turbine.

**BARCT Technical Justification**

*The load on Natural Gas Pipeline Turbines varies greatly compared to peaker turbines.* SoCalGas and SDG&E supply fuel to both baseline electrical-generating stations as well as peaker turbines. This is a challenge during scorching summer days as many peaker plants come online to meet air conditioning demand. In addition, purchasers of natural gas who use the combined SoCalGas/SDG&E natural gas system to deliver gas to their respective facilities create even greater variability with respect to the operation of our Natural Gas Pipeline Turbines. Customers decide where the gas will be received into our combined system based on the price they paid for the gas. As a result, certain compressor stations may be need to cycle more than others depending on gas delivery points along California's border.

While both peaker and Natural Gas Pipeline Turbines operate at variable load, peaker turbines most often operate at high loads, over 90 percent<sup>6</sup>, while Natural Gas Pipeline Turbines have wider variability ranging from 30 to 95 percent load. Another operational difference is peaker turbines operate at fixed speed while Natural Gas Pipeline Turbines operate at variable speeds. These operational and physical differences are summarized in Table 2 below:

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<sup>6</sup> Based on conversations with peaker turbine operators, peaker turbines usually only operate a couple of hours per day depending on the season, but at high loads (90-95 percent). The peaker turbines come online quickly when there is a need for additional electricity generation, such as during the hottest part of the day as air conditioning use ramps up, or to make up for the loss of solar energy in the late afternoon.

Characteristic	Pipeline	Peaker
Cycle	Simple	Simple
Load	Variable	Variable
Load range	30-95%	90-95%
Speed	Variable	Fixed
Cycling On/Off	Highly variable from multiple times per day to weekly	Most often daily
Shaft	Double	Single

Operational and design data for some of our Natural Gas Pipeline Turbines are included in Attachments 2 A-C:

- A) Wheeler Ridge load data from Continuous Emissions Monitoring System (CEMS)
- B) Design Example 1 load distribution chart
- C) Design Example 2 load distribution chart

Attachment 2A is a histogram of actual load data for approximately the last year and a half from our Wheeler Ridge Compressor Station, while the design examples provided in Attachments 2B and 2C are not representative of actual operating data. The design examples are reflective of recent SoCalGas' engineering efforts to design Natural Gas Pipeline Turbine and compressor replacements at two of our compressor stations. These histograms show how a new Natural Gas Pipeline Turbine might be loaded to handle historical capacity, while also leaving extra capacity at higher loads to handle peak loads. While energy peaks happen infrequently, the availability of Natural Gas Pipeline Turbines must remain continuous and unabated, so that natural gas service is not curtailed whenever natural gas purchasers and shippers utilize our gas pipeline system. Industrial, commercial, and residential customers throughout Southern California rely on natural gas fuel for power generation and heating, among many other uses.

***Load variability in Natural Gas Pipeline Turbines warrants higher NOx limits for transition periods.*** SCR systems require tuning to perform properly. This includes ensuring the proper distribution of ammonia in the gas stream and uniform gas velocity through the catalyst, as well as determining the proper ammonia flow to meet the NOx emissions limit for all process conditions. The ammonia-flow control system adjusts for changes in NOx mass emissions caused by load changes. As compression needs change so does the fuel flow rate. Higher load results in higher fuel rates, causing higher exhaust flow-rates at higher temperatures, and higher NOx concentration. Thus, the ammonia control system must continuously respond to these changes. For example, as load varies, the control system must respond to both to the fuel supply signal (feedforward) and the CEMS NOx signal (feedback).

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The Wheeler Ridge Compressor Station BACT determination includes a higher transitional NOx limit due to the Natural Gas Pipeline Turbines' significant load variability. Since the limit is based on a three-hour rolling average, for three hours after a fuel transition (plus or minus), the NOx limit is 12-ppmv rather than 8-ppmv. Note that the Wheeler Ridge ammonia injection system almost always achieves less than 8-ppmv, even after load transitions, but the higher limit is to assure compliance during infrequent events.

An example from SoCalGas' Wheeler Ridge Compressor Station is shown in Attachment 3 from March of this year. The load in this period, as shown by a blue trend, was between about 2,600 and 4,200 horsepower which corresponds to about 52% to 84% of rated load at site conditions (elevation and temperature). The control system did a suitable job of maintaining NOx emissions below the 8-ppmv limit, although some variation in NOx can be observed that correlates to some larger load changes. The 12-ppmv transition limit was not needed in this example. Much more variability is observed in the ammonia slip after a transition.

***Natural Gas Pipeline Turbines require higher Ammonia Slip levels to achieve lower NOx levels.*** Ammonia slip is the ammonia that passes through the SCR catalyst unreacted. Since more ammonia is needed to achieve lower NOx levels, there is a trade-off between NOx and ammonia exhaust emissions. Ammonia slip exhibits more variability than NOx, and as the catalyst ages more ammonia is needed to maintain the same NOx reduction. Therefore, defining the appropriate level for the ammonia slip limit is critical for compliance with the NOx emissions limit.

Wheeler Ridge has a permit limit of 20-ppmv ammonia slip. This is higher than the 10-ppmv limit at PG&E's Kettleman City Compressor Station. The PG&E Natural Gas Pipeline Turbines are equipped with Dry-Low NOx combustion controls, while those at Wheeler Ridge are not. Dry-Low NOx combustion controls lower the NOx prior to the SCR catalyst; therefore, less ammonia is needed to control NOx. SoCalGas and SDG&E's Natural Gas Pipeline Turbines that will be subject to PAR 1134 do not have Dry-Low NOx combustion controls; therefore, a higher ammonia slip limit must be considered. Further, the manufacturers of our Natural Gas Pipeline Turbines' do not make Dry-Low NOx control systems for them. If SCAQMD sets a NOx limit lower than 8-ppmv and 12-ppmv (transitional) for BARCT, the ammonia slip limit will have to be much higher than discussed in this letter.

The Wheeler Ridge Compressor Station CEMS data in Attachment 3, shows these Natural Gas Pipeline Turbines cannot meet an ammonia slip limit of 5-ppmv. The data shows that, except for a few spikes, most of the three-hour ammonia slip data is below 15-ppmv. Despite this, SoCalGas believes that a modern retrofit SCR-system will perform better. Other than a few spikes, 15-ppmv for a three-hour rolling average is the most reasonable ammonia slip limit.

#### **Ammonia Catalyst**

While we understand there are new ammonia catalysts to lower ammonia slip, there is limited experience with them. Catalyst selectivity to convert ammonia into nitrogen rather than NOx is very sensitive. We understand that normal catalyst performance-degradation can change selectivity such that ammonia is converted into NOx. Additionally, we are not aware of an installation on a pipeline turbine, thus there is no available performance data as the catalyst ages, nor experience indicating how an ammonia catalyst might behave on a turbine with a highly

Page 6

variable load. Therefore, SoCalGas believes ammonia catalysts cannot be determined to be BARCT. Because there are no installations on a pipeline turbine, there is no data (performance as the catalyst ages) nor experience indicating how an ammonia catalyst might behave on a turbine with a highly variable load.

### **Conclusion**

Based on SoCalGas' experience operating the 8-ppmv/12-ppmv tiered NOx limits at our Wheeler Ridge Compressor Station, we believe it is unrealistic to set a maximum retrofit limit based on that achieved by replacement turbines that operate very differently than Natural Gas Pipeline Turbines.

Moreover, Natural Gas Pipeline Turbines have never been considered in previous Rule 1134 rulemakings. We respectfully request that SCAQMD create a specific class and category for Natural Gas Pipeline Turbines, consistent with SJVAPCD Rule 4703 with the following BARCT emission limits:

- **Steady state:** 8-ppm volume (ppmv) NOx at 15 percent oxygen, 3-hour rolling average
- **Non-steady state (transitional):** 12-ppmv NOx at 15 percent oxygen, 3-hour rolling average
- **Ammonia slip:** 15-ppmv, 3-hour rolling average

SoCalGas and SDG&E appreciate your consideration of these comments and recommendations. We look forward to continuing to work with staff regarding the proposed rule amendments. Please contact me if there are any questions.

Sincerely,

*Daniel McGivney*

Daniel McGivney  
Environmental Affairs Program Manager  
Southern California Gas Company

Attachment 1

**San Joaquin Valley  
Unified Air Pollution Control District**

**Best Available Control Technology (BACT) Guideline 3.4.1\***

Last Update: October 1, 2002\*\*

**Emissions Unit: Gas Turbine -  $\geq$  47 MMBtu/hr, Variable Load, Without Heat Recovery**

Pollutant	Achieved in Practice or contained in SIP	Technologically Feasible	Alternate Basic Equipment
VOC	0.007 lb/MMBtu, (Oxidation catalyst and natural gas fuel, or equal)		
SO <sub>x</sub>	PUC quality natural gas fuel		
NO <sub>x</sub>	8 ppmvd @ 15% O <sub>2</sub> (Steady State) and 12 ppmv @ 15% O <sub>2</sub> (Transitional State) (High-Temperature SCR, or equal)		
CO	0.024 lb/MMBtu, (Oxidation catalyst and natural gas fuel, or equal)		
PM <sub>10</sub>	0.015 lb/MMBtu and less than 5% opacity at lube oil vents, (Air inlet filter cooler, lube oil vent coalescer and natural gas fuel, or equal)		

\*\* Achieved in Practice entries updated 10/01/02 based on operation of S-1792-5-X.

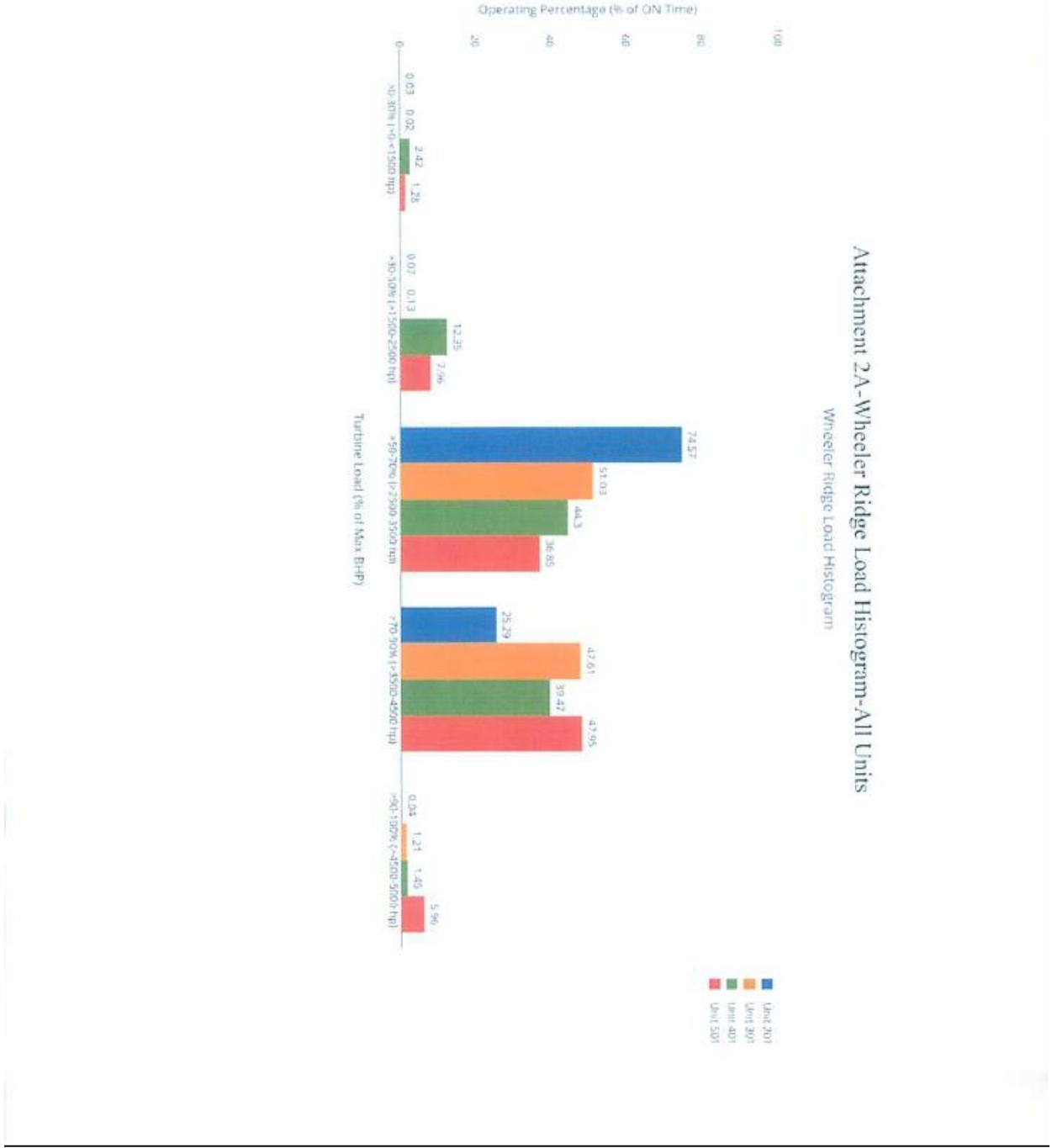
Addition information related to this BACT determination provided by SoCal Gas Company:

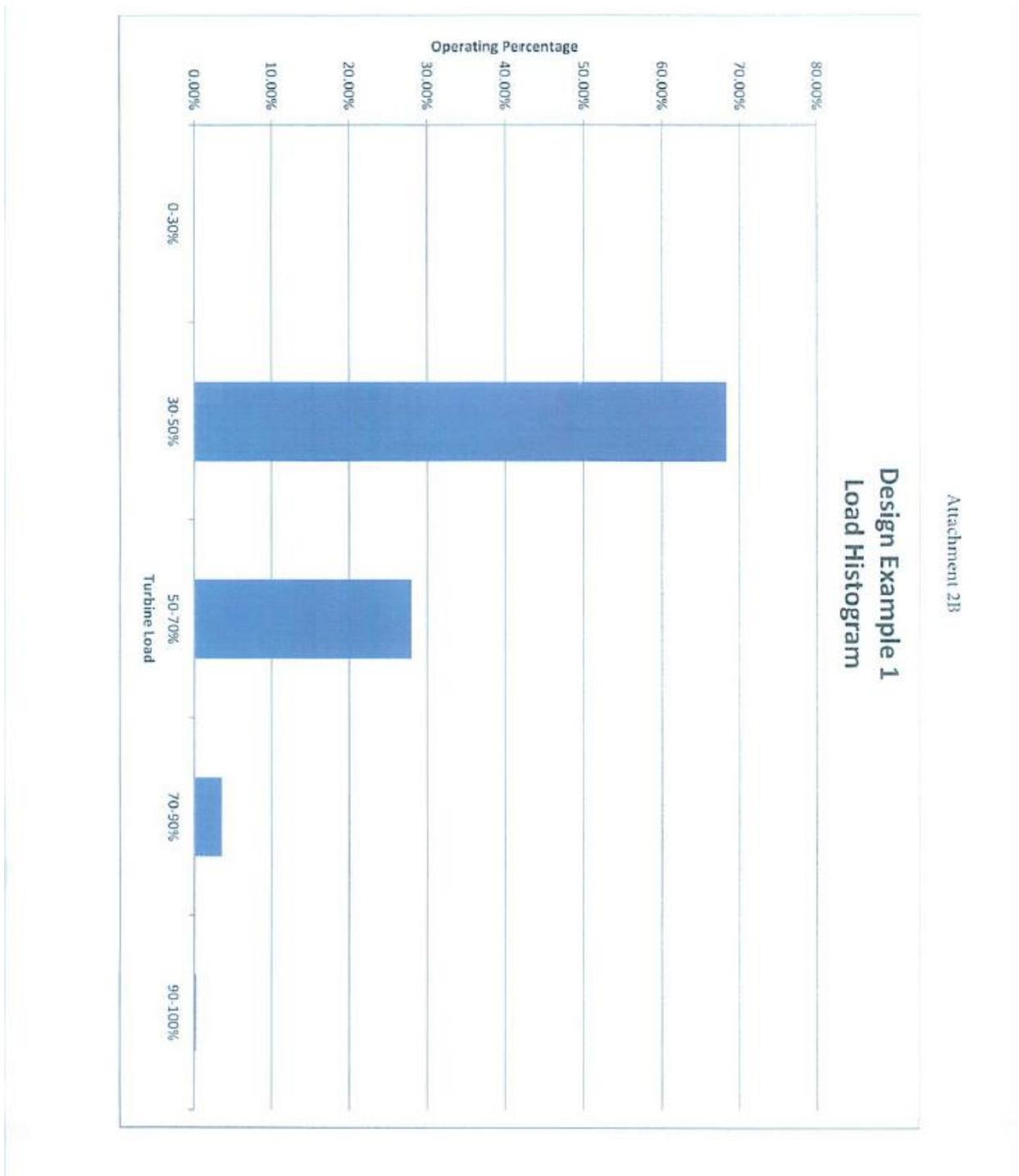
A three hour rolling average is used to determine NO<sub>x</sub> and ammonia slip compliance. Steady State and Transitional State conditions are determined by a change in fuel flow rate during 15 minute period of approximately 10% of the average from the previous 15 minute period.

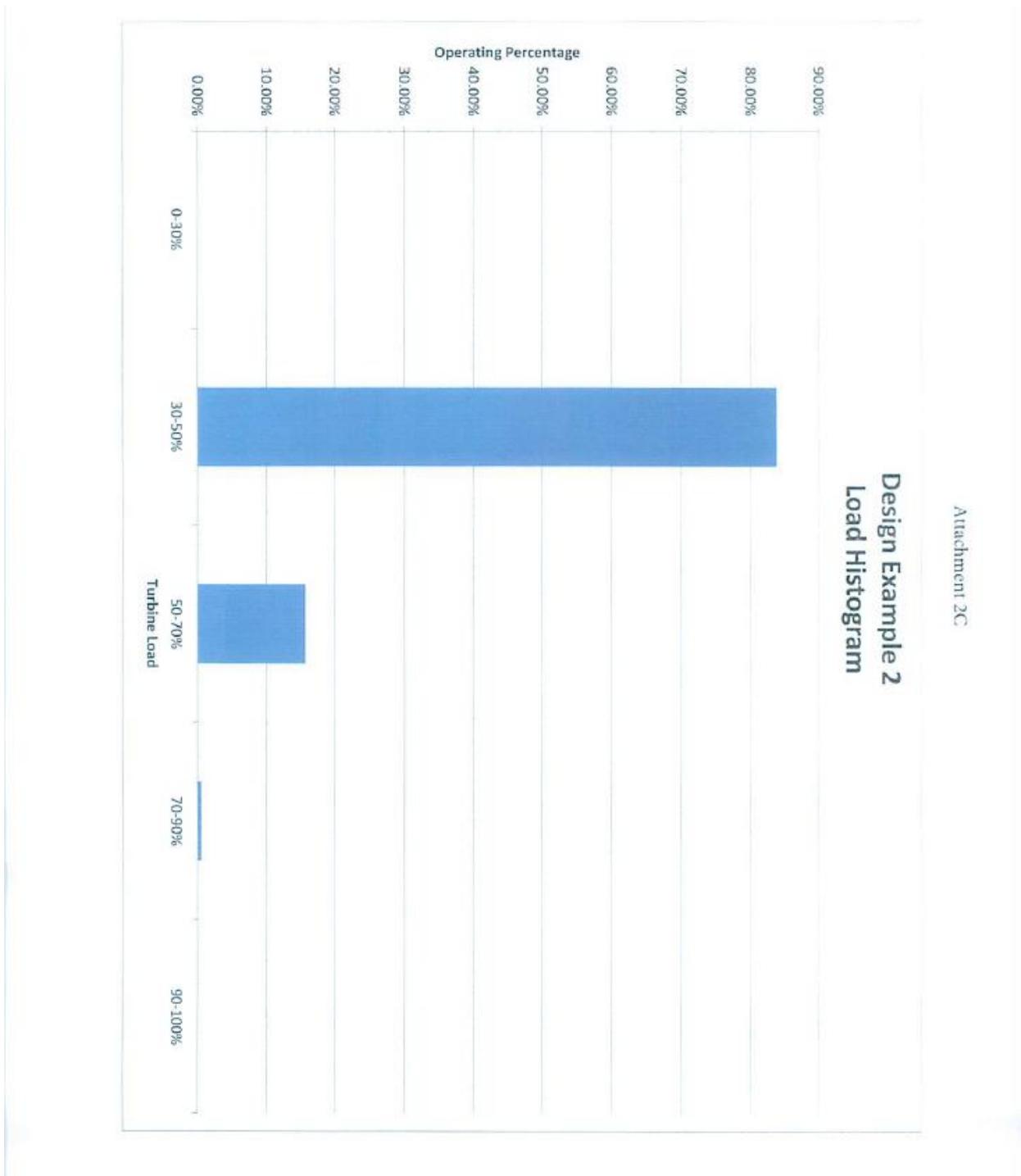
The permit includes a 20 ppm ammonia slip limit at stack oxygen concentration. NO<sub>x</sub> compliance is not possible without ample ammonia slip allowance as catalyst ages.

\*This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Next Page(s)

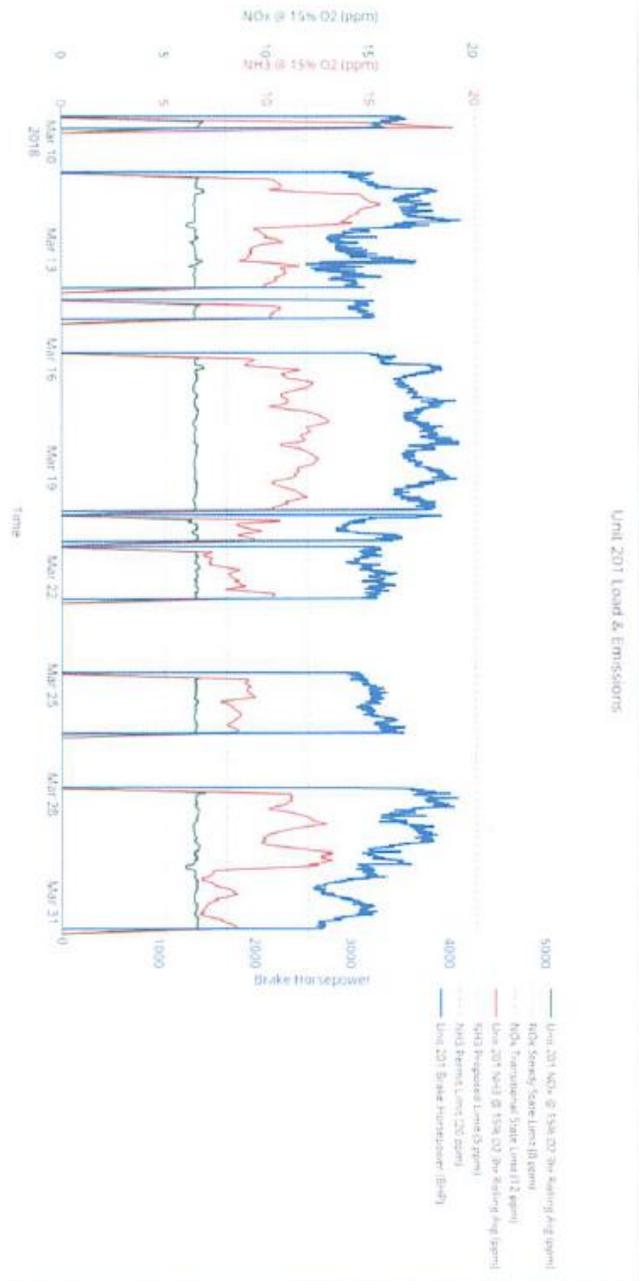
3.4.1







Attachment 3 - Wheeler Ridge Unit 201 March 2018



**Response to Comment 5-1**

Staff is aware that three of the gas compressor turbines were recently removed from service and replaced with electric turbines resulting in approximately 164.8 tons per year of NOx emission reductions using 2015 baseline emissions. The staff report will include a footnote to Table 2-6 indicating such. Table 2-6 will also be updated to reflect the correct year of installation for the remaining four turbines.

**Response to Comment 5-2**

The two new installations of compressor gas turbines were provided as evidence that for this specific class and category, an emission limit of 3.5 ppmv NOx at 15% oxygen on a dry basis has been proposed by other facilities and permitted by other air agencies. A 10 ppm ammonia slip was used as the basis for the ammonia emissions associated with the control equipment.

The commenter refers to a BARCT assessment conducted by San Joaquin Valley Air Pollution Control District establishing BARCT at 8 ppmv at 15% oxygen on a dry basis during normal operations and 12 ppmv at 15% oxygen on a dry basis during transitional periods. That BARCT assessment was conducted in 2007 and staff has found more recent information, including the recent permitting of the similar compressor gas turbines noted above, as evidence that a new BARCT assessment is warranted.

The commenter asserts that the proposed emission rates are not achievable by retrofitting the equipment because selective catalytic reduction, combined with water injection, has not been demonstrated to achieve 95% NOx reductions on this class/category of units. However, selective catalytic reduction alone can achieve 95% NOx reductions. The higher ammonia emission limit, 10 ppmv at 15% oxygen on a dry basis, is provided to account for the variable and low loads.

Staff has provided an alternative schedule for the facility to meet the proposed limits with 12 additional months allowed to demonstrate the NOx emissions limit and 36 additional months to demonstrate the ammonia emissions limit.

**Response to Comment 5-3**

The staff report will include a footnote to Table 2-19 indicating that the three turbines were removed from service in late 2018. The cost to retrofit the remaining four turbines varies between \$11,000 and \$13,000 per ton of NOx reduced. Cost-effectiveness was determined using the U.S. EPA's "Air Pollution Control Cost Estimation Spreadsheet for Selective Catalytic Reduction" with a control efficiency of 95% NOx reduction to meet the proposed NOx emissions limit. No evidence has been provided that a dual ammonia injection grid or frequent catalyst replacement would be necessary. However, if a dual ammonia injection grid and increase catalyst replacement is included as asserted by the commenter, U.S. EPA's control cost spreadsheet indicates that the average cost-effectiveness would be approximately \$21,300 per ton of NOx reduced which remains below the AQMP cost-effectiveness threshold of \$50,000 per ton of NOx reduced.

Replacement costs of the gas compressor turbines were not calculated because replacement is not necessary to achieve the requirements of PAR 1134 and the commenter has not committed to replacement. The U.S. EPA's "Catalog of CHP Technologies" estimates the cost of new turbines to range between \$1 and \$3 million per MW, including construction, installation, and associated

infrastructure costs. The remaining four compressor turbines combine for a total output of 3.6 MW meaning the replacement cost would range between \$3.6 and \$10.8 million; substantially lower than the infrastructure costs of \$100 million or more stated by the commenter.

## ATTACHMENT I

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

## **Final Socioeconomic Impact Assessment for Proposed Amended Rule 1134 - Emissions of Oxides of Nitrogen from Stationary Gas Turbines**

**April 2019**

### **Deputy Executive Officer**

Planning, Rule Development, and Area Sources

Philip M. Fine, Ph.D.

### **Assistant Deputy Executive Officer**

Planning, Rule Development, and Area Sources

Sarah L. Rees, Ph.D.

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WAYNE NASTRI

## EXECUTIVE SUMMARY

A socioeconomic analysis was conducted to assess the potential impacts of Proposed Amended Rule (PAR) 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines on the four-county region of Los Angeles, Orange, Riverside, and San Bernardino. A summary of the analysis and findings is presented below.

<p><b>Elements of Proposed Amendments</b></p>	<p>PAR 1134 applies to RECLAIM and non-RECLAIM stationary gas turbines that are not subject to SCAQMD Rule 1135 - Emissions of Oxides of Nitrogen from Electricity Generating Facilities or located at petroleum refineries, landfills, or publicly owned treatment works.</p> <p>PAR 1134 would: (1) expand its applicability to include stationary gas turbines that were not previously required to comply with Rule 1134; (2) update the NOx and ammonia emission limits for stationary gas turbines to comply with Best Available Retrofit Control Technology (BARCT); (3) update monitoring, reporting, and recordkeeping requirements (MRR); (4) establish new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; (5) provide relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NOx emissions; and (6) revise existing exemptions to remove obsolete provisions.</p> <p>Implementation of the proposed amendments is estimated to reduce NOx emissions by 2.8 tons per day after implementation of the BARCT limits, which is expected to be achieved by retrofitting existing stationary gas turbines with air pollution control equipment (e.g., selective catalytic reduction (SCR) technology/systems installation), or repowering or replacing existing stationary gas turbines.</p>
<p><b>Affected Facilities and Industries</b></p>	<p>There are 35 facilities that are potentially impacted by PAR 1134.<sup>1</sup> There are 73 turbines at these 35 facilities: 6 turbines already operate at the proposed emissions limits, 23 would be exempt, and 11 would qualify for the low-use provisions. The remaining 33 turbines will need to be replaced, repowered, or retrofitted to come into compliance with PAR 1134. These 33 turbines are located across 19 facilities.</p> <p>Among the 19 affected facilities, four are in the coal gasification at mine site sector (NAICS 211111), four are in the electric power generation, fossil fuel (e.g., coal, oil, gas) sector (NAICS 221112), two are in booster pumping station, natural gas transportation sector (NAICS 486210), two are in the academies, college or university sector (NAICS 611310), two are classified as private hospitals (NAICS 622110), two are state and local government facilities (NAICS 921190), and there is a single facility located in aircraft</p>

<sup>1</sup> This analysis does not consider four facilities with emergency turbines only. PAR 1134 does not propose changes to emergency turbines, and therefore these facilities are unaffected.

	<p>hangar rental (NAICS 488119), absorbent paper stock manufacturing (NAICS 322121), and adrenal medicinal manufacturing (NAICS 325412). Of these 19 facilities, 11 (with 20 turbines) are located in Los Angeles County, three (with four turbines) are in Orange County, two (with five turbines) is in Riverside County, and the remaining three facilities (with four turbines) are located in San Bernardino County.</p>
<p><b>Assumptions of Analysis</b></p>	<p>The main requirements of PAR 1134 for affected facilities include one-time costs and annual recurring costs. The one-time costs would include capital costs of SCR retrofits and one-time permit modifications. Annual recurring cost estimates include the annual operating costs of SCRs including reagent, catalyst replacement, electricity, and maintenance costs. Staff has used the U.S. EPA Air Pollution Control Cost Manual to estimate costs of capital, installation, and operating and maintenance of SCRs.</p> <p>Total one-time capital costs for an SCR retrofit include direct and indirect costs associated with purchasing and installing SCR equipment. These costs include the equipment cost for the SCR system itself, the cost of auxiliary equipment, direct and indirect installation costs, and additional costs due to installation such as asbestos removal. The size and costs of the SCR are based primarily on the boiler size or heat input, the type of fuel burned, the required level of NO<sub>x</sub> reduction, reagent consumption rate, and catalyst costs. In addition, all 19 affected facilities will incur a one-time cost to have their permits modified.</p> <p>Total annual costs include the purchase of reagent and electrical power, as well as operating and supervisory labor cost, maintenance cost, and catalyst replacement cost.</p> <ul style="list-style-type: none"> <li>▪ The annual maintenance labor and material cost is assumed to be 0.5% of the total capital costs in dollars.</li> <li>▪ The annual cost of reagent purchases is estimated using the reagent volume flow rate, the operating time per year, and the cost of reagent in dollars per gallon.</li> <li>▪ Electrical power consumption is estimated for SCR equipment, ammonia vaporization, water vaporization, and additional fan power.</li> <li>▪ Annual catalyst replacement cost is based on estimating the total volume of catalyst, the total number of catalyst layers, and the number of layers replaced annually.</li> </ul>
<p><b>Compliance Costs</b></p>	<p>The average annual total cost of PAR 1134 is projected to be <del>\$4.85.5</del> - <del>\$5.86.7</del> million (in 2018 dollars) between 2019 and 2045, for the 1% and 4% real interest rate scenarios, respectively.</p> <p>Average annual capital cost is estimated to be <del>\$2.83.2</del> - <del>\$3.84.4</del> million per year across all affected facilities. Per unit capital costs are broken down as follows:</p>

	<ul style="list-style-type: none"> <li>▪ Capital costs associated with SCR retrofits range from \$470,000 - \$12.7 million per unit.</li> <li>▪ <u>One-time permit fees are assumed to be \$24,000 per unit.</u></li> </ul> <p>Average annual operating and maintenance cost is projected to be <del>\$2.02.3</del> million across all affected facilities. Per unit annual costs are broken down as follows:</p> <ul style="list-style-type: none"> <li>▪ Annual maintenance costs range from \$2,400 - \$31,000 per unit.</li> <li>▪ Annual reagent costs from \$1,000 - \$124,000 per unit.</li> <li>▪ Estimates for the annual electricity costs range from \$1,000 - \$68,000 per unit.</li> <li>▪ Annual per unit catalyst replacement costs range from \$1,000 - \$21,000.</li> </ul> <p>The majority of the overall annual compliance costs are expected to be incurred by the coal gasification at mine site sector (<del>3833</del>33%), electric power generation - fossil fuel (e.g., coal, oil, gas) (<del>4721</del>21%), booster pumping station - natural gas transportation (<del>4513</del>13%), <u>state and local government (11%)</u>, absorbent paper stock manufacturing (322121) (<del>87</del>7%), academies, college or university sector (<del>76</del>6%), <del>state and local government (5%)</del>, and private hospitals (<del>43</del>3%).</p>
<p><b>Jobs and Other Socioeconomic Impacts</b></p>	<p>Based on the assumptions outlined above, the compliance cost of PAR 1134, and the application of the Regional Economic Models, Inc. (REMI) model, it is projected that <del>28-33</del> - <del>38-46</del> jobs will be forgone annually, on average, between 2019 and 2045. The projected job loss impacts represent <del>0.0002500029</del>% – <del>0.0003400041</del>% of total employment in the four-county region.</p> <p>Early in the time horizon, the REMI modeling analysis projects positive job impacts from the expenditures made by the affected facilities. The engine, turbine, and power transmission equipment manufacturing sector (NAICS 3336) and the management, scientific, and technical consulting services sector (NAICS 5416) are projected to gain jobs from additional demand for equipment installation from the affected facilities on average.</p> <p>In subsequent years, the direct costs of compliance lead to jobs foregone in the educational services - private sector (NAICS 621), the oil and gas extraction sector (NAICS 211), state and local government (NAICS 92), and the electric power generation, transmission and distribution sector (NAICS 2211). 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), transportation and warehousing (NAICS 48,492-493), administrative, support, waste management, and remediation services (NAICS 56), and retail trade (NAICS 44 - 45).</p>

<p><b>Competitiveness</b></p>	<p>The additional cost brought on by PAR 1134 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.</p> <p>It is projected that the oil and gas extraction sector (NAICS 211), which includes four affected facilities (with nine turbines), would experience a rise in its relative cost of production of 0.039% in 2025 for the 4% real interest rate scenario. The oil and gas extraction sector is also expected to experience an increase in its delivered price by 0.010% in 2025 for the 4% real interest rate scenario. In the pipeline transportation sector (NAICS 486), which includes two affected facilities (with seven turbines), the relative cost of production and relative delivered price are expected to increase by 0.172% and 0.048% in 2025, respectively. Finally, the electric power generation, transmission, and distribution sector (NAICS 2211), which includes four affected facilities (with four turbines), the relative cost of production and relative delivered price are expected to increase by <del>0.015</del><u>0.19</u>% and <del>0.005</del><u>0.07</u>% in 2025, respectively.</p>
<p><b>CEQA Alternatives</b></p>	<p>There are three CEQA alternatives associated with the proposed amendments to PAR 1134. Alternative A, the no project alternative, means that the current version of Rule 1134 would remain in effect. Under Alternative B, the requirements would be equivalent to the proposed project but the compliance date for meeting the NOx and ammonia emission limits would be one year earlier, December 31, 2022, which would allow three years to comply with PAR 1134. Under Alternative C, the requirements would be equivalent to the proposed project, but the compliance dates for meeting the NOx and ammonia emission limits would vary depending on fuel type, as follows: (1) liquid fuel (outer continental shelf): December 31, 2023, (2) natural gas (combined cycle): June 30, 2023; (3) natural gas (compressor gas turbine): December 31, 2023; (4) natural gas (simple cycle): December 31, 2022; (5) produced gas: December 31, 2023; (6) produced gas (outer continental shelf): December 31, 2023; and (7) Other: December 31, 2023.</p> <p>Assuming a 4% real interest rate, average annual compliance costs for the CEQA alternatives range from <del>\$6.06.9</del> - <del>\$6.17.0</del> million between 2019 and 2045. Average annual jobs forgone for the CEQA alternatives range from <del>40</del> - <del>42</del><u>50</u> between 2019 and 2045.</p>
<p><b>Potential NOx RTC Market Impacts</b></p>	<p>If PAR 1134 is adopted, 18 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 these rules once adopted. Facilities that received initial determination notifications and meet the proposed criteria to exit, would not receive a final determination notification to exit RECLAIM until key elements such as NSR and permitting are resolved. However, these facilities may request to opt-out of RECLAIM before these key elements are resolved, upon meeting specific conditions specified in subdivision (g) of Rule 2001.</p>

	<p>The 18 facilities currently account for 4.4% of annual NOx emissions and 2.1% of the NOx RTC holdings in the NOx RECLAIM universe for compliance year 2019. The simultaneous transition of the 18 facilities out of the NOx RECLAIM program would have a very small impact, if any, on the demand and supply of NOx RTC market. Specifically, the transition of these facilities is unlikely to result in large price fluctuations in the NOx RTC market, nor is the transition expected to significantly affect the remaining NOx RECLAIM facilities that are not yet ready to exit.</p>
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## 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. Additionally, California State Assembly Bill (AB) 617, approved by the Governor on July 26, 2017, requires air districts to develop an expedited schedule for the implementation of Best Available Retrofit Control Technology (BARCT) no later than December 31, 2023 for facilities that are in the state greenhouse gas cap-and-trade program. PAR 1134 applies to RECLAIM and non-RECLAIM stationary gas turbines that are not subject to SCAQMD Rule 1135 - Emissions of Oxides of Nitrogen from Electricity Generating Facilities or located at petroleum refineries, landfills, or publicly owned treatment works.

PAR 1134 is proposing to: 1) expand its applicability to include stationary gas turbines that were not previously required to comply with Rule 1134; 2) update the NOx and ammonia emission limits for stationary gas turbines to comply with BARCT; 3) update monitoring, reporting, and recordkeeping requirements (MRR)<sup>2</sup>; 4) establish new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; 5) provide relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NOx emissions; and 6) revise existing exemptions to remove obsolete provisions.

Implementation of the proposed amendments is estimated to reduce NOx emissions by 2.8 tons per day after implementation of the BARCT limits, which is expected to be achieved by retrofitting existing stationary gas turbines with air pollution control equipment (e.g., selective catalytic reduction (SCR) technology/systems installation), or repowering or replacing existing stationary gas.

## 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.

### 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

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<sup>2</sup> SCAQMD staff is working on a new Proposed Rule 113 - MRR Requirements for NOx and SOx Sources. If PR 113 is adopted by the Board, then reporting requirements for PAR 1134 facilities will be transitioned to PR 113.

## 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 BARCT or "all feasible measures" requirements relating to ozone, carbon monoxide (CO), oxides of sulfur (SO<sub>x</sub>), oxides of nitrogen (NO<sub>x</sub>), 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 1134 was adopted in 1989. The rule applied to stationary gas turbines rated at 0.3 MW and larger that were issued a permit to operate by the SCAQMD prior to August 4, 1989. The origin of the rule can be traced to a 1979 United States Environmental Protection Agency (EPA) New Source Performance Standard for Stationary Gas Turbines. In 1981, the California Air Resources Board (CARB) adopted a Suggested Control Measure for this same equipment.

Rule 1134 was subsequently amended three times; each to provide regulatory flexibility. In December 1995, Rule 1134 was amended to exempt gas turbines located on San Clemente Island and the South East Desert Air Basin. In April 1997, Rule 1134 was amended to increase the NO<sub>x</sub> concentration limit for turbines utilizing sewage digester gas. In August 1997, Rule 1134 was amended to clarify the need for continuous emission monitoring systems (CEMS) on turbines with a power output of 2.9 MW or larger. EPA approved Rule 1134 into the State Implementation Plan (SIP) on August 1, 2000.

### **Stationary Gas Turbines and RECLAIM**

Beginning in 1994, a large number of utilities and third-party-owned cogenerators were included in the RECLAIM program and as such were not required to meet the NO<sub>x</sub> concentration limits imposed by Rule 1134. However, gas turbines permitted prior to August 4, 1989 and used at publicly-owned treatment works, landfills, hospitals and other public facilities, and sources which were not covered under RECLAIM, were still required to meet the concentration limits in Rule 1134 through application of various control technologies. New turbines installed at non-RECLAIM facilities after August 4, 1989 are not subject to Rule 1134. PAR 1134 will apply to all stationary gas turbines located at non-RECLAIM and RECLAIM facilities (excluding those subject to Rule 1135 or located at a petroleum refinery, landfill, or sewage treatment facility), regardless of the date they were permitted.

### **AFFECTED INDUSTRIES**

There are 35 facilities that are potentially impacted by Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (PAR 1134). Of these 35 facilities, 19 are currently in the NO<sub>x</sub> RECLAIM program. The remaining facilities are not in the RECLAIM program; 8 are currently subject to SCAQMD Rule 1134. Eight facilities are not subject to RECLAIM or Rule 1134 because of applicability requirement of RECLAIM and the turbines were built after 1989.

There are 73 turbines at these 35 facilities: 6 turbines are at the proposed emissions limits, 23 would be exempt, and 11 would qualify for the low-use provisions. The remaining 33 turbines will need to be replaced, repowered, or retrofitted to come into compliance with PAR 1134. These 33 turbines are located across 19 facilities. Among these 33 turbines, 10 are natural gas (combined cycle), 13 are natural gas (simple cycle), four are natural gas (compressor gas turbine), and six are produced gas. There are 7 turbines that already utilize SCR but will increase their ammonia usage by an estimated 30% to meet the proposed emissions limits. Twenty-six turbines do not currently utilize SCR.

Among the 19 affected facilities, four are in the coal gasification at mine site sector (NAICS 211111), four are in the electric power generation, fossil fuel (e.g., coal, oil, gas) sector (NAICS 221112), two facilities are in the booster pumping station, natural gas transportation sector (NAICS 486210), two are in the academies, college or university sector (NAICS 611310), two are classified as private hospitals (NAICS 622110), two are state and local government facilities (NAICS 921190), and there is a single facility located in aircraft hangar rental (NAICS 488119), absorbent

paper stock manufacturing (NAICS 322121), and adrenal medicinal manufacturing (NAICS 325412).

Of these 19 facilities, 11 (with 20 turbines) are located in Los Angeles County, three (with four turbines) are in Orange County, two (with five turbines) is in Riverside County, and the remaining three facilities (with four turbines) are located in San Bernardino County.

### **Small Businesses**

SCAQMD defines a “small business” in Rules 102 and 301, 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 CAAA 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.<sup>3</sup> For example, a business classified in the fossil fuel electric power generation sector (NAICS 221112) with fewer than 750 employees is considered a small business by SBA. A private hospital (NAICS 621111) with revenue less than \$11 million is classified as a small business by the SBA.

Revenue and employee data was available for 15 of the 19 affected facilities in the Dun and Bradstreet Enterprise Database.<sup>4</sup> Under SCAQMD’s more restrictive definition of a small business (Rule 102), there are three small businesses potentially affected by PAR 1134. Under SCAQMD’s less restrictive definition of a small business (Small Business Assistance Office), there are six small businesses potentially affected by PAR 1134. Using the sector-specific SBA definitions, 12 of the facilities are classified as small businesses. Under the CAAA definition of small business, eight of the facilities are considered small businesses.

## **COMPLIANCE COST**

The main requirements of PAR 1134 for affected facilities include one-time costs and annual recurring costs. The one-time costs would include capital costs of SCR retrofits and one-time

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<sup>3</sup> The latest SBA definition of small businesses by industry can be found at <http://www.sba.gov/content/table-small-business-size-standards>.

<sup>4</sup> Dun & Bradstreet Enterprise Database, 2019.

permit modifications.<sup>5</sup> Annual recurring cost estimates include the annual operating costs of SCRs including reagent, catalyst replacement, electricity, and maintenance costs.

Staff has used the U.S. EPA Air Pollution Control Cost Manual to estimate costs of capital, installation, and operating and maintenance of SCRs.<sup>6,7</sup> Required modifications (and associated costs) to facilities in order to meet the updated BARCT NO<sub>x</sub> concentration limits in PAR 1134 are detailed below.

Total one-time capital costs for an SCR retrofit include direct and indirect costs associated with purchasing and installing SCR equipment. These costs include the equipment cost for the SCR system itself, the cost of auxiliary equipment, direct and indirect installation costs, and additional costs due to installation such as asbestos removal. The size and costs of the SCR are based primarily on the boiler size or heat input, the type of fuel burned, the required level of NO<sub>x</sub> reduction, reagent consumption rate, and catalyst costs. For the 27 natural gas turbines affected by PAR 1134, total capital costs associated with SCR retrofits range from \$470,000 - \$12.7 million. For the six affected produced gas turbines, total capital costs are \$930,000 per unit.

In addition, all 19 affected facilities will be required to have their permits modified as a result of PAR 1134. Permit fees for each piece of equipment will result in a one-time cost ranging from \$3,000 - \$24,000. For this cost analysis, we assume all affected units incur a one-time permit cost of \$24,000 in Year 2024.

Total annual costs account for purchase of reagent and electrical power, as well as operating and supervisory labor cost, maintenance cost, and catalyst replacement cost. In general, operation of an SCR system requires only minimal, operating or supervisory labor.

The annual maintenance labor and material cost is assumed to be 0.5% of the total capital costs in dollars. Annual maintenance costs range from \$2,400 - \$31,000 for natural gas turbines. For produced gas turbines, annual maintenance cost is \$4,600 per unit.

The annual cost of reagent purchases is estimated using the reagent volume flow rate, the operating time per year, and the cost of reagent in dollars per gallon. Annual reagent costs for natural gas turbines range from \$1,000 - \$124,000, and from \$1,000 - \$7,000 for produced gas turbines.

Electrical power consumption is estimated for SCR equipment, ammonia vaporization, water vaporization, and additional fan power. Estimates for the annual electricity costs for natural gas turbines range from \$1,000 - \$68,000. Annual electricity costs for produced gas turbines range from \$1,000 - \$4,000.

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<sup>5</sup> Retrofit of SCR on an existing unit has higher capital costs than SCR installed on a new system.

<sup>6</sup> U.S. EPA Air Pollution Control Cost Manual, Selective Catalytic Reduction available at: [https://www.epa.gov/sites/production/files/201712/documents/scrcostmanualchapter7thedition\\_2016revisions2017.pdf](https://www.epa.gov/sites/production/files/201712/documents/scrcostmanualchapter7thedition_2016revisions2017.pdf)

<sup>7</sup> SCR cost calculation spreadsheet available at: [https://www3.epa.gov/ttn/ecas/docs/scr\\_cost\\_manual\\_spreadsheet\\_2016\\_vf.xlsx](https://www3.epa.gov/ttn/ecas/docs/scr_cost_manual_spreadsheet_2016_vf.xlsx)

Annual catalyst replacement cost is based on estimating the total volume of catalyst, the total number of catalyst layers, and the number of layers replaced annually. Annual catalyst replacement costs for natural gas turbines range from \$1,000 - \$21,000. For produced gas turbines affected by 1134, annual catalyst replacement costs are estimated to be \$1,000 per unit.

**Table 1:  
Annual Estimated Costs of PAR 1134 Series by Industry**

Industry (NAICS)	Number of Facilities	Present Worth Value		Average Annual Cost	
		1% Discount Rate	4% Discount Rate	1% Real Interest Rate	4% Real Interest Rate
Coal gasification at mine site (211111)	4	\$43,952,135	\$33,615,710	\$1,840,815	\$2,195,831
Electric power generation, fossil fuel (e.g., coal, oil, gas) (221112)	4	\$18,490,473	\$15,026,326	\$757,932	\$971,173
Absorbent paper stock manufacturing (322121)	1	\$9,382,882	\$7,249,173	\$390,041	\$473,855
Adrenal medicinal manufacturing (325412)	1	\$2,660,553	\$2,165,150	\$109,013	\$139,894
Booster pumping station, natural gas transportation (486210)	2	\$18,043,247	\$13,588,807	\$755,124	\$893,496
Aircraft hangar rental (488119)	1	\$4,599,491	\$3,504,491	\$191,907	\$229,809
Academics, college or university sector (611310)	2	\$8,290,414	\$6,355,976	\$345,338	\$416,203
Hospitals, private (622110)	2	\$4,279,455	\$3,321,182	\$177,679	\$216,873
State and local government (921190)	2	\$5,614,032	\$4,482,075	\$231,280	\$290,820
<b>Total</b>	<b>19</b>	<b>\$115,312,682</b>	<b>\$89,308,890</b>	<b>\$4,799,129</b>	<b>\$5,827,953</b>

**Table 1:**  
**Annual Estimated Costs of PAR 1134 by Industry**

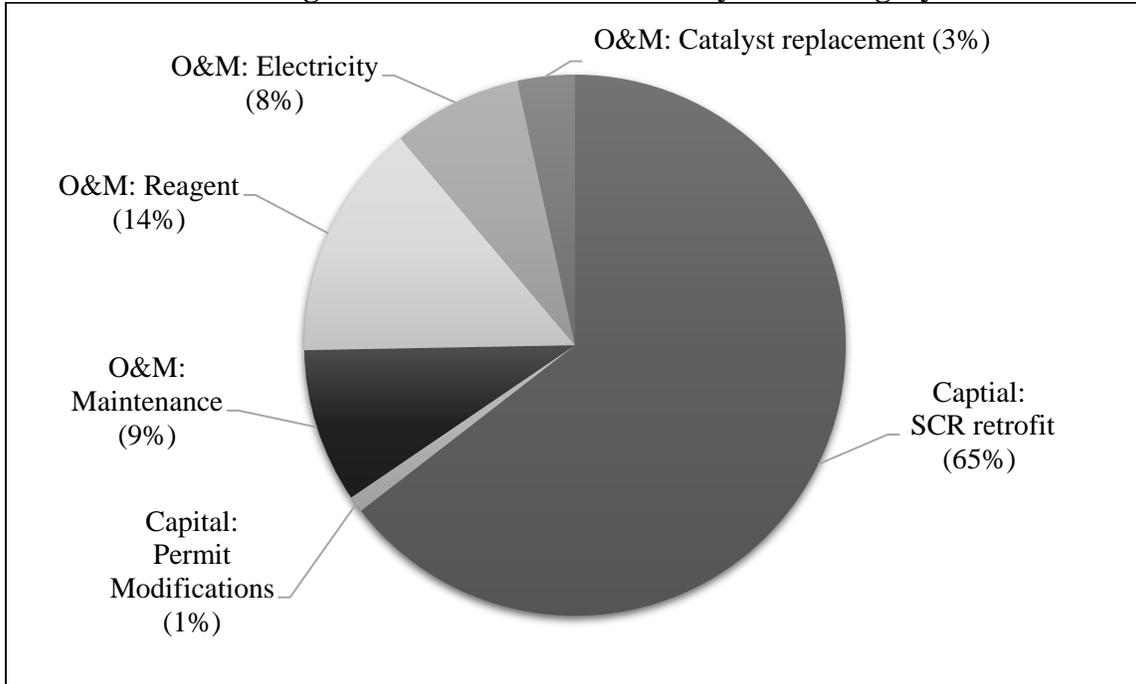
<u>Industry (NAICS)</u>	<u>Number of Facilities</u>	<u>Present Worth Value</u>		<u>Average Annual Cost</u>	
		<u>1% Real Interest Rate</u>	<u>4% Real Interest Rate</u>	<u>1% Real Interest Rate</u>	<u>4% Real Interest Rate</u>
<u>Coal gasification at mine site (211111)</u>	<u>4</u>	<u>\$43,952,135</u>	<u>\$33,615,710</u>	<u>\$1,840,815</u>	<u>\$2,195,831</u>
<u>Electric power generation, fossil fuel (e.g., coal, oil, gas) (221112)</u>	<u>4</u>	<u>\$27,400,097</u>	<u>\$22,350,802</u>	<u>\$1,104,841</u>	<u>\$1,419,982</u>
<u>Absorbent paper stock manufacturing (322121)</u>	<u>1</u>	<u>\$9,382,882</u>	<u>\$7,249,173</u>	<u>\$390,041</u>	<u>\$473,855</u>
<u>Adrenal medicinal manufacturing (325412)</u>	<u>1</u>	<u>\$2,660,553</u>	<u>\$2,165,150</u>	<u>\$109,013</u>	<u>\$139,894</u>
<u>Booster pumping station, natural gas transportation (486210)</u>	<u>2</u>	<u>\$18,043,247</u>	<u>\$13,588,807</u>	<u>\$755,124</u>	<u>\$893,496</u>
<u>Aircraft hangar rental (488119)</u>	<u>1</u>	<u>\$4,599,491</u>	<u>\$3,504,491</u>	<u>\$191,907</u>	<u>\$229,809</u>
<u>Academies, college or university sector (611310)</u>	<u>2</u>	<u>\$8,290,414</u>	<u>\$6,355,976</u>	<u>\$345,338</u>	<u>\$416,203</u>
<u>Hospitals; private (622110)</u>	<u>2</u>	<u>\$4,279,455</u>	<u>\$3,321,182</u>	<u>\$177,679</u>	<u>\$216,873</u>
<u>State and local government (921190)</u>	<u>2</u>	<u>\$14,195,228</u>	<u>\$10,824,994</u>	<u>\$592,142</u>	<u>\$709,715</u>
<b><u>Total</u></b>	<b><u>19</u></b>	<b><u>\$132,803,503</u></b>	<b><u>\$102,976,285</u></b>	<b><u>\$5,506,899</u></b>	<b><u>\$6,695,656</u></b>

The average annual total cost of PAR 1134 is estimated to be \$4.85.5 - \$5.86.7 million (in 2018 dollars) between 2019 and 2045, for the 1% and 4% real interest rate scenarios, respectively.<sup>8</sup> Table 1 presents a breakdown of total costs by industry. The majority of the overall annual compliance costs is expected to be incurred by the coal gasification at mine site sector (3833%), electric power generation, fossil fuel (e.g., coal, oil, gas) (1721%), booster pumping station, natural gas transportation (135%), state and local government (11%), booster pumping station, natural gas transportation (8%), absorbent paper stock manufacturing (7%), academies, college or university sector (76%), state and local government (5%), and hospitals; private (43%).

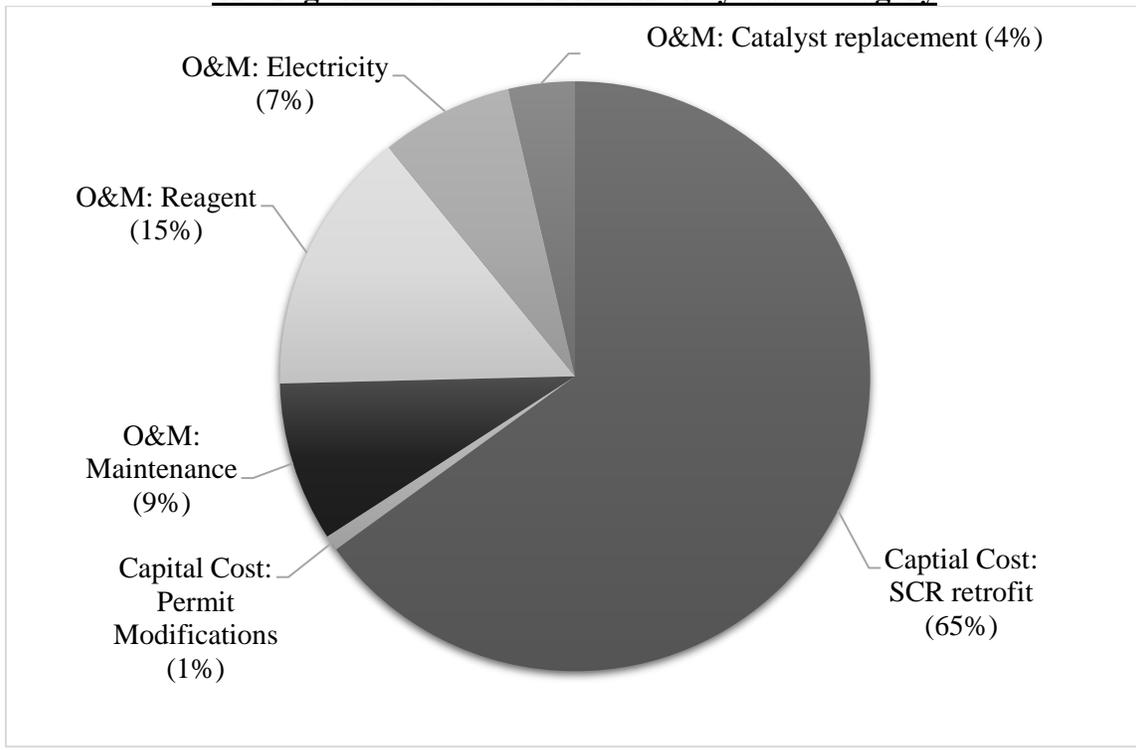
Figure 1 and Table 2 present the distribution of the overall costs by selected cost categories. The majority of costs of PAR 1134 (\$3.84.4 million annually) stem from the capital costs associated with SCR retrofits (65%). The additional capital costs for permit modifications are estimated to cost \$57,000 annually (or 1% of total average annual costs). The recurring costs total \$2.02.3 million annually, comprised of the annual costs of reagent (154%), maintenance (9%), electricity (87%), and catalyst replacement (34%).

<sup>8</sup> SCAQMD uses both 1% and 4% real interest rates to provide a range of potential compliance cost estimates for the proposed amendments.

**Figure 1:**  
**Average Annual Cost of PAR 1134 by Cost Category**



**Figure 1:**  
**Average Annual Cost of PAR 1134 by Cost Category**



**Table 2:  
Annual Estimated Costs of the PAR 1134 Series by Cost Categories**

-	Present Worth Value (2019)		Annual Average (2019-2045)	
	1% Discount Rate	4% Discount Rate	1% Real Interest Rate	4% Real Interest Rate
<b>One-Time Costs</b>	-	-	-	-
SCR retrofit	\$68,042,426	\$58,924,617	\$2,746,189	\$3,759,752
Permit modifications	\$1,027,297	\$887,435	\$41,349	\$56,610
<b>Recurring Costs</b>	-	-	-	-
Maintenance	\$12,359,023	\$7,887,136	\$537,548	\$537,548
Reagent	\$18,951,798	\$12,088,918	\$824,409	\$824,409
Electricity	\$10,359,665	\$6,608,193	\$450,648	\$450,648
Catalyst replacement	\$4,572,473	\$2,912,592	\$198,985	\$198,985
<b>Total</b>	<b>\$115,312,682</b>	<b>\$89,308,890</b>	<b>\$4,799,129</b>	<b>\$5,827,953</b>

**Table 2:  
Annual Estimated Costs of the PAR 1134 Series by Cost Categories**

-	Present Worth Value (2019)		Annual Average (2019-2045)	
	<u>1% Discount Rate</u>	<u>4% Discount Rate</u>	<u>1% Real Interest Rate</u>	<u>4% Real Interest Rate</u>
<b>One-Time Costs</b>	-	-	-	-
SCR retrofit	\$79,232,746	\$68,591,416	\$3,179,519	\$4,353,014
Permit Modifications	\$1,027,297	\$887,435	\$41,349	\$56,610
<b>Recurring Costs</b>	-	-	-	-
Maintenance	\$13,471,644	\$8,593,611	\$586,012	\$586,012
Reagent	\$22,338,403	\$14,239,293	\$971,925	\$971,925
Electricity	\$11,146,387	\$7,107,734	\$484,917	\$484,917
Catalyst replacement	\$5,587,025	\$3,556,797	\$243,178	\$243,178
<b>Total</b>	<b>\$132,803,503</b>	<b>\$102,976,285</b>	<b>\$5,506,899</b>	<b>\$6,695,656</b>

## JOBS AND OTHER SOCIOECONOMIC IMPACTS

The REMI model (PI+ v2.2.8) was used to assess the total socioeconomic impacts of a regulatory change (i.e., the proposed rule).<sup>9</sup> 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.<sup>10</sup>

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 \$4.85.5 - \$5.86.7 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 3 lists the industry sectors modeled in REMI that would either incur a cost or benefit from the compliance expenditures.

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 at a regional scale. The most recent regional analysis was conducted for the 2016 Air Quality Management Plan (AQMP) which found significant health benefits if federal air quality standards are met. PAR 1134 would result in approximately 2% of the NOx control strategy to meet the 2023 attainment goals in the 2016 AQMP.

On average, PAR 1134 is expected to result in approximately ~~28-33~~ - ~~38-46~~ jobs forgone annually, between 2019 and 2045, depending on the real interest rate assumed (1% - 4%). The projected job loss impacts represent about ~~0.0002500029%~~ - ~~0.0003400041%~~ of the total employment in the four-county region. Table 4 presents the job impacts across multiple sectors of the regional economy for selected years in the planning horizon.

<sup>9</sup> Regional Economic Modeling Inc. (REMI). Policy Insight® for the South Coast Area (160 sector model). Version 2.2.8, 2018.

<sup>10</sup> Within each county, producers are made up of 156 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.>)

**Table 3:  
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 retrofit	Oil and gas extraction (211), Electric power generation, transmission, and distribution (2211), Pulp, paper, and paperboard mills (3221), Pharmaceutical and medicine manufacturing (3254), Scenic and sightseeing transportation and support activities for transportation (487-488), Educational services - private (61), Hospitals; private (622), State and local government (92)	<i>One-time Capital Cost:</i>  Engine, turbine, and power transmission equipment manufacturing (3336), Construction (23), Management, scientific, and technical consulting services (5416)
Permit modifications		<i>One-time Capital Cost:</i> Public administration (92)
Maintenance		<i>One-time Capital Cost:</i> Management, scientific, and technical consulting services
Reagent		<i>One-time Capital Cost:</i> Basic chemical manufacturing (3251)
Electricity		<i>Recurring Cost:</i> Electric power generation, transmission, and distribution (2211)
Catalyst replacement		<i>Recurring Cost:</i> Basic chemical manufacturing

**Table 4:**  
**Job Impacts of PAR 1134<sup>3E</sup>**

Industry (NAICS)	2023	2025	2030	2035	2045	Average Annual Jobs (2019–2045)	Average Annual Baseline (2019–2045)	% Change from Baseline Jobs
Construction (23)	155	-15	-19	-11	-5	-4	471,648	-0.00086%
Management, scientific, and technical consulting services (5416)	94	1	1	1	0	4	137,452	0.00315%
Retail trade (44-45)	34	-4	-6	-6	-5	-3	986,426	-0.00035%
Administrative, support, waste management, and remediation services (56)	27	-2	-4	-4	-3	-2	818,786	-0.00026%
State and Local Government (92)	24	-2	-9	-9	-7	-5	908,258	-0.00055%
Food services and drinking places (722)	19	-1	-3	-4	-4	-2	731,231	-0.00029%
Transportation and warehousing (48,492-493)	15	-3	-5	-4	-3	-3	502,311	-0.00054%
Wholesale trade (42)	13	-2	-3	-2	-2	-1	479,144	-0.00028%
Engine, turbine, and power transmission equipment manufacturing (3336)	7	0	0	0	0	0	1,060	0.02445%
Educational services—private (61)	5	-2	-3	-3	-2	-2	271,055	-0.00078%
Electric power generation, transmission and distribution (2211)	0	-1	-1	-1	-1	-1	9,994	-0.00815%
Oil and gas extraction (211)	-1	-5	-7	-7	-5	-5	23,472	-0.02146%
All Other Industries	134	-17	-24	-22	-23	-14	5,952,804	-0.00024%
<b>Total</b>	<b>526</b>	<b>-53</b>	<b>-83</b>	<b>-72</b>	<b>-60</b>	<b>-38</b>	<b>11,293,642</b>	<b>-0.00034%</b>

\* Assumes a 4% real interest rate

In earlier years of the regional simulation 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. The engine, turbine, and power transmission equipment manufacturing sector (NAICS 3336) and the management, scientific, and technical consulting services sector (NAICS 5416) are projected to gain jobs from additional demand for equipment installation from the affected facilities on average. In 2023, 526-579 additional jobs are expected to be created as a result of the increased demand.

**Table 4:  
Job Impacts of PAR 1134\***

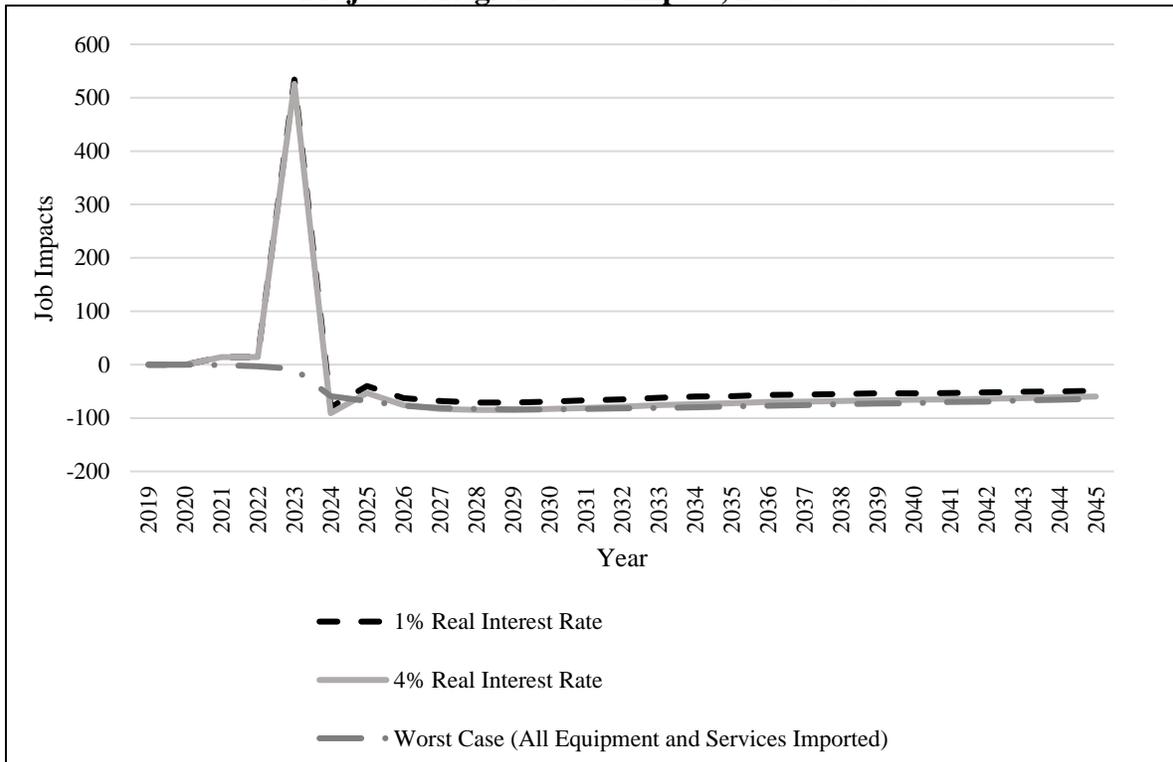
<u>Industry (NAICS)</u>	<u>2023</u>	<u>2025</u>	<u>2030</u>	<u>2035</u>	<u>2045</u>	<u>Average Annual Jobs (2019 - 2045)</u>	<u>Average Annual Baseline (2019 - 2045)</u>	<u>% Change from Baseline Jobs</u>
Construction (23)	178	-17	-21	-12	-5	-4	471,648	-0.00089%
Management, scientific, and technical consulting services (5416)	94	1	1	1	0	4	137,452	0.00323%
Retail trade (44-45)	38	-4	-7	-7	-6	-4	986,426	-0.00040%
Administrative, support, waste management, and remediation services (56)	29	-3	-5	-4	-4	-3	818,786	-0.00037%
State and Local Government (92)	23	-7	-13	-13	-10	-8	908,258	-0.00093%
Food services and drinking places (722)	21	-1	-4	-4	-4	-2	731,231	-0.00032%
Transportation and warehousing (48,492-493)	16	-4	-5	-4	-3	-3	502,311	-0.00059%
Wholesale trade (42)	15	-2	-3	-2	-2	-1	479,144	-0.00031%
Engine, turbine, and power transmission equipment manufacturing (3336)	10	0	0	0	0	0	1,060	0.03493%
Educational services; private (61)	5	-2	-3	-3	-3	-2	271,055	-0.00082%
Electric power generation, transmission and distribution (2211)	0	-1	-2	-2	-1	-1	9,994	-0.01075%
Oil and gas extraction (211)	-1	-5	-7	-7	-5	-5	23,472	-0.02162%
All Other Industries	177	-21	-29	-28	-28	-17	5,952,804	-0.00029%
<b>Total</b>	<b>579</b>	<b>-65</b>	<b>-96</b>	<b>-83</b>	<b>-69</b>	<b>-46</b>	<b>11,293,642</b>	<b>-0.00041%</b>

\* Assumes a 4% real interest rate

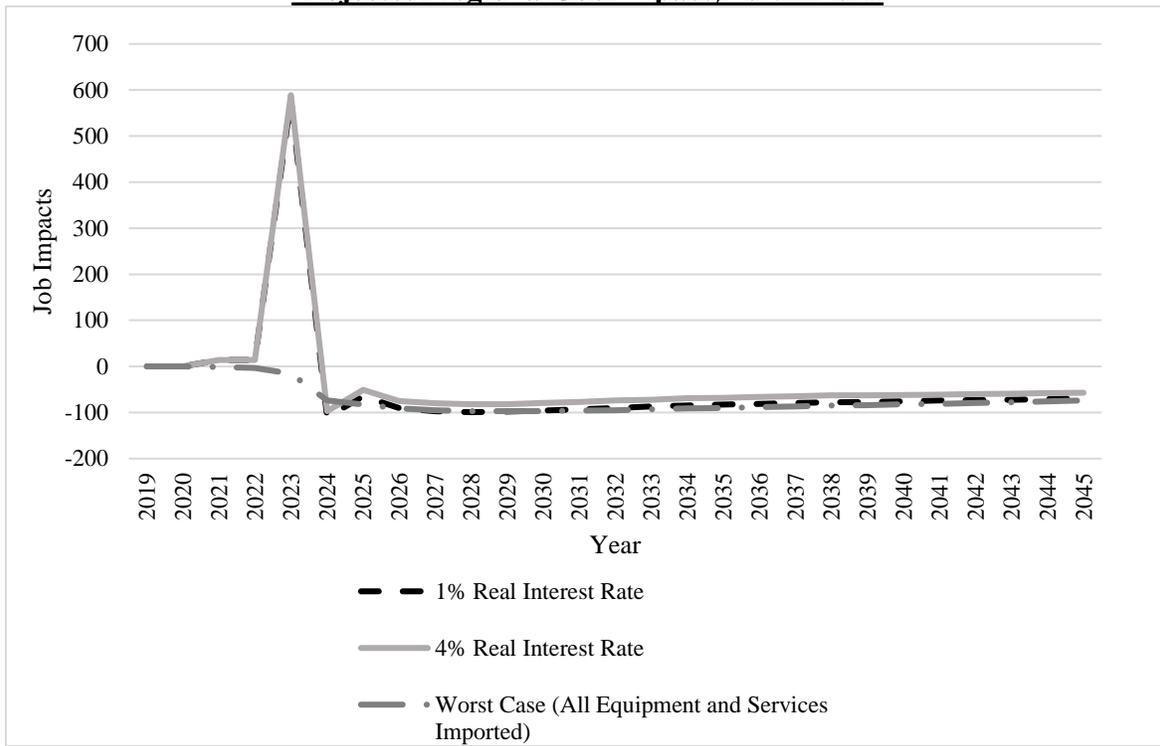
In subsequent years, the positive impact of increased spending subsidies and jobs forgone are expected to begin. Direct costs of compliance lead to jobs foregone in the educational services - private sector (NAICS 621), the oil and gas extraction sector (NAICS 211), state and local government (NAICS 92), and the electric power generation, transmission and distribution sector

(NAICS 2211). 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. 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), transportation and warehousing (NAICS 48,492-493), administrative, support, waste management, and remediation services (NAICS 56), and retail trade (NAICS 44 - 45). A smaller number of jobs foregone are expected in the wholesale trade sector (NAICS 42), and the food services and drinking places sector (NAICS 722).

**Figure 2:  
Projected Regional Job Impact, 2019 – 2045**



**Figure 2:  
Projected Regional Job Impact, 2019 - 2045**



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 ~~61~~72 jobs forgone annually. Figure 2 presents a trend of job gain and losses over the 2019 - 2045 time frame for the 1% real interest rate, 4% real interest rate, and the worst case scenarios.

**Competitiveness**

The additional cost brought on by PAR 1134 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 oil and gas extraction sector (NAICS 211), which includes four affected facilities (with nine turbines), would experience a rise in its relative cost of production of 0.039% in 2025 for the 4% real interest rate scenario. The oil and gas extraction sector is also expected to experience an increase in its delivered price by 0.010% in 2025 for the 4% real interest rate

scenario. In the pipeline transportation sector (NAICS 486), which includes two affected facilities (with seven turbines), the relative cost of production and relative delivered price are expected to increase by 0.172% and 0.048% in 2025, respectively. Finally, the electric power generation, transmission, and distribution sector (NAICS 2211), which includes four affected facilities (with four turbines), the relative cost of production and relative delivered price are expected to increase by 0.0195% and 0.0075% in 2025, respectively.<sup>11</sup>

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.

## CEQA ALTERNATIVES

There are three CEQA alternatives associated with the proposed amendments to PAR 1134. Alternative A, the no project alternative, means that the current version of Rule 1134 would remain in effect. Under Alternative B, the requirements would be equivalent to the proposed project but the compliance date for meeting the NOx and ammonia emission limits would one year earlier, December 31, 2022, which would allow three years to comply with PAR 1134. The earlier compliance date under Alternative B is more stringent than the proposed project. Under Alternative C, the requirements would be equivalent to the proposed project, but the compliance dates for meeting the NOx and ammonia emission limits would vary depending on fuel type, as follows: (1) liquid fuel (outer continental shelf): December 31, 2023, (2) natural gas (combined cycle): June 30, 2023; (3) natural gas (compressor gas turbine): December 31, 2023; (4) natural gas (simple cycle): December 31, 2022; (5) produced gas: December 31, 2023; (6) produced gas (outer continental shelf): December 31, 2023; and (7) Other: December 31, 2023. The earlier compliance dates for the natural gas - combined cycle and natural gas - simple cycle categories under Alternative C are more stringent than the proposed project but less stringent than Alternative B for the natural gas - combined cycle category.

Assuming a 4% real interest rate, average annual compliance costs for the CEQA alternatives range from ~~\$6.09~~ - ~~\$6.17~~ million between 2019 and 2045, as shown in Table 5. Jobs forgone for the CEQA alternatives range from ~~40-48~~ - ~~42-50~~ between 2019 and 2045.<sup>12</sup>

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<sup>11</sup> Compliance costs are not equally shared amongst individual facilities within affected industry sectors. Therefore, increases in delivered prices and/or the relative cost of production may differ amongst the facilities within a given sector.

<sup>12</sup> Alternative B and Alternative C have the same cost-effectiveness as the proposed amendments and both would achieve the same emission reductions. Even though Alternative B and C have earlier compliance dates the cost-effectiveness evaluation is time neutral.

**Table 5:**  
**Average Annual Cost and Job Impacts of CEQA Alternatives\***

Alternatives	Average Annual, 2019 - 2045	
	Cost	Job Impacts
Proposed Amendments	<u>\$6,695,656</u> <del>\$5,827,953</del>	-3846
Alternative A - No Project	-	-
Alternative B - Implementation by December 31, 2022	<u>\$6,989,775</u> <del>\$6,083,803</del>	-4250
Alternative C - Phased Implementation	<u>\$6,908,458</u> <del>\$5,996,473</del>	-4048

\* Assumes a 4% real interest rate

## UPDATED COST IMPACTS ASSESSMENT FOR COMPLIANCE WITH RULE 2002

### Potential Impacts for NOx RECLAIM Facilities Ready to Exit

Rule 2002(f)(10) prohibits a RECLAIM facility from selling any future compliance year NOx RECLAIM Trading Credits (RTCs) upon receipt of a final determination notification that it is ready to exit the NOx RECLAIM program. If PAR 1134 is adopted, 18 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 these rules once adopted. Facilities that received initial determination notifications and meet the proposed criteria to exit, would not receive a final determination notification to exit RECLAIM until key elements such as NSR and permitting are resolved. However, these facilities may request to opt-out of RECLAIM before these key elements are resolved, upon meeting specific conditions specified in subdivision (g) of Rule 2001.

Thirteen out of the 18 facilities were allocated NOx RTCs (no cost or fee when RTCs were allocated) at the outset of the NOx RECLAIM program. The initial allocations for the 13 facilities amounted to approximately 1.129 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 all 18 facilities is 1.018 TPD for compliance years 2019 and later.<sup>13</sup> At the same time, total NOx emissions from these same facilities declined to 0.868 TPD in 2016.

<sup>13</sup> According to the NOx RTC holdings data as of July 31, 2018 and excluding any transactions that may have occurred after this date.

If these 18 facilities receive final determination notifications in 2019, they will not be able to sell their NO<sub>x</sub> RTCs for compliance year 2019 and onwards. For the purpose of this analysis, it is assumed that none of the 18 facilities would acquire additional NO<sub>x</sub> RTCs or sell their current NO<sub>x</sub> RTC holdings of 1.018 TPD before receiving a final determination notification. However, it is foreseeable that at least some of these NO<sub>x</sub> RTC holdings may be sold or transferred before they are frozen due to anticipation of receiving a final determination notification. Lastly, as they pertain to SCAQMD, RTCs are not property rights. It is known to all market participants that purchasing RTCs beyond the current compliance year is accompanied by known investment risks that are embedded within the RECLAIM programs.<sup>14</sup>

It is estimated that, out of the total 1.018 TPD of future compliance year NO<sub>x</sub> RTCs currently held by the 18 facilities, at least 0.122 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 NO<sub>x</sub> RECLAIM program and their NO<sub>x</sub> emissions remain between 5% above and below their 2016 levels,<sup>15</sup> then 0.071 TPD of these additionally acquired RTCs are estimated to be used for compliance purposes, with the remaining 0.050 TPD being potential surplus RTCs available for sale or transfer.<sup>16</sup> Applying the most recent 12-month rolling average NO<sub>x</sub> RTC price for compliance year 2017 of \$3,786 per ton,<sup>17</sup> the total value of all potential surplus RTCs would be approximately \$70,000 in RECLAIM compliance year 2019 and all subsequent RECLAIM compliance years. These facilities can elect to transfer or sell these RTCs prior to receiving a final determination notification. If the facility is holding these RTCs at or after the issuance of a final determination notification they will not be able to sell, use, or transfer the RTCs.

In addition, 12 facilities are estimated to have insufficient NO<sub>x</sub> RTC holdings if they were to remain in the NO<sub>x</sub> RECLAIM program and their NO<sub>x</sub> emissions remain between 5% above and below their 2016 levels. By exiting the NO<sub>x</sub> RECLAIM program, these facilities would avoid the need to acquire about 0.449 - 0.529 TPD of NO<sub>x</sub> RTCs which, if valued at \$3,786 per ton, would imply potential total cost-savings worth approximately \$620,000 - \$730,000 in RECLAIM compliance year 2019 and for all subsequent RECLAIM compliance years.<sup>18,19</sup>

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<sup>14</sup> 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.

<sup>15</sup> In order to estimate the number of RTCs needed for compliance in future years, it is necessary to project the emissions levels of all affected 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.

<sup>16</sup> Since there were no costs associated with the initially allocated NO<sub>x</sub> RTCs for a RECLAIM facility, the facilities would not incur financial losses as a result of complying with Rule 2002(f)(10) if their frozen future compliance year NO<sub>x</sub> RTC holdings are at or below their respective adjusted initial allocations.

<sup>17</sup> 12-month rolling average of Compliance Year 2018 NO<sub>x</sub> RTCs, as calculated from Jan 2018 to Jan 2019. See Table I of "Twelve-Month and Three-Month Rolling Average Price of Compliance Years 2018 and 2019 NO<sub>x</sub> and SO<sub>x</sub> RTCs," available at <http://www.aqmd.gov/docs/default-source/reclaim/nox-rolling-average-reports/nox-and-sox-rtcs-rolling-avg-price-cy-2018-19-jan-2019.pdf>

<sup>18</sup> 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.

<sup>19</sup> The dollar figures for the potential costs and savings for facilities exiting RECLAIM are highly sensitive to the assumed RTC price of \$3,786 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

**Table 6:  
Potential Impacts on NOx RTC Market Demand and Supply**

	NOx Emission Scenarios for Future Compliance Years		
	<i>5% Below 2016 NOx Emissions</i>	<i>Same as 2016 NOx Emissions</i>	<i>5% Above 2016 NOx Emissions</i>
<b>Acquired RTCs potentially for sale if remain (TPD)</b>	0.050	0.050	0.050
<b>Potential RTC sales foregone if exiting</b>	\$69,657	\$69,657	\$69,657
<b>RTCs need for compliance if remain (TPD)</b>	0.449	0.489	0.529
<b>Potential cost-savings by exiting</b>	\$620,228	\$675,392	\$730,556
<b>Net compliance year savings</b>	\$550,571	\$605,735	\$660,899

Table 6 presents potential foregone sales of surplus RTCs, potential cost-savings for those facilities needed to acquire RTCs for compliance purposes, and the net savings for compliance year 2019 and onwards for three emission scenarios. The first scenario assumes future NOx emissions of the 18 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.

### **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

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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.

surge in discrete-year NOx RTC prices in 2017. The potential exit of the 18 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.

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 0.449 - 0.529 TPD. At the same time, the potential foregone market supply from all facilities with potential surplus RTC holdings is estimated at 0.086 - 0.093 TPD. 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 market supply is estimated to be lower at 0.080 - 0.081 TPD. Table 7 reports the potentially foregone market demand and supply for three different NOx emission scenarios.

Given the analysis above and the fact that the 18 facilities currently account for 4.4% of annual NOx emissions and 2.1% of the NOx RTC holdings in the NOx RECLAIM universe in compliance year 2019, the simultaneous transition of the 18 facilities out of the NOx RECLAIM program would have a very small impact, if any, on the demand and supply of NOx RTC market. Specifically, the net decrease in market demand expected to result from the transition of the 18 facilities could potentially assert downward pressure on the discrete-year NOx RTC prices. However, facility exit is unlikely to result in large price fluctuations in the NOx RTC market, nor is the transition expected to significantly affect the remaining NOx RECLAIM facilities that are not yet ready to exit.<sup>20</sup>

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<sup>20</sup> 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 7:  
Potential Impacts on NO<sub>x</sub> RTC Market Demand and Supply**

		NO <sub>x</sub> Emission Scenarios for Future Compliance Years		
		<i>5% Below 2016 NO<sub>x</sub> Emissions</i>	<i>Same as 2016 NO<sub>x</sub> Emissions</i>	<i>5% Above 2016 NO<sub>x</sub> Emissions</i>
<b>A</b>	<b>Foregone Market Demand</b>	0.449	0.489	0.529
<b>B</b>	<b>Foregone Market Supply</b> <i>– From All Facilities with Surplus RTC Holdings</i>	0.093	0.090	0.086
<b>C</b>	<b>Net Foregone Market Demand</b> (= A - B)	0.356	0.399	0.443
	<b>Percent Difference:</b> <i>(Demand - Supply)/Demand</i> (= C / A)	79%	82%	84%
<b>D</b>	<b>Foregone Market Supply</b> <i>– From Facilities with Surplus RTC Holdings &amp; Historical Record of RTC Sales/Transfers</i>	0.081	0.081	0.080
<b>E</b>	<b>Net Foregone Market Demand</b> (= A - D)	0.368	0.408	0.449
	<b>Percent Difference:</b> <i>(Demand - Supply)/Demand</i> (= E / A)	82%	83%	85%

Note: The supply and demand of NO<sub>x</sub> RTCs are expressed in TPD and rounded to the nearest thousandth. Percent differences are rounded to the nearest integer.

It is possible that the vast majority of facilities will opt to remain in RECLAIM following the adoption of the PAR 1134. The decision to remain in RECLAIM coincides with more favorable NSR provisions and those facilities with surplus RTCs may wish 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 the PAR 1134 could potentially result in a net cost savings as it pertains to the RTCs currently held by RECLAIM facilities.

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

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

**March 2019**

**SCAQMD No. 01292019RB  
State Clearinghouse No. 2016071006**

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## PREFACE

This document constitutes the Final Subsequent Environmental Assessment (SEA) for Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines. A Draft SEA was circulated for a 45-day public review and comment period from Tuesday, January 29, 2019 to Friday, March 15, 2019 and four comment letters were received. The comment letters and responses relative to the Draft SEA have been included in Appendix G of this Final SEA.

Analysis of PAR 1134 in the Draft SEA indicated that while reducing NO<sub>x</sub> emissions is an environmental benefit, secondary significant adverse environmental impacts were also expected for the topic area of hazards and hazardous materials. Since significant adverse impacts were identified, an alternatives analysis and mitigation measures are required and are included in the Final SEA. [CEQA Guidelines Section 15252].

In addition, subsequent to the release of the Draft SEA for public review and comment, minor modifications were made to PAR 1134. The minor modifications include: 1) the addition, revision, and removal of definitions for clarification; 2) rewording and renumbering of rule language; 3) the addition of provisions for compressor gas turbines; 4) the addition of a compliance date extension from the emissions limits specified in the rule for owners or operators of compressor gas turbines who submit a request for a time extension, and 5) the inclusion of a new effective date for compressor gas turbines to comply with the emission limits set forth in PAR 1134 three years after a permit to construct is issued if the permit application is submitted before July 1, 2021. To facilitate identification of the changes between the Draft SEA and the Final SEA, modifications to the document are included as underlined text 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 1134 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 SEA. In addition, revisions to the proposed project in response to verbal or written comments during the rule development process would not create new, avoidable significant effects. As a result, these revisions do not require recirculation of the Draft SEA pursuant to CEQA Guidelines Sections 15073.5 and 15088.5. Therefore, the Draft SEA has been revised to include the aforementioned modifications such that it is now the Final SEA for PAR 1134.

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## **CHAPTER 1**

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### **EXECUTIVE SUMMARY**

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## INTRODUCTION

The California Legislature created the South Coast Air Quality Management District (SCAQMD) in 1977<sup>1</sup> 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 (NO<sub>2</sub>), and particulate matter with an aerodynamic diameter of less than 10 microns (PM<sub>10</sub>). 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 (PM<sub>2.5</sub>). 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 (SO<sub>2</sub>), and NO<sub>2</sub> 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<sup>2</sup> 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<sup>3</sup>. Furthermore, the SCAQMD must adopt rules and regulations that carry out the AQMP<sup>4</sup>. The AQMP is a regional blueprint for how the SCAQMD will achieve air quality standards and healthful air and the 2016 AQMP<sup>5</sup> 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 (NO<sub>x</sub>) and volatile organic compounds (VOC) emissions need to be addressed, with the emphasis that NO<sub>x</sub> emission reductions are more effective to reduce the formation of ozone and PM<sub>2.5</sub>. Ozone is a criteria pollutant shown to adversely affect human health and is formed when VOCs react with NO<sub>x</sub> in the atmosphere. NO<sub>x</sub> is a precursor to the formation of ozone and PM<sub>2.5</sub>, and NO<sub>x</sub> emission reductions are necessary to achieve the ozone standard attainment. NO<sub>x</sub> emission reductions also contribute to attainment of PM<sub>2.5</sub> standards.

In October 1993, the SCAQMD Governing Board adopted Regulation XX – Regional Clean Air Incentives Market (RECLAIM) to reduce NO<sub>x</sub> and oxides of sulfur (SO<sub>x</sub>) emissions from high

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<sup>1</sup> The Lewis-Presley Air Quality Management Act, 1976 Cal. Stats., Ch. 324 (codified at Health and Safety Code Section 40400-40540).

<sup>2</sup> The CEQA Guidelines are codified at Title 14 California Code of Regulations Section 15000 *et seq.*

<sup>3</sup> Health and Safety Code Section 40460(a).

<sup>4</sup> Health and Safety Code Section 40440(a).

<sup>5</sup> 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 NO<sub>x</sub> RECLAIM trading credits (RTCs). However, analysis of the RECLAIM program over the long term has shown that the ability to achieve actual NO<sub>x</sub> 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 NO<sub>x</sub> Reductions from RECLAIM Assessment, committed to additional NO<sub>x</sub> 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 NO<sub>x</sub> 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 NO<sub>x</sub> RECLAIM facility emissions to an equipment-based command-and-control regulatory structure per SCAQMD Regulation XI – Source Specific Standards. Thus, SCAQMD staff conducted a programmatic analysis of the RECLAIM equipment at each facility to determine if there are appropriate and up-to-date BARCT NO<sub>x</sub> 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 NO<sub>x</sub> emitting equipment is subject to an adopted future BARCT rule.

As such, SCAQMD staff has proposed amendments to Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines, to facilitate the transition of affected equipment subject to the NO<sub>x</sub> RECLAIM program to a command-and-control regulatory structure and to implement Control Measure CMB-05. PAR 1134 applies to RECLAIM and non-RECLAIM stationary gas turbines that are not subject to SCAQMD Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities or located at petroleum refineries, landfills, or publicly owned treatment works. PAR 1134 is proposing to: 1) expand its applicability to include stationary gas turbines that were not previously required to comply with Rule 1134; 2) update the NO<sub>x</sub> and

ammonia emission limits for stationary gas turbines to comply with Best Available Retrofit Control Technology (BARCT); 3) ~~transition all monitoring, reporting, and recordkeeping requirements (MRR) in Rule 1134 to new SCAQMD Rule 113 – MRR Requirements for NO<sub>x</sub> and SO<sub>x</sub> Sources, upon its adoption;~~ 4) establish new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; 5) provide relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NO<sub>x</sub> emissions; and 6) revise existing exemptions to remove obsolete provisions. Implementation of the proposed project is estimated to reduce NO<sub>x</sub> emissions by 2.8 tons per day after implementation of the BARCT limits, which is expected to be achieved by retrofitting existing stationary gas turbines with air pollution control equipment (e.g., selective catalytic reduction (SCR) technology/systems installation), or repowering or replacing existing stationary gas turbines.

## CALIFORNIA ENVIRONMENTAL QUALITY ACT

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

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

PAR 1134 is considered a “project” as defined by CEQA. PAR 1134 will transition affected stationary gas turbines at NO<sub>x</sub> RECLAIM facilities to a command-and-control regulatory structure. NO<sub>x</sub> RECLAIM facilities with equipment subject to PAR 1134 will be required to meet the NO<sub>x</sub> emission limits as specified in PAR 1134, unless those facilities qualify for an exemption. In addition, a subset of stationary gas turbines at non-RECLAIM facilities will be required to meet new NO<sub>x</sub> emission limits in accordance with the compliance schedule in PAR 1134. The decision to transition from NO<sub>x</sub> RECLAIM into a source-specific command-and-control regulatory structure was approved by the SCAQMD Governing Board as a control measure CMB-05 in the 2016 AQMP and the potential environmental impacts associated with the 2016 AQMP, including CMB-05, were analyzed in the Final Program Environmental Impact Report (Program EIR) certified in March 2017<sup>6</sup>.

The March 2017 Final Program EIR for the 2016 AQMP determined that the overall implementation of CMB-05 has the potential to generate adverse environmental impacts in seven

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<sup>6</sup> SCAQMD, Final Program Environmental Impact Report for the 2016 Air Quality Management Plan, March 2017. <http://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmd-projects/scaqmd-projects---year-2017>

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

BARCT is statutorily required in California Health and Safety Code section 40406 to be based on “environmental, energy, and economic impacts.” A BARCT analysis was conducted and completed as part of the rule development process for PAR 1134<sup>7</sup>. PAR 1134 revises NOx emission limits to reflect current BARCT for stationary gas turbines. In particular, PAR 1134 is proposing to: 1) expand its applicability to include stationary gas turbines that were not previously required to comply with Rule 1134; 2) update the NOx and ammonia emission limits for stationary gas turbines to comply with Best Available Retrofit Control Technology (BARCT); 3) ~~transition all monitoring, reporting, and recordkeeping requirements (MRR) in Rule 1134 to new SCAQMD Rule 113 – MRR Requirements for NOx and SOx Sources, upon its adoption;~~ 4) establish new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; 5) provide relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NOx; and 6) revise existing exemptions to remove obsolete provisions. The proposed project is estimated to reduce NOx emissions by 2.8 tons per day after implementation of BARCT limits and will provide an overall environmental benefit to air quality. While reducing emissions of NOx and other contaminants will create an environmental benefit, activities that facility operators may undertake to comply with PAR 1134 may also create secondary adverse environmental impacts in the topic area of hazards and hazardous materials.

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

<sup>7</sup> SCAQMD’s rule development webpage for PAR 1134 contains all of the documentation relied upon for the BARCT analysis and can be found here: <http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules#1134>.

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

However, PAR 1134 is expected to have: 1) significant effects that were not discussed in the March 2017 Final Program EIR (CEQA Guidelines Section 15162(a)(3)(A)); and 2) significant effects that were previously examined that will be substantially more severe than what was discussed in the March 2017 Final Program EIR for the 2016 AQMP (CEQA Guidelines Section 15162(a)(3)(B)).

Thus, analysis of the proposed project indicates that the type of CEQA document appropriate for the proposed project is a Subsequent Environmental Assessment (SEA), in lieu of an EA. The SEA is a substitute CEQA document prepared in lieu of a Subsequent Environmental Impact Report with significant impacts (CEQA Guidelines Section 15162(b)), pursuant to the SCAQMD's Certified Regulatory Program (CEQA Guidelines Section 15251(1); codified in SCAQMD Rule 110). The SEA is also a public disclosure document intended to: 1) provide the lead agency, responsible agencies, decision makers and the general public with information on the environmental impacts of the proposed project; and 2) be used as a tool by decision makers to facilitate decision making on the proposed project.

Because new potentially significant adverse effects to hazards and hazardous materials that may result from implementing PAR 1134 were not analyzed at the project level in the March 2017 Final Program EIR for the 2016 AQMP, and because PAR 1134 contains new information that was not previously considered, the SCAQMD, as lead agency for the proposed project has prepared this SEA with significant impacts pursuant to its Certified Regulatory Program. Because PAR 1134 may have statewide, regional, or areawide significance, a CEQA scoping meeting is required pursuant to Public Resources Code Section 21083.9(a)(2) and was held at the SCAQMD's Headquarters in conjunction with the Public Workshop on December 18, 2018. There were no CEQA-related comments made at the Public Workshop/CEQA scoping meeting relative to PAR 1134. Further, pursuant to CEQA Guidelines Section 15252, since significant adverse impacts have been identified, an alternatives analysis and mitigation measures are required.

~~The A Draft SEA is being released and circulated for a 45-day public review and comment period from Tuesday, January 29, 2019 to Friday, March 15, 2019. Any Four comments letters were received during the public comment period relative to ~~on~~ the analysis presented in ~~this~~ the Draft SEA. The comment letters and the responses are included in Appendix G of the Final SEA. ~~received during the public comment period will be responded to and included in the Final SEA.~~~~

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

Subsequent to the release of the Draft SEA for public review and comment, minor modifications were made to PAR 1134. The minor modifications include: 1) the addition, revision, and removal of definitions for clarification; 2) rewording and renumbering of rule language; 3) the addition of provisions for compressor gas turbines; 4) the addition of a compliance date extension from the emissions limits specified in the rule for owners or operators of compressor gas turbines who

submit a request for a time extension, and 5) the inclusion of a new effective date for compressor gas turbines to comply with the emission limits set forth in PAR 1134 three years after a permit to construct is issued if the permit application is submitted before July 1, 2021. Staff has reviewed the modifications to PAR 1134 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 SEA. The Draft SEA concluded significant adverse hazards and hazardous materials impacts for the storage and use of aqueous ammonia and the revisions to PAR 1134 in response to verbal or written comments from the rule development process would not create new/additional or avoidable significant effects or make the aforementioned hazards and hazardous materials impacts worse. As a result, these minor revisions do not require recirculation of the Draft SEA pursuant to CEQA Guidelines Sections 15073.5 and 15088.5. Therefore, the Draft SEA has been revised to include the aforementioned modifications such that it is now the Final SEA for PAR 1134.

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

## PREVIOUS CEQA DOCUMENTATION

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

The following summarizes the contents of the CEQA documents prepared for the previous versions of Rule 1134 and for the 2016 AQMP in reverse chronological order and are included for informational purposes. For CEQA documents that were prepared after January 1, 2000, a link for downloading files from the SCAQMD's website is provided immediately following the summaries. In addition, hardcopies of these CEQA documents can be obtained by submitting a Public Records Act request to the SCAQMD's Public Records Unit.

**Final Program Environmental Impact Report for the 2016 Air Quality Management Plan; March 2017 (SCH No. 2016071006):** The 2016 AQMP identified control measures and strategies to bring the region into attainment with the revoked 1997 8-hour NAAQS (standard) (80 ppb) for ozone by 2024; the 2008 8-hour ozone standard (75 ppb) by 2032; the 2012 annual PM<sub>2.5</sub> standard (12 µg/m<sup>3</sup>) by 2025; the 2006 24-hour PM<sub>2.5</sub> standard (35 µg/m<sup>3</sup>) by 2019; and the revoked 1979 1-hour ozone standard (120 ppb) by 2023. The 2016 AQMP consists of three components: 1) the SCAQMD's Stationary, Area, and Mobile Source Control Measures; 2) State and Federal Control Measures provided by the California Air Resources Board; and 3) Regional Transportation Strategy and Control Measures provided by the Southern California Association of Governments. The 2016 AQMP includes emission inventories and control measures for stationary, area and mobile sources, the most current air quality setting, updated growth projections, new modeling techniques, demonstrations of compliance with state and federal Clean Air Act requirements, and

an implementation schedule for adoption of the proposed control strategy. A Final Program EIR was prepared for the project which identified potential adverse impacts that may result from implementing the project for the following environmental topic areas: 1) aesthetics; 2) air quality and GHGs; 3) energy; 4) hazards and hazardous materials; 5) hydrology and water quality; 6) noise; 7) solid and hazardous waste; and 8) transportation and traffic. The analysis concluded that significant and unavoidable adverse environmental impacts from the project are expected to occur after implementing mitigation measures for the following environmental topic areas: 1) aesthetics from increased glare and from the construction and operation of catenary lines and use of bonnet technology for ships; 2) construction air quality and GHGs; 3) energy (due to increased electricity demand); 4) hazards and hazardous materials due to: (a) increased flammability of solvents; (b) storage, accidental release and transportation of ammonia; (c) storage and transportation of liquefied natural gas (LNG); and (d) proximity to schools; 5) hydrology (water demand); 6) construction noise and vibration; 7) solid construction waste and operational waste from vehicle and equipment scrapping; and 8) transportation and traffic during construction and during operation on roadways with catenary lines and at the harbors. Since significant adverse environmental impacts were identified, an alternatives analysis was required by CEQA and prepared. The March 2017 Final Program EIR concluded that the project would have significant and unavoidable adverse environmental impacts even after mitigation measures were identified and applied. As such, mitigation measures were made a condition of the approval of the project and a Mitigation Monitoring and Reporting Plan was adopted. Findings were made and a Statement of Overriding Considerations was prepared and adopted. The SCAQMD Governing Board certified the Final Program EIR and approved the project on March 3, 2017. This document can be obtained by visiting the following website at: <http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/2016aqmpfpeir.pdf>.

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

**Final Supplemental Environmental Assessment for Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen From Stationary Gas Turbines; April 1997 (SCAQMD No. 970124TT):** The April 1997 amendments to Rule 1134 addressed state implementation plan (SIP) deficiencies identified by the United States Environmental Protection Agency (U.S. EPA); that included minor language clarifications and raised the NO<sub>x</sub> concentration limit for facilities that use digester gas fuel in selective catalytic reduction controlled gas turbine units. The April 1997 amendments increased the NO<sub>x</sub> emission limit from nine parts per million to 25 parts per million. The April 1997 amendments resulted in a loss of anticipated of emission reductions of NO<sub>x</sub> of approximately 127 pounds per day. The SCAQMD prepared a Draft Supplemental Environmental Assessment for the April 1997 amendments to Rule 1134, which identified significant adverse

environmental impacts for air quality. The Draft Supplemental Environmental Assessment for Rule 1134 was a supplement to the December 1995 Final Supplemental Environmental Assessment (SCAQMD No. 951207TM) prepared for Rule 1134 and was circulated for a 45-day public review and comment period. The Final Supplemental Environmental Assessment was certified by the SCAQMD Governing Board on April 11, 1997. Findings were made and a Statement of Overriding Considerations was also adopted for this project. A Mitigation, Monitoring, and Reporting Plan was not prepared since no feasible mitigation measures or alternatives were identified in the April 1997 Final Supplemental Environmental Assessment for Rule 1134.

**Final Supplemental Environmental Assessment for Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen From Stationary Gas Turbines; December 1995 (SCAQMD No. 951207TM):** The December 1995 amendments to Rule 1134 exempted some existing stationary gas turbines from the NO<sub>x</sub> limits contained in the rule. The exempted stationary gas turbines included those operated in the Salton Sea Air Basin (SSAB) and the Mojave Desert Air Basin (MDAB) formally known as the Southeast Desert Air Basin (SEDAB) and on San Clemente Island. In addition, the December 1995 amendments eliminated the requirement to account for variations in ambient temperature, pressure, and humidity by continuously correcting the reference NO<sub>x</sub> emission limits to the International Standards Organization (ISO) standard. The SCAQMD prepared a Draft Supplemental Environmental Assessment for the December 1995 amendments to Rule 1134, which identified significant adverse environmental impacts for air quality. The Draft Supplemental Environmental Assessment for Rule 1134 was a supplement to the August 1989 Final EIR (SCH No. 86121708) prepared for Rule 1134 and was circulated for a 45-day public review and comment period. Findings were made and a Statement of Overriding Considerations was adopted for the project. A Mitigation, Monitoring, and Reporting Plan was not prepared since no feasible mitigation measures or alternatives were identified in the December 1995 Final Supplemental Environmental Assessment for Rule 1134. The Final Supplemental Environmental Assessment was certified by the SCAQMD Governing Board on December 7, 1995.

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

## **INTENDED USES OF THIS DOCUMENT**

In general, a CEQA document is an informational document that informs a public agency's decision-makers and the public generally of potentially significant adverse environmental effects of a project, identifies possible ways to avoid or minimize the significant effects, and describes reasonable alternatives to the project (CEQA Guidelines Section 15121). A public agency's decision-makers must consider the information in a CEQA document prior to making a decision

on the project. Accordingly, this SEA is intended to: a) provide the SCAQMD Governing Board and the public with information on the environmental effects of the proposed project; and b) be used as a tool by the SCAQMD Governing Board to facilitate decision-making on the proposed project.

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

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

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

To the extent that local public agencies, such as cities, county planning commissions, et cetera, are responsible for making land use and planning decisions related to projects that must comply with the requirements in PAR 1134, they could possibly rely on this SEA during their decision-making process. Similarly, other single purpose public agencies approving projects that utilize compliant equipment subject to PAR 1134 may rely on this SEA.

## **AREAS OF CONTROVERSY**

CEQA Guidelines Section 15123(b)(2) requires a public agency to identify the areas of controversy in the CEQA document, including issues raised by agencies and the public. Over the course of developing the proposed project, no concerns regarding PAR 1134 were expressed by representatives of industry and environmental groups, either in public meetings or in written comments.

Pursuant to CEQA Guidelines Section 15131(a), “[e]conomic or social effects of a project shall not be treated as significant effects on the environment.” CEQA Guidelines Section 15131(b) states further, “[e]conomic or social effects of a project may be used to determine the significance of physical changes caused by the project.” Physical changes that may be caused by PAR 1134 have been evaluated in Chapter 4 of this SEA. No direct or indirect physical changes resulting from economic or social effects have been identified as a result of implementing PAR 1134.

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

## **EXECUTIVE SUMMARY**

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

Alternatives; and various appendices. The following subsections briefly summarize the contents of each chapter.

### **Summary of Chapter 1 – Executive Summary**

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

### **Summary of Chapter 2 – Project Description**

SCAQMD staff has been directed by the Governing Board to begin the process of transitioning equipment at facilities that are currently subject to facility permit requirements per SCAQMD Regulation XX – RECLAIM for NO<sub>x</sub> to instead be subject to an equipment-based command-and-control regulatory structure per SCAQMD Regulation XI. To date, several rules have been amended in accordance with the Governing Board’s direction. Currently, SCAQMD staff is continuing this transition process by proposing amendments to Rule 1134. PAR 1134 reflects the proposed project which is a culmination of recommendations made throughout the public engagement process including four working group meetings held at SCAQMD headquarters in Diamond Bar on February 22, 2018, April 26, 2018, June 13, 2018, and August 10, 2018. The working group is composed of representatives from the manufacturers, trade organizations, permit stakeholders, businesses, environmental groups, public agencies, consultants, and other interested parties. In addition, staff also discussed concepts for PAR 1134 at the RECLAIM working group meetings held on November 8, 2017, January 11, 2018, February 8, 2018, March 8, 2018, April 12, 2018, June 14, 2018, July 12, 2018, November 8, 2018, and December 13, 2018. A Public Workshop and CEQA Scoping Meeting was held December 18, 2018. PAR 1134 will transition affected stationary gas turbines at NO<sub>x</sub> RECLAIM facilities to a command-and-control regulatory structure. PAR 1134 revises NO<sub>x</sub> emission limits to reflect current BARCT for stationary gas turbines. In particular, PAR 1134 is proposing to: 1) expand its applicability to include stationary gas turbines that were not previously required to comply with Rule 1134; 2) update the NO<sub>x</sub> and ammonia emission limits for stationary gas turbines to comply with BARCT; 3) transition all monitoring, reporting, and recordkeeping requirements (MRR) in Rule 1134 to new SCAQMD Rule 113, upon its adoption; 4) establish new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; 5) provide relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NO<sub>x</sub> emissions; and 6) revise existing exemptions to remove obsolete provisions. Other minor changes are also proposed for clarity and consistency throughout the rule. The proposed project is estimated to reduce NO<sub>x</sub> emissions by 2.8 tons per day after implementation of BARCT limits and will provide an overall environmental benefit to air quality. While reducing emissions of NO<sub>x</sub> and other contaminants will create an environmental benefit, activities that facility operators may undertake to comply with PAR 1134 may also create secondary potentially significant adverse environmental impacts the topic area of hazards and hazardous materials for the storage and use of aqueous ammonia.

A copy of PAR 1134 can be found in Appendix A of this ~~Draft~~ Final SEA.

### **Summary of Chapter 3 – Existing Setting**

Pursuant to CEQA Guidelines Section 15125, Chapter 3 – Existing Setting includes a description of the environmental topic areas that are potentially adversely affected by the proposed project. While the analysis of the proposed project indicated that additional potentially significant adverse

hazards and hazardous material impacts will occur, the focus of the analysis in this SEA is limited to the environmental topic of and hazards and hazardous materials. However, because physical modifications are expected to occur that may cause adverse, but less than significant, air quality impacts as a result of implementing PAR 1134, this chapter also includes the topic of air quality.

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

### **Air Quality**

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

### **Hazards and Hazardous Materials**

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

### **Summary of Chapter 4 – Environmental Impacts**

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

CEQA document to discuss whether the proposed project has cumulative impacts. Chapter 4 considers and discusses each of these requirements.

#### **Potential Environmental Impacts Found To Be Significant**

Hazards and hazardous materials is the only environmental topic area that has been identified in this SEA as having potentially significant adverse impacts if the proposed project is implemented. In addition, because physical modifications are expected to occur that may cause adverse, but less than significant, air quality impacts as a result of implementing PAR 1134, this chapter also analyzes the topic of air quality.

#### **Potential Environmental Impacts Found Not To Be Significant**

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

The analysis in the March 2017 Final Program EIR for the 2016 AQMP concluded that significant and unavoidable adverse environmental impacts from the project are expected to occur after implementing mitigation measures for the following environmental topic areas: 1) aesthetics from increased glare and from the construction and operation of catenary lines and use of bonnet technology for ships; 2) construction air quality and GHGs; 3) energy (due to increased electricity demand); 4) hazards and hazardous materials due to: (a) increased flammability of solvents; (b) storage, accidental release and transportation of ammonia; (c) storage and transportation of liquefied natural gas (LNG); and (d) proximity to schools; 5) hydrology (water demand); 6) construction noise and vibration; 7) solid construction waste and operational waste from vehicle and equipment scrapping; and, 8) transportation and traffic during construction and during operation on roadways with catenary lines and at the harbors. It is important to note, however, that for these environmental topic areas, not all of the conclusions of significance are applicable to the currently proposed project, PAR 1134. Please see Chapter 4, Table 4-16, for a summary of the significant and unavoidable adverse environmental impacts identified in the March 2017 Final Program EIR and which ones apply to the proposed project.

PAR 1134 is expected to have: 1) significant effects that were not discussed in the previous March 2017 Final Program EIR for the 2016 AQMP (CEQA Guidelines Section 15162(a)(3)(A)); and 2) significant effects that were previously examined that may be substantially more severe than what was discussed in the March 2017 Final Program EIR for the 2016 AQMP (CEQA Guidelines Section 15162(a)(3)(B)).

By preparing a SEA for the proposed project, since the topics of air quality and hazards and hazardous materials are the only environmental topic areas that would be affected by PAR 1134, no other environmental topic areas have been evaluated in this SEA. Thus, the conclusions reached in this SEA are consistent with the conclusions reached in the previously certified CEQA document (e.g., the March 2017 Final Program EIR for the 2016 AQMP) that aside from the topics ~~air quality during construction and~~ of hazards and hazardous materials, there would be no other significant adverse effects from the implementation of the proposed project. Thus, the proposed project would have no significant or less than significant direct or indirect adverse effects on the following environmental topic areas:

- aesthetics

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

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

#### **Other CEQA Topics**

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

#### **Summary Chapter 5 - Alternatives**

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

storage of hazardous materials associated with operating air pollution control equipment (e.g., SCRs) while meeting the overall objectives of the project. Therefore, the proposed project is preferred over the project alternatives.

**Table 1-1**  
**Summary of the Proposed Project Alternatives**

PROPOSED PROJECT Compliance Date 12/31/2023 <sup>1</sup>			ALTERNATIVE A No Project <sup>4, 5</sup>		ALTERNATIVE B Earlier Compliance Date 12/31/2022		ALTERNATIVE C Phased Compliance Dates <sup>6</sup>
Fuel Type	NOx Limit (ppmv)	Ammonia Limit (ppmv)	NOx Limit (ppmv)	Ammonia Limit (ppmv)	NOx Limit (ppmv)	Ammonia Limit (ppmv)	Phased compliance dates with equivalent NOx & Ammonia limits to the Proposed Project
Liquid Fuel – Outer Continental Shelf <sup>2</sup>	30	5	--	--	30	5	Compliance Date: December 31, 2023
Natural Gas – Combined Cycle	2	5	--	--	2	5	Compliance Date: June 30, 2023
Natural Gas – <del>Pipeline Compressor Gas</del> Turbine <sup>7</sup>	<del>83.5</del>	<del>5</del> <u>10</u>	--	--	<del>83.5</del>	<del>5</del> <u>10</u>	Compliance Date: December 31, 2023
Natural Gas – Simple Cycle	2.5	5	--	--	2.5	5	Compliance Date: December 31, 2022
Produced Gas	<del>5</del> <u>9</u>	5	--	--	<del>5</del> <u>9</u>	5	Compliance Date: December 31, 2023
Produced Gas – Outer Continental Shelf <sup>3</sup>	15	5	--	--	15	5	Compliance Date: December 31, 2023
Other	12.5	5	--	--	12.5	5	Compliance Date: December 31, 2023

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

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

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

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

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

<sup>7</sup> The effective date for compressor gas turbines is two years after a permit to construct is issued by the Executive Officer or three years after a permit to construct is issued if the permit application is submitted before July 1, 2021. Only four existing compressor gas turbines are subject to PAR 1134.

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

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

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

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Earlier Compliance Date 12/31/2022	ALTERNATIVE C Phased Compliance Dates
<p><b>Significance of Air Quality Impacts</b></p>	<p><b>Less than Significant:</b> No exceedances of the SCAQMD's air quality significance thresholds for any pollutant are expected to occur either during construction, during construction with overlapping operational impacts, or during operation after all construction is completed. As facilities implement modifications to retrofit existing stationary gas turbines with air pollution control equipment (e.g., SCR technology/systems installation), or repower or replace existing stationary gas turbines, emissions from construction are expected to occur. As facilities transition their existing stationary gas turbines to achieve BARCT emission levels over the 4-year compliance period, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit (see <a href="#">Appendix F</a>). Upon completion of construction at all affected facilities, an overall benefit to operational air quality will occur due to the project's overall NOx emission reductions.</p>	<p><b>Not Significant:</b> Alternative A would not result in an exceedance of any SCAQMD air quality significance thresholds during construction or operation because no physical modifications would be expected to occur that would create construction emissions or reduce overall NOx emissions from the affected equipment. The SCAQMD will not achieve any emissions reductions of NOx (a pre-cursor to the formation of ozone); thus, attainment for the SCAQMD for ozone is unlikely to occur.</p>	<p><b>Significant:</b> Due to having an earlier compliance date when compared to the proposed project, the construction schedules of the affected facilities under Alternative B would be expected to occur over a shorter period time such that more facilities would be expected to undergo construction on a peak day. As such, an exceedance of the SCAQMD's air quality significance threshold for NOx is expected to occur during overlapping construction of more SCR systems and more retrofit, repower or replacement of stationary gas turbines on a peak day, than the proposed project. As facilities transition their existing stationary gas turbines to achieve BARCT emission levels over the 3-year compliance period, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit. Upon completion of construction at all affected facilities, an overall benefit to operational air quality will occur sooner due to the project's overall NOx emission reductions.</p>	<p><b>Significant:</b> Due to having earlier compliance dates for gas turbines equipped with and without SCRs, the construction schedules of the affected facilities under Alternative C would be expected to occur over a shorter period time such that more facilities would be expected to undergo construction on a peak day. As such, exceedances of the SCAQMD's air quality significance threshold for NOx is expected to occur during overlapping construction of more SCR systems and more retrofit, repower or replacement of stationary gas turbines stationary gas turbines on a peak day, than the proposed project. As facilities transition their existing stationary gas turbines to achieve BARCT emission levels over the 3-year compliance period for gas turbines equipped with and without SCRs and over the 4-year compliance period for the remaining gas turbines, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit. Upon completion of construction at all affected facilities, an overall benefit to operational air quality will occur sooner due to the project's overall NOx emission reductions.</p>

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

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B More Stringent Compliance Deadline	ALTERNATIVE C Phased Compliance Deadline
<b>Hazards and Hazardous Materials</b>	Some of the affected stationary gas turbines are expected to be retrofitted with SCR technology, which requires ammonia for operation. Thus, the analysis assumes that one new ammonia storage tank will be needed for each SCR system installed at each facility. Ammonia is considered to be a hazardous material.	None of the affected facilities will be required to achieve BARCT level equivalency through compliance with the proposed project. As such, no stationary gas turbines will be retrofitted with SCR technology. Thus, no new ammonia storage tanks will be needed.	Some of the affected stationary gas turbines are expected to be retrofitted with SCR technology, which requires ammonia for operation. Thus, the analysis assumes that one new ammonia storage tank will be needed for each SCR system installed at each facility. Ammonia is considered to be a hazardous material.	Some of the affected stationary gas turbines are expected to be retrofitted with SCR technology, which requires ammonia for operation. Thus, the analysis assumes that one new ammonia storage tank will be needed for each SCR system installed at each facility. Ammonia is considered to be a hazardous material.
<b>Significance of Hazards and Hazardous Materials Impacts</b>	<b>Significant:</b> Based on the analysis, using EPA RMP*Comp, the estimated distance of the toxic endpoint from the catastrophic failure of an aqueous ammonia storage tank to sensitive receptors could result in significant impacts for any facility that installs a new ammonia storage tank, depending on the location of where the storage tank is installed, relative to the location of the offsite receptor. If the toxic endpoint is outside of a facility’s boundaries, mitigation measures will be required.	<b>Not Significant:</b> The construction of SCR systems would not be necessary; thus, there would be no need to use ammonia or build new ammonia storage tanks. No significant hazards or hazardous materials impacts would be expected to occur.	<b>Significant:</b> Based on the analysis, using EPA RMP*Comp, the estimated distance of the toxic endpoint from the catastrophic failure of an aqueous ammonia storage tank to sensitive receptors could result in significant impacts for any facility that installs a new ammonia storage tank, depending on the location of where the storage tank is installed, relative to the location of the offsite receptor. If the toxic endpoint is outside of a facility’s boundaries, mitigation measures will be required.  The number of affected facilities would be the same as the proposed project. The level of significance in Alternative B would be equivalent to the proposed project.	<b>Significant:</b> Based on the analysis, using EPA RMP*Comp, the estimated distance of the toxic endpoint from the catastrophic failure of an aqueous ammonia storage tank to sensitive receptors could result in significant impacts for any facility that installs a new ammonia storage tank, depending on the location of where the storage tank is installed, relative to the location of the offsite receptor. If the toxic endpoint is outside of a facility’s boundaries, mitigation measures will be required. The number of affected facilities would be the same as the proposed project. The level of significance in Alternative C would be equivalent to the amount in the proposed project.

## **CHAPTER 2**

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### **PROJECT DESCRIPTION**

**Project Location**

**Project Background**

**Project Objectives**

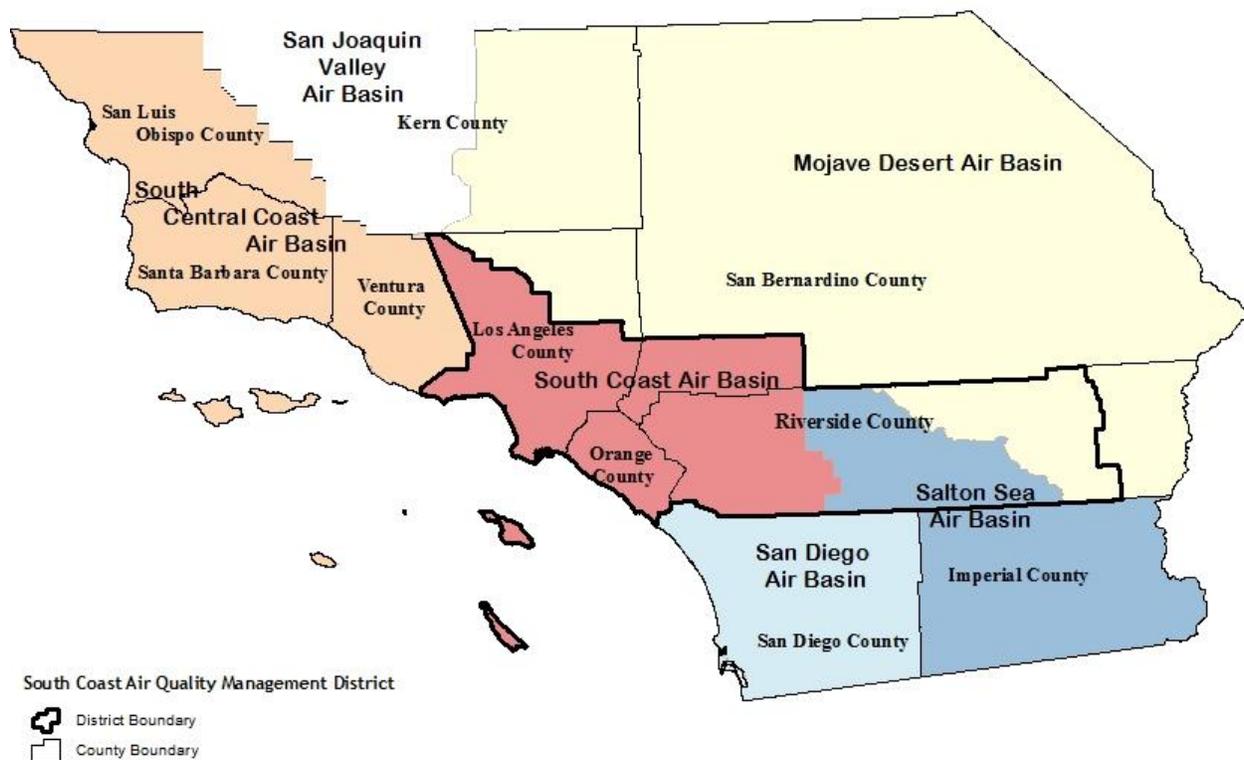
**Project Description**

**Summary of Affected Equipment**

**Technology Overview**

## PROJECT LOCATION

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



**Figure 2-1**  
**Southern California Air Basins**

## **PROJECT BACKGROUND**

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

In the 2016 AQMP, control measure CMB-05 – Further NOx Reductions from RECLAIM Assessment, committed to achieving NOx emission reductions of five tons per day by 2025, along with achieving BARCT level equivalency for all facilities through a command-and-control regulatory structure, while alleviating facilities from installing technology that would quickly become obsolete or serve as an intermediate technology. The process of transitioning NOx RECLAIM facilities to a command-and-control regulatory structure will ensure that the affected equipment will meet BARCT level equivalency as soon as practicable. As a result of control measure CMB-05 from the 2016 AQMP and ABs 617 and 398, SCAQMD staff has been directed by the Governing Board to begin the process of transitioning equipment at NOx RECLAIM facilities from a facility permit structure to an equipment-based command-and-control regulatory structure per SCAQMD Regulation XI – Source Specific Standards. SCAQMD staff has proposed amendments to Rule 1134 to transition equipment from the NOx RECLAIM program to a command-and-control regulatory structure, while achieving BARCT. PAR 1134 will assist in the transition of 18 facilities out of the RECLAIM program.

## **PROJECT OBJECTIVES**

The main objectives of PAR 1134 are to: 1) reduce NOx emissions from stationary gas turbines and transition these equipment that are currently permitted under the NOx RECLAIM program to a command-and-control regulatory structure; and 2) implement Control Measure CMB-05 by updating the NOx limits and incorporating new ammonia (NH3) emission limits to reflect current BARCT.

## PROJECT DESCRIPTION

If adopted, PAR 1134 would: 1) expand its applicability to include stationary gas turbines that were not previously required to comply with Rule 1134; 2) update the NO<sub>x</sub> and NH<sub>3</sub> emission limits for stationary gas turbines to comply with BARCT; 3) ~~transition all monitoring, reporting, and recordkeeping requirements (MRR) in Rule 1134 to new SCAQMD Rule 113 – MRR Requirements for NO<sub>x</sub> and SO<sub>x</sub> Sources, upon its adoption;~~ 4) establish new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; 5) provide relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NO<sub>x</sub> emissions; and 6) revise existing exemptions to remove obsolete provisions. Implementation of the proposed project is estimated to reduce NO<sub>x</sub> emissions by 2.8 tons per day after implementation of BARCT limits.

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

### PAR 1134

#### **Purpose – Subdivision (a)**

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

#### **Applicability – Subdivision (b)**

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

#### **Definitions – Subdivision (c)**

PAR 1134 proposes to delete obsolete definitions, add new definitions, and modify existing definitions to clarify and explain key concepts.

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

Chemical Processing Gas Turbine  
Emission Control Plan  
Higher Heating Value of Fuel (HHV)  
Lower Heating Value of Fuel (LLV)  
Peaking Gas Turbine Unit  
Sewage Digester Gas  
Southeast Desert Air Basin (SEDAB)

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

Cogeneration Gas Turbine  
Combined Cycle Gas Turbine  
Compressor Gas Turbine (formerly Pipeline Gas Turbine Unit)  
Emergency Standby Gas Turbine  
Existing Gas Turbine  
~~Higher Heating Value of Fuel (HHV)~~  
~~Lower Heating Value of Fuel (LLV)~~

### Stationary Gas Turbine

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

- Annual Capacity Factor
- Duct Burner
- Former RECLAIM NO<sub>x</sub> Facility
- Landfill
- Natural Gas
- Non-RECLAIM NO<sub>x</sub> Facility
- Oxides of Nitrogen (NO<sub>x</sub>) Emissions
- Outer Continental Shelf
- Petroleum Refinery
- Produced Gas
- Publicly Owned Treatment Works
- RECLAIM NO<sub>x</sub> Facility
- Shutdown
- Simple Cycle Gas Turbine
- Start-up
- Tuning

#### **Emissions Limitations – Renumbered Subdivision (d)**

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

Modified paragraph (d)(1) proposes to add a provision of applicability to existing turbines currently subject to Rule 1134 on an interim basis until the existing gas turbine can comply with the limits set forth in Table 1 of paragraph (d)(3) or by January 1, 2024, whichever comes first. Turbines that are a RECLAIM NO<sub>x</sub> source or a former RECLAIM NO<sub>x</sub> source are not subject to paragraph (d)(1).

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

New paragraph (d)(3) proposes to add the following emissions limits for stationary gas turbines with a compliance date of no later than January 1, 2024. ~~It is important to note that the NO<sub>x</sub> emission limit in Table 1 would not apply during start up, shutdown, and tuning.~~

**PAR 1134, Table I: Emissions Limits for Stationary Gas Turbines**

<b>Fuel Type</b>	<b>NO<sub>x</sub> (ppmv)</b>	<b>Ammonia (ppmv)</b>	<b>Oxygen Correction (%, dry)</b>
Liquid – Turbines Located on Outer Continental Shelf	30	5	15
Natural Gas – Combined Cycle Turbine	2	5	15
Natural Gas – Pipeline Gas Turbine	8	5	15
Natural Gas – Simple Cycle Turbine	2.5	5	15
Produced Gas	59	5	15
Produced Gas – Turbines Located on Outer Continental Shelf	15	5	15
Other	12.5	5	15

New paragraph (d)(4) proposes to add the following emissions limits for compressor gas turbines with an effective date 24 months after a permit to construct is issued by the Executive Officer or three years after a permit to construct is issued if the permit application is submitted before July 1, 2021.

**PAR 1134, Table II: Emissions Limits for Compressor Gas Turbines**

<b>Fuel Type</b>	<b>NO<sub>x</sub> (ppmv)</b>	<b>Ammonia (ppmv)</b>	<b>Oxygen Correction (%, dry)</b>
Natural Gas – Compressor Gas Turbine	3.5	10	15

New paragraph (d)(45) proposes to include requirements for start-up, shutdown, and tuning periods in each stationary gas turbine's permit. The requirements will specify duration, mass emissions, and number of start-ups, shutdowns, and, if applicable, tunings. Requirements for start-up, shutdown, and tuning of existing electric generating units are currently in the permits for that equipment. Additionally, start-up, shutdown, and tuning are unique to each unit and evaluated during the permitting process. Therefore, PAR 1134 does not specify specific start-up, shutdown, and tuning requirements, but instead states that the requirements will be put in each stationary gas turbine's permit.

New subparagraph (d)(56)(B) proposes to allow the emissions limits of turbines that are installed after [Date of Adoption] to be averaged over a 60-minute rolling average. For stationary gas turbines installed before [Date of Adoption], new subparagraph (d)(56)(A) allows the option for turbines to retain their current averaging time. Compressor gas turbines will require the emission limits to be averaged over a 3-hour rolling average.

New paragraph (d)(67) proposes to prohibit the use of liquid fuel in a stationary gas turbine except for Outer Continental Shelf gas turbines which do not have access to natural gas. Outer Continental Shelf gas turbines burning 10 percent or less liquid fuel will be subject to the produced gas limit.

New paragraph (d)(78) proposes to require the facility owner or operator of a stationary gas turbine to submit applications to reconcile their permits with Rule 1134 by July 1, 2022. As facilities

transition out of RECLAIM to Rule 1134, their permits will need to be revised to remove references to RECLAIM rules and include references to Rule 1134.

New paragraph (d)(9) proposes to allow an owner or operator of a compressor gas turbine to request an extension of up to one year for compliance with the NO<sub>x</sub> emissions limits in Table II and a three year extension for compliance with the ammonia emissions limits in Table II. If an owner or operator of a compressor gas turbine elects to submit a request for a time extension, that owner or operator is required to submit a request at least 30 days before the compliance deadline, as specified in paragraph (d)(4). Part of the information to be submitted as part of an extension request includes a demonstration that the actual facility NO<sub>x</sub> emissions will decrease by at least 25 percent averaged over three years beginning December 31, 2023 in comparison to 2017 facility emissions. Any extension requested in excess of 12 months requires the compressor gas turbine to be equipped with an ammonia continuous emission monitoring system certified under an approved SCAQMD protocol. For extension requests greater than 24 months, the facility must demonstrate that the compressor gas turbine is operating less than 1,000 hours per year. The Executive Officer will approve or disapprove all requests for time extensions and will determine if an extenuating circumstance necessitates additional time to complete implementation.

#### **Monitoring and Source Testing – Subdivision (e)**

~~SCAQMD has committed to developing a new, separate rule, to be named Rule 113, to address monitoring, recordkeeping, and reporting requirements (MRR) for NO<sub>x</sub> and SO<sub>x</sub> emissions. Once amended Rules 113-218 and 218.1 is-are adopted, all Rule 1134 equipment will be required to transition to complying with the MRR requirements in Rule 113-218 and 218.1. For the interim period, the intention of the PAR 1134 MRR is to maintain current MRR for all facilities and minimize the RECLAIM reporting requirements. Turbines that are non-RECLAIM NO<sub>x</sub> sources already comply with Rule 218 – Continuous Emission Monitoring (Rule 218) in addition to other MRR requirements. Therefore, requiring compliance with Rule 218 will not affect these units.~~

Paragraph (e)(1) applies to gas turbines 2.9 MW and larger located at non-RECLAIM NO<sub>x</sub> facilities and proposes to require compliance with SCAQMD Rule 218 – Continuous Emission Monitoring.

Subparagraph (e)(2)(A) proposes to require the owner or operator of any existing gas turbine located at a non-RECLAIM NO<sub>x</sub> source not operating with a continuous emission monitoring systems to conduct a source test to demonstrate compliance with NO<sub>x</sub> and carbon monoxide concentration and demonstrated perfect efficiency (ERR) if applicable.

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

Subparagraph clause (e)(2)(C)(i) proposes to determine compliance with NO<sub>x</sub> concentration limits for turbines not equipped with NO<sub>x</sub> CEMS using source tests that shall be conducted every calendar year. Clause (e)(2)(C)(ii) proposes to allow turbines that emit less than 25 tons per year of NO<sub>x</sub> to source test at least once every three calendar years. Additionally, clause (e)(2)(C)(iii) proposes to allow for turbines not equipped with ammonia CEMS to source test quarterly when initially installed and after an annual test is failed. After four consecutive compliant ammonia

source tests, source testing of ammonia may be conducted every calendar year. Turbines currently testing for ammonia annually may retain that schedule until an annual test is failed.

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

New paragraph (e)(4) applies to former RECLAIM facilities. To demonstrate compliance with the NO<sub>x</sub> emissions limits, these facilities will be required to comply with SCAQMD Rule 2012 with the exception of the following provisions that reference reporting requirements or that do not apply to stationary gas turbines:

- Rule 2012 paragraphs (c)(3) through (c)(8), reporting and Super Compliant facilities;
- Rule 2012 subparagraphs (d)(2)(B) through (d)(2)(E), reporting and emission factors;
- Rule 2012 subdivision (e) NO<sub>x</sub> Process Units;
- Rule 2012 paragraphs (g)(5) through (g)(8), reporting;
- Rule 2012 paragraphs (h)(1), (h)(2), and (h)(4) through (h)(6), reporting and mass emissions; (F)
- Rule 2012 subdivisions, (i), (k), and (l), Recordkeeping, Exemptions, Appeals; and
- Rule 2012 Reported Data and Transmitting/Reporting Frequency requirements from Appendix A – “Protocol for Monitoring, Reporting and Recordkeeping for Oxides of Nitrogen (NO<sub>x</sub>) Emissions.”

#### **Test Methods – Subdivision (f)**

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

#### **Recordkeeping – Subdivision (g)**

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

#### **Exemptions – Subdivision (h)**

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

Paragraph (h)(3) proposes to exempt existing combined cycle gas turbines at 2.5 ppmv NO<sub>x</sub> at 15% oxygen on a dry basis from the emissions limitations in paragraph (d)(3), with the condition that the units keep their NO<sub>x</sub> and ammonia limits, start-up, shutdown, and tuning requirements, and averaging times on the current permit.

To address low-use stationary gas turbines, a low-use provision, paragraph (h)(4) proposes to allow low-use equipment to continue operating without retrofit provided that they: do not exceed annual capacity factor limits; include annual capacity factor limits in their permit; and keep the NO<sub>x</sub> and ammonia limits, start-up, shutdown, and tuning requirements, and averaging times on the current

permit. The annual capacity factor, paragraph (c)(1), is defined as the ratio between the actual annual input and the annual maximum heat input if operated continuous over one year. The annual capacity factor limits for gas turbines in subparagraph (h)(4)(A) is less than twenty-five percent in one calendar year and less than ten percent averaged over three years. In order to obtain the low-use exemption, subparagraph (h)(4)(B) requires that an application for the low-use exemption be submitted by July 1, 2022. Subparagraph (h)(4)(C) requires that annual capacity factor to be determined annually and submitted to the Executive Officer no later than March 1 following the reporting year. If a unit exceeds the annual capacity factor, subparagraph (h)(4)(D) states the owner or operator is subject to a notice of violation for each year of exceedance and for each annual and/or three-year exceedance. Clause (h)(4)(D)(iii) requires that after two years of the date of reported exceedance, the unit must come into compliance with the emissions limits in Table 1. There are also interim milestone requirements in clauses (h)(4)(D)(i) and (h)(4)(D)(ii): submitting a permit application within six months from the date of reported exceedance and a CEMS plan within six months from the date of permit application submittal.

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

## SUMMARY OF AFFECTED EQUIPMENT

Among the ~~34~~<sup>39</sup> facilities subject to PAR 1134 there are approximately 12 RECLAIM facilities and four non-RECLAIM facilities for a total of 16 facilities that are expected to be affected by PAR 1134. The Final Staff Report indicates that 73 stationary gas turbines at 39 facilities would subject to PAR 1134. However, for the CEQA analysis, 30 stationary gas turbines at 16 facilities were analyzed as these represent stationary gas turbines that will require physical changes such as modification or the replacement of an existing stationary gas turbine and/or an increase in ammonia usage for a SCR system. The remaining facilities contain stationary gas turbines that either currently meet the proposed emission limits (six) or are eligible for exemptions from the emission limits in PAR 1134 (24), qualify for low-use provisions (11), have been shut down, or have modified, retrofitted, or repowered their stationary gas turbines prior to the adoption of PAR 1134. Therefore, only 30 stationary gas turbines are included in the CEQA analysis.

Amongst the 16 facilities that are affected by PAR 1134, approximately 30 stationary gas turbines would need to be replaced, repowered, or retrofitted with air pollution control equipment in order to comply with the NO<sub>x</sub> limits in PAR 1134. Upon full implementation of BARCT, PAR 1134 is estimated to reduce NO<sub>x</sub> emissions by approximately 2.8 tons per day. Table 2-1 identifies the industry sectors, as classified by the North American Industry Classification System (NAICS) code, and the number of respective stationary gas turbines at facilities that would be subject to the requirements in PAR 1134.

**Table 2-1  
Affected Industries Subject to PAR 1134**

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

Table 2-2 identifies the number of stationary gas turbines that would require modifications to comply with BARCT for the 16 affected facilities. The following list describes stationary gas turbines that would require modifications in order to meet the updated BARCT NO<sub>x</sub> and NH<sub>3</sub> concentration limits in PAR 1134:

- 1) Stationary Gas Turbines with SCR: seven stationary gas turbines may need modifications in order to comply with PAR 1134 if they continue operating. Compliance with PAR 1134 would require modifications to the existing SCR systems, additional ammonia deliveries, or replacement or repowering of the existing SCR system. The analysis in this SEA applies the most conservative assumptions to represent a “worst-case” scenario therefore it is assumed that these seven stationary gas turbines would replace their existing SCR systems to comply with PAR 1134.
- 2) Stationary Gas Turbines without SCR: Of the 30 stationary gas turbines, 17 units currently are not equipped with SCR post-combustion technology for NO<sub>x</sub> reduction and are expected to need modifications in order to comply with PAR 1134 if they continue operating. Compliance with PAR 1134 for these 17 stationary gas turbines would require installation of post-combustion technology which is likely to be an SCR system that would also include installation of an ammonia or urea tank and ammonia or urea deliveries once the SCR system is operational.
- 3) Stationary Gas Turbines located in the Outer Continental Shelf (OCS): There are six stationary gas turbines located in the OCS that may need modifications in order to comply

with PAR 1134 if they continue operating. Typically for a stationary gas turbine when deciding the most effective NO<sub>x</sub> controls, installing an SCR system would be the primary post-combustion technology for NO<sub>x</sub> reduction however, there is no way to safely deliver and store aqueous ammonia for stationary gas turbines located in the OCS due to space constraints on the platforms and risk of exposure during catastrophic failure of an ammonia tank to workers. Thus, as determined in the technology assessment in the Staff Report<sup>8</sup> replacement or repowering of the existing stationary gas turbines with equipment utilizing pre-combustion technology is the most likely scenario to ensure OCS stationary gas turbines meet BARCT for NO<sub>x</sub>.

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

Description of Modifications	Total
Gas Turbines expected to install new <u>or modify existing</u> SCR	24
Gas Turbines expected to be replaced	6
Total Number of Affected Stationary Gas Turbines	30

Note: Amongst the affected facilities the size of stationary gas turbines varies between approximately 1 MW and ~~50-60~~ MW. Thus, modifications required to comply with PAR 1134 will vary based on the scale of NO<sub>x</sub> reductions needed and the size of the affected equipment.

The 2015 NO<sub>x</sub> emission inventory for turbines that will be subject to PAR 1134 is ~~3.33~~ 3.33.2 tons per day as presented in Table 2-3.

**Table 2-3**  
**NO<sub>x</sub> Emission Inventory and Electricity Generation Capacity**

Equipment Type	2015 NO <sub>x</sub> Emission Inventory (tons per day)	Electricity Generation Capacity (MWh)
Combined Cycle Turbines	0.9	<del>210</del> 258
Simple Cycle Turbines	<del>1.7</del> 1.2	<del>534</del> 540
Produced Gas Turbines	<del>0.2</del> < 0.1	<del>60</del> 161
Outer Continental Shelf Gas Turbines	0.5	15
<u>Compressor Gas Turbines</u>	<u>0.6</u>	<u>37</u>
<b>TOTAL</b>	<b><u>3.33.2</u></b>	<b><u>849</u>1,011</b>

Key: MWh = megawatt-hour

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

## 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 (CO<sub>2</sub>) 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 NO<sub>x</sub>, SO<sub>x</sub>, carbon monoxide (CO), and soot (solid carbon) can be discharged into the atmosphere.

Of the total NO<sub>x</sub> emissions that can be generated, there are two types of NO<sub>x</sub> formed during combustion: 1) thermal NO<sub>x</sub>; and 2) fuel NO<sub>x</sub>. Thermal NO<sub>x</sub> is produced from the reaction between the nitrogen and oxygen in the combustion air at high temperatures while fuel NO<sub>x</sub> 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 NO<sub>x</sub> generated is dependent on fuel type and boilers, engines, and gas turbines all generate thermal NO<sub>x</sub> as a combustion by-product. The following provides a brief description of the various types of existing combustion equipment that may be affected by PAR 1134 and subsequently retrofitted with NO<sub>x</sub> control equipment.

*Turbines:* Gas turbines convert energy stored in a fluid into mechanical energy by channeling the fluid through a system of stationary and moving vanes. The moving vanes are attached to a rotor to turn either a shaft, producing work output in the form of torque, or to generate velocity and pressure energy in a jet. Gas turbines can be used in combined-cycle cogeneration and simple-cycle arrangements. Combined cycle systems are typically used for very large systems and generally have higher capital costs than simple cycle gas turbines. Gas turbines are used to produce both electricity and steam. Gas turbines can operate on both gaseous (e.g., natural gas) and liquid fuels (e.g., diesel). For the purpose of the analysis in this SEA, controlling NO<sub>x</sub> emissions from gas turbines is assumed to be accomplished with post-combustion SCR technology or pre-combustion Dry Low-NO<sub>x</sub> for stationary gas turbines located in the OCS.

One portion of the BARCT assessment for PAR 1134 evaluated technologically feasible NO<sub>x</sub> emissions control technologies specific to stationary gas turbines. The BARCT assessment identified the following technologies that could be employed to achieve BARCT compliance in the event that a facility operator chooses to install new or modify their existing air pollution control equipment to reduce NO<sub>x</sub> emissions from electric power generating units: 1) dry low-NO<sub>x</sub> or lean premix emission combustors for natural gas, landfill gas, and produced gas turbines; 2) water or steam injection for natural gas, landfill gas, sewage digester gas, and produced gas turbines; 3) catalytic combustion for natural gas and produced gas turbines; 4) selective catalytic reduction (SCR) for natural gas, landfill gas, sewage digester gas, and produced gas turbines; and 6) catalytic absorption systems for natural gas turbines. PAR 1134 is expected to result in ~~47~~16 facilities either installing new or modifying existing air pollution control equipment as part of meeting updated BARCT and reducing NO<sub>x</sub> emissions. The type of air pollution control equipment that is commonly used at a facility to reduce NO<sub>x</sub> emissions is dependent upon a variety of factors such as the age of the existing air pollution control equipment, the size of the stationary gas turbine, the amount of NO<sub>x</sub> emission reductions that can be achieved, and whether the stationary gas turbine is: 1) designed with pre-combustion technologies or features that help minimize the formation of NO<sub>x</sub>; 2) equipped with post-combustion air pollution control equipment; or 3)

equipped with a combination of pre- and post-combustion control technologies. The following summarizes the technology assessment of pre- and post-combustion technologies that were analyzed as part of the BARCT assessment for PAR 1134.

## **Pre-Combustion Technologies**

### **Dry Low-NO<sub>x</sub> or Lean Premix Emission Combustors (Natural Gas, Landfill Gas, Produced Gas Turbines)**

Prior to combustion, gaseous fuel and compressed air are pre-mixed, minimizing localized hot spots that produce elevated combustion temperatures and therefore, less NO<sub>x</sub> 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 NO<sub>x</sub> formation, as very lean conditions cannot produce the high temperatures that create thermal NO<sub>x</sub>. Using this technology, NO<sub>x</sub> emissions, without further controls, have been demonstrated at single digits (< 9 ppmv at 15% oxygen, dry). The technology is engineered into the combustor that becomes an intrinsic part of the turbine design. Fuel staging or air staging is utilized to keep the flame within its operating boundaries. It is not available as a “retrofit” technology and must be designed for each turbine application.

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

Demineralized water is injected into the combustor through the fuel nozzles to lower flame temperature and reduce NO<sub>x</sub> emissions. Water or steam provides a heat sink that lowers flame temperature. Imprecise application leads to some hot zones so NO<sub>x</sub> is still created. NO<sub>x</sub> levels in natural gas turbines can be lowered by 80% to 25 ppmv at 15% oxygen on a dry basis. Addition of water or steam increases mass flow through the turbine and creates a small amount of additional power. The addition of water increases carbon monoxide emissions and there is added cost to demineralize the water. Turbines using water or steam injection has increased maintenance due to erosion and wear.

### **Catalytic Combustion (Natural Gas, Produced Gas Turbines)**

A catalytic process is used instead of a flame to combust the natural gas. Flameless combustion lowers combustion temperature resulting in reduced NO<sub>x</sub> formation. The overriding constraints are operating efficiency over a wide operating range of the turbine. Initial engine demonstrations have shown that catalytic combustion reducing NO<sub>x</sub> emissions. In its first commercial installation, NO<sub>x</sub> concentrations were lowered from approximately 20 ppmv to below 3 ppmv at 15% O<sub>2</sub> oxygen on a dry basis without post-combustion controls. Several turbine manufacturers are in the development stage to incorporate this technology.

## **Post-Combustion Technologies**

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

Selective Catalytic Reduction is the primary post-combustion technology for NO<sub>x</sub> reduction and is widely used in turbines. The technology can reduce NO<sub>x</sub> emissions 95 percent or greater. In many cases the NO<sub>x</sub> reduction is limited by the release of other pollutants (ammonia and carbon monoxide), space constraints, or reaches the practical limit of the NO<sub>x</sub> measuring device. Many stationary gas turbines already utilize selective catalytic reduction. Further reductions could be

possible by adding catalyst modules. From observations made during site visits, space is not readily available to add catalyst modules and would require construction.

Ammonia is injected into the flue gas and reacts with NO<sub>x</sub> to form nitrogen and water. Catalysts are made from ceramic materials and active catalytic components of base metals, zeolites, or precious metals. The catalyst may be configured into plates but many new systems are configured into honeycombs to ensure uniform dispersion and reduce ammonia emissions to below 5 ppmv. The reductant, ammonia, is available as anhydrous ammonia, aqueous ammonia, or urea. Anhydrous ammonia is toxic and SCAQMD does not permit new installations of anhydrous ammonia storage tanks. Urea is an alternative but requires conversion to ammonia to be used. Most new selective catalytic reduction installations utilize aqueous ammonia in a 19 percent solution.

To perform optimally, the gas temperature in the control device should be between 400 degrees Fahrenheit and 800 degrees Fahrenheit. During start-up and shutdown, the temperature will be below optimal range greatly reducing the effectiveness. Thus, NO<sub>x</sub> concentration limits are generally not applicable during start-up or shutdown. Newer stationary gas turbines reduce the low temperature periods where emissions are out of control.

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

### **Catalytic Absorption Systems for Turbines**

Catalytic absorption is based on an integration of catalytic oxidation and absorption technology resulting in similar control efficiency as selective catalytic reduction without the use of ammonia. Carbon monoxide and nitrogen oxide catalytically oxidize to carbon dioxide and nitrogen dioxide and the nitrogen dioxide molecules are absorbed onto the catalyst. The catalyst is a platinum-based substrate with a potassium carbonate coating. The catalyst tends to be very sensitive to sulfur (e.g., can be poisoned by sulfur causing failure), even the small amounts in pipeline natural gas. Initial issues regarding catalyst failures have been addressed by conducting more frequent and extensive catalyst washing. At one facility, NO<sub>x</sub> emission levels were best achieved when all three catalyst layers are washed about every four months. During the wash process, the turbine is non-operational for about three days.

## **CHAPTER 3**

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### **EXISTING SETTING**

**Introduction**

**Existing Setting**

**Air Quality**

**Hazards and Hazardous Materials**

## INTRODUCTION

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

The following sections summarize the existing setting for control measure CMB-05 and the existing rules that will be affected by the proposed project (e.g., PAR 1134) as well as the regional existing setting for air quality and hazards and hazardous materials which were the only environmental topics identified that may be adversely affected by the proposed project.

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

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

## EXISTING SETTING

In general, Rule 1134, was developed to reduce NO<sub>x</sub> emissions stationary gas turbines. Control measure CMB-05 in the 2016 AQMP was also developed to identify a series of approaches that can be explored to ensure equivalency with equipment-based command-and-control regulations implementing BARCT, and to generate further NO<sub>x</sub> emission reductions at RECLAIM facilities. The following summarizes the existing setting for control measure CMB-05 as well as the current version of Rule 1134.

### **CMB-05 - Further NO<sub>x</sub> Reductions from RECLAIM Assessment**

The 2016 AQMP identifies control measures and strategies to bring the region into attainment with the revoked 1997 8-hour NAAQS (standard) (80 parts per billion (ppb)) for ozone by 2024; the 2008 8-hour ozone standard (75 ppb) by 2032; the 2012 annual PM<sub>2.5</sub> standard (12 microgram per cubic meter (µg/m<sup>3</sup>)) by 2025; the 2006 24-hour PM<sub>2.5</sub> standard (35 µg/m<sup>3</sup>) by 2019; and the revoked 1979 1-hour ozone standard (120 ppb) by 2023. The 2016 AQMP consists of three components: 1) the SCAQMD's Stationary, Area, and Mobile Source Control Measures; 2) State and Federal Control Measures provided by the CARB; and 3) Regional Transportation Strategy and Control Measures provided by the Southern California Association of Governments. The 2016

AQMP includes emission inventories and control measures for stationary, area and mobile sources, the most current air quality setting, updated growth projections, new modeling techniques, demonstrations of compliance with state and federal Clean Air Act requirements, and an implementation schedule for adoption of the proposed control strategy. Control measure CMB-05, one of several components in the 2016 AQMP, was developed to identify a series of approaches that can be explored to ensure equivalency with command-and-control regulations implementing BARCT, and to generate five tons per day of further NO<sub>x</sub> emission reductions at RECLAIM facilities as soon as feasible, and no later than 2025, and to transition to a command-and-control regulatory structure requiring BARCT level controls as soon as practicable. Because many of the RECLAIM program's original advantages appeared to be diminishing, CMB-05 prescribed an orderly sunset of the RECLAIM program to create more regulatory certainty and reduce compliance burdens for RECLAIM facilities, while also achieving more actual and SIP creditable emissions reductions.

#### **Rule 1134**

Rule 1134 was adopted in 1989. The rule applies to stationary gas turbines rated at 0.3 MW and larger that were issued a permit to operate by the SCAQMD prior to August 4, 1989. The origin of the rule can be traced to a New Source Performance Standard for Stationary Gas Turbines that was promulgated by the U.S. EPA in 1979. In 1981, the CARB adopted a Suggested Control Measure for this same equipment. Rule 1134 was subsequently amended three times to provide regulatory flexibility. In particular, in December 1995, Rule 1134 was amended to exempt gas turbines located on San Clemente Island and the South East Desert Air Basin. In April 1997, Rule 1134 was amended to increase the NO<sub>x</sub> concentration limit for turbines utilizing sewage digester gas. In August 1997, Rule 1134 was amended to clarify the need for continuous emission monitoring systems (CEMS) on turbines with a power output of 2.9 MW or larger. U.S. EPA approved Rule 1134 into the SIP on August 1, 2000.

Beginning in 1994, a large number of utilities and third-party-owned cogenerators were included in the RECLAIM program and as such were not required to meet the NO<sub>x</sub> concentration limits contained in Rule 1134. However, gas turbines permitted prior to August 4, 1989 and used at publicly-owned treatment works (POTWs), landfills, hospitals and other public facilities, and sources which were not subject to the RECLAIM program, were still required to meet the concentration limits in Rule 1134. In addition, new turbines installed at non-RECLAIM facilities after August 4, 1989 were also not subject to Rule 1134.

## **AIR QUALITY**

It is the responsibility of SCAQMD to ensure that state and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, CO, NO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards and in the case of PM<sub>10</sub> and SO<sub>2</sub>, far more stringent. California has also established standards for sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride. The state and NAAQS for each of these pollutants and their effects on health are summarized in Table 3-1. SCAQMD monitors levels of various criteria pollutants at 38 monitoring stations. The 2016 air quality data (the latest data available) from SCAQMD's monitoring stations are presented in Table 3-2.

**Table 3-1  
State and Federal Ambient Air Quality Standards**

<b>Pollutant</b>	<b>Averaging Time</b>	<b>State Standard<sup>a</sup></b>	<b>Federal Primary Standard<sup>b</sup></b>	<b>Most Relevant Effects</b>
<b>Ozone (O<sub>3</sub>)</b>	1-hour	0.09 ppm (180 µg/m <sup>3</sup> )	0.12 ppm	(a) Short-term exposures: 1) Pulmonary function decrements and localized lung edema in humans and animals; and 2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; and (d) Property damage.
	8-hour	0.070 ppm (137 µg/m <sup>3</sup> )	0.070 ppm (137 µg/m <sup>3</sup> )	
<b>Suspended Particulate Matter (PM<sub>10</sub>)</b>	24-hour	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; and (b) Excess seasonal declines in pulmonary function, especially in children.
	Annual Arithmetic Mean	20 µg/m <sup>3</sup>	No Federal Standard	
<b>Suspended Particulate Matter (PM<sub>2.5</sub>)</b>	24-hour	No State Standard	35 µg/m <sup>3</sup>	(a) Increased hospital admissions and emergency room visits for heart and lung disease; (b) Increased respiratory symptoms and disease; and (c) Decreased lung functions and premature death.
	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	12 µg/m <sup>3</sup>	
<b>Carbon Monoxide (CO)</b>	1-Hour	20 ppm (23 mg/m <sup>3</sup> )	35 ppm (40 mg/m <sup>3</sup> )	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses.
	8-Hour	9 ppm (10 mg/m <sup>3</sup> )	9 ppm (10 mg/m <sup>3</sup> )	

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

Pollutant	Averaging Time	State Standard <sup>a</sup>	Federal Primary Standard <sup>b</sup>	Most Relevant Effects
<b>Nitrogen Dioxide (NO<sub>2</sub>)</b>	1-Hour	0.18 ppm (339 µg/m <sup>3</sup> )	0.100 ppm (188 µg/m <sup>3</sup> )	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration.
	Annual Arithmetic Mean	0.030 ppm (57 µg/m <sup>3</sup> )	0.053 ppm (100 µg/m <sup>3</sup> )	
<b>Sulfur Dioxide (SO<sub>2</sub>)</b>	1-Hour	0.25 ppm (655 µg/m <sup>3</sup> )	75 ppb (196 µg/m <sup>3</sup> )–	Broncho-constriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma.
	24-Hour	0.04 ppm (105 µg/m <sup>3</sup> )	No Federal Standard	
<b>Sulfates</b>	24-Hour	25 µg/m <sup>3</sup>	No Federal Standard	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; and (f) Property damage
<b>Hydrogen Sulfide (H<sub>2</sub>S)</b>	1-Hour	0.03 ppm (42 µg/m <sup>3</sup> )	No Federal Standard	Odor annoyance.
<b>Lead (Pb)</b>	30-Day Average	1.5 µg/m <sup>3</sup>	No Federal Standard	(a) Increased body burden; and (b) Impairment of blood formation and nerve conduction.
	Calendar Quarter	No State Standard	1.5 µg/m <sup>3</sup>	
	Rolling 3-Month Average	No State Standard	0.15 µg/m <sup>3</sup>	
<b>Visibility Reducing Particles</b>	8-Hour	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more due to particles when relative humidity is less than 70 percent.	No Federal Standard	The statewide standard is intended to limit the frequency and severity of visibility impairment due to regional haze. This is a visibility based standard not a health based standard. Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent.
<b>Vinyl Chloride</b>	24-Hour	0.01 ppm (26 µg/m <sup>3</sup> )	No Federal Standard	Highly toxic and a known carcinogen that causes a rare cancer of the liver.
ppb = parts per billion parts of air, by volume ppm = parts per million parts of air, by volume			µg/m <sup>3</sup> = micrograms per cubic meter mg/m <sup>3</sup> = milligrams per cubic meter	

<sup>a</sup> The California ambient air quality standards for O<sub>3</sub>, CO, SO<sub>2</sub> (1-hour and 24-hour), NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> are values not to be exceeded. All other California standards shown are values not to be equaled or exceeded.

<sup>b</sup> The national ambient air quality standards, other than O<sub>3</sub> and those based on annual averages are not to be exceeded more than once a year. The O<sub>3</sub> standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standards is equal to or less than one.

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

<b>CARBON MONOXIDE (CO)<sup>a</sup></b>				
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. in ppm 1-hour	Max. Conc. in ppm, 8-hour
<b>LOS ANGELES COUNTY</b>				
1	Central Los Angeles	361	1.9	1.4
2	Northwest Coastal Los Angeles County	366	2.2	1.1
3	Southwest Coastal Los Angeles County	362	1.6	1.3
4	South Coastal Los Angeles County 1	--	--	--
4	South Coastal Los Angeles County 2	--	--	--
4	South Coastal Los Angeles County 3	363	3.3	2.2
4	I-710 Near Road <sup>##</sup>	--	--	--
6	West San Fernando Valley	366	2.4	1.9
8	West San Gabriel Valley	366	1.5	1
9	East San Gabriel Valley 1	366	1.3	1.2
9	East San Gabriel Valley 2	364	1.1	1
10	Pomona/Walnut Valley	361	1.7	1.3
11	South San Gabriel Valley	366	2.8	1.7
12	South Central Los Angeles County	366	4.4	3.9
13	Santa Clarita Valley	366	1.3	1.1
<b>ORANGE COUNTY</b>				
16	North Orange County	366	3.1	1.5
17	Central Orange County	355	2.6	2.1
17	I-5 Near Road <sup>##</sup>	360	3.7	2.2
18	North Coastal Orange County	366	2.1	1.7
19	Saddleback Valley	353	1.3	0.7
<b>RIVERSIDE COUNTY</b>				
22	Corona/Norco Area	--	--	--
23	Metropolitan Riverside County 1	359	1.7	1.3
23	Metropolitan Riverside County 3	366	1.9	1.4
24	Perris Valley	--	--	--
25	Elsinore Valley	298*	1.2	0.6
26	Temecula Valley	--	--	--
29	San Gorgonio Pass	--	--	--
30	Coachella Valley 1**	361	3.1	1.5
30	Coachella Valley 2**	--	--	--
30	Coachella Valley 3**	--	--	--
<b>SAN BERNARDINO COUNTY</b>				
32	Northwest San Bernardino Valley	366	1.7	1.3
33	I-10 Near Road <sup>##</sup>	366	1.7	1.3
33	CA-60 Near Road <sup>##</sup>	--	--	--
34	Central San Bernardino Valley 1	359	1.7	1
34	Central San Bernardino Valley 2	358	2.2	1.7
35	East San Bernardino Valley	--	--	--
37	Central San Bernardino Mountains	--	--	--
38	East San Bernardino Mountains	--	--	--
<b>DISTRICT MAXIMUM</b>			<b>4.4</b>	<b>3.9</b>
<b>SOUTH COAST AIR BASIN</b>			<b>4.4</b>	<b>3.9</b>
ppm = parts per million		**Salton Sea Air Basin		
-- = Pollutant not monitored		*Incomplete Data		
<sup>##</sup> = Four near-road sites measuring one or more of the pollutants PM2.5, CO, and/or NO2 are operating near the following freeways: I-1, I-10, CA-60, and I-710.				

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

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

OZONE (O3)										
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. in ppm 1-hr	Max. Conc. in ppm 8-hr	4th High Conc. ppm 8-hr	No. Days Standard Exceeded				
						Federal			State	
						Old > 0.124 ppm 1-hr	Current > 0.070 ppm 8-hr*	2008 > 0.075 ppm 8-hr	Current > 0.09 ppm 1-hr	Current > 0.070 ppm 8-hr
<b>LOS ANGELES COUNTY</b>										
1	Central LA	364	0.103	0.078	0.071	0	4	1	2	4
2	Northwest Coastal LA County	365	0.085	0.073	0.066	0	2	0	0	2
3	Southwest Coastal LA County	361	0.087	0.08	0.067	0	2	1	0	3
4	South Coastal LA County 1	--	--	--	--	--	--	--	--	--
4	South Coastal LA County 2	--	--	--	--	--	--	--	--	--
4	South Coastal LA County 3	365	0.079	0.059	0.055	0	0	0	0	0
4	I-710 Near Road <sup>###</sup>	--	--	--	--	--	--	--	--	--
6	West San Fernando Valley	364	0.122	0.098	0.086	0	23	14	9	23
8	West San Gabriel Valley	358	0.126	0.09	0.082	1	18	15	12	19
9	East San Gabriel Valley 1	366	0.146	0.106	0.095	4	39	25	30	40
9	East San Gabriel Valley 2	362	0.148	0.114	0.098	6	52	31	38	55
10	Pomona/Walnut Valley	360	0.127	0.092	0.087	1	26	14	20	29
11	South San Gabriel Valley	359	0.111	0.081	0.074	0	6	2	9	6
12	South Central LA County	365	0.098	0.071	0.064	0	1	0	1	1
13	Santa Clarita Valley	366	0.13	0.115	0.1	2	57	35	29	59
<b>ORANGE COUNTY</b>										
16	North Orange County	365	0.103	0.078	0.075	0	6	3	3	7
17	Central Orange County	354	0.103	0.074	0.071	0	4	0	2	4
17	I-5 Near Road <sup>###</sup>	--	--	--	--	--	--	--	--	--
18	North Coastal Orange County	366	0.09	0.069	0.065	0	0	0	0	0
19	Saddleback Valley	365	0.122	0.093	0.079	0	13	6	5	13
<b>RIVERSIDE COUNTY</b>										
22	Corona/Norco Area	--	--	--	--	--	--	--	--	--
23	Metropolitan Riverside County 1	357	0.142	0.104	0.097	1	69	47	33	71
23	Metropolitan Riverside County 3	365	0.14	0.106	0.095	1	65	43	34	70
24	Perris Valley	366	0.131	0.098	0.092	1	55	30	23	56
25	Elsinore Valley	360	0.124	0.093	0.087	0	44	25	15	45
26	Temecula Valley	355	0.092	0.081	0.077	0	19	6	0	20
29	San Geronio Pass	358	0.128	0.106	0.094	1	52	39	26	54
30	Coachella Valley 1**	363	0.103	0.092	0.087	0	46	20	6	48
30	Coachella Valley 2**	331	0.099	0.089	0.081	0	27	12	3	29
30	Coachella Valley 3**	--	--	--	--	--	--	--	--	--
<b>SAN BERNARDINO COUNTY</b>										
32	Northwest San Bernardino Valley	366	0.156	0.116	0.11	10	88	65	53	89
33	I-10 Near Road <sup>###</sup>	--	--	--	--	--	--	--	--	--
33	CA-60 Near Road <sup>###</sup>	--	--	--	--	--	--	--	--	--
34	Central San Bernardino Valley 1	362	0.139	0.105	0.098	3	49	39	34	52
34	Central San Bernardino Valley 2	366	0.158	0.118	0.114	10	106	76	70	108
35	East San Bernardino Valley	364	0.145	0.119	0.103	3	97	71	55	100
37	Central San Bernardino Mountains	365	0.163	0.121	0.116	9	101	80	64	103
38	East San Bernardino Mountains	--	--	--	--	--	--	--	--	--
<b>DISTRICT MAXIMUM</b>			<b>0.163</b>	<b>0.121</b>	<b>0.116</b>	<b>10</b>	<b>106</b>	<b>80</b>	<b>70</b>	<b>108</b>
<b>SOUTH COAST AIR BASIN</b>			<b>0.163</b>	<b>0.121</b>	<b>0.116</b>	<b>17</b>	<b>132</b>	<b>103</b>	<b>83</b>	<b>132</b>
ppm = parts per million -- = Pollutant not monitored <sup>###</sup> = Four near-road sites measuring one or more of the pollutants PM2.5, CO, and/or NO2 are operating near the following freeways: I-1, I-10, CA-60, and I-710. **Salton Sea Air Basin *Incomplete data										

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

<b>NITROGEN DIOXIDE (NO<sub>2</sub>)<sup>b</sup></b>					
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	1-hour Max. Conc. ppb, 1,	1-hour 98 <sup>th</sup> Percentile Conc. ppb,	Annual Average AAM Conc. ppb
<b>LOS ANGELES COUNTY</b>					
1	Central LA	366	64.7	61	20.8
2	Northwest Coastal LA County	366	54.5	49.3	11.6
3	Southwest Coastal LA County	348	81.5	54.7	10.1
4	South Coastal LA County 1	--	--	--	--
4	South Coastal LA County 2	--	--	--	--
4	South Coastal LA County 3	366	75.6	66.3	18.5
4	I-710 Near Road <sup>##</sup>	366	95.3	76.6	23.9
6	West San Fernando Valley	355	55.5	45.9	12.9
8	West San Gabriel Valley	366	71.9	58.4	15.4
9	East San Gabriel Valley 1	366	74.2	58.3	16.6
9	East San Gabriel Valley 2	365	65.4	45.7	11.6
10	Pomona/Walnut Valley	360	69.3	62.5	20.1
11	South San Gabriel Valley	361	63.2	60.1	20
12	South Central LA County	366	63.7	58.4	15.6
13	Santa Clarita Valley	361	46.4	39.4	10.2
<b>ORANGE COUNTY</b>					
16	North Orange County	359	60.4	51.5	14.7
17	Central Orange County	354	64.3	56.7	14.8
17	I-5 Near Road <sup>##</sup>	357	75.2	60.1	23.4
18	North Coastal Orange County	349	59.8	51.2	10.1
19	Saddleback Valley	--	--	--	--
<b>RIVERSIDE COUNTY</b>					
22	Corona/Norco Area	--	--	--	--
23	Metropolitan Riverside County 1	366	73.1	52.2	14.9
23	Metropolitan Riverside County 3	366	64.9	48.3	13.6
24	Perris Valley	--	--	--	--
25	Elsinore Valley	345*	51.3	35.6	8.1
26	Temecula Valley	--	--	--	--
29	San Geronio Pass	348	46.9	42.6	7.9
30	Coachella Valley 1**	363	42.6	34.4	6
30	Coachella Valley 2**	--	--	--	--
30	Coachella Valley 3**	--	--	--	--
<b>SAN BERNARDINO COUNTY</b>					
32	Northwest San Bernardino Valley	366	70.1	55.1	16.5
33	I-10 Near Road <sup>##</sup>	362	93.4	74.3	29.3
33	CA-60 Near Road <sup>##</sup>	361	89.8	71.3	31
34	Central San Bernardino Valley 1	357	71.7	56.4	18.2
34	Central San Bernardino Valley 2	355	60.1	51.4	16.6
35	East San Bernardino Valley	--	--	--	--
37	Central San Bernardino Mountains	--	--	--	--
38	East San Bernardino Mountains	--	--	--	--
<b>DISTRICT MAXIMUM</b>			<b>95.3</b>	<b>76.6</b>	<b>31</b>
<b>SOUTH COAST AIR BASIN</b>			<b>95.3</b>	<b>76.6</b>	<b>31</b>
ppb = parts per billion AAM = Annual Arithmetic Mean ## = Four near-road sites measuring one or more of the pollutants PM <sub>2.5</sub> , CO, and/or NO <sub>2</sub> are operating near the following freeways: I-1, I-10, CA-60, and I-710. -- = Pollutant not monitored **Salton Sea Air Basin					

<sup>b</sup> The NO<sub>2</sub> federal 1-hour standard is 100 ppb and the annual standard is annual arithmetic mean NO<sub>2</sub> > 0.0534 ppm (53.4 ppb). The state 1-hour and annual standards are 0.18 ppm (180 ppb) and 0.030 ppm (30 ppb).

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

SULFUR DIOXIDE (SO <sub>2</sub> ) <sup>c</sup>				
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Maximum Conc. ppb, 1-hour	99 <sup>th</sup> Percentile Conc. ppb, 1-hour
<b>LOS ANGELES COUNTY</b>				
1	Central LA	366	13.4	2.5
2	Northwest Coastal LA County	--	--	--
3	Southwest Coastal LA County	363	9.7	5.7
4	South Coastal LA County 1	--	--	--
4	South Coastal LA County 2	--	--	--
4	South Coastal LA County 3	366	17.8	12
4	I-710 Near Road <sup>##</sup>	--	--	--
6	West San Fernando Valley	--	--	--
8	West San Gabriel Valley	--	--	--
9	East San Gabriel Valley 1	--	--	--
9	East San Gabriel Valley 2	--	--	--
10	Pomona/Walnut Valley	--	--	--
11	South San Gabriel Valley	--	--	--
12	South Central LA County	--	--	--
13	Santa Clarita Valley	--	--	--
<b>ORANGE COUNTY</b>				
16	North Orange County	--	--	--
17	Central Orange County	--	--	--
17	I-5 Near Road <sup>##</sup>	--	--	--
18	North Coastal Orange County	366	3.3	2.1
19	Saddleback Valley	--	--	--
<b>RIVERSIDE COUNTY</b>				
22	Corona/Norco Area	--	--	--
23	Metropolitan Riverside County 1	366	5.6	2
23	Metropolitan Riverside County 3	--	--	--
24	Perris Valley	--	--	--
25	Elsinore Valley	--	--	--
26	Temecula Valley	--	--	--
29	San Gorgonio Pass	--	--	--
30	Coachella Valley 1 <sup>**</sup>	--	--	--
30	Coachella Valley 2 <sup>**</sup>	--	--	--
30	Coachella Valley 3 <sup>**</sup>	--	--	--
<b>SAN BERNARDINO COUNTY</b>				
32	Northwest San Bernardino Valley	--	--	--
33	I-10 Near Road <sup>##</sup>	--	--	--
33	CA-60 Near Road <sup>##</sup>	--	--	--
34	Central San Bernardino Valley 1	363	6.3	2
34	Central San Bernardino Valley 2	--	--	--
35	East San Bernardino Valley	--	--	--
37	Central San Bernardino Mountains	--	--	--
38	East San Bernardino Mountains	--	--	--
<b>DISTRICT MAXIMUM</b>			<b>17.8</b>	<b>12</b>
<b>SOUTH COAST AIR BASIN</b>			<b>17.8</b>	<b>12</b>
ppb = parts per billion <span style="float:right">** Salton Sea Air Basin</span>				
-- = Pollutant not monitored				
<sup>##</sup> = Four near-road sites measuring one or more of the pollutants PM <sub>2.5</sub> , CO, and/or NO <sub>2</sub> are operating near the following freeways: I-1, I-10, CA-60, and I-710.				

<sup>c</sup> The federal SO<sub>2</sub> 1-hour standard is 75 ppb (0.075 ppm). The state standards are 1-hour average SO<sub>2</sub> > 0.25 ppm (250 ppb) and 24-hour average SO<sub>2</sub> > 0.04 ppm (40 ppb).

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

SUSPENDED PARTICULATE MATTER PM10 <sup>d</sup>							
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. µg/m <sup>3</sup> , 24-hour	No. (%) Samples Exceeding Standard		Annual Average AAM Conc. <sup>e</sup> µg/m <sup>3</sup>	
				Federal > 150 µg/m <sup>3</sup> , 24-hour	State > 50 µg/m <sup>3</sup> , 24-hour		
<b>LOS ANGELES COUNTY</b>							
1	Central LA	277*	67	0	18(6%)	32.4	
2	Northwest Coastal LA County	--	--	--	--	--	
3	Southwest Coastal LA County	60	43	0	0(0%)	21.6	
4	South Coastal LA County 1	--	--	--	--	--	
4	South Coastal LA County 2	60	56	0	3(5%)	27.8	
4	South Coastal LA County 3	59	75	0	8(14%)	31.9	
4	I-710 Near Road <sup>##</sup>	--	--	--	--	--	
6	West San Fernando Valley	--	--	--	--	--	
8	West San Gabriel Valley	--	--	--	--	--	
9	East San Gabriel Valley 1	60	74	0	12(20%)	33.7	
9	East San Gabriel Valley 2	362	74	0	21(6%)	29.8	
10	Pomona/Walnut Valley	--	--	--	--	--	
11	South San Gabriel Valley	--	--	--	--	--	
12	South Central LA County	--	--	--	--	--	
13	Santa Clarita Valley	60	96	0	1(2%)	23.4	
<b>ORANGE COUNTY</b>							
16	North Orange County	--	--	--	--	--	
17	Central Orange County	353	74	0	3(1%)	24.4	
17	I-5 Near Road <sup>##</sup>	--	--	--	--	--	
18	North Coastal Orange County	--	--	--	--	--	
19	Saddleback Valley	59	59	0	1(2%)	21	
<b>RIVERSIDE COUNTY</b>							
22	Corona/Norco Area	51*	62	0	7(14%)	31.7	
23	Metropolitan Riverside County 1	302*	82	0	58(19%)	36.9	
23	Metropolitan Riverside County 3	356 <sup>+</sup>	116	0	175(49%)	49	
24	Perris Valley	57	76	0	5(9%)	32.2	
25	Elsinore Valley	366	99	0	4(1%)	21.4	
26	Temecula Valley	--	--	--	--	--	
29	San Geronio Pass	57	65	0	3(5%)	24	
30	Coachella Valley 1 <sup>**</sup>	355 <sup>+</sup>	113	0	6(2%)	20.8	
30	Coachella Valley 2 <sup>**</sup>	313 <sup>**</sup>	137	0	56(18%)	36.9	
30	Coachella Valley 3 <sup>**</sup>	272 <sup>**</sup>	150	0	76(28%)	43	
<b>SAN BERNARDINO COUNTY</b>							
32	Northwest San Bernardino Valley	363	72	0	5(1%)	25	
33	I-10 Near Road <sup>##</sup>	--	--	--	--	--	
33	CA-60 Near Road <sup>##</sup>	--	--	--	--	--	
34	Central San Bernardino Valley 1	61	94	0	15(25%)	38.1	
34	Central San Bernardino Valley 2	333*	91	0	33(10%)	33.1	
35	East San Bernardino Valley	56	72	0	4(7%)	27.8	
37	Central San Bernardino Mountains	61	46	0	0(0%)	17.1	
38	East San Bernardino Mountains	--	--	--	--	--	
<b>DISTRICT MAXIMUM</b>			<b>150<sup>+</sup></b>	<b>0<sup>+</sup></b>	<b>175<sup>+</sup></b>	<b>49.0<sup>+</sup></b>	
<b>SOUTH COAST AIR BASIN</b>			<b>116<sup>+</sup></b>	<b>0<sup>+</sup></b>	<b>181<sup>+</sup></b>	<b>49.0<sup>+</sup></b>	
µg/m <sup>3</sup> = micrograms per cubic meter of air AAM = Annual Arithmetic Mean -- = Pollutant not monitored **Salton Sea Air Basin *Incomplete Data <sup>##</sup> = Four near-road sites measuring one or more of the pollutants PM2.5, CO, and/or NO2 are operating near the following freeways: I-1, I-10, CA-60, and I-710. <sup>+</sup> = High PM10 (≥ 155 µg/m <sup>3</sup> ) data recorded in Coachella Valley (due to high winds) and the Basin (due to Independence Day fireworks) are excluded in accordance with the U.S. EPA Exceptional Event Rule.							

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

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

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

SUSPENDED PARTICULATE MATTER PM <sub>2.5</sub> <sup>f</sup>						
Source Receptor Area No.	Location of Air Monitoring Station	No. Days of Data	Max. Conc. µg/m <sup>3</sup> , 24-hour	98 <sup>th</sup> Percentile Conc. in µg/m <sup>3</sup> , 24-hr	No. (%) Samples Exceeding Federal Std > 35 µg/m <sup>3</sup> , 24-hour	Annual Average AAM Conc. <sup>g</sup> µg/m <sup>3</sup>
<b>LOS ANGELES COUNTY</b>						
1	Central LA	357	44.39	27.3	2(0.6%)	11.83
2	Northwest Coastal LA County	--	--	--	--	--
3	Southwest Coastal LA County	--	--	--	--	--
4	South Coastal LA County 1	356	29.37	23.56	0	10.36
4	South Coastal LA County 2	350	28.93	22.05	0	9.62
4	South Coastal LA County 3	--	--	--	--	--
4	I-710 Near Road <sup>##</sup>	352	33.31	26.09	0	12.03
6	West San Fernando Valley	113	30.05	24.59	0	9.23
8	West San Gabriel Valley	119	29.21	25.38	0	9.59
9	East San Gabriel Valley 1	122	32.17	29.01	0	10.15
9	East San Gabriel Valley 2	--	--	--	--	--
10	Pomona/Walnut Valley	--	--	--	--	--
11	South San Gabriel Valley	120	46.59	25.13	2(1.7%)	11.75
12	South Central LA County	115	36.35	26.35	1(0.9%)	11.13
13	Santa Clarita Valley	--	--	--	--	--
<b>ORANGE COUNTY</b>						
16	North Orange County	--	--	--	--	--
17	Central Orange County	349	44.45	24.02	1(0.3%)	9.47
17	I-5 Near Road <sup>##</sup>	--	--	--	--	--
18	North Coastal Orange County	--	--	--	--	--
19	Saddleback Valley	117	24.79	13.41	0	7.36
<b>RIVERSIDE COUNTY</b>						
22	Corona/Norco Area	--	--	--	--	--
23	Metropolitan Riverside County 1	357 <sup>+</sup>	39.12	31.65	4(1.1%)	12.54
23	Metropolitan Riverside County 3	352 <sup>+</sup>	45.64	35.14	6(1.7%)	14.02
24	Perris Valley	--	--	--	--	--
25	Elsinore Valley	--	--	--	--	--
26	Temecula Valley	--	--	--	--	--
29	San Geronio Pass	--	--	--	--	--
30	Coachella Valley 1 <sup>**</sup>	112	14.71	12.43	0	5.53
30	Coachella Valley 2 <sup>**</sup>	115	25.84	15.04	0	7.74
30	Coachella Valley 3 <sup>**</sup>	--	--	--	--	--
<b>SAN BERNARDINO COUNTY</b>						
32	Northwest San Bernardino Valley	--	--	--	--	--
33	I-10 Near Road <sup>##</sup>	--	--	--	--	--
33	CA-60 Near Road <sup>##</sup>	347 <sup>+</sup>	44.14	33.02	6(1.7%)	14.73
34	Central San Bernardino Valley 1	111 <sup>+</sup>	30.45	26.25	0	12.04
34	Central San Bernardino Valley 2	113 <sup>+</sup>	32.54	27.12	0	10.84
35	East San Bernardino Valley	--	--	--	--	--
37	Central San Bernardino Mountains	--	--	--	--	--
38	East San Bernardino Mountains	55	28.42	22.14	0	6.83
<b>DISTRICT MAXIMUM</b>			<b>46.6<sup>+</sup></b>	<b>35.1<sup>+</sup></b>	<b>6<sup>+</sup></b>	<b>14.73<sup>+</sup></b>
<b>SOUTH COAST AIR BASIN</b>			<b>46.6<sup>+</sup></b>	<b>35.1<sup>+</sup></b>	<b>9<sup>+</sup></b>	<b>14.73<sup>+</sup></b>
µg/m <sup>3</sup> = micrograms per cubic meter of air AAM = Annual Arithmetic Mean -- = Pollutant not monitored **Salton Sea Air Basin *Incomplete Data <sup>##</sup> = Four near-road sites measuring one or more of the pollutants PM <sub>2.5</sub> , CO, and/or NO <sub>2</sub> are operating near the following freeways: I-1, I-10, CA-60, and I-710 <sup>+</sup> = High PM <sub>10</sub> (≥ 155 µg/m <sup>3</sup> ) data recorded in Coachella Valley (due to high winds) and the Basin (due to Independence Day fireworks) are excluded in accordance with the U.S. EPA Exceptional Event Rule.						

<sup>f</sup> PM<sub>2.5</sub> samples were collected every 3 days at all sites except for station numbers 072, 077, 087, 3176, 4144 and 4165, where samples were taken daily, and station number 5818 where samples were taken every 6 days. PM<sub>2.5</sub> statistics listed above are for the FRM data only. FEM PM<sub>2.5</sub> continuous monitoring instruments were operated at some of the above locations for special purposes studies.

<sup>g</sup> Both federal and state standards are annual average (AAM) > 12.0 µg/m<sup>3</sup>.

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

Source Receptor Area No.	Location of Air Monitoring Station	LEAD <sup>h</sup>		SULFATES (SOx) <sup>i</sup>	
		Max. Monthly Average Conc. <sup>m)</sup> µg/m <sup>3</sup>	Max. 3-Month Rolling Average <sup>m)</sup> µg/m <sup>3</sup>	No. Days of Data	Max. Conc. µg/m <sup>3</sup> , 24-hour
<b>LOS ANGELES COUNTY</b>					
1	Central LA	0.016	0.01	58	5.8
2	Northwest Coastal LA County	--	--	--	--
3	Southwest Coastal LA County	0.006	0.01	58	6.2
4	South Coastal LA County 1	--	--	--	--
4	South Coastal LA County 2	0.008	0.01	59	6.3
4	South Coastal LA County 3	--	--	57	7.4
4	I-710 Near Road <sup>##</sup>	--	--	--	--
6	West San Fernando Valley	--	--	--	--
8	West San Gabriel Valley	--	--	--	--
9	East San Gabriel Valley 1	--	--	58	9.5 <sup>#</sup>
9	East San Gabriel Valley 2	--	--	--	--
10	Pomona/Walnut Valley	--	--	--	--
11	South San Gabriel Valley	0.011	0.01	--	--
12	South Central LA County	0.016	0.01	--	--
13	Santa Clarita Valley	--	--	59	4.1
<b>ORANGE COUNTY</b>					
16	North Orange County	--	--	--	--
17	Central Orange County	--	--	59	5.3 <sup>#</sup>
17	I-5 Near Road <sup>##</sup>	--	--	--	--
18	North Coastal Orange County	--	--	--	--
19	Saddleback Valley	--	--	58	3.7
<b>RIVERSIDE COUNTY</b>					
22	Corona/Norco Area	--	--	50	8.2 <sup>#</sup>
23	Metropolitan Riverside County 1	0.007	0.01	114	15.2 <sup>#</sup>
23	Metropolitan Riverside County 3	--	--	118	13.6 <sup>#</sup>
24	Perris Valley	--	--	55	6.0 <sup>#</sup>
25	Elsinore Valley	--	--	--	--
26	Temecula Valley	--	--	--	--
29	San Geronio Pass	--	--	56	4.0 <sup>#</sup>
30	Coachella Valley 1 <sup>**</sup>	--	--	51	3.9
30	Coachella Valley 2 <sup>**</sup>	--	--	113	4.1
30	Coachella Valley 3 <sup>**</sup>	--	--	--	--
<b>SAN BERNARDINO COUNTY</b>					
32	Northwest San Bernardino Valley	0.007	0.01	--	--
33	I-10 Near Road <sup>##</sup>	--	--	--	--
33	CA-60 Near Road <sup>##</sup>	--	--	--	--
34	Central San Bernardino Valley 1	--	--	59	17.1 <sup>#</sup>
34	Central San Bernardino Valley 2	0.01	0.01	55	16.0 <sup>#</sup>
35	East San Bernardino Valley	--	--	56	12.1 <sup>#</sup>
37	Central San Bernardino Mountains	--	--	59	3.9 <sup>#</sup>
38	East San Bernardino Mountains	--	--	--	--
<b>DISTRICT MAXIMUM</b>		<b>0.016<sup>++</sup></b>	<b>0.01<sup>++</sup></b>		<b>17.1<sup>#</sup></b>
<b>SOUTH COAST AIR BASIN</b>		<b>0.016<sup>++</sup></b>	<b>0.01<sup>++</sup></b>		<b>17.1<sup>#</sup></b>
µg/m <sup>3</sup> = micrograms per cubic meter of air		+ = High PM10 (≥ 155 µg/m <sup>3</sup> ) data recorded in Coachella Valley (due to high winds) and the Basin (due to Independence Day fireworks) are excluded			
-- = Pollutant not monitored		in accordance with the U.S. EPA Exceptional Event Rule.			
<sup>**</sup> Salton Sea Air Basin		++ = Higher lead concentrations were recorded at near-source monitoring sites			
<sup>*</sup> Incomplete Data		immediately downwind of stationary lead sources. Maximum monthly			
<sup>##</sup> = Four near-road sites measuring one or more of the pollutants PM2.5, CO, and/or NO2 are operating near the following freeways: I-1, I-10, CA-60, and I-710.		and 3-month rolling averages recorded were 0.88 µ/m <sup>3</sup> and 0.06 µ/m <sup>3</sup> .			

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

<sup>i</sup> Sulfate data is not available at this time. State sulfate standard is 24-hour ≥ 25 µg/m<sup>3</sup>. There is no federal standard for sulfate.

## Carbon Monoxide

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

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

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

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

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

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

On August 12, 2011, U.S. EPA issued a decision to retain the existing NAAQS for CO, determining that those standards provided the required level of public health protection. However, U.S. EPA added a monitoring requirement for near-road CO monitors in urban areas with population of one million or more, utilizing stations that would be implemented to meet the 2010 NO<sub>2</sub> near-road monitoring requirements. The two new CO monitors are at the I-5 near-road site, located in Orange County near Anaheim, and the I-10 near-road site, located near Etiwanda Avenue in San Bernardino County near Ontario, Rancho Cucamonga, and Fontana.

## Ozone

Ozone (O<sub>3</sub>), a colorless gas with a sharp odor, is a highly reactive form of oxygen. High ozone concentrations exist naturally in the stratosphere. Some mixing of stratospheric ozone downward through the troposphere to the earth's surface does occur; however, the extent of ozone transport is limited. At the earth's surface in sites remote from urban areas ozone concentrations are normally very low (e.g., from 0.03 ppm to 0.05 ppm).

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

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

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

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

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

## Nitrogen Dioxide

NO<sub>2</sub> is a reddish-brown gas with a bleach-like odor. Nitric oxide (NO) is a colorless gas, formed from the nitrogen (N<sub>2</sub>) and oxygen (O<sub>2</sub>) in air under conditions of high temperature and pressure which are generally present during combustion of fuels; NO reacts rapidly with the oxygen in air to form NO<sub>2</sub>. NO<sub>2</sub> is responsible for the brownish tinge of polluted air. The two gases, NO and NO<sub>2</sub>, are referred to collectively as NO<sub>x</sub>. In the presence of sunlight, NO<sub>2</sub> reacts to form nitric oxide and an oxygen atom. The oxygen atom can react further to form ozone, via a complex series of chemical reactions involving hydrocarbons. Nitrogen dioxide may also react to form nitric acid (HNO<sub>3</sub>) which reacts further to form nitrates, components of PM<sub>2.5</sub> and PM<sub>10</sub>.

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposures to NO<sub>2</sub> at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO<sub>2</sub> in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma and/or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these subgroups. More recent studies have found associations between NO<sub>2</sub> exposures and cardiopulmonary mortality, decreased lung function, respiratory symptoms, and emergency room asthma visits.

In animals, exposure to levels of NO<sub>2</sub> considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO<sub>2</sub>.

In 2016, nitrogen dioxide concentrations were monitored at 27 locations. No area of the Basin or SSAB exceeded the federal or state standards for NO<sub>2</sub>. The Basin has not exceeded the federal standard for NO<sub>2</sub> (0.0534 ppm) since 1991, when the Los Angeles County portion of the Basin recorded the last exceedance of the standard in any county within the United States. The current 1-hour average NO<sub>2</sub> NAAQS (100 ppb) was last exceeded on two days in 2014 in the South Coastal Los Angeles County area at the Long Beach-Hudson air monitoring station. However, the 98th percentile form of the standard was not exceeded, and the 2013-2015 design value is not in violation of the NAAQS. The higher relative concentrations in the Los Angeles area are indicative of the concentrated emission sources, especially heavy-duty vehicles. NO<sub>x</sub> emission reductions continue to be necessary because it is a precursor to both ozone and PM (PM<sub>2.5</sub> and PM<sub>10</sub>) concentrations.

With the revised NO<sub>2</sub> federal standard in 2010, near-road NO<sub>2</sub> measurements were required to be phased in for larger cities. The four near-road monitoring stations are: (1) I-5 near-road, located in Orange County near Anaheim; (2) I-710 near-road, located at Long Beach Blvd. in Los Angeles County near Compton and Long Beach; (3) SR-60 near-road, located west of Vineyard Avenue near the San Bernardino/Riverside County border near Ontario, Mira Loma, and Upland; and (4) I-10 near-road, located near Etiwanda Avenue in San Bernardino County near Ontario, Rancho Cucamonga, and Fontana.

The longest operating near-road station in the Basin, adjacent to I-5 in Orange County, has not exceeded the level of the 1-hour NO<sub>2</sub> NAAQS (100 ppb) since the measurements began on January 1, 2014. The peak 1-hour NO<sub>2</sub> concentration at that site in 2014 was 78.8 ppb and the peak concentration for 2015 was 70.2 ppb. This can be compared to the annual peak values measured

at the nearest ambient monitoring station in Central Orange County (Anaheim station), where the 2014 and 2015 peaks were 75.8 and 59.1, respectively.

### **Sulfur Dioxide**

SO<sub>2</sub> is a colorless gas with a sharp odor. It reacts in the air to form sulfuric acid (H<sub>2</sub>SO<sub>4</sub>), which contributes to acid precipitation, and sulfates, which are components of PM<sub>10</sub> and PM<sub>2.5</sub>. Most of the SO<sub>2</sub> emitted into the atmosphere is produced by burning sulfur-containing fuels.

Exposure of a few minutes to low levels of SO<sub>2</sub> can result in airway constriction in some asthmatics. All asthmatics are sensitive to the effects of SO<sub>2</sub>. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, is observed after acute higher exposure to SO<sub>2</sub>. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO<sub>2</sub>.

Animal studies suggest that despite SO<sub>2</sub> being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO<sub>2</sub> levels. In these studies, efforts to separate the effects of SO<sub>2</sub> from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

No exceedances of federal or state standards for sulfur dioxide occurred in 2016 at any of the six locations monitored the Basin. The maximum 1-hour SO<sub>2</sub> concentration was 17.8 ppb, as recorded in the South Coastal Los Angeles County area. The 99<sup>th</sup> percentile of 1-hour SO<sub>2</sub> concentration was 12 ppb, as recorded in South Coastal Los Angeles County area. Though SO<sub>2</sub> concentrations remain well below the standards, SO<sub>2</sub> is a precursor to sulfate, which is a component of fine particulate matter, PM<sub>10</sub>, and PM<sub>2.5</sub>. Historical measurements showed concentrations to be well below standards and monitoring has been discontinued.

### **Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)**

Of great concern to public health are the particles small enough to be inhaled into the deepest parts of the lung. Respirable particles (particulate matter less than about 10 micrometers in diameter (PM<sub>10</sub>)) can accumulate in the respiratory system and aggravate health problems such as asthma, bronchitis, and other lung diseases. Children, the elderly, exercising adults, and those suffering from asthma are especially vulnerable to adverse health effects of PM<sub>10</sub> and PM<sub>2.5</sub>.

A consistent correlation between elevated ambient fine particulate matter (PM<sub>2.5</sub>) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks, and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. Studies have reported an association between long-term exposure to air pollution dominated by PM<sub>2.5</sub> and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in fine particulate matter concentration levels have also been related to hospital admissions for acute respiratory conditions, to school and kindergarten absences, to a decrease in

respiratory function in normal children, and to increased medication use in children and adults with asthma. Studies have also shown lung function growth in children is reduced with long-term exposure to particulate matter. In addition to children, the elderly and people with preexisting respiratory and/or cardiovascular disease appear to be more susceptible to the effects of PM10 and PM2.5.

SCAQMD monitored PM10 concentrations at 23 locations in 2016. The federal 24-hour PM10 standard (150  $\mu\text{g}/\text{m}^3$ ) was not exceeded in 2016. The Basin has remained in attainment of the PM10 NAAQS since 2006. The maximum three-year average 24-hour PM10 concentration of 150  $\mu\text{g}/\text{m}^3$  was recorded in the Coachella Valley area and was 100 percent of the federal standard and 300 percent of the much more stringent state 24-hour PM10 standard (50  $\mu\text{g}/\text{m}^3$ ). The state 24-hour PM10 standard was exceeded at several of the monitoring stations. The maximum annual average PM10 concentration of 49  $\mu\text{g}/\text{m}^3$  was recorded in Metropolitan Riverside County. The federal annual PM10 standard has been revoked. The much more stringent state annual PM10 standard (20  $\mu\text{g}/\text{m}^3$ ) was exceeded in most stations in each county in the Basin and in the Coachella Valley.

In 2016, PM2.5 concentrations were monitored at 19 locations throughout the Basin. U.S. EPA revised the federal 24-hour PM2.5 standard from 65  $\mu\text{g}/\text{m}^3$  to 35  $\mu\text{g}/\text{m}^3$ , effective December 17, 2006. In 2016, the maximum PM2.5 concentrations in the Basin exceeded the new federal 24-hour PM2.5 standard in seven out of 19 locations. The maximum 24-hour PM2.5 concentration of 46.6  $\mu\text{g}/\text{m}^3$  was recorded in the South San Gabriel Valley area. The 98th percentile 24-hour PM2.5 concentration of 35.1  $\mu\text{g}/\text{m}^3$  was recorded in the Metropolitan Riverside County, which barely exceeds the federal standard of 35  $\mu\text{g}/\text{m}^3$ . The maximum annual average concentration of 14.73  $\mu\text{g}/\text{m}^3$  was recorded in San Bernardino County, which represents 98 percent of the 2006 federal standard of 15  $\mu\text{g}/\text{m}^3$ .

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

## Lead

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

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

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

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

The current lead concentrations in Los Angeles County are now below the NAAQS. The maximum quarterly average lead concentration ( $0.01 \mu\text{g}/\text{m}^3$  at several monitoring) was seven percent of the federal quarterly average lead standard ( $0.15 \mu\text{g}/\text{m}^3$ ). The maximum monthly average lead concentration ( $0.016 \mu\text{g}/\text{m}^3$  in South Central Los Angeles County) was one percent of the state monthly average lead standard. As a result of the 2012-2014 design value below the NAAQS, SCAQMD will be requesting that U.S. EPA re-designate the nonattainment area as attaining the federal lead standard. Stringent SCAQMD rules governing lead-producing sources will help to ensure that there are no future violations of the federal standard. Furthermore, one business that had been responsible for the highest measured lead concentrations in Los Angeles County has closed and is in the process of demolition and site clean-up.

## **Sulfates**

Sulfates are chemical compounds which contain the sulfate ion and are part of the mixture of solid materials which make up PM<sub>10</sub>. Most of the sulfates in the atmosphere are produced by oxidation of SO<sub>2</sub>. Oxidation of sulfur dioxide yields sulfur trioxide (SO<sub>3</sub>), which reacts with water to form sulfuric acid, which then contributes to acid deposition. The reaction of sulfuric acid with basic substances such as ammonia yields sulfates, a component of PM<sub>10</sub> and PM<sub>2.5</sub>.

Most of the health effects associated with fine particles and SO<sub>2</sub> at ambient levels are also associated with sulfates. Thus, both mortality and morbidity effects have been observed with an increase in ambient sulfate concentrations. However, efforts to separate the effects of sulfates from the effects of other pollutants have generally not been successful.

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

The most current preliminary data available for sulfates is for 2016. In 2016, the state 24-hour sulfate standard ( $25 \mu\text{g}/\text{m}^3$ ) was not exceeded in any of the 19 monitoring locations in the Basin. The maximum 24-hour sulfate concentration was 17.1 ppb, as recorded in the Central San Bernardino Valley. There are no federal sulfate standards.

## **Vinyl Chloride**

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

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

## **Volatile Organic Compounds**

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

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

## **Non-Criteria Pollutants**

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

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

The following subsections summarize the existing setting for compounds that contribute to TACs.

### **Air Quality – Toxic Air Contaminants (TACs)**

#### ***Federal***

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

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

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

## State

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

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

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

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

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

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

Many of CARB's recent ATCMs are part of the CARB Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (Diesel Risk Reduction Plan), which was adopted in September 2000 (<http://www.arb.ca.gov/diesel/documents/rrpapp.htm>) with the goal of reducing DPM emissions from compression ignition engines and associated health risk by

75 percent by 2010 and 85 percent by 2020. The Diesel Risk Reduction Plan includes strategies to reduce emissions from new and existing engines through the use of ultra-low sulfur diesel fuel, add-on controls, and engine replacement. In addition to stationary source engines, the plan addresses DPM emissions from mobile sources such as trucks, buses, construction equipment, locomotives, and ships.

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

### **SCAQMD**

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

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

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

in March 2008 was the most significant of recent amendments to the rule. Rule 1401.1 – Requirements for New and Relocated Facilities Near Schools sets risk thresholds for new and relocated facilities near schools. The requirements are more stringent than those for other air toxics rules in order to provide additional protection to school children.

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

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

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

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

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

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

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

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

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

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

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

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

- SCAQMD’s Mobile Source Committee approved the “Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions” (August 2002). This

document provides guidance for analyzing cancer risks from DPM from truck idling and movement (e.g., truck stops, warehouse and distribution centers, or transit centers), ship hoteling at ports, and train idling.

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

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

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

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

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

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

### ***Multiple Air Toxics Exposure Studies***

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

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

Multiple Air Toxics Exposure Study III (MATES III): MATES III was part of the SCAQMD Governing Board's 2003-04 Environmental Justice Workplan approved on September 5, 2003. The MATES III report consisted of several elements including a monitoring program, an updated emissions inventory of TACs, and a modeling effort to characterize carcinogenic health risk across the Basin. Besides toxics, additional measurements included organic carbon, elemental carbon, and total carbon, as well as, Particulate Matter (PM), including PM<sub>2.5</sub>. It did not estimate mortality or other health effects from particulate exposures. MATES III revealed a general downward trend in air toxic pollutant concentrations with an estimated Basin-wide lifetime carcinogenic health risk of 1,200 in one million. Mobile sources accounted for 94 percent of the basin-wide lifetime carcinogenic health risk with diesel exhaust particulate contributing to 84 percent of the mobile source Basin-wide lifetime carcinogenic health risk. Non-diesel carcinogenic health risk declined by 50 percent from the MATES II values.

Multiple Air Toxics Exposure Study IV (MATES IV): MATES IV, the current version, includes a monitoring program, an updated emissions inventory of TACs, and a modeling effort to characterize risk across the Basin. The study focuses on the carcinogenic risk from exposure to

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

## Health Effects

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

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

## HAZARDS AND HAZARDOUS MATERIALS

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

PARs 1134 is intended to improve overall air quality; however, it may have direct or indirect hazards associated with the implementation. In order to achieve the desired reduction of NOx emissions from PAR 1134, some stationary gas turbines may require the installation of air pollution control equipment such as SCR systems which utilize ammonia. As such, implementation of PAR 1134 may affect the use, storage, and transport of hazards and hazardous materials for any facility that installs SCR technology for reducing NOx emissions. New (or modifications to existing) air pollution control equipment and related components are expected to

be installed at some of the affected facilities such that their operations may increase the quantity of hazardous materials generated by the control equipment and may increase the quantity of ammonia used. It is anticipated some facilities will need to install SCR technology to meet NOx emission limits and in doing so, may result in the overall increase in the amount of ammonia delivered, stored and injected. Installation of SCR equipment may also result in potential ammonia slip emissions, an increase the amount of fresh catalyst needed, and an increase spent catalyst replaced over time.

## **Hazardous Materials Regulations**

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

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

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

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

**Toxic Substances:** Toxic substances may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability, or even death. For example, such substances can cause disorientation, acute allergic reactions, asphyxiation, skin irritation, or other adverse health effects if human exposure exceeds certain levels. (The level depends on the substances involved and are chemical-specific.) Carcinogens (substances that can cause cancer) are a special class of toxic substances. Examples of toxic substances include benzene (a component of gasoline and a suspected carcinogen) and methylene chloride (a common laboratory solvent and a suspected carcinogen).

**Ignitable Substances:** Ignitable substances are hazardous because of their ability to burn. Gasoline, hexane, and natural gas are examples of ignitable substances.

**Corrosive Materials:** Corrosive materials can cause severe burns. Corrosives include strong acids and bases such as sodium hydroxide (lye) or sulfuric acid (battery acid).

**Reactive Materials:** Reactive materials may cause explosions or generate toxic gases. Explosives, pure sodium or potassium metals (which react violently with water), and cyanides are examples of reactive materials.

## Federal Regulations

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

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

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

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

corresponding “Threshold Planning Quantities” must cooperate in the preparation of the emergency plan.

2. Emergency Release Notification (§304) requires facilities to immediately report accidental releases of EHS chemicals and hazardous substances in quantities greater than corresponding Reportable Quantities (RQs) as defined under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to state and local officials. Information about accidental chemical releases must be made available to the public.
3. Hazardous Chemical Storage Reporting (§§311 – 312) requires facilities that manufacture, process, or store designated hazardous chemicals to make Safety Data Sheets (SDSs, formerly referred to as material safety data sheets or MSDSs) describing the properties and health effects of these chemicals available to state and local officials and local fire departments. These sections also require facilities to report to state and local officials and local fire departments, inventories of all on-site chemicals for which SDSs exist. Lastly, information about chemical inventories at facilities and SDSs must be available to the public.
4. Toxic Chemical Release Inventory (§313) requires facilities to annually complete and submit a Toxic Chemical Release Inventory Form for each Toxic Release Inventory (TRI) chemical that are manufactured or otherwise used above the applicable threshold quantities.

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

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

Hazardous materials regulations are implemented by the Research and Special Programs Administration (RSPA) branch of the U.S. DOT. The regulations cover the definition and classification of hazardous materials, communication of hazards to workers and the public,

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

### ***Hazardous Materials and Waste Regulations***

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

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

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

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

**Prevention of Accidental Releases and Risk Management Programs:** Requirements pertaining to the prevention of accidental releases are promulgated in section 112 (r) of the CAA Amendments of 1990 [42 U.S.C. §7401 et. seq.]. The objective of these requirements was to prevent the accidental release and to minimize the consequences of any such release of a hazardous substance. Under these provisions, facilities that produce, process, handle or store hazardous substance have a duty to: 1) identify hazards which may result from releases using hazard assessment techniques;

2) design and maintain a safe facility and take steps necessary to prevent releases; and 3) minimize the consequence of accidental releases that occur.

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

### ***Hazardous Material Worker and Public Safety Requirements***

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

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

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

move hazardous materials to conduct employee safety training; have an inventory of safety equipment relevant to potential hazards; have knowledge on use of the safety equipment; prepare an illness prevention program; provide hazardous substance exposure warnings; prepare an emergency response plan; and prepare a fire prevention plan.

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

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

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

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

**Table 3-3  
NFPA 704 Hazards Rating Code**

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

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

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

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

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

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

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

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

**Upper Explosive Limit (UEL):** The upper explosive limit of a gas or a vapor is the highest concentration (percentage) of a gas or a vapor in air capable of producing a flash of fire in

presence of an ignition source (e.g., arc, flame, or heat). Concentrations of a substance in air above the UEL are "too rich" to burn.

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

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

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

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

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

## State Regulations

### *Hazardous Materials and Waste Regulations*

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

1. **Subsection 65962.5. (a)**

List provided by DTSC that includes:

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

2. **Subsection 65962.5. (b)**

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

3. **Subsection 65962.5. (c)**

The State Water Resources Control Board shall list of all of the following:

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

4. **Subsection 65962.5. (d)**

The appropriate local enforcement agency will list of all solid waste disposal facilities from which there is a known migration of hazardous waste.

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

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

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

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

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

**Hazardous Materials Disclosure Program:** The Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) as promulgated by CalEPA in CCR, Title 27, Chapter 6.11 requires the administrative consolidation of six hazardous materials and waste programs (program elements) under one agency, a CUPA. The Unified Program administered by the State of California consolidates, coordinates, and makes consistent the

administrative requirements, permits, inspections, and enforcement activities for the state's environmental and emergency management programs, which include Hazardous Waste Generator and On-Site Hazardous Waste Treatment Programs (“Tiered Permitting”); Above ground SPCC Program; Hazardous Materials Release Response Plans and Inventories (business plans); the CalARP Program; the UST Program; and the Uniform Fire Code Plans and Inventory Requirements. The Unified Program is implemented at the local government level by CUPAs.

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

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

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

### Local Regulations

**Los Angeles County:** The Office of Emergency Management is responsible for organizing and directing the preparedness efforts of the Emergency Management Organization of Los Angeles County. Los Angeles County's policies towards hazardous materials management include enforcing stringent site investigations for factors related to hazards; limiting the development in high hazard areas, such as floodplains, high fire hazard areas, and seismic hazard zones; facilitating safe transportation, use, and storage of hazardous materials; supporting lead paint abatement; remediating Brownfield sites; encouraging the purchase of homes on the FEMA Repeat Hazard list and designating the land as open space; enforcing restrictions on access to important energy sites; limiting development downslope from aqueducts; promoting safe alternatives to chemical-

based products in households; and prohibiting development in floodways. The county has defined effective emergency response management capabilities to include supporting county emergency providers with reaching their response time goals; promoting the participation and coordination of emergency response management between cities and other counties at all levels of government; coordinating with other county and public agency emergency planning and response activities; and encouraging the development of an early warning system for tsunamis, floods and wildfires.

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

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

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

**Riverside County:** Through its membership in the Southern California Hazardous Waste Management Authority (SCHWMA), the County of Riverside has agreed to work on a regional level to solve problems involving hazardous waste. SCHWMA was formed through a joint powers agreement between Santa Barbara, Ventura, San Bernardino, Orange, San Diego, Imperial, and Riverside Counties and the Cities of Los Angeles and San Diego. Working within the concept of “fair share,” each SCHWMA county has agreed to take responsibility for the treatment and disposal of hazardous waste in an amount that is at least equal to the amount generated within that county. This responsibility can be met by siting hazardous waste management facilities (transfer, treatment, and/or repository) capable of processing an amount of waste equal to or larger than the amount generated within the county, or by creating intergovernmental agreements between

counties to provide compensation to a county for taking another county's waste, or through a combination of both facility siting and intergovernmental agreements. When and where a facility is to be sited is primarily a function of the private market. However, once an application to site a facility has been received, the county will review the requested facility and its location against a set of established siting criteria to ensure that the location is appropriate and may deny the application based on the findings of this review. The County of Riverside does not presently have any of these facilities within its jurisdiction and, therefore, must rely on intergovernmental agreements to fulfill its fair share responsibility to SCHWMA.

### **Emergency Response to Hazardous Materials and Waste Incidents**

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

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

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

### **Hazardous Materials Incidents**

Hazardous materials move through the region by a variety of modes: Truck, rail, air, ship, and pipeline. The movement of hazardous materials implies a degree of risk, depending on the materials being moved, the mode of transport, and numerous other factors (e.g., weather and road conditions). According to the Office of Hazardous Materials Safety (OHMS) in the U.S. DOT, hazardous materials shipments can be regarded as equivalent to deliveries, but any given shipment may involve one or more movements or trip segments, which may occur by different routes (e.g.,

rail transport with final delivery by truck). According to the Commodity Flow Survey data<sup>9</sup> there were approximately 2.6 billion tons of hazardous materials shipments in the United States in 2012 (the last year for which data are available). Table 3-4 indicates that trucks move more than 50 percent and pipeline accounts for approximately 24 percent of all hazardous materials shipped from a location in the United States. By contrast, rail accounts for only 4.3 percent of shipments<sup>10</sup>.

**Table 3-4  
Hazardous Material Shipments in the United States in 2012**

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

Source: U.S. DOT<sup>11,12</sup>

The movement of hazardous materials through the U.S. transportation system represents about 22.8 percent of total tonnage for all freight shipments as measured by the Commodity Flow Survey. Comparatively, the total commercial freight moved in 2012 in California by all transportation modes was 718,345 thousand tons<sup>13</sup>.

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

<sup>9</sup> USDOT, 2015. United States: 2012; 2012 Economic Census and 2012 Commodity Flow Survey. Issued March 2015. Available at <http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/ec12tcf-us.pdf>

<sup>10</sup> USDOT, 2015. United States: 2012; 2012 Economic Census and 2012 Commodity Flow Survey. Issued March 2015. Available at <http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/ec12tcf-us.pdf>

<sup>11</sup> USDOT, 2016. Table 1a. Hazardous Material Shipment Characteristics by Mode of Transportation for the United States: 2012. Accessed July 25, 2016.

[http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/commodity\\_flow\\_survey/2012/hazardous\\_materials/table1a](http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/commodity_flow_survey/2012/hazardous_materials/table1a)

<sup>12</sup> USDOT, 2016a. Table 1a. Shipment Characteristics by Mode of Transportation for the United States: 2012. Accessed July 25, 2016. [http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/commodity\\_flow\\_survey/2012/united\\_states/table1](http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/commodity_flow_survey/2012/united_states/table1)

<sup>13</sup> USDOT, 2016b. Table 3: Weight of Outbound Commodity Flows by State of Origin: 2012. Accessed July 25, 2016. [http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/commodity\\_flow\\_survey/2012/state\\_summaries/tables/table3](http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/commodity_flow_survey/2012/state_summaries/tables/table3)

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

Table 3-5 provides a summary of the reported hazardous material incidents for Los Angeles, Orange, Riverside, and San Bernardino counties for 2012 through 2014 from the Hazmat Incident Database<sup>14</sup>. Data presented is for the entire county and not limited to the portion of the county located within the jurisdiction of the SCAQMD.

**Table 3-5**  
**Reported Hazardous Materials Incidents for 2012 - 2014**

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

In 2012, there were a total of 872 incidents reported for Los Angeles, Orange, Riverside and San Bernardino counties. In 2013, there were a total of 791 incidents reported for Los Angeles, Orange, Riverside and San Bernardino counties, and in 2014 a total of 776 incidents for these four counties. Over the three-year period, San Bernardino and Los Angeles counties accounted for the largest number of incidents, followed by Orange and Riverside counties. As noted in Table 3-5, the number of incidents has reduced over the years.

### **Hazards Associated with Air Pollution Control**

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

### **Ammonia**

Ammonia is the primary hazardous chemical identified with the use SCR technology. Ammonia, though not a carcinogen, can have chronic and acute health impacts. Therefore, a potential increase in the use of ammonia may increase the current existing risk setting associated with deliveries (e.g., truck and road accidents) and onsite or offsite spills for each facility that currently uses or

<sup>14</sup> Pipeline and Hazardous Materials Safety Administration (PHMSA), 2015. Incident Reports Database Search. Accessed, November 17, 2015 at <https://hazmatonline.phmsa.dot.gov/IncidentReportsSearch/Welcome.aspx>

will begin to use ammonia. Exposure to a toxic gas cloud is the potential hazard associated with this type of control equipment. A toxic gas cloud is the release of a volatile chemical such as anhydrous ammonia that could form a cloud that migrates off-site, thus exposing individuals. Anhydrous ammonia is heavier than air such that when released into the atmosphere, it would form a cloud at ground level rather than be dispersed. “Worst-case” conditions tend to arise when very low wind speeds coincide with the accidental release, which can allow the chemicals to accumulate rather than disperse. Though there are facilities that may be affected by the 2016 AQMP control measures that are currently permitted to use anhydrous ammonia, for any new construction, current SCAQMD policy no longer allows the use of anhydrous ammonia. Instead, to minimize the hazards associated with ammonia used in the SCR or SNCR process, aqueous ammonia, no more than 19 percent by volume, is typically required as a permit condition associated with the installation of SCR or SNCR equipment for the following reasons: 1) 19 percent aqueous ammonia does not travel as a dense gas like anhydrous ammonia; and 2) 19 percent aqueous ammonia is not on any acutely hazardous materials lists unlike anhydrous ammonia or aqueous ammonia at higher percentages.

## **CHAPTER 4**

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### **ENVIRONMENTAL IMPACTS**

#### **Introduction**

#### **Potential Significant Environmental Impacts and Mitigation Measures**

#### **Air Quality Impacts**

#### **Hazards and Hazardous Materials Impacts**

#### **Potential Environmental Impacts Found Not to be Significant**

#### **Significant Environmental Effects Which Cannot be Avoided**

#### **Significant Irreversible Environmental Changes**

#### **Potential Growth-Inducing Impacts**

#### **Relationship Between Short-Term and Long-Term Environmental Goals**

## INTRODUCTION

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

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

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

## POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

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

For the entire 2016 AQMP, the analysis concluded that significant and unavoidable adverse environmental impacts from the project are expected to occur after implementing mitigation measures for the following environmental topic areas: 1) aesthetics from increased glare and from the construction and operation of catenary lines and use of bonnet technology for ships; 2) construction air quality and GHGs; 3) energy (due to increased electricity demand); 4) hazards and hazardous materials due to: (a) increased flammability of solvents; (b) storage, accidental release and transportation of ammonia; (c) storage and transportation of liquefied natural gas (LNG); and (d) proximity to schools; 5) hydrology (water demand); 6) construction noise and vibration; 7) solid construction waste and operational waste from vehicle and equipment scrapping; and, 8)

transportation and traffic during construction and during operation on roadways with catenary lines and at the harbors. Since significant adverse environmental impacts were identified, mitigation measures were identified and applied. However, the March 2017 Final Program EIR concluded that the 2016 AQMP would have significant and unavoidable adverse environmental impacts even after mitigation measures were identified and applied. As such, mitigation measures were made a condition of project approval and a Mitigation Monitoring and Reporting Plan was adopted. Findings were made and a Statement of Overriding Considerations was prepared and adopted for this project.

PAR 1134 proposes to update emission limits to reflect current BARCT and to provide implementation timeframes for reducing NO<sub>x</sub> and ammonia emissions for RECLAIM and non-RECLAIM stationary gas turbines that are not subject to Rule 1135 or located at landfills, petroleum refineries, or publicly owned treatment works. PAR 1134 will also help transition RECLAIM facilities to a command-and-control regulatory structure. Stationary gas turbines located at RECLAIM and non-RECLAIM facilities subject to Rule 1134 will be required to meet the applicable NO<sub>x</sub> concentration limit by January 1, 2024. For PAR 1134, compliance is expected to be achieved through the installation of SCR technology and repowering, replacement, or retrofitting existing stationary gas turbines. The proposed NO<sub>x</sub> emission reductions are expected to improve overall air quality in the SCAQMD's jurisdiction and further the progress towards attaining and maintaining state and NAAQS for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>. However, the implementation of the proposed project could create both direct and indirect air quality and hazards and hazardous materials impacts from those sources that install SCR technology or repower, or replace existing stationary gas turbines. As demonstrated in the following analysis, the construction associated with installing new air pollution control equipment, or repowering, or replacing existing stationary gas turbines in order to reduce NO<sub>x</sub> emissions, is not expected to exceed the SCAQMD's air quality significance thresholds for construction or operation. Further, after construction is completed, the operation of any new SCR systems and repowered or replaced gas turbines would reduce NO<sub>x</sub> emissions overall, thus, reducing any potential adverse impact to air quality.

However, for the topic of hazards and hazardous materials, the analysis demonstrates that for any installation of a SCR system, a corresponding installation of one new ammonia storage tank will be necessary. The potential proximity of any new ammonia storage tank to any nearby sensitive receptor could potentially have a significant adverse hazards and hazardous materials impact. For this reason, the analysis concludes that the implementation of PAR 1134 would be expected to have significant adverse hazards and hazardous materials impacts from the storage and use of ammonia to operate any new SCR systems that are installed.

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

The environmental impact analysis for this environmental topic area incorporates a “worst-case” approach. This approach entails the premise that whenever the analysis requires that assumptions be made, those assumptions that result in the greatest adverse impacts are typically chosen. This method ensures that all potential effects of the proposed project are documented for the decision-makers and the public. Accordingly, the following analyses use a conservative “worst-case” approach for analyzing the potentially significant adverse air quality and hazards and hazardous materials impacts associated with the implementation of the PAR 1134.

## AIR QUALITY IMPACTS

### Significance Criteria

The environmental analysis assumes that installation of NO<sub>x</sub> air pollution control equipment (e.g., dry low NO<sub>x</sub> for OCS facilities and SCR systems) for the affected sources will reduce NO<sub>x</sub> emissions overall, but construction activities associated with both the installation of new air pollution control devices and the repowering or replacement of existing gas turbines and modification of existing control devices will create secondary air quality impacts (e.g., emissions), which can adversely affect local and regional air quality. An affected facility may generate emissions both during the construction period and through ongoing daily operations. During installation of SCR systems or the repowering or replacement of existing gas turbines or modification of existing NO<sub>x</sub> control devices, emissions may be generated by onsite construction equipment and by offsite vehicles used for worker commuting. After construction activities are completed, additional emissions may be generated from the increased electricity use of the SCRs (as GHGs) and offsite vehicles (as criteria pollutants and GHGs) used for delivering fresh materials (e.g., chemicals, fresh catalyst, etc.) needed for operations and hauling away solid waste for disposal or recycling (e.g., spent catalyst). To determine whether air quality impacts from adopting and implementing PAR 1134 are significant, impacts will be evaluated and compared to the following criteria. If impacts exceed any of the significance thresholds in Table 4-1, they will be considered significant. All feasible mitigation measures will be identified and implemented to reduce significant impacts to the maximum extent feasible. PAR 1134 will be considered to have significant adverse air quality impacts if any one of the thresholds in Table 4-1 are equaled or exceeded. In general, the SCAQMD makes significance determinations for construction and operational impacts based on the maximum or peak daily emissions during the construction or operation period, which provides a “worst-case” analysis of the construction and operational emissions. The type of emission reduction projects that may be or expected to be undertaken to comply with PAR 1134 are primarily the installation of SCR technology and the repowering or replacement of existing stationary gas turbines for facilities located in the OCS with new stationary gas turbines with built-in dry low NO<sub>x</sub> technology; thus, this will be analyzed in this SEA.

To comply with the proposed emission limits of PAR 1134, a facility has the following options: 1) install an SCR system and associated ammonia storage tank; 2) replace their existing stationary gas turbine with a stationary gas turbine that has built-in pre-combustion controls such as dry low NO<sub>x</sub> technology; 3) replace their existing SCR system; or 4) modify their existing SCR system. However, since modifying the existing SCR system is expected to have less air quality impacts from construction than a replacement of an entire SCR system, the analysis in this SEA applies the most conservative assumptions to represent a “worst-case” scenario therefore it is assumed that facilities that currently do not meet BARCT with existing SCR systems will replace their existing SCR system rather than modifying the existing SCR system to comply with PAR 1134. Additionally, due to the number of affected stationary gas turbines and compliance date of January 1, 2024, the “worst-case” construction analysis is based on a combination of these construction activities overlapping as detailed in Table 4-7. In addition, because compressor gas turbines have an effective compliance date of two years after a permit to construct is issued by the Executive Officer or three years after a permit to construct is issued if the permit application is submitted before July 1, 2021, the potential for overlapping construction activities is less likely to occur because of the extended compliance time provided in PAR 1134.

**Table 4-1**  
**SCAQMD Air Quality Significance Thresholds**

<b>Mass Daily Thresholds <sup>a</sup></b>		
<b>Pollutant</b>	<b>Construction <sup>b</sup></b>	<b>Operation <sup>c</sup></b>
<b>NO<sub>x</sub></b>	100 lbs/day	55 lbs/day
<b>VOC</b>	75 lbs/day	55 lbs/day
<b>PM<sub>10</sub></b>	150 lbs/day	150 lbs/day
<b>PM<sub>2.5</sub></b>	55 lbs/day	55 lbs/day
<b>SO<sub>x</sub></b>	150 lbs/day	150 lbs/day
<b>CO</b>	550 lbs/day	550 lbs/day
<b>Lead</b>	3 lbs/day	3 lbs/day
<b>Toxic Air Contaminants (TACs), Odor, and GHG Thresholds</b>		
<b>TACs</b> (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk $\geq 10$ in 1 million Cancer Burden $> 0.5$ excess cancer cases (in areas $\geq 1$ in 1 million) Chronic & Acute Hazard Index $\geq 1.0$ (project increment)	
<b>Odor</b>	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
<b>GHG</b>	10,000 MT/yr CO <sub>2</sub> eq for industrial facilities	
<b>Ambient Air Quality Standards for Criteria Pollutants <sup>d</sup></b>		
<b>NO<sub>2</sub></b> 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)	
<b>PM<sub>10</sub></b> 24-hour average annual average	10.4 $\mu\text{g}/\text{m}^3$ (construction) <sup>e</sup> & 2.5 $\mu\text{g}/\text{m}^3$ (operation) 1.0 $\mu\text{g}/\text{m}^3$	
<b>PM<sub>2.5</sub></b> 24-hour average	10.4 $\mu\text{g}/\text{m}^3$ (construction) <sup>e</sup> & 2.5 $\mu\text{g}/\text{m}^3$ (operation)	
<b>SO<sub>2</sub></b> 1-hour average 24-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99 <sup>th</sup> percentile) 0.04 ppm (state)	
<b>Sulfate</b> 24-hour average	25 $\mu\text{g}/\text{m}^3$ (state)	
<b>CO</b> 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)	
<b>Lead</b> 30-day Average Rolling 3-month average	1.5 $\mu\text{g}/\text{m}^3$ (state) 0.15 $\mu\text{g}/\text{m}^3$ (federal)	

<sup>a</sup> Source: SCAQMD CEQA Handbook (SCAQMD, 1993)

<sup>b</sup> Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).

<sup>c</sup> For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.

<sup>d</sup> Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

<sup>e</sup> Ambient air quality threshold based on SCAQMD Rule 403.

KEY: lbs/day = pounds per day    ppm = parts per million     $\mu\text{g}/\text{m}^3$  = microgram per cubic meter     $\geq$  = greater than or equal to  
MT/yr CO<sub>2</sub>eq = metric tons per year of CO<sub>2</sub> equivalents     $>$  = greater than

Revision: March 2015

## Project-Specific Air Quality Impacts During Construction

Construction-related emissions can be distinguished as either onsite or offsite. Onsite emissions generated during construction principally consist of exhaust emissions (NO<sub>x</sub>, SO<sub>x</sub>, CO, VOC, PM<sub>2.5</sub> and PM<sub>10</sub>) from heavy-duty construction equipment operation, fugitive dust (primarily as PM<sub>10</sub>) from disturbed soil, and VOC emissions from asphaltic paving and painting. Offsite emissions during the construction phase normally consist of exhaust emissions and entrained paved road dust (primarily as PM<sub>10</sub>) from worker commute trips, material delivery trips, and haul truck material trips to and from the construction site. In general, limited construction emissions from site preparation activities, which may include earthmoving/grading, are anticipated because the each affected facility, typically, has already been graded and paved. Further, operators at each affected facility who install air pollution control equipment such as SCR technology to reduce NO<sub>x</sub> emissions will also need to utilize chemicals such as ammonia and catalyst as part of the process. As such, a new ammonia storage tank will need to be installed along with a containment berm large enough to hold 110 percent of the tank capacity in the event of an accidental release, pursuant to U.S. EPA's spill prevention control and countermeasure regulations.

To estimate the “worst-case” construction- and operational-related emissions associated with repowering or replacing an existing stationary gas turbine or installing new SCR systems in order to comply with the NO<sub>x</sub> emission limits in PAR 1134, assumptions were made to estimate combustion emissions from construction activities occurring onsite, off-site on-road emissions from worker trips, deliveries and haul trips, and on-site fugitive dust emissions, and operational emissions from deliveries and haul trips.

Among the 34-39 facilities subject to PAR 1134 there are approximately 12 RECLAIM facilities and four non-RECLAIM facilities for a total of 16 facilities that are expected to require modifications to comply with PAR 1134. The Final Staff Report indicates that 73 stationary gas turbines at 39 facilities would subject to PAR 1134. However, for the CEQA analysis, 30 stationary gas turbines at 16 facilities were analyzed as these represent stationary gas turbines that will require physical changes such as modification or the replacement of an existing stationary gas turbine and/or an increase in ammonia usage for a SCR system. The remaining facilities contain stationary gas turbines that either currently meet the proposed emission limits (six), are eligible for exemptions from the emission limits in PAR 1134 (24), qualify for low-use provisions (11), have been shut down, or have modified, retrofitted, or repowered their stationary gas turbines prior to the adoption of PAR 1134. Therefore, only 30 stationary gas turbines are included in the CEQA analysis. The remaining facilities contain stationary gas turbines that either currently meet the proposed emission limits or are eligible for exemptions from the emission limits in PAR 1134. Amongst the 16 facilities that will require modifications to comply with PAR 1134, approximately 30 stationary gas turbines would need to be replaced, repowered, or retrofitted with air pollution control equipment in order to comply with the NO<sub>x</sub> limits in PAR 1134. Of the 30 stationary gas turbines seven are equipped with older, less efficient SCR systems that are not capable of meeting the more stringent NO<sub>x</sub> emission limits in PAR 1134 and the remaining stationary gas turbines are not equipped with any air pollution control equipment for reducing NO<sub>x</sub> emissions. The seven facilities operating stationary gas turbines that are already equipped with existing SCR systems will need to increase the amount of ammonia injected and in turn increase their ammonia usage in order to meet the proposed emission limits in PAR 1134. Some of these SCR systems may not be capable of meeting the proposed NO<sub>x</sub> limits even with the increased ammonia injection. Therefore, it is assumed that all existing SCR systems at the affected facilities will need to be replaced but that the existing ammonia storage tank will be used. For any facility that operates a

stationary gas turbine that is not equipped with any air pollution control equipment for reducing NOx emissions, a new SCR system with a new ammonia tank will need to be installed or the existing stationary gas turbine will need to be replaced with a new stationary gas turbine with built-in dry low NOx technology. A summary of the affected units analyzed in this SEA are shown in Table 4-2.

**Table 4-2**  
**Proposed Construction Activities**

Construction Activities	Number of Affected Units
Install SCR system and associated ammonia tank	17
Replace existing SCR system	7 <sup>1</sup>
Replace existing stationary gas turbine with stationary gas turbine with built-in dry low NOx technology	6

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

For this reason, the environmental analysis in this SEA assumes that overlapping construction activities from the installation of SCR systems and associated ammonia storage tank or replacement stationary gas turbines with dry low-NOx technology will be installed, which is expected to result in the “worst-case” emissions.

### SCR System Installation

Currently, there are 17 stationary gas turbines that are not equipped with SCR technology. If facility owners/operators of these 17 turbines decide to install 17 SCR systems, 17 ammonia storage tanks (e.g., one storage tank for each SCR system) would also need to be installed because SCR systems utilize ammonia in the NOx reduction process. However, for any operator installing more than one SCR system at one facility, this analysis assumes that only one large aqueous ammonia storage tank would be installed in lieu of multiple, smaller ammonia storage tanks, because it is likely and expected the facilities would want to simplify their ammonia delivery schedule. For example, several RECLAIM facilities have two stationary gas turbines that are each expected to utilize new SCR technology; therefore, it is possible that the facility operator of these facilities would elect to install one larger aqueous ammonia storage tank, in lieu of two smaller tanks, to service the two new SCR systems. Also by assuming that one larger storage tank would be installed in lieu of multiple smaller storage tanks, the hazards and hazardous materials impacts from a catastrophic failure of the larger ammonia tank would represent the “worst-case” off-site consequence in the event of a spill. The size of each storage tank that may be needed to supply ammonia to each SCR system has been estimated to range between 250 and 10,000 gallons in capacity. As previously discussed, there are also seven existing SCR systems that may not be capable of meeting the proposed NOx emissions limits. As such, it is assumed that these SCR systems will be replaced but the facility will continue to use the existing ammonia tanks. Existing ammonia tanks are up to 12,000 gallons in capacity; however, the increase in ammonia usage will only affect the number of truck trips to deliver the ammonia and not the amount of ammonia stored on site.

Some facilities may have sufficient space to install one new SCR system and one new ammonia storage tank for their existing stationary gas turbine(s) and would likely expect minor modifications to the existing facility. However, because installation of a SCR system and

associated ammonia storage tank may need to occupy the space of existing equipment, demolition activities are assumed to occur prior to installation of the new equipment in order to remove any existing equipment or structures (as applicable), remove old piping and electrical connections, and break up the old foundation. For these reasons, slab pouring or paving activities are also anticipated and were analyzed.

The type of construction-related activities attributable to installing a new SCR system and associated ammonia storage tank would consist predominantly of deliveries of steel, piping, wiring, chemicals, catalysts, and other materials, and would also involve maneuvering the materials within the site via a variety of off-road equipment such as a crane, forklift et cetera or on-road equipment such as haul trucks, delivery trucks, and passenger vehicles for construction workers. If a new foundation is not needed, to establish footings or structure supports, some concrete cutting and digging may be necessary in order to re-pour new footings prior to building above the existing foundation. Because the gas turbines are currently operating at existing facilities, the analysis assumes that no more than 2,500 square feet of area would need to be disturbed at a single facility at a given time. Construction was assumed to consist of four phases: 1) demolition; 2) site preparation; 3) paving; and, 4) installing the NOx control equipment along with supporting devices and structures. Based on previous CEQA analyses<sup>15</sup> conducted for the installation of one SCR system and one ammonia storage tank, the typical equipment that may be needed to complete each construction phase at a single affected facility is presented in Table 4-3.

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<sup>15</sup> SCAQMD, Final Subsequent Environmental Assessment for Proposed Amended Rules 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; 1146.2 - Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters; and Proposed Rule 1100 – Implementation Schedule for NOx Facilities, November 2018. <http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2018/pars-1146-series---final-sea---full-merge-113018.pdf>

**Table 4-3  
Construction Equipment That May Be Needed to Install One SCR System and One  
Ammonia Tank at One Facility**

Construction Phase	Off-Road Equipment Type	Quantity	Daily Usage Hours
Demolition	Concrete/Industrial Saws	1	8
Demolition	Cranes	1	2
Demolition	Rubber Tired Dozers	1	3
Demolition	Tractors/Loaders/Backhoes	1	4
Site Preparation	Rubber Tired Dozers	1	7
Site Preparation	Tractors/Loaders/Backhoes	1	4
Site Preparation	Trenchers	1	4
Building Construction	Aerial Lifts	1	4
Building Construction	Cranes	1	2
Building Construction	Forklifts	1	6
Building Construction	Generator Sets	1	8
Building Construction	Tractors/Loaders/Backhoes	1	4
Building Construction	Welders	1	4
Paving	Cement and Mortar Mixers	2	6
Paving	Pavers	1	5
Paving	Plate Compactors	1	4
Paving	Rollers	1	4
Paving	Tractors/Loaders/Backhoes	1	4

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

- To provide a “worst-case” analysis, each SCR system and associated ammonia storage tank installation will require its own construction crew and equipment. For any facility with multiple gas turbines, the installation of SCR systems and associated ammonia storage tanks are assumed to occur in sequential order with the same construction crew and equipment in order to avoid all gas turbines being offline at the same time.
- The four phases are assumed to occur sequentially during a traditional work week (e.g., five days) and each phase is assumed the following number of days: demolition – 15 days; site preparation – five days; installation of NO<sub>x</sub> control equipment – 180 days; and paving – five days.
- During construction of each SCR system and ammonia storage tank the following number of round-trip trips would occur from off-road equipment each day: demolition - 25 trips; site preparation – 10 trips; installation of SCR system and ammonia tank – 68 trips; and paving – 10 trips. In addition, 10 on-road hauling trips are estimated to be needed during demolition, seven on-road vendor trips are estimated to be needed during the installation of the SCR system and ammonia storage tank, and one vendor trip per day will be needed during paving.

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

Table 4-4 presents the peak daily emissions from construction activities to install one SCR system and one ammonia storage tank at one facility. There are 17 gas turbines located at nine facilities where each gas turbine is assumed to need one SCR system and one ammonia storage tank installed. For the facilities that have more than one gas turbine and thus require more than one SCR system to be installed, it is possible only one ammonia storage tank with a large enough capacity to supply enough ammonia to all of the SCR systems would be needed. Further, for these six facilities, the installations of the SCR systems are assumed to occur sequentially (e.g., one SCR system and one ammonia storage tank at a time) in order to avoid all gas turbines being offline simultaneously and to maintain operations at each facility. There are an additional seven stationary gas turbines that may need to replace their existing SCR systems; thus this analysis includes 16 facilities and 24 affected stationary gas turbines. PAR 1134 provides approximately four years (compliance date of January 1, 2024) for facilities to take the necessary actions in order to achieve compliance, e.g., to construct each SCR system and ammonia storage tank at the nine affected facilities or to replace the existing SCR system at the other six affected facilities. With a four-year compliance timeframe, construction at these 16 facilities would likely be staggered because of the lead time needed to complete design and engineering, procure contracts, order equipment, and obtain SCAQMD permits prior to beginning construction. Construction activities may be further staggered due to the potential for the owner or operator of facilities with compressor gas turbines to submit a request to the Executive officer for a compliance date extension. In addition, because compressor gas turbines have an effective compliance date of two years after a permit to construct is issued by the Executive Officer or three years after a permit to construct is issued if the permit application is submitted before July 1, 2021, the potential for overlapping construction activities is less likely to occur because of the extended compliance time provided in PAR 1134. Thus, the analysis assumes that not all nine facilities would begin construction on the exact same day and maintain the exact same schedule. However, it is possible that some facilities may have overlapping construction phases (e.g., Facility 1 would have demolition occurring, while Facility 2 may be conducting site preparation, etc.). Table 4-4 presents the peak daily emissions for the construction of one SCR system and ammonia storage tank at one facility, and the quantity of peak daily construction emissions are less than the SCAQMD's air quality significance thresholds for construction. Table 4-7 presents this overlap in peak daily emissions for construction of two SCR systems and two ammonia storage tanks. Appendix B contains the CalEEMod output files for the annual, summer, and winter construction emissions for the construction of one SCR system at one facility.

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

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

### **Complete Replacement of Existing Stationary Gas Turbine**

In lieu of installing a new SCR system, a facility operator may consider completely replacing their existing stationary gas turbine with a new, more efficient stationary gas turbine equipped with dry low NOx technology that is capable of meeting the applicable NOx emission limit without the need for an SCR system. The decision to completely replace a gas turbine will be based on a number of factors such as age, reliability, high maintenance and operating costs, fuel efficiency issues, and/or the lack of replacement parts. However, it is impossible to predict when this would occur for the affected units, because it is a facility-based decision (e.g., cost, long-term planning, etc.) that is dependent on the status of the unit (e.g., unit operation schedule, unit age, and maintenance of the unit, etc.).

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

- Before dismantling can occur, the existing gas turbine would need to be shut down and allowed to cool. The dismantling and demolition process is estimated to take 20 days and then it would require approximately five days of site preparation, 180 days of building construction, and five days of paving, for a total of 190 days.
- 50 workers would be needed to dismantle the existing stationary gas turbine and install the new stationary gas turbine.
- Equipment needed to replace a stationary gas turbine is presented in Table 4-5.
- The footprint of the existing gas turbine is assumed to be approximately 3,000 square feet and the facility operator is assumed to replace the unit with equipment of the same or similar size and footprint.
- To provide a “worst-case” analysis, each gas turbine replacement will require its own construction crew and equipment. For any facility with multiple gas turbines undergoing replacement, the replacements are assumed to occur in sequential order with the same construction crew and equipment in order to avoid all gas turbines being offline at the same time.
- Once the new gas turbine becomes operational, the NOx emissions are expected to be fewer in the new gas turbine relative to the existing gas turbine. Similarly, the fuel efficiency of

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

- No additional employees are expected to be needed to operate and maintain the new gas turbine. The required operation and maintenance activities are expected to be similar for the new gas turbine.

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

Construction Phase	Off-Road Equipment Type	Quantity	Daily Usage Hours
Demolition	Concrete/Industrial Saws	1	8
Demolition	Cranes	1	3
Demolition	Rubber Tired Dozers	1	4
Demolition	Tractors/Loaders/Backhoes	1	4
Site Preparation	Rubber Tired Dozers	1	7
Site Preparation	Tractors/Loaders/Backhoes	1	4
Site Preparation	Trenchers	1	4
Building Construction	Aerial Lifts	1	4
Building Construction	Cranes	1	3
Building Construction	Forklifts	1	6
Building Construction	Generator Sets	1	8
Building Construction	Tractors/Loaders/Backhoes	1	4
Building Construction	Welders	1	4
Paving	Cement and Mortar Mixers	2	6
Paving	Pavers	1	5
Paving	Plate Compactors	1	4
Paving	Rollers	1	4
Paving	Tractors/Loaders/Backhoes	1	4

Construction emissions associated with removing one stationary gas turbine and replacing it with a new stationary gas turbine of comparable size and footprint were estimated using CalEEMod version 2016.3.2. Appendix B contains the detailed construction estimates for replacing one stationary gas turbine. Table 4-6 summarizes the peak daily construction emissions from replacing a stationary gas turbine with a new stationary gas turbine.

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

<b>Construction Emissions</b>	<b>VOC (lb/day)</b>	<b>NOx (lb/day)</b>	<b>CO (lb/day)</b>	<b>SOx (lb/day)</b>	<b>PM10 (lb/day)</b>	<b>PM2.5 (lb/day)</b>
Replacement of 1 Stationary Gas Turbine	1.4	12.9	10.1	0.0	6.1	3.6
Significance Threshold for Construction	75	100	550	150	150	55
<b>Exceed Significance?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

As shown in Table 4-6, the construction emissions from the replacement of one stationary gas turbine on a peak day are less than SCAQMD's air quality significance thresholds for construction.

The existing six stationary turbines located in the OCS will likely replace some of their existing stationary gas turbines with new stationary gas turbines with dry low NOx technology or other NOx reduction control technology to comply with PAR 1134. However, as explained earlier, to minimize disruption at the facility, each replacement is assumed to occur in sequential order with the same construction crew and equipment in order to avoid all gas turbines being offline at the same time.

There may be other facilities that will elect to replace their existing gas turbine(s), but SCAQMD staff is unable to predict if there are additional facilities that would choose replacement since there are a variety of factors to be considered. One factor is the useful life of the equipment since an average stationary gas turbine is estimated to have a useful life of 25 to 30 years. Some facility operators may decide to replace an old gas turbine with a new gas turbine to improve operational efficiency or if the existing gas turbine cannot be retrofitted with a new SCR system. Overall, the decision to replace an existing gas turbine will depend upon cost, the feasibility to install a new SCR system and achieve the NOx emission limits in PAR 1134, as well equipment age and size, and the facility's operational needs.

Given the duration of construction that would be needed to replace an existing gas turbine and install an SCR system and ammonia storage tank and the length of time provided to comply with the requirements of PAR 1134 (on or before January 1, 2024, approximately four years to achieve compliance), the construction phases for multiple facilities could potentially overlap on a peak day. A peak day is expected to consist of two SCR systems and associated ammonia storage tank installations and one stationary gas turbine replacement. Overlapping peak daily construction emissions are shown in Table 4-7. In addition, because compressor gas turbines have an effective compliance date of two years after a permit to construct is issued by the Executive Officer or three years after a permit to construct is issued if the permit application is submitted before July 1, 2021, the potential for overlapping construction activities is less likely to occur because of the extended compliance time provided in PAR 1134.

**Table 4-7  
Overlapping Peak Daily Construction Emissions**

<b>Construction Emissions</b>	<b>VOC (lb/day)</b>	<b>NOx (lb/day)</b>	<b>CO (lb/day)</b>	<b>SOx (lb/day)</b>	<b>PM10 (lb/day)</b>	<b>PM2.5 (lb/day)</b>
Installation of Two SCR Systems and Two Ammonia Storage Tanks	2.6	25.8	17.3	0.03	12.2	7.1
Replacement of 1 Stationary Gas Turbine	1.3	12.9	8.9	0.02	6.1	3.6
Total Overlapping Construction Emissions	4.0	38.7	26.2	0.05	18.3	10.7
Significance Threshold for Construction	75	100	550	150	150	55
<b>Exceed Significance?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

As shown in Table 4-7, the air quality impacts due to construction from the implementation of PAR 1134 are expected to be less than significant.

### **Project-Specific Air Quality Impacts During Operation**

The proposed project is expected to result in direct air quality benefits from the reduction of 2.8 tons per day of NOx emissions by January 1, 2024. Implementation is expected to be achieved through any of the following modifications: 1) install one new SCR system for one existing stationary gas turbine that does not have post-combustion air pollution control equipment; 2) replace one existing stationary gas turbine with one new stationary gas turbine equipped with dry low-NOx technology; or 3) replace one existing SCR system and increase the amount of ammonia injection. Once construction is complete, secondary criteria pollutant emissions may be generated as part of operation activities necessary with operating and maintaining the SCR systems and gas turbines. In particular, the following activities may be sources of secondary criteria pollutant emissions during operation: 1) new vehicle trips via heavy-duty for periodic ammonia/urea deliveries for each SCR system installed; 2) new vehicle trips via heavy-duty trucks for periodic deliveries of fresh catalyst and hauling away spent catalyst the new SCR systems are installed; and 3) increased vehicle trips via heavy-duty periodic ammonia/urea deliveries for facilities increasing ammonia usage on existing SCR systems with replaced catalyst modules.

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

- One new ammonia storage tank is assumed to require two one-way truck deliveries of 19 percent aqueous ammonia. Ammonia delivery trucks can deliver approximately 6,400 gallons at any one time.
- Each facility with only one new SCR system installed will need only one new ammonia delivery trip per month, but the quantity delivered will vary according to the capacity of the ammonia storage tank. For facilities that will have more than one SCR system installed, the analysis assumes that one new large ammonia storage tank will require two one-way truck deliveries of 19 percent aqueous ammonia. Since the ammonia tanks will be pressurized, no ammonia emissions are expected from filling the storage tanks.

- As a conservative estimate, it is assumed the peak daily trips associated with ammonia/urea deliveries will be one truck per facility for all gas turbines that are equipped with new SCR systems. The delivery distance of one ammonia truck is assumed to be 100 miles round-trip.
- All initial catalyst deliveries are assumed to occur during the construction phase. However, catalyst modules are expected to be replaced every two to three years. When spent catalyst removal and replacement becomes necessary, two one-way trucks will be needed to remove the catalyst and two one-way trucks will be needed to deliver the fresh catalyst modules.
- Peak daily trips assume truck trip distances to deliver catalyst would be similar to ammonia and are assumed to be 100 miles round-trip. It is assumed the catalyst delivery vehicles would be similar to the ammonia delivery trucks (heavy-duty).
- No additional employees are anticipated to be needed to operate the new SCR systems because the existing work force per affected facility is expected to be sufficient. As such, no additional emissions from new workers are anticipated from the operation of the new SCR systems.
- Nine facilities are expected to install new SCR systems with new ammonia deliveries with eight of the aforementioned facilities located within one quarter mile of sensitive receptors (e.g., schools, residences, etc.).
- Six facilities with existing SCR systems are expected to increase their ammonia usage with two of the aforementioned facilities located within one quarter mile of sensitive receptors (e.g., schools, residences, etc.).
- The projected increase in aqueous ammonia usage will not change the number of aqueous ammonia deliveries occurring on a peak day (e.g., one truck) per facility.

A total of 16 facilities will need new ammonia deliveries. Of the 16 facilities with SCR systems, seven had existing SCR systems and therefore, would not result in new catalyst delivery trips. Secondary operational emissions from these facilities were estimated using EMFAC2017 emission factors and are presented in Table 4-8. Appendix B contains the detailed emissions calculations from the operational activities from the operating the new SCR systems and increase in delivery trucks as a result of increasing ammonia usage for facilities with existing SCR systems as well as new catalyst deliveries.

**Table 4-8**  
**Peak Daily Operational Emissions at One Facility**

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

As indicated in Table 4-8, operational emissions from one facility as a result in an increase in delivery trucks is below the SCAQMD's air quality significance thresholds for operation. Due to the number of affected facilities with increased ammonia deliveries (17), operational emissions may overlap on a peak day. However, in the most conservative assumption, if four facilities were to overlap their scheduled ammonia delivery and one facility with new SCR catalyst delivery, air quality impacts from operations are expected to be less than significant as shown in Table 4-9.

**Table 4-9  
Peak Daily Operational Emissions**

<b>Operational Activity</b>	<b>VOC (lb/day)</b>	<b>NOx (lb/day)</b>	<b>CO (lb/day)</b>	<b>SOx (lb/day)</b>	<b>PM10 (lb/day)</b>	<b>PM2.5 (lb/day)</b>
Increased Ammonia Delivery Trucks for 4 Facilities	0.31	2.08	1.35	0.01	0.14	0.08
New Catalyst Delivery and Spent Catalyst Haul Trip at 1 Facility	0.15	1.04	0.68	0.00	0.07	0.04
<b>TOTAL</b>	<b>0.46</b>	<b>3.11</b>	<b>2.03</b>	<b>0.01</b>	<b>0.21</b>	<b>0.12</b>
Significance Threshold for Operation	55	55	550	150	150	55
<b>Exceed Significance?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

#### ***Construction and Operation Overlap Impact***

Given the number of affected facilities and the varying modifications expected to occur at each affected facility in order to comply with PAR 1134, construction activities at some facilities could potentially overlap with operational activities occurring at other facilities that have completed construction. The overlap could occur during the period from the date of adoption of PAR 1134 until January 1, 2024, at which all affected stationary gas turbines, except for compressor gas turbines, are required to meet the NOx emission limits set forth in PAR 1134. Compressor gas turbines have an effective compliance date of two years after a permit to construct is issued by the Executive Officer or three years after a permit to construct is issued if the permit application is submitted before July 1, 2021. The peak daily emissions during this overlap period are assumed to occur when two new SCR systems and associated ammonia storage tanks are being installed (see Table 4-4) and one existing stationary gas turbine is being replaced (see Table 4-6 for one stationary gas turbine installation). Peak operational emissions are assumed to occur when four facilities receive ammonia deliveries and one facility receives new SCR catalyst and hauls off spent catalyst (see Table 4-9). According to SCAQMD policy, in the event that there is an overlap of construction and operation phases, the peak daily emissions from the construction and operation overlap period should be summed and compared to the SCAQMD's air quality significance thresholds for operation because the latter are more stringent, and thus, more conservative. As such, total emissions from overlapping construction and operational activities have been compared to the air quality significance thresholds for operation in Table 4-10.

**Table 4-10**  
**Peak Daily Overlapping Construction and Operational Emissions**

<b>Operational Activity</b>	<b>VOC (lb/day)</b>	<b>NO<sub>x</sub> (lb/day)</b>	<b>CO (lb/day)</b>	<b>SO<sub>x</sub> (lb/day)</b>	<b>PM<sub>10</sub> (lb/day)</b>	<b>PM<sub>2.5</sub> (lb/day)</b>
Installation of 2 new SCR Systems and 2 new ammonia storage tanks (construction)	3.9	38.7	29.6	0.1	18.2	10.7
Replacement of 1 Stationary Gas Turbine (construction)	1.4	12.9	10.1	0.0	6.1	3.6
Increased Truck Trips for ammonia delivery for 4 facilities (operation)	0.31	2.08	1.35	0.01	0.14	0.08
Increased Truck Trips for New Catalyst Delivery and Hauling Spent Catalyst at 1 Facility	0.15	1.04	0.68	0.00	0.07	0.04
<b>TOTAL</b>	4.42	41.81	28.19	0.06	18.44	10.82
Significance Threshold for Operation	55	55	550	150	150	55
<b>Exceed Significance?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

As indicated in Table 4-10, the peak daily emissions during the construction and operational overlap period do not exceed any of the SCAQMD's air quality significance thresholds for operation. Therefore, the air quality impacts during the construction and operation overlap period are considered to be less than significant. In conclusion, the proposed project is also not expected to result in significant adverse air quality impacts during the construction and operation overlap period.

SCR systems reduce NO<sub>x</sub> emissions by using ammonia, which is considered a TAC. Unreacted ammonia emissions generated from these units are referred to as ammonia slip. Ammonia slip is limited to five ppm through permit conditions for new SCR installations. Based on the November 2015 Final Program Environmental Analysis for Proposed Amended Regulation XX - RECLAIM<sup>16</sup> the concentration at a receptor located 25 meters from a stack would be much less than one percent of the concentration at the release from the exit of the stack. Thus, the peak concentration of ammonia at a receptor located 25 meters from a stack is calculated by assuming a dispersion of one percent. While ammonia does not have an OEHHA approved cancer potency value, it does have non-carcinogenic chronic (200 microgram (µg) per cubic meter) and acute (3,200 µg per cubic meter) reference exposure levels (RELs). Table 4-11 summarizes the calculated non-carcinogenic chronic and acute hazard indices for ammonia and compares these values to the respective significance thresholds for a system with either an ammonia slip limit of 5 ppmv or 10 ppmv, as applicable; both were shown to be less than significant.

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

**Table 4-11**  
**Health Risk from the Facilities Using Ammonia**

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

<sup>1</sup> Some facilities have stationary gas turbines that may qualify for exemptions provided they meet applicable specified criteria in PAR 1134. Of those stationary gas turbines that may be exempt, some would have an ammonia limit not to exceed 10 ppmv at 15 percent oxygen on a dry basis. Also, compressor gas turbines, of which there are only four currently located at one facility, have an ammonia slip limit not to exceed 10 ppmv at 15 percent oxygen on a dry basis.

Even if multiple SCR systems are installed at one facility, the locations of all the stacks would generally not be situated in the same place within the affected facility's property. For a facility with space limitations and multiple SCR installations, the exhaust would likely be routed to one stack which would still be limited to either five ppmv or 10 ppmv ammonia slip. As such, even with multiple SCR system installations, the acute and chronic hazard indices would not be expected to exceed the significance threshold.

### PM Impacts from Ammonia Usage

In a SCR system, the ammonia is injected into the flue gas stream and reacts with NO<sub>x</sub> to form elemental nitrogen (N<sub>2</sub>) and water in the cleaned exhaust gas. A small amount of unreacted ammonia (ammonia slip) may pass through. The SCAQMD through permit conditions limits ammonia slip to five ppm. In the November 2015 Final Program EA for NO<sub>x</sub> RECLAIM<sup>17</sup>, SCAQMD staff conducted a series of regional simulations to determine the impacts of reducing NO<sub>x</sub> while increasing the potential for creating ammonia slip due to increased use of ammonia needed for the operation of SCR systems. In the analysis, 14 tons per day of NO<sub>x</sub> emission reductions at RECLAIM facilities were estimated while ammonia slip emissions from the same facilities would increase by 1.63 tons per day. The simulations were run for the 2021 draft baseline emissions inventory to estimate what the impacts would be at full implementation of the 14 tons per day decrease in NO<sub>x</sub> emissions. The effect of decreasing 14 tons per day of NO<sub>x</sub> would result in a decrease of annual PM<sub>2.5</sub> of approximately 0.7  $\mu\text{g}$  per cubic meter. However, since the usage of ammonia is necessary to achieve the NO<sub>x</sub> emission reductions (via SCR technology), the ammonia usage would cause a concurrent increase in annual PM<sub>2.5</sub> of approximately 0.6  $\mu\text{g}$  per cubic meter. Thus, increasing the amount of ammonia slip would result in a net average 0.1  $\mu\text{g}$  per cubic meter decrease in annual PM<sub>2.5</sub>. Further, the simulations showed that there would be no change in ozone levels compared to what would occur if there was no increase in ammonia slip. The overall decrease in annual PM<sub>2.5</sub> would occur provided that all 14 tons per day of NO<sub>x</sub> emissions would be reduced, which in turn would reduce PM<sub>2.5</sub> emissions overall, even if some PM<sub>2.5</sub> emissions are generated from ammonia slip. In summary, the impacts to regional PM<sub>2.5</sub>

<sup>17</sup> SCAQMD, Final Program Environmental Assessment for Proposed Amended Regulation XX -RECLAIM, November 2015. <http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2015/regxxfinalpeplusappendices.pdf>

and ozone due to increased ammonia slip in these simulations was concluded to not create a significant adverse impact. Because this proposed project would have substantially less ammonia slip emissions than what was analyzed in the regional simulations, the impacts to regional PM<sub>2.5</sub> and ozone due to increased ammonia slip from PAR 1134 would not create a significant adverse air quality impact.

### **Odor Impacts**

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

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

The replacement stationary gas turbines are expected to be the same size as the existing stationary gas turbines and therefore to cause any additional odors. Furthermore, since the replacement stationary gas turbines are newer and more gas efficient, there is potentially less odors due to a decrease in fuel usage. [please add a sentence or two here explaining why the odor profile of replaced gas turbines may improve or at the very least remain unchanged since the newer more efficient gas turbines use less fuel when compared to their older counterparts.]

### **Greenhouse Gas Impacts**

Significant changes in global climate patterns have recently been associated with global warming, an average increase in the temperature of the atmosphere near the Earth's surface, attributed to accumulation of GHG emissions in the atmosphere. GHGs trap heat in the atmosphere, which in turn heats the surface of the Earth. Some GHGs occur naturally and are emitted to the atmosphere through natural processes, while others are created and emitted solely through human activities. The emission of GHGs through the combustion of fossil fuels (i.e., fuels containing carbon) in conjunction with other human activities, appears to be closely associated with global warming. State law defines GHG to include the following: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>)

(Health and Safety Code Section 38505(g)). The most common GHG that results from human activity is CO<sub>2</sub>, followed by CH<sub>4</sub> and N<sub>2</sub>O.

Traditionally, GHGs and other global warming pollutants are perceived as solely global in their impacts and that increasing emissions anywhere in the world contributes to climate change anywhere in the world. A study conducted on the health impacts of CO<sub>2</sub> “domes” that form over urban areas cause increases in local temperatures and local criteria pollutants, which have adverse health effects<sup>18</sup>.

The analysis of GHGs is a different analysis than the analysis of criteria pollutants for the following reasons. For criteria pollutants, the significance thresholds are based on daily emissions because attainment or non-attainment is primarily based on daily exceedances of applicable ambient air quality standards. Further, several ambient air quality standards are based on relatively short-term exposure effects on human health (e.g., one-hour and eight-hour standards). Since the half-life of CO<sub>2</sub> is approximately 100 years, for example, the effects of GHGs occur over a longer term which means they affect the global climate over a relatively long-time frame. As a result, the SCAQMD’s current position is to evaluate the effects of GHGs over a longer timeframe than a single day (i.e., annual emissions). GHG emissions are typically considered to be cumulative impacts because they contribute to global climate effects. GHG emission impacts from implementing the proposed project were calculated at the project-specific level during construction and operation. For example, installation of NO<sub>x</sub> control equipment has the potential to increase the use of electricity, fuel, and water and the generation of wastewater which will in turn increase CO<sub>2</sub> emissions.

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

As indicated in Chapter 3, combustion processes generate GHG emissions in addition to criteria pollutants. The following analysis mainly focuses on directly emitted CO<sub>2</sub> because this is the primary GHG pollutant emitted during the combustion process and is the GHG pollutant for which emission factors are most readily available. CO<sub>2</sub> emissions were estimated from CalEEMod for the SCR systems and stationary gas turbines equipped with dry low NO<sub>x</sub> technology.

Installation of NO<sub>x</sub> control equipment as part of implementing the proposed project is expected to generate construction-related CO<sub>2</sub> emissions. In addition, based on the type and size of equipment

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<sup>18</sup> Jacobsen, Mark Z. “Enhancement of Local Air Pollution by Urban CO<sub>2</sub> 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>

affected by the proposed project, CO<sub>2</sub> emissions from the operation of the NO<sub>x</sub> control equipment are likely to increase from current levels due to using electricity, fuel and water and generating more wastewater. The proposed project will also result in an increase of GHG operational emissions produced from additional truck hauling and deliveries necessary to accommodate the additional solid waste generation and increased use of chemicals and supplies.

For the purposes of addressing the potential GHG impacts of the proposed project, the overall impacts of CO<sub>2e</sub> emissions from the project were estimated and evaluated from the earliest possible initial implementation of the proposed project with construction beginning in 2020. Once the proposed project is fully implemented, the potential NO<sub>x</sub> emission reductions would continue through the end of the useful life of the equipment. The analysis estimated CO<sub>2e</sub> emissions from all sources subject to the proposed project (construction and operation) from the time construction is expected to commence (January 1, 2020) the end of the project (January 1, 2024). The beginning of the proposed project was assumed to be no sooner than 2020, since installing NO<sub>x</sub> control equipment takes considerable advance planning and engineering. The proposed project is expected to achieve 2.8 tons per day of the NO<sub>x</sub> emission reduction, such that any installed or modified NO<sub>x</sub> controls could be constructed and operational by December 31, 2023. However, compressor gas turbines have an effective compliance date of two years after a permit to construct is issued by the Executive Officer or three years after a permit to construct is issued if the permit application is submitted before July 1, 2021. Thus, once construction is complete and the equipment is operational, CO<sub>2e</sub> emissions will remain constant.

Approximately 17 new SCR systems and associated ammonia storage tanks, seven SCR system replacements, and six stationary gas turbine replacements are expected to be constructed as a result of the implementation of PAR 1134. Also, 16 facilities will need new or additional ammonia deliveries. Only one of the facilities is expected to need two additional deliveries per month while the remaining facilities will need one delivery per month for a total of 204 ammonia deliveries per year. Additionally, SCR catalysts will need to be replaced. For GHG emission estimates, it is conservatively assumed that 16 additional catalyst deliveries will occur per year for the 16 new SCR systems and 16 truck trips to remove spent catalyst. The total increased truck trips per year is therefore 236 truck trips. GHG Emissions from construction activities were estimated using CalEEMod v.2016.3.2 and GHG emissions from operational activities were estimated based on EMFAC2017 factors for heavy duty trucks. Appendix B contains CalEEMod files for construction emissions and Appendix C contains detailed calculations for operational emissions. As summarized in Table 4-12, implementation of PAR 1134 may result in the generation of 145 amortized metric tons of CO<sub>2e</sub> emissions during construction and 21 metric tons of CO<sub>2e</sub> emissions from mobile sources during operation from all the affected facilities.

**Table 4-12**  
**GHG Emissions from the Proposed Project**

Activity	CO <sub>2</sub> (MT/year <sup>a</sup> )
Construction <sup>b</sup> – 17 SCR systems and associated ammonia storage tanks, 7 SCR System replacements, 6 Stationary Gas Turbines installed in one year	145
Operation – On-road vehicles	21
<b>Total GHG</b>	<b>166</b>
Significance Threshold	10,000
<b>Exceed Significance?</b>	<b>NO</b>

a. 1 metric ton = 2,205 pounds

b. GHGs from short-term construction activities are amortized over 30 years

As summarized in Table 4-12, GHG emissions from the installation of new SCR systems, and the replacement of SCR catalyst modules and existing stationary gas turbines were quantified by applying the same assumptions used to quantify the criteria pollutant emissions. The only exception is that the construction GHG emissions were amortized over a 30-year project life in accordance with the guidance provided in the Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans<sup>19</sup> that was adopted by the SCAQMD Governing Board in December 2008.

Thus, as shown in Table 4-12, total GHG emissions are 166 metric tons per year, which is below the SCAQMD's GHG significance threshold for industrial sources. For this reason, implementing the proposed project is not expected to generate significant adverse cumulative GHG air quality impacts. Further, PAR 1134 is not expected to generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG gases.

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

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

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

**CUMULATIVE IMPACTS:** The preceding analysis concluded that air quality impacts from construction and operational activities would be less than significant as a result of implementing the proposed project. Thus, the air quality impacts due to construction and operation are not considered to be cumulatively considerable pursuant to CEQA Guidelines section 15064 (h)(1) and therefore, there are no significant adverse cumulative air quality impacts. Further, it should be noted that the air quality analysis is a conservative, “worst case” analysis so the actual construction and operational impacts are not expected to be as great as estimated in this SEA. Additionally, the construction activities are temporary when compared to the permanent project long-term emission reductions of NOx as a result of the proposed project. Even though the proposed project will cause a temporary less than significant increase in air emissions during the construction and operation phase, the temporary net increase in construction emissions combined with the total permanent emission reductions projected overall during operation would not interfere with the expected overall NOx reductions as part of the proposed project. For example, an increase in NOx emissions during the construction and operation overlap period is expected to result in approximately 42 pounds of NOx per day as indicated in Table 4-10, however the proposed project is expected to result in NOx emission reductions of 2.8 tons per day (5,600 pounds per day) after implementation of BARCT limits. Further, as facilities complete

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<sup>19</sup> Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans, [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/ghgattachmente.pdf?sfvrsn=2](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf?sfvrsn=2)

modifications to their existing stationary gas turbines to comply with PAR 1134, the incremental NOx emissions reductions that are expected to occur would offset the NOx emissions generated during construction. An example of facility NOx emission reductions after implementation of PAR 1134 can be found in Appendix F.

Also, implementing control measure CMB-05 contained in the 2016 AQMP, in addition to the air quality benefits of existing and proposed SCAQMD rules, is anticipated to bring the SCAQMD into attainment with all national and most state ambient air quality standards by the year 2023. Therefore, cumulative operational air quality impacts from the proposed project and previous amendments considered together, are not expected to be significant because implementation of the proposed project is expected to result in net emission reductions and overall air quality improvement. Therefore, there will be no significant cumulative adverse operational air quality impacts from implementing the proposed project.

Though the proposed project involves combustion processes which could generate GHG emissions such as CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O, the proposed project does not affect equipment or operations that have the potential to emit other GHGs such as SF<sub>6</sub>, HFCs or PFCs. Relative to GHGs, implementing the proposed project is not expected to increase GHG emissions that exceed the SCAQMD's GHG significance threshold. In addition, implementing the proposed project is expected to generate less than significant adverse cumulative GHG air quality impacts. The GHG analysis for the proposed project can be found in Chapter 4.

## **HAZARDS AND HAZARDOUS MATERIALS IMPACTS**

### **Significance Criteria**

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

- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards.
- Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

### **PROJECT-SPECIFIC IMPACTS - HAZARD ANALYSIS:**

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

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

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

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

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

### **Hazard Safety Regulations**

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

proposed project. The Hazardous Materials Transportation Act is the federal legislation that regulates transportation of hazardous materials.

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

### **Impacts on Water Quality**

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

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

### **Transportation Release**

It is expected that the affected facilities utilizing SCR technology will receive ammonia from a local ammonia supplier located in the greater Los Angeles area. Deliveries of aqueous ammonia would be made by tanker truck via public roads. The maximum capacity of an ammonia tanker truck is approximately 6,400 gallons. The estimated ammonia use and storage needed to meet the NOx emission limits for PAR 1134 are shown in Appendix E. The “worst-case” assumption for delivery frequency from a supplier would be to deliver one ammonia tanker truck to fill one 5,000-gallon tank of ammonia at a facility (Facility A). When comparing the proposed project to what was analyzed in the following Transportation Release Scenarios, the “worst-case” for PAR 1134 would actually result in fewer deliveries of ammonia on any given day resulting in less impacts than Scenario 1 and a smaller volume of ammonia resulting in less impacts than Scenario 2. For both scenarios, the potential impacts from transportation release are expected to be less than significant. Thus, the potential impacts from a transportation release as a result of PAR 1134 would also be less than significant. Regulations for the transport of hazardous materials by public highway are described in 49 CFR Sections 173 and 177.

### Transportation Release Scenario 1:

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

Every time hazardous materials are moved from the site of generation, opportunities are provided for an accidental (unintentional) release. A study conducted by the EPA indicates that the expected number of hazardous materials spills per mile shipped ranges from one in 100 million to one in one million, depending on the type of road and transport vehicle used. The U.S. EPA analyzed accident and traffic volume data from New Jersey, California, and Texas, using the Resource Conservation and Recovery Act Risk/Cost Analysis Model and calculated the accident involvement rates presented in Table 4-14. This information was summarized from the Los Angeles County Hazardous Waste Management Plan (Los Angeles County, 1988).

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

**Table 4-13**  
**Truck Accident Rates for Cargo on Highways**

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

Source: Environmental Protection Agency, 1984.

\*Note: Average number for transport on interstates, highways, and urban roadways.

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

The actual occurrence of an accidental release of a hazardous material cannot be predicted. The location of an accident or whether sensitive populations would be present in the immediate vicinity also cannot be identified. In general, the shortest and most direct route that takes the least amount

of time would have the least risk of an accident. Hazardous material transporters do not routinely avoid populated areas along their routes, although they generally use approved truck routes that take population densities and sensitive populations into account.

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

In the unlikely event that the tanker truck would rupture and release the entire 7,000 gallons of aqueous ammonia, the ammonia solution would have to pool and spread out over a flat surface in order to create sufficient evaporation to produce a significant vapor cloud. For a road accident, the roads are usually graded and channeled to prevent water accumulation and a spill would be channeled to a low spot or drainage system, which would limit the surface area of the spill and the subsequent evaporative emissions. Additionally, the roadside surfaces may not be paved and may absorb some of the spill. In a typical release scenario, because of the characteristics of most roadways, the pooling effect on an impervious surface would not typically occur. As a result, the spilled ammonia would not be expected to evaporate into a toxic cloud at concentrations that could significantly adversely affect residences or other sensitive receptors in the area of the spill.

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

### **Transportation Release Scenario 2:**

This transportation release scenario uses as a surrogate analysis a project at the BP Carson refinery in which SCR system was retrofitted onto an existing fluid catalytic cracking unit (FCCU) and an associated 12,660 gallon ammonia storage tank was constructed (Final Negative Declaration for: BP Carson Refinery Fluid Catalytic Cracking Unit NO<sub>x</sub> Reduction Project: SCH No. 2002021068; SCAQMD, 2002). The following summarizes the ammonia transport analysis for the BP Carson Refinery FCCU project.

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

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

is 1 in 10, and that of a large release in a transportation accident is 1 in 40 (ENSR, 1994). The likelihood of a major transportation release after the project is constructed is therefore approximately once per 330,000 years (8,300 times 40). The probability of a transportation accident that would pose a significant risk to the public is therefore insignificant.

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

### **Ammonia Tank Rupture**

To analyze the effects of aqueous ammonia as a result of an accidental release due to tank rupture, a Consequence Analysis using the EPA RMP\*Comp (Version 1.07) is typically performed. SCAQMD staff estimated that the largest aqueous ammonia tank that would be installed as a result of implementing PAR 1134 would be 5,000 gallons at one facility. The facilities that were identified as installing SCR systems and the associated ammonia storage tanks were estimated to need storage tanks with a capacity from 250 to 5,000 gallons. Nine facilities were assumed to install one new SCR system and one new ammonia storage tank each. Of these nine facilities, eight are located within one-quarter mile of sensitive receptors. As summarized in Table 4-14, one facility would require the installation of four new SCR systems, five facilities would require the installation of two new SCR systems at each facility, and the remainder would only install one new SCR system per facility. The analysis assumed that each facility would install one large aqueous ammonia storage tank with enough capacity to service all of their new SCR systems.

**Table 4-14  
Number of New SCR Systems and Affected Facilities**

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

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

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

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

Appendix E shows the estimated distance to the toxic endpoint for each facility using the estimated tank size needed for enough aqueous ammonia to reduce the facility's emissions to the NO<sub>x</sub> limits. The largest tank expected to be installed at a facility is 5,000 gallons. However, the tank can only hold about 67% of its capacity at any one time which in this case is 3,350 gallons of aqueous ammonia. Facility A is expected to need one 5,000 gallon tank which will be sited adjacent to a sensitive receptor; Facility A is considered to be the "worst case" for determining offsite consequence in the event of an ammonia release. It is important to note that there are facilities that have existing ammonia storage tanks larger than 5,000 gallons; however, since these tanks are existing, there is no increase in the amount of ammonia that will be stored at the facility at any one time. Eight facilities have sensitive receptors that are located directly across or adjacent to the facilities within the toxic endpoint distance; thus, the hazards and hazardous materials impacts due to tank rupture will be potentially significant. In addition, if mitigation measures (e.g., a secondary containment (dikes and/or berms), installation of grating-covered trench around the perimeter, and tertiary containment) were to occur, the toxic endpoint distance for some facilities would be less than 0.1 miles or 528 feet and the hazards and hazardous materials impacts would continue to be potentially significant due to the vicinity of the sensitive receptors relative to the location of the affected equipment. Therefore, the proposed project has the potential to generate significant adverse hazard impacts as a result of the potential for accidental releases of aqueous ammonia.

If significant adverse environmental impacts are identified in a CEQA document, the CEQA document shall describe feasible measures that could minimize the impacts of the proposed project.

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

**PROJECT-SPECIFIC MITIGATION MEASURES:** Facilities retrofitting units with SCR systems and the accompanying ammonia storage tank will need to submit permit applications to modify their equipment. Thus, SCAQMD staff will conduct a CEQA evaluation of the facility-specific project to determine if the project is covered by the analysis in this ~~Revised Draft~~ Final SEA. If significant adverse environmental impacts are identified in a CEQA document, the CEQA

document shall describe feasible measures that could minimize the significant adverse impacts (CEQA Guidelines Section 15126.4). Therefore, feasible mitigation measures to reduce the risk of an offsite consequence to nearby sensitive receptors are necessary.

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

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

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

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

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

HZ-5 Equip the truck loading/unloading area with an underground gravity drain that flows to a large on-site retention basin to provide sufficient ammonia dilution to minimize the offsite hazards impacts to the maximum extent feasible ~~to the extent that no hazards impact is possible~~ in the event of an accidental release during transfer of aqueous ammonia.

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

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

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

**CUMULATIVE IMPACTS:** As noted in previous discussions, the accidental release of aqueous ammonia during transport is not expected to result in exposures to ammonia exceeding the ERPG 2 level. However, because the sensitive receptors are closer than 0.1 mile for several facilities, an accidental release of ammonia onsite, either during unloading from a truck or an accidental release

in the event of storage tank failure is considered significant. Mitigation measures were identified, but it was concluded that they could not reduce hazard impacts from project-specific releases of ammonia to less than significant.

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

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

## CUMULATIVE ENVIRONMENTAL IMPACTS

CEQA Guidelines Section 15130(a) requires a discussion of cumulative impacts if a project may have an effect that is potentially cumulatively considerable, as defined in CEQA Guidelines Section 15065(a)(3). The preceding analysis concluded there are no cumulative secondary impacts associated with the NO<sub>x</sub> emissions limits and compliance dates as contained in PAR 1134. Further, upon completion of construction at all affected facilities, the net effect of the proposed project will result in overall emission reductions of NO<sub>x</sub>. In addition, any construction as part of the proposed project will be temporary (for approximately one to four years) and the overall NO<sub>x</sub> emissions will be reduced during the construction and operation overlap. For example, an increase in NO<sub>x</sub> emissions during the construction and operation overlap period is expected to result in approximately 42 pounds of NO<sub>x</sub> per day as indicated in Table 4-10, however the proposed project is expected to result in NO<sub>x</sub> emission reductions of 2.8 tons per day (5,600 pounds per day) after implementation of BARCT limits. Further, as facilities complete modifications to their existing stationary gas turbines to comply with PAR 1134, the incremental NO<sub>x</sub> emissions reductions that are expected to occur would offset the NO<sub>x</sub> emissions generated during construction. To achieve NO<sub>x</sub> emission reductions in the proposed project, new SCR systems or replacement SCR systems and replacement stationary gas turbines with dry low NO<sub>x</sub> technology would need to be constructed and ammonia usage would need to be increased. Further, no exceedances of the SCAQMD's air quality significance thresholds for any pollutant are expected to occur either during construction, during construction with overlapping operational impacts, or during operation after all construction is completed. Any temporary emission increases in NO<sub>x</sub> during construction will not interfere with the air quality progress and attainment demonstration projected in the 2016 AQMP. Based on regional modeling analyses performed for the 2016 AQMP, implementing control measures contained in the 2016 AQMP, in addition to the air quality benefits of the existing rules, is anticipated to bring the District into attainment with all national and most state ambient air quality standards. In particular, the federal annual PM<sub>2.5</sub> standards are predicted to be achieved

in 2023 with implementation of the proposed ozone strategy and the California annual PM<sub>2.5</sub> standard will be achieved in 2025. The 2016 AQMP is also expected to achieve the ozone 8-hour standard by 2023.

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

Full implementation of the proposed project would achieve NO<sub>x</sub> emission reductions capable of offsetting the construction NO<sub>x</sub> emissions. As facilities implement modifications to retrofit existing stationary gas turbines with new air pollution control equipment (e.g. SCR technology/systems installation), modify existing SCR systems, or repower or replace existing stationary gas turbines, emissions from construction are expected to occur. However, as RECLAIM facilities transition their existing stationary gas turbines to achieve BARCT emission levels over the 4-year compliance period, some facilities will have completed construction, which will create incremental NO<sub>x</sub> emission reductions, an air quality benefit. Upon completion of construction at all affected facilities, an overall benefit to operational air quality will occur due to the project's overall NO<sub>x</sub> emission reductions. Specifically, as facilities modify, repower, or replace equipment, a single facility may reduce their NO<sub>x</sub> emissions between 12 pounds per day and 1,000 pounds per day, as illustrated in Appendix F. Thus, when multiple facilities transition their equipment to comply with PAR 1134, the expected NO<sub>x</sub> emissions reductions will be permanent and cumulatively a larger quantity relative to the temporary NO<sub>x</sub> emission increases generated during construction. Also, implementation of other control measures in the 2016 AQMP will provide human health benefits by reducing population exposures to existing NO<sub>x</sub> emissions. Therefore, cumulative air quality impacts from the proposed project, previous amendments, and all other AQMP control measures considered together, are not expected to be significant because implementation of all 2016 AQMP control measures is expected to result in net emission reductions and overall air quality improvement. This determination is consistent with the conclusion in the 2016 AQMP Final Program EIR that cumulative air quality impacts from all AQMP control measures are not expected to be significant. Therefore, there will be no significant cumulative adverse air quality impacts from implementing the proposed project.

In addition, there is a potential for creating significant adverse hazards and hazardous materials impacts from the catastrophic failure of an ammonia storage tank, which has been based on the toxic endpoint (using EPA RMP\*Comp) and the proximity of affected facilities to nearby sensitive receptors. Because the project-specific hazards and hazardous materials impacts for ammonia deliveries would potentially create significant impacts, they are considered to be cumulatively considerable pursuant to CEQA Guidelines Section 15064 (h)(1) and therefore, generate significant adverse cumulative hazards and hazardous materials impacts. However, for ammonia use and

storage, the project-specific hazards and hazardous materials impacts do not exceed any applicable significance thresholds; thus, they are not considered to be cumulatively considerable pursuant to CEQA Guidelines Section 15064(h)(1) and therefore, do not generate significant adverse cumulative hazards and hazardous materials impacts.

## **POTENTIAL ENVIRONMENTAL IMPACTS FOUND NOT TO BE SIGNIFICANT**

Because this SEA is a subsequent CEQA document to the March 2017 Final Program EIR for the 2016 AQMP, this SEA relies on the conclusions reached in that document as evidence for environmental areas where impacts were found not to be significant. The previous CEQA document reviewed approximately 17 environmental topic areas and analyzed whether the respective project would create potentially significant adverse impacts. The March 2017 Final Program EIR for the 2016 AQMP concluded that significant and unavoidable adverse environmental impacts from the project are expected to occur after implementing mitigation measures for the following environmental topic areas: 1) aesthetics from increased glare and from the construction and operation of catenary lines and use of bonnet technology for ships; 2) construction air quality and GHGs; 3) energy (due to increased electricity demand); 4) hazards and hazardous materials due to: (a) increased flammability of solvents; (b) storage, accidental release and transportation of ammonia; (c) storage and transportation of liquefied natural gas (LNG); and (d) proximity to schools; 5) hydrology (water demand); 6) construction noise and vibration; 7) solid construction waste and operational waste from vehicle and equipment scrapping; and, 8) transportation and traffic during construction and during operation on roadways with catenary lines and at the harbors. It is important to note, however, that for these environmental topic areas, not all of the conclusions of significance are applicable to this currently proposed project, PAR 1134. Table 4-16 summarizes the eight significant and unavoidable adverse environmental impacts identified in the March 2017 Final Program EIR and identifies which apply to the proposed project.

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

<b>CONCLUSION OF SIGNIFICANT IMPACTS IN MARCH 2017 FINAL PROGRAM EIR</b>	<b>APPLICABLE TO/SIGNIFICANT FOR THE PROPOSED PROJECT?</b>	<b>EXPLANATION</b>
Aesthetics from increased glare and from the construction and operation of catenary lines and use of bonnet technology for ships	No	This environmental topic area is not applicable to PAR 1134 because neither catenary lines nor the use of bonnet technology for ships are applicable to stationary gas turbines and the corresponding NOx emission controls (e.g., SCR technology). Therefore, this conclusion is not applicable to the proposed project.
Construction air quality and GHGs	No	These environmental topic areas are applicable to the proposed project. The impacts for these environmental topics areas are analyzed in this SEA (see pp. 4-3 to 4-18 for construction air quality and GHGs), and the analysis concluded less than significant impacts.
Energy due to increased electricity demand	No	While the use of SCR technology will require some electricity to operate, the amount of electricity that would be needed to install SCR technology for PAR 1134 would be less than significant.
Hazards and hazardous materials due the increased flammability of solvents	No	Stationary gas turbines and the corresponding NOx emission controls (e.g. SCR technology) do not utilize solvents for their operation. Therefore, this conclusion is not applicable to the proposed project.
Hazards and hazardous materials due to the storage, accidental release and transportation of ammonia	Yes	This environmental topic area is applicable to the proposed project because SCR technology utilizes ammonia. The impacts for this environmental topic area are analyzed in this SEA (see pp. 4-19 to 4-27). The analysis concluded significant impacts for the storage and accidental release of ammonia and less than significant impacts for the transportation of ammonia.
Hazards and hazardous materials due to the storage and transportation of LNG	No	Stationary gas turbines and the corresponding NOx emission controls (e.g. SCRs) do not utilize LNG for their operation. Therefore, this conclusion is not applicable to the proposed project.
Hazards and hazardous materials due to proximity to schools	Yes	This conclusion is applicable to the proposed project because some of the affected facilities that will install new SCR systems are located near schools. The impacts for this environmental topic area are analyzed in this SEA (see pp. 4-19 to 4-27).

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

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

PAR 1134 is expected to have: 1) significant effects that were not discussed in the previous March 2017 Final Program EIR for the 2016 AQMP (CEQA Guidelines Section 15162(a)(3)(A)); and 2) significant effects that were previously examined that will be substantially more severe than what was discussed in the March 2017 Final Program EIR for the 2016 AQMP (CEQA Guidelines Section 15162(a)(3)(B)).

By preparing a SEA for the proposed project, since the topics of air quality and hazards and hazardous materials are the only environmental topic areas that would be affected by PAR 1134

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

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

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

## **SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED**

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

## **SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES**

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

## **POTENTIAL GROWTH-INDUCING IMPACTS**

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

## **RELATIONSHIP BETWEEN SHORT-TERM AND LONG-TERM ENVIRONMENTAL GOALS**

CEQA documents are required to explain and make findings about the relationship between short-term uses and long-term productivity. (CEQA Guidelines Section 15065(a)(2).) An important consideration when analyzing the effects of a proposed project is whether it will result in short-term environmental benefits to the detriment of achieving long-term goals or maximizing productivity of these resources. Implementing the proposed project is not expected to achieve short-term goals at the expense of long-term environmental productivity or goal achievement. PAR 1134 will transition stationary gas turbines at RECLAIM facilities to a command-and-control regulatory structure. The primary objective of this project is to ensure RECLAIM and non-RECLAIM stationary gas turbines that are not subject to SCAQMD Rule 1135 or located at petroleum refineries, landfills, or publicly owned treatment works meet NOx emission limits and BARCT level equivalency. PAR 1134 implements control measure CMB-05 from the 2016 AQMP. NOx, is a precursor to the formation of ozone and PM2.5, so even if the proposed project is implemented and there will be some NOx emissions during construction and operation, there will also be an overall NOx emissions reduction occurring after implementation of the BARCT limits and these will continue to help attain federal and state air quality standards which are expected to enhance short- and long-term environmental productivity in the region. Implementing the proposed project does not narrow the range of beneficial uses of the environment. Of the potential environmental impacts discussed in Chapter 4, only those related to hazards and hazardous materials for ammonia storage are concluded to have potentially significant adverse effects.

## **CHAPTER 5**

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### **ALTERNATIVES**

**Introduction**

**Methodology for Developing Project Alternatives**

**Description of Alternatives**

**Comparison of Alternatives**

**Alternatives Rejected as Infeasible**

**Lowest Toxic Alternative**

**Environmentally Superior Alternative**

**Conclusion**

## INTRODUCTION

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

## METHODOLOGY FOR DEVELOPING PROJECT ALTERNATIVES

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

Alternatives to the proposed project were crafted by varying the timing of compliance. Of the amendments proposed to Rule 1134, only the components that pertain to complying with the NOx emission limits could entail physical modifications to the affected equipment and that these physical modifications could create adverse environmental impacts. As such, in addition to the no project alternative, two alternatives were developed by modifying compliance deadlines of the proposed project, which effect the manner and timing in which compliance with the NOx emission limits may be achieved.

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

The March 2017 Final Program EIR for the 2016 AQMP concluded that the overall implementation of CMB-05 has the potential to generate adverse environmental impacts to seven topic areas – air quality, energy, hazards and hazardous materials, hydrology and water quality, noise, solid and hazardous waste and transportation.

CEQA Guidelines Section 15125(a) recognizes that a baseline may be established at times other than when the NOP/IS is circulated to the public by stating (emphasis added), “This environmental setting *will normally* constitute the baseline physical conditions by which a lead agency determines whether an impact is significant.” Chapter 3 summarizes the existing setting/baseline for control measure CMB-05 from the 2016 AQMP as well as the current version of Rule 1134.

## DESCRIPTION OF ALTERNATIVES

The evaluation of the components that comprise PAR 1134 indicate that only the installation of new ammonia storage tanks to support the installation of new SCR systems in order to comply with the proposed NOx emission limits could result in potentially significant adverse hazards and hazardous materials impacts for ammonia storage and use. In particular, for each affected facility that was identified as having the potential to install one new ammonia storage tank, an analysis to determine the potential for an offsite consequence in the event of a release of ammonia was conducted using EPA RMP\*Comp (see Appendix D - List of Affected Facilities and see Chapter 4 for the analysis). The analysis indicated that a catastrophic failure of an aqueous ammonia storage tank would cause a significant adverse hazards and hazardous materials impact to nearby sensitive receptors located within 0.1 mile of the storage tank (e.g., the toxic endpoint distance).

The evaluation also indicates that implementation of PAR 1134 will result in facility owners/operations making physical modifications to affected equipment and these activities will cause adverse, but less than significant, impacts to air quality during construction, during the period when construction and operation activities overlap, and during operation.

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

Three alternatives to the proposed project have been developed and summarized in Table 5-1, as follows: Alternative A - No Project, Alternative B – Earlier Compliance Date, and Alternative C – Phased Compliance Dates. The primary components of the proposed alternatives that have been modified are the manner and timing in which compliance with the NOx emission limits may be achieved. Unless otherwise specifically noted, all other components of the project alternatives are identical to the components of the proposed project.

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

The following subsections provide a brief description of the alternatives.

### **Proposed Project**

PAR 1134 will facilitate the transition of the NOx RECLAIM program to a command-and-control regulatory structure and will implement Control Measure CMB-05, of the 2016 AQMP for RECLAIM and non-RECLAIM stationary gas turbines that are not subject to Rule 1135 or located at petroleum refineries, landfills, or publicly owned treatment works. The main objectives of PAR 1134 are to: 1) reduce NOx emissions from stationary gas turbines and transition these equipment that are currently permitted under the NOx RECLAIM program to a command-and-control regulatory structure; and 2) implement Control Measure CMB-05 by updating the NOx limits and incorporating new ammonia (NH3) emission limits to reflect current BARCT. PAR 1134 would:

1) expand its applicability to include stationary gas turbines that were not previously required to comply with Rule 1134; 2) update the NO<sub>x</sub> and ammonia emission limits for stationary gas turbines to comply with BARCT; 3) ~~transition all monitoring, reporting, and recordkeeping requirements (MRR) in Rule 1134 to new SCAQMD Rule 113 – MRR Requirements for NO<sub>x</sub> and SO<sub>x</sub> Sources, upon its adoption;~~ 4) establish new exemptions for low-use equipment, certain existing combined cycle gas turbines, and emergency standby gas turbines; 5) provide relief from having to comply with ammonia requirements for turbines that do not use ammonia for controlling NO<sub>x</sub> emissions; and 6) revise existing exemptions to remove obsolete provisions. PAR 1134 implements control measure CMB-05 from the 2016 Final AQMP. Affected equipment would have until December 31, 2023 (four years) to comply with PAR 1134. However, compressor gas turbines have an effective compliance date of two years after a permit to construct is issued by the Executive Officer or three years after a permit to construct is issued if the permit application is submitted before July 1, 2021.

### **Alternative A: No Project (Current Rule)**

Alternative A, the no project alternative, means that the current version of Rule 1134 that was amended in August 1997, would remain in effect and there would be no transition out of the NO<sub>x</sub> RECLAIM program. Under the current version of Rule 1134, stationary gas turbines at RECLAIM facilities would not have to comply with the NO<sub>x</sub> emission limits in set forth in Rule 1134. Under this alternative, no NO<sub>x</sub> emission reductions will be achieved, no ammonia use would be needed, and the stationary gas turbines at RECLAIM and non-RECLAIM facilities would not meet BARCT level equivalency.

### **Alternative B: Earlier Compliance Date 12/31/2022**

Under Alternative B, the requirements would be equivalent to the proposed project but the compliance date for meeting the NO<sub>x</sub> and ammonia emission limits would one year earlier, December 31, 2022, which would allow three years to comply with PAR 1134. The earlier compliance date under Alternative B is more stringent than the proposed project.

### **Alternative C: Phased Compliance Dates**

Under Alternative C, the requirements would be equivalent to the proposed project, but the compliance dates for meeting the NO<sub>x</sub> and ammonia emission limits would vary depending on fuel type, as follows: 1) Liquid Fuel – Outer Continental Shelf: December 31, 2023; 2) Natural Gas – Combined Cycle: June 30, 2023; 3) Natural Gas – ~~Pipeline-Compressor~~ Gas Turbine: December 31, 2023; 4) Natural Gas – Simple Cycle: December 31, 2022; 5) Produced Gas: December 31, 2023; 6) Produced Gas – Outer Continental Shelf: December 31, 2023; and 7) Other: December 31, 2023. The earlier compliance dates for the Natural Gas – Combined Cycle and Natural Gas – Simple Cycle categories under Alternative C are more stringent than the proposed project but less stringent than Alternative B for the Natural Gas – Combined Cycle category.

**Table 5 - 1  
Summary of the Proposed Project Alternatives**

PROPOSED PROJECT Compliance Date 12/31/2023 <sup>1</sup>			ALTERNATIVE A No Project <sup>4,5</sup>		ALTERNATIVE B Earlier Compliance Date 12/31/2022		ALTERNATIVE C Phased Compliance Dates <sup>6</sup>
Fuel Type	NOx Limit (ppmv)	Ammonia Limit (ppmv)	NOx Limit (ppmv)	Ammonia Limit (ppmv)	NOx Limit (ppmv)	Ammonia Limit (ppmv)	Phased compliance dates with equivalent NOx & Ammonia limits to the Proposed Project
Liquid Fuel – Outer Continental Shelf <sup>2</sup>	30	5	--	--	30	5	Compliance Date: December 31, 2023
Natural Gas – Combined Cycle	2	5	--	--	2	5	Compliance Date: June 30, 2023
Natural Gas – <del>Pipeline Compressor Gas</del> Turbine <sup>7</sup>	<del>83.5</del>	<del>510</del>	--	--	<del>83.5</del>	<del>510</del>	Compliance Date: December 31, 2023
Natural Gas – Simple Cycle	2.5	5	--	--	2.5	5	Compliance Date: December 31, 2022
Produced Gas	<del>59</del>	5	--	--	<del>59</del>	5	Compliance Date: December 31, 2023
Produced Gas – Outer Continental Shelf <sup>3</sup>	15	5	--	--	15	5	Compliance Date: December 31, 2023
Other	12.5	5	--	--	12.5	5	Compliance Date: December 31, 2023

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

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

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

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

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

<sup>7</sup> The effective date for compressor gas turbines is two years after a permit to construct is issued by the Executive Officer or three years after a permit to construct is issued if the permit application is submitted before July 1, 2021. Only four existing compressor gas turbines are subject to PAR 1134.

## **COMPARISON OF ALTERNATIVES**

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

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

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

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

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

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

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B Earlier Compliance Date 12/31/2022	ALTERNATIVE C Phased Compliance Dates
<p><b>Significance of Air Quality Impacts</b></p>	<p><b>Less than Significant:</b> No exceedances of the SCAQMD's air quality significance thresholds for any pollutant are expected to occur either during construction, during construction with overlapping operational impacts, or during operation after all construction is completed. As facilities implement modifications to retrofit existing stationary gas turbines with air pollution control equipment (e.g., SCR technology/systems installation), or repower or replace existing stationary gas turbines, emissions from construction are expected to occur. As facilities transition their existing stationary gas turbines to achieve BARCT emission levels over the 4-year compliance period, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit (see <a href="#">Appendix F</a>). Upon completion of construction at all affected facilities, an overall benefit to operational air quality will occur due to the project's overall NOx emission reductions.</p>	<p><b>Not Significant:</b> Alternative A would not result in an exceedance of any SCAQMD air quality significance thresholds during construction or operation because no physical modifications would be expected to occur that would create construction emissions or reduce overall NOx emissions from the affected equipment. The SCAQMD will not achieve any emissions reductions of NOx (a pre-cursor to the formation of ozone); thus, attainment for the SCAQMD for ozone is unlikely to occur.</p>	<p><b>Significant:</b> Due to having an earlier compliance date when compared to the proposed project, the construction schedules of the affected facilities under Alternative B would be expected to occur over a shorter period time such that more facilities would be expected to undergo construction on a peak day. As such, an exceedance of the SCAQMD's air quality significance threshold for NOx is expected to occur during overlapping construction of more SCR systems and more retrofit, repower or replacement of stationary gas turbines on a peak day, than the proposed project. As facilities transition their existing stationary gas turbines to achieve BARCT emission levels over the 3-year compliance period, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit. Upon completion of construction at all affected facilities, an overall benefit to operational air quality will occur sooner due to the project's overall NOx emission reductions.</p>	<p><b>Significant:</b> Due to having earlier compliance dates for gas turbines equipped with and without SCRs, the construction schedules of the affected facilities under Alternative C would be expected to occur over a shorter period time such that more facilities would be expected to undergo construction on a peak day. As such, exceedances of the SCAQMD's air quality significance threshold for NOx is expected to occur during overlapping construction of more SCR systems and more retrofit, repower or replacement of stationary gas turbines stationary gas turbines on a peak day, than the proposed project. As facilities transition their existing stationary gas turbines to achieve BARCT emission levels over the 3-year compliance period for gas turbines equipped with and without SCRs and over the 4-year compliance period for the remaining gas turbines, some facilities will have completed construction, which will create incremental NOx emission reductions, an air quality benefit. Upon completion of construction at all affected facilities, an overall benefit to operational air quality will occur sooner due to the project's overall NOx emission reductions.</p>

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

CATEGORY	PROPOSED PROJECT	ALTERNATIVE A No Project	ALTERNATIVE B More Stringent Compliance Deadline	ALTERNATIVE C Phased Compliance Deadline
<b>Hazards and Hazardous Materials</b>	Some of the affected stationary gas turbines are expected to be retrofitted with SCR technology, which requires ammonia for operation. Thus, the analysis assumes that a new ammonia storage tank will be needed at each facility that installs SCR equipment. Ammonia is considered to be a hazardous material.	None of the affected facilities will be required to achieve BARCT level equivalency through compliance with the proposed project. As such, no stationary gas turbines will be retrofitted with SCR technology. Thus, no new ammonia storage tanks will be needed.	Some of the affected stationary gas turbines are expected to be retrofitted with SCR technology, which requires ammonia for operation. Thus, the analysis assumes that a new ammonia storage tank will be needed at each facility that installs SCR equipment. Ammonia is considered to be a hazardous material.	Some of the affected stationary gas turbines are expected to be retrofitted with SCR technology, which requires ammonia for operation. Thus, the analysis assumes that a new ammonia storage tank will be needed at each facility that installs SCR equipment. Ammonia is considered to be a hazardous material.
<b>Significance of Hazards and Hazardous Materials Impacts</b>	<b>Significant:</b> Based on the analysis, using EPA RMP*Comp, the estimated distance of the toxic endpoint from the catastrophic failure of an aqueous ammonia storage tank to sensitive receptors could result in significant impacts for any facility that installs a new ammonia storage tank, depending on the location of where the storage tank is installed, relative to the location of the offsite receptor. If the toxic endpoint is outside of a facility’s boundaries, mitigation measures will be required.	<b>Not Significant:</b> The construction of SCR systems would not be necessary; thus, there would be no need to use ammonia or build new ammonia storage tanks, No hazards or hazardous materials impacts would occur.	<b>Significant:</b> Based on the analysis, using EPA RMP*Comp, the estimated distance of the toxic endpoint from the catastrophic failure of an aqueous ammonia storage tank to sensitive receptors could result in significant impacts for any facility that installs a new ammonia storage tank, depending on the location of where the storage tank is installed, relative to the location of the offsite receptor. If the toxic endpoint is outside of a facility’s boundaries, mitigation measures will be required.  The number of affected facilities would be the same as the proposed project. The level of significance in Alternative B would be equivalent to the proposed project.	<b>Significant:</b> Based on the analysis, using EPA RMP*Comp, the estimated distance of the toxic endpoint from the catastrophic failure of an aqueous ammonia storage tank to sensitive receptors could result in significant impacts for any facility that installs a new ammonia storage tank, depending on the location of where the storage tank is installed, relative to the location of the offsite receptor. If the toxic endpoint is outside of a facility’s boundaries, mitigation measures will be required. The number of affected facilities would be the same as the proposed project. The level of significance in Alternative C would be equivalent to the amount in the proposed project.

## ALTERNATIVES REJECTED AS INFEASIBLE

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

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

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

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

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

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

## LOWEST TOXIC ALTERNATIVE

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

As explained in the hazards and hazardous materials discussion in Chapter 4, implementation of the proposed project may alter the hazards and hazardous materials associated with the existing facilities affected by the proposed project. Air pollution control equipment (e.g., SCR systems) are expected to be installed at affected facilities such that their operations may increase the quantity of ammonia (a hazardous material) used in the control equipment. The main NO<sub>x</sub> reduction technology considered for the proposed project is based on employing SCR systems. The analysis shows that in order to control NO<sub>x</sub> from existing stationary gas turbines, the use of SCRs may increase the use of toxic materials (e.g., aqueous ammonia).

To identify a lowest toxic alternative with respect to the proposed project, a lowest toxic alternative would be if either no control technologies are used that utilize hazardous or toxic materials or NO<sub>x</sub> control technologies are employed that use the least amount of hazardous or toxic materials. For the proposed project, and Alternatives B and C, it is assumed that SCR technology may be used control NO<sub>x</sub>, since PAR 1134 neither prescribes the method for controlling NO<sub>x</sub> emissions nor requires replacement of the existing stationary gas turbines with newer, cleaner equipment without the use of SCR systems. Of the three alternatives, only Alternative A – the No Project alternative, does not assume that SCR systems and ammonia will be utilized. Thus, hazardous materials would not be needed if Alternative A is implemented.

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

## ENVIRONMENTALLY SUPERIOR ALTERNATIVE

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

If Alternative A is implemented, PAR 1134 would not be adopted, the proposed project's objectives would not be achieved such that no NO<sub>x</sub> emissions reductions and the corresponding health benefits would not occur. If Alternative A is implemented, the quantity of NO<sub>x</sub> emissions currently generated by the affected stationary gas turbines (the baseline) will remain unchanged. Currently, the Basin is in non-attainment for ozone and cannot achieve attainment unless NO<sub>x</sub>

emissions reductions occur. In addition, implementing Alternative A means that RECLAIM facilities with stationary gas turbines would not transition to a command-and-control regulatory structure or some stationary gas turbines would not achieve BARCT level equivalency. Units at non-RECLAIM facilities would also not meet BARCT level equivalency. While Alternative A would not result in any significant adverse air quality or hazards and hazardous materials impacts, Alternative A would also not achieve the project objectives and air quality benefits. Therefore, Alternative A is not the environmentally superior alternative.

If Alternative B is implemented, the compliance date would be reduced by one year when compared to the proposed project. The same quantity of NO<sub>x</sub> emissions reductions (e.g., 2.8 tons per day) would be achieved as the proposed project; however, the timing of when the NO<sub>x</sub> emission reductions would be achieved will occur one year earlier (e.g., by December 31, 2022 instead of December 31, 2023). While Alternative B will accelerate the operational benefits from the NO<sub>x</sub> emission reductions, the timing of the construction activities will also be accelerated and compressed over a three-year compliance period. While the number of affected facilities would be the same as the proposed project, these facilities would be required to retrofit, repower, or replace their equipment to comply with BARCT in a shorter timeframe (one year earlier). The air quality impacts due to the physical modifications expected to take place at the affected facilities would be expected to exceed the SCAQMD's regional air quality significance threshold for NO<sub>x</sub> during the overlapping construction and operation phase. While a concurrent operational air quality benefit would result due to Alternative B's overall NO<sub>x</sub> emission reductions, the application of an earlier compliance date for all stationary gas turbines would result in construction occurring over a shorter, compressed time frame than the proposed project and thus, the operational benefit from NO<sub>x</sub> emission reductions may not fully reduce the concurrent temporary increases in NO<sub>x</sub> emissions occurring during construction to less than significant levels. Under Alternative B, once the SCR systems are installed and operational, the hazards and hazardous materials impacts would be the same as the proposed project. If Alternative B is implemented, the project objectives would be achieved but potentially significant adverse air quality impacts during overlapping construction and operations will be expected to occur in addition to the significant adverse hazards and hazardous materials due to ammonia storage and use during operation.

If Alternative C is implemented, the compliance dates for meeting the NO<sub>x</sub> and ammonia emission limits would vary depending on fuel type, as follows: 1) Liquid Fuel – Outer Continental Shelf: December 31, 2023, 2) Natural Gas – Combined Cycle: June 30, 2023 ; 3) Natural Gas – Pipeline Compressor Gas Turbine: December 31, 2023; 4) Natural Gas – Simple Cycle: December 31, 2022 ; 5) Produced Gas: December 31, 2023; 6) Produced Gas – Outer Continental Shelf: December 31, 2023; and 7) Other: December 31, 2023. While the same quantity of NO<sub>x</sub> emissions reductions would be achieved under Alternative C as the proposed project (e.g., 2.8 tons per day), a portion of these NO<sub>x</sub> emission reductions would be achieved six months earlier for the Natural Gas – Combined Cycle category (by June 30, 2023 instead of December 31, 2023) and one year earlier for the Natural Gas – Simple Cycle category (by December 31, 2022 instead of December 31, 2023). This acceleration of the operational benefits under Alternative C will also mean that the timing of the construction activities associated with these fuel type categories will also be accelerated and compressed over a 3.5-year period for the Natural Gas – Combined Cycle category and over a three-year period for the Natural Gas – Simple Cycle category. While the number of affected facilities would be the same as the proposed project, these facilities would be required to retrofit, repower, or replace their equipment to comply with BARCT in a shorter timeframe (from six months to one year earlier for the Natural Gas – Combined Cycle and the Natural Gas – Simple Cycle categories, respectively). The air quality impacts due to the physical modifications expected

to take place at the affected facilities would be expected to exceed the SCAQMD's regional air quality significance threshold for NO<sub>x</sub> during the overlapping construction and operation phase. While a concurrent operational air quality benefit would result due to Alternative C's overall NO<sub>x</sub> emission reductions, the application of earlier compliance dates for natural gas-fueled simple and combined cycle stationary gas turbines would result in construction occurring over a shorter, compressed time frame than the proposed project and thus, the operational benefit from achieving earlier NO<sub>x</sub> emission reductions from these categories may not fully reduce the concurrent, temporary increases in NO<sub>x</sub> emissions occurring during construction to less than significant levels. Under Alternative C, once the SCR systems are installed and operational, the hazards and hazardous materials impacts would be the same as the proposed project. If Alternative C is implemented, the project objectives would be achieved but potentially significant adverse air quality impacts during overlapping construction and operations will be expected to occur, though less than those that may be generated under Alternative B in addition to the significant adverse hazards and hazardous materials due to ammonia storage and use during operation.

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

## **CONCLUSION**

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

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

Thus, when comparing the environmental effects of the project alternatives to the proposed project and evaluating the effectiveness of whether each alternative is achieving the project objectives, while the proposed project has potentially significant hazards and hazardous materials impacts due to ammonia storage and use, these impacts are equivalent to the hazards and hazardous materials impacts for Alternatives B and C, and mitigation measures have been crafted to help affected facilities reduce or completely prevent, depending on each facility's proximity to a sensitive receptor, their potential for an offsite release. Further, the proposed project provides the best balance in achieving the project objectives while, unlike Alternatives B and C, assuring that less than significant air quality impacts will occur during construction, during the construction and operation overlap and during operation after full implementation of PAR 1134.

## **APPENDICES**

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

**Appendix B: CalEEMod Files and Assumptions**

**Appendix C: CEQA Impact Evaluations – Assumptions and Calculations**

**Appendix D: PAR 1134 List of Affected Facilities**

**Appendix E: Hazards Analysis**

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## **APPENDIX A**

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

In order to save space and avoid repetition, please refer to the latest version of PAR 1134 located elsewhere in the Governing Board Package (meeting date April 5, 2019). Original hard copies of the Draft SEA, which include the draft version of the proposed amended rule (PAR 1134 v120618) listed above, can be obtained through the SCAQMD Public Information Center at the Diamond Bar headquarters or by contacting Fabian Wesson, Public Advisor at the SCAQMD's Public Information Center by phone at (909) 396-2039 or by email at [PICrequests@aqmd.gov](mailto:PICrequests@aqmd.gov).

## **APPENDIX B**

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### **CalEEMod Files And Assumptions**

## **APPENDIX B-1**

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### **CalEEMod Files And Assumptions**

#### **PAR1134 Construction SCR and NH3 Tank**

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Annual

**PAR1134\_Construction\_SCR and NH3 Tank**  
**South Coast AQMD Air District, Annual**

**1.0 Project Characteristics**

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**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**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	31
<b>Climate Zone</b>	9			<b>Operational Year</b>	2020
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	702.44	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Annual

Project Characteristics -

Land Use -

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

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

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Rubber Tired Dozers (1): 3 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Cranes (1): 2 hours per day

Off-road Equipment - Cement and Mortar Mixers (2): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Plate Compactors (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day

Off-road Equipment - Rubber Tired Dozers (1): 7 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Trenchers (1): 4 hours per day

Trips and VMT - Demolition: 20 Worker Trips, 0 Vendor Trips, 10 Hauling Trips

Site Preparation: 10 Work Trips, 0 Vendor Trips, 0 Hauling Trips

Building Construction: 20 Worker Trips, 5 Vendor Trips, 0 Hauling

Paving: 10 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	180.00
tblConstructionPhase	NumDays	0.00	15.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	4.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	3.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00

**2.0 Emissions Summary**

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**2.1 Overall Construction**

**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1051	0.8910	0.8582	1.6300e-003	0.0381	0.0465	0.0845	0.0139	0.0446	0.0585	0.0000	141.9421	141.9421	0.0210	0.0000	142.4658
<b>Maximum</b>	<b>0.1051</b>	<b>0.8910</b>	<b>0.8582</b>	<b>1.6300e-003</b>	<b>0.0381</b>	<b>0.0465</b>	<b>0.0845</b>	<b>0.0139</b>	<b>0.0446</b>	<b>0.0585</b>	<b>0.0000</b>	<b>141.9421</b>	<b>141.9421</b>	<b>0.0210</b>	<b>0.0000</b>	<b>142.4658</b>

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1051	0.8910	0.8582	1.6300e-003	0.0381	0.0465	0.0845	0.0139	0.0446	0.0585	0.0000	141.9420	141.9420	0.0210	0.0000	142.4657
<b>Maximum</b>	<b>0.1051</b>	<b>0.8910</b>	<b>0.8582</b>	<b>1.6300e-003</b>	<b>0.0381</b>	<b>0.0465</b>	<b>0.0845</b>	<b>0.0139</b>	<b>0.0446</b>	<b>0.0585</b>	<b>0.0000</b>	<b>141.9420</b>	<b>141.9420</b>	<b>0.0210</b>	<b>0.0000</b>	<b>142.4657</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

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Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-2-2020	4-1-2020	0.3362	0.3362
2	4-2-2020	7-1-2020	0.3110	0.3110
3	7-2-2020	9-30-2020	0.3110	0.3110
		Highest	0.3362	0.3362

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.0000e-005</b>

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**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
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.0000e-005</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	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**

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Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/22/2020	5	15	
2	Site Preparation	Site Preparation	1/23/2020	1/29/2020	5	5	
3	Building Construction	Building Construction	1/30/2020	10/7/2020	5	180	
4	Paving	Paving	10/8/2020	10/14/2020	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	1	2.00	231	0.29
Demolition	Rubber Tired Dozers	1	3.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Trenchers	1	4.00	78	0.50
Building Construction	Aerial Lifts	1	4.00	63	0.31
Building Construction	Cranes	1	2.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	5.00	130	0.42
Paving	Plate Compactors	1	4.00	8	0.43
Paving	Rollers	1	4.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	4.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	20.00	0.00	10.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	6	20.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	10.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

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**3.1 Mitigation Measures Construction**

**3.2 Demolition - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.8100e-003	0.0746	0.0518	9.0000e-005		3.9600e-003	3.9600e-003		3.7600e-003	3.7600e-003	0.0000	8.1170	8.1170	1.5800e-003	0.0000	8.1565
<b>Total</b>	<b>7.8100e-003</b>	<b>0.0746</b>	<b>0.0518</b>	<b>9.0000e-005</b>	<b>0.0000</b>	<b>3.9600e-003</b>	<b>3.9600e-003</b>	<b>0.0000</b>	<b>3.7600e-003</b>	<b>3.7600e-003</b>	<b>0.0000</b>	<b>8.1170</b>	<b>8.1170</b>	<b>1.5800e-003</b>	<b>0.0000</b>	<b>8.1565</b>

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**3.2 Demolition - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.4000e-003	2.8000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	3.0000e-005	0.0000	0.3773	0.3773	3.0000e-005	0.0000	0.3780
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.7000e-004	5.1000e-004	5.6800e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4815	1.4815	4.0000e-005	0.0000	1.4826
<b>Total</b>	<b>7.1000e-004</b>	<b>1.9100e-003</b>	<b>5.9600e-003</b>	<b>2.0000e-005</b>	<b>1.7400e-003</b>	<b>1.0000e-005</b>	<b>1.7500e-003</b>	<b>4.6000e-004</b>	<b>1.0000e-005</b>	<b>4.8000e-004</b>	<b>0.0000</b>	<b>1.8588</b>	<b>1.8588</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>1.8605</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.8100e-003	0.0746	0.0518	9.0000e-005		3.9600e-003	3.9600e-003		3.7600e-003	3.7600e-003	0.0000	8.1170	8.1170	1.5800e-003	0.0000	8.1564
<b>Total</b>	<b>7.8100e-003</b>	<b>0.0746</b>	<b>0.0518</b>	<b>9.0000e-005</b>	<b>0.0000</b>	<b>3.9600e-003</b>	<b>3.9600e-003</b>	<b>0.0000</b>	<b>3.7600e-003</b>	<b>3.7600e-003</b>	<b>0.0000</b>	<b>8.1170</b>	<b>8.1170</b>	<b>1.5800e-003</b>	<b>0.0000</b>	<b>8.1564</b>

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**3.2 Demolition - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.4000e-003	2.8000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	3.0000e-005	0.0000	0.3773	0.3773	3.0000e-005	0.0000	0.3780
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.7000e-004	5.1000e-004	5.6800e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4815	1.4815	4.0000e-005	0.0000	1.4826
<b>Total</b>	<b>7.1000e-004</b>	<b>1.9100e-003</b>	<b>5.9600e-003</b>	<b>2.0000e-005</b>	<b>1.7400e-003</b>	<b>1.0000e-005</b>	<b>1.7500e-003</b>	<b>4.6000e-004</b>	<b>1.0000e-005</b>	<b>4.8000e-004</b>	<b>0.0000</b>	<b>1.8588</b>	<b>1.8588</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>1.8605</b>

**3.3 Site Preparation - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0132	0.0000	0.0132	7.2400e-003	0.0000	7.2400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1500e-003	0.0322	0.0152	3.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	2.3535	2.3535	7.6000e-004	0.0000	2.3725
<b>Total</b>	<b>3.1500e-003</b>	<b>0.0322</b>	<b>0.0152</b>	<b>3.0000e-005</b>	<b>0.0132</b>	<b>1.7400e-003</b>	<b>0.0149</b>	<b>7.2400e-003</b>	<b>1.6000e-003</b>	<b>8.8400e-003</b>	<b>0.0000</b>	<b>2.3535</b>	<b>2.3535</b>	<b>7.6000e-004</b>	<b>0.0000</b>	<b>2.3725</b>

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**3.3 Site Preparation - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	9.0000e-005	9.5000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2469	0.2469	1.0000e-005	0.0000	0.2471
<b>Total</b>	<b>1.1000e-004</b>	<b>9.0000e-005</b>	<b>9.5000e-004</b>	<b>0.0000</b>	<b>2.7000e-004</b>	<b>0.0000</b>	<b>2.8000e-004</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>0.2469</b>	<b>0.2469</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.2471</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0132	0.0000	0.0132	7.2400e-003	0.0000	7.2400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1500e-003	0.0322	0.0152	3.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	2.3535	2.3535	7.6000e-004	0.0000	2.3725
<b>Total</b>	<b>3.1500e-003</b>	<b>0.0322</b>	<b>0.0152</b>	<b>3.0000e-005</b>	<b>0.0132</b>	<b>1.7400e-003</b>	<b>0.0149</b>	<b>7.2400e-003</b>	<b>1.6000e-003</b>	<b>8.8400e-003</b>	<b>0.0000</b>	<b>2.3535</b>	<b>2.3535</b>	<b>7.6000e-004</b>	<b>0.0000</b>	<b>2.3725</b>

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**3.3 Site Preparation - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	9.0000e-005	9.5000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2469	0.2469	1.0000e-005	0.0000	0.2471
<b>Total</b>	<b>1.1000e-004</b>	<b>9.0000e-005</b>	<b>9.5000e-004</b>	<b>0.0000</b>	<b>2.7000e-004</b>	<b>0.0000</b>	<b>2.8000e-004</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>0.2469</b>	<b>0.2469</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.2471</b>

**3.4 Building Construction - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0824	0.7164	0.6921	1.1600e-003		0.0397	0.0397		0.0383	0.0383	0.0000	98.7261	98.7261	0.0169	0.0000	99.1475
<b>Total</b>	<b>0.0824</b>	<b>0.7164</b>	<b>0.6921</b>	<b>1.1600e-003</b>		<b>0.0397</b>	<b>0.0397</b>		<b>0.0383</b>	<b>0.0383</b>	<b>0.0000</b>	<b>98.7261</b>	<b>98.7261</b>	<b>0.0169</b>	<b>0.0000</b>	<b>99.1475</b>

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**3.4 Building Construction - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5100e-003	0.0480	0.0119	1.1000e-004	2.8400e-003	2.4000e-004	3.0700e-003	8.2000e-004	2.3000e-004	1.0400e-003	0.0000	11.0678	11.0678	7.3000e-004	0.0000	11.0860
Worker	8.0400e-003	6.1600e-003	0.0682	2.0000e-004	0.0198	1.5000e-004	0.0199	5.2400e-003	1.4000e-004	5.3900e-003	0.0000	17.7780	17.7780	5.1000e-004	0.0000	17.7907
<b>Total</b>	<b>9.5500e-003</b>	<b>0.0542</b>	<b>0.0801</b>	<b>3.1000e-004</b>	<b>0.0226</b>	<b>3.9000e-004</b>	<b>0.0230</b>	<b>6.0600e-003</b>	<b>3.7000e-004</b>	<b>6.4300e-003</b>	<b>0.0000</b>	<b>28.8458</b>	<b>28.8458</b>	<b>1.2400e-003</b>	<b>0.0000</b>	<b>28.8767</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0824	0.7164	0.6921	1.1600e-003		0.0397	0.0397		0.0383	0.0383	0.0000	98.7260	98.7260	0.0169	0.0000	99.1474
<b>Total</b>	<b>0.0824</b>	<b>0.7164</b>	<b>0.6921</b>	<b>1.1600e-003</b>		<b>0.0397</b>	<b>0.0397</b>		<b>0.0383</b>	<b>0.0383</b>	<b>0.0000</b>	<b>98.7260</b>	<b>98.7260</b>	<b>0.0169</b>	<b>0.0000</b>	<b>99.1474</b>

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**3.4 Building Construction - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5100e-003	0.0480	0.0119	1.1000e-004	2.8400e-003	2.4000e-004	3.0700e-003	8.2000e-004	2.3000e-004	1.0400e-003	0.0000	11.0678	11.0678	7.3000e-004	0.0000	11.0860
Worker	8.0400e-003	6.1600e-003	0.0682	2.0000e-004	0.0198	1.5000e-004	0.0199	5.2400e-003	1.4000e-004	5.3900e-003	0.0000	17.7780	17.7780	5.1000e-004	0.0000	17.7907
<b>Total</b>	<b>9.5500e-003</b>	<b>0.0542</b>	<b>0.0801</b>	<b>3.1000e-004</b>	<b>0.0226</b>	<b>3.9000e-004</b>	<b>0.0230</b>	<b>6.0600e-003</b>	<b>3.7000e-004</b>	<b>6.4300e-003</b>	<b>0.0000</b>	<b>28.8458</b>	<b>28.8458</b>	<b>1.2400e-003</b>	<b>0.0000</b>	<b>28.8767</b>

**3.5 Paving - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2000e-003	0.0113	0.0112	2.0000e-005		6.1000e-004	6.1000e-004		5.7000e-004	5.7000e-004	0.0000	1.4855	1.4855	4.3000e-004	0.0000	1.4963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>1.2000e-003</b>	<b>0.0113</b>	<b>0.0112</b>	<b>2.0000e-005</b>		<b>6.1000e-004</b>	<b>6.1000e-004</b>		<b>5.7000e-004</b>	<b>5.7000e-004</b>	<b>0.0000</b>	<b>1.4855</b>	<b>1.4855</b>	<b>4.3000e-004</b>	<b>0.0000</b>	<b>1.4963</b>

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**3.5 Paving - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.7000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0615	0.0615	0.0000	0.0000	0.0616
Worker	1.1000e-004	9.0000e-005	9.5000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2469	0.2469	1.0000e-005	0.0000	0.2471
<b>Total</b>	<b>1.2000e-004</b>	<b>3.6000e-004</b>	<b>1.0200e-003</b>	<b>0.0000</b>	<b>2.9000e-004</b>	<b>0.0000</b>	<b>3.0000e-004</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>8.0000e-005</b>	<b>0.0000</b>	<b>0.3084</b>	<b>0.3084</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.3087</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2000e-003	0.0113	0.0112	2.0000e-005		6.1000e-004	6.1000e-004		5.7000e-004	5.7000e-004	0.0000	1.4855	1.4855	4.3000e-004	0.0000	1.4963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>1.2000e-003</b>	<b>0.0113</b>	<b>0.0112</b>	<b>2.0000e-005</b>		<b>6.1000e-004</b>	<b>6.1000e-004</b>		<b>5.7000e-004</b>	<b>5.7000e-004</b>	<b>0.0000</b>	<b>1.4855</b>	<b>1.4855</b>	<b>4.3000e-004</b>	<b>0.0000</b>	<b>1.4963</b>

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**3.5 Paving - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.7000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0615	0.0615	0.0000	0.0000	0.0616
Worker	1.1000e-004	9.0000e-005	9.5000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2469	0.2469	1.0000e-005	0.0000	0.2471
<b>Total</b>	<b>1.2000e-004</b>	<b>3.6000e-004</b>	<b>1.0200e-003</b>	<b>0.0000</b>	<b>2.9000e-004</b>	<b>0.0000</b>	<b>3.0000e-004</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>8.0000e-005</b>	<b>0.0000</b>	<b>0.3084</b>	<b>0.3084</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.3087</b>

**4.0 Operational Detail - Mobile**

**4.1 Mitigation Measures Mobile**

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	ROG	NOx	CO	SO2	Fugitive 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

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	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

Land Use	Miles			Trip %			Trip Purpose %		
	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

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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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>							

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**5.2 Energy by Land Use - Natural Gas**

**Mitigated**

	Natural Gas 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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>							

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

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**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**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

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**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
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.0000e-005</b>

**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
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.0000e-005</b>

**7.0 Water Detail**

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**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

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**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**8.0 Waste Detail**

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**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

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**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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### 10.0 Stationary Equipment

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#### Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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#### Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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#### User Defined Equipment

Equipment Type	Number
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### 11.0 Vegetation

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PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

**PAR1134\_Construction\_SCR and NH3 Tank**  
**South Coast AQMD Air District, Summer**

**1.0 Project Characteristics**

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**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**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	31
<b>Climate Zone</b>	9			<b>Operational Year</b>	2020
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	702.44	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

Project Characteristics -

Land Use -

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

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

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Rubber Tired Dozers (1): 3 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Cranes (1): 2 hours per day

Off-road Equipment - Cement and Mortar Mixers (2): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Plate Compactors (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day

Off-road Equipment - Rubber Tired Dozers (1): 7 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Trenchers (1): 4 hours per day

Trips and VMT - Demolition: 20 Worker Trips, 0 Vendor Trips, 10 Hauling Trips

Site Preparation: 10 Work Trips, 0 Vendor Trips, 0 Hauling Trips

Building Construction: 20 Worker Trips, 5 Vendor Trips, 0 Hauling

Paving: 10 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	180.00
tblConstructionPhase	NumDays	0.00	15.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	4.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	3.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00

**2.0 Emissions Summary**

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

**2.1 Overall Construction (Maximum Daily Emission)**

**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.3044	12.8970	8.6326	0.0164	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,575.2959	1,575.2959	0.3389	0.0000	1,580.8367
<b>Maximum</b>	<b>1.3044</b>	<b>12.8970</b>	<b>8.6326</b>	<b>0.0164</b>	<b>5.3811</b>	<b>0.6951</b>	<b>6.0762</b>	<b>2.9261</b>	<b>0.6395</b>	<b>3.5656</b>	<b>0.0000</b>	<b>1,575.2959</b>	<b>1,575.2959</b>	<b>0.3389</b>	<b>0.0000</b>	<b>1,580.8367</b>

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.3044	12.8970	8.6326	0.0164	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,575.2959	1,575.2959	0.3389	0.0000	1,580.8367
<b>Maximum</b>	<b>1.3044</b>	<b>12.8970</b>	<b>8.6326</b>	<b>0.0164</b>	<b>5.3811</b>	<b>0.6951</b>	<b>6.0762</b>	<b>2.9261</b>	<b>0.6395</b>	<b>3.5656</b>	<b>0.0000</b>	<b>1,575.2959</b>	<b>1,575.2959</b>	<b>0.3389</b>	<b>0.0000</b>	<b>1,580.8367</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.3000e-004</b>

**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.3000e-004</b>

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/22/2020	5	15	
2	Site Preparation	Site Preparation	1/23/2020	1/29/2020	5	5	
3	Building Construction	Building Construction	1/30/2020	10/7/2020	5	180	
4	Paving	Paving	10/8/2020	10/14/2020	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

#### OffRoad Equipment

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	1	2.00	231	0.29
Demolition	Rubber Tired Dozers	1	3.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Trenchers	1	4.00	78	0.50
Building Construction	Aerial Lifts	1	4.00	63	0.31
Building Construction	Cranes	1	2.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	5.00	130	0.42
Paving	Plate Compactors	1	4.00	8	0.43
Paving	Rollers	1	4.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	4.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	20.00	0.00	10.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	6	20.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	10.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

**3.1 Mitigation Measures Construction**

**3.2 Demolition - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.0411	9.9487	6.9046	0.0125		0.5284	0.5284		0.5020	0.5020		1,192.9997	1,192.9997	0.2317		1,198.7923
<b>Total</b>	<b>1.0411</b>	<b>9.9487</b>	<b>6.9046</b>	<b>0.0125</b>	<b>1.0000e-005</b>	<b>0.5284</b>	<b>0.5284</b>	<b>0.0000</b>	<b>0.5020</b>	<b>0.5020</b>		<b>1,192.9997</b>	<b>1,192.9997</b>	<b>0.2317</b>		<b>1,198.7923</b>

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

**3.2 Demolition - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.0600e-003	0.1814	0.0361	5.2000e-004	0.0117	5.8000e-004	0.0122	3.1900e-003	5.6000e-004	3.7500e-003		55.8886	55.8886	3.7500e-003		55.9824
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0905	0.0608	0.8176	2.3000e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		228.8835	228.8835	6.5800e-003		229.0480
<b>Total</b>	<b>0.0956</b>	<b>0.2423</b>	<b>0.8537</b>	<b>2.8200e-003</b>	<b>0.2352</b>	<b>2.2800e-003</b>	<b>0.2375</b>	<b>0.0625</b>	<b>2.1200e-003</b>	<b>0.0646</b>		<b>284.7721</b>	<b>284.7721</b>	<b>0.0103</b>		<b>285.0304</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.0411	9.9487	6.9046	0.0125		0.5284	0.5284		0.5020	0.5020	0.0000	1,192.9997	1,192.9997	0.2317		1,198.7923
<b>Total</b>	<b>1.0411</b>	<b>9.9487</b>	<b>6.9046</b>	<b>0.0125</b>	<b>1.0000e-005</b>	<b>0.5284</b>	<b>0.5284</b>	<b>0.0000</b>	<b>0.5020</b>	<b>0.5020</b>	<b>0.0000</b>	<b>1,192.9997</b>	<b>1,192.9997</b>	<b>0.2317</b>		<b>1,198.7923</b>

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**3.2 Demolition - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.0600e-003	0.1814	0.0361	5.2000e-004	0.0117	5.8000e-004	0.0122	3.1900e-003	5.6000e-004	3.7500e-003		55.8886	55.8886	3.7500e-003		55.9824
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0905	0.0608	0.8176	2.3000e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		228.8835	228.8835	6.5800e-003		229.0480
<b>Total</b>	<b>0.0956</b>	<b>0.2423</b>	<b>0.8537</b>	<b>2.8200e-003</b>	<b>0.2352</b>	<b>2.2800e-003</b>	<b>0.2375</b>	<b>0.0625</b>	<b>2.1200e-003</b>	<b>0.0646</b>		<b>284.7721</b>	<b>284.7721</b>	<b>0.0103</b>		<b>285.0304</b>

**3.3 Site Preparation - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2693	0.0000	5.2693	2.8965	0.0000	2.8965			0.0000			0.0000
Off-Road	1.2592	12.8666	6.0732	0.0107		0.6943	0.6943		0.6387	0.6387		1,037.7150	1,037.7150	0.3356		1,046.1054
<b>Total</b>	<b>1.2592</b>	<b>12.8666</b>	<b>6.0732</b>	<b>0.0107</b>	<b>5.2693</b>	<b>0.6943</b>	<b>5.9636</b>	<b>2.8965</b>	<b>0.6387</b>	<b>3.5352</b>		<b>1,037.7150</b>	<b>1,037.7150</b>	<b>0.3356</b>		<b>1,046.1054</b>

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

**3.3 Site Preparation - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0452	0.0304	0.4088	1.1500e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		114.4418	114.4418	3.2900e-003		114.5240
<b>Total</b>	<b>0.0452</b>	<b>0.0304</b>	<b>0.4088</b>	<b>1.1500e-003</b>	<b>0.1118</b>	<b>8.5000e-004</b>	<b>0.1126</b>	<b>0.0296</b>	<b>7.8000e-004</b>	<b>0.0304</b>		<b>114.4418</b>	<b>114.4418</b>	<b>3.2900e-003</b>		<b>114.5240</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2693	0.0000	5.2693	2.8965	0.0000	2.8965			0.0000			0.0000
Off-Road	1.2592	12.8666	6.0732	0.0107		0.6943	0.6943		0.6387	0.6387	0.0000	1,037.7150	1,037.7150	0.3356		1,046.1054
<b>Total</b>	<b>1.2592</b>	<b>12.8666</b>	<b>6.0732</b>	<b>0.0107</b>	<b>5.2693</b>	<b>0.6943</b>	<b>5.9636</b>	<b>2.8965</b>	<b>0.6387</b>	<b>3.5352</b>	<b>0.0000</b>	<b>1,037.7150</b>	<b>1,037.7150</b>	<b>0.3356</b>		<b>1,046.1054</b>

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**3.3 Site Preparation - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0452	0.0304	0.4088	1.1500e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		114.4418	114.4418	3.2900e-003		114.5240
<b>Total</b>	<b>0.0452</b>	<b>0.0304</b>	<b>0.4088</b>	<b>1.1500e-003</b>	<b>0.1118</b>	<b>8.5000e-004</b>	<b>0.1126</b>	<b>0.0296</b>	<b>7.8000e-004</b>	<b>0.0304</b>		<b>114.4418</b>	<b>114.4418</b>	<b>3.2900e-003</b>		<b>114.5240</b>

**3.4 Building Construction - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9160	7.9597	7.6901	0.0128		0.4415	0.4415		0.4253	0.4253		1,209.1881	1,209.1881	0.2064		1,214.3491
<b>Total</b>	<b>0.9160</b>	<b>7.9597</b>	<b>7.6901</b>	<b>0.0128</b>		<b>0.4415</b>	<b>0.4415</b>		<b>0.4253</b>	<b>0.4253</b>		<b>1,209.1881</b>	<b>1,209.1881</b>	<b>0.2064</b>		<b>1,214.3491</b>

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

**3.4 Building Construction - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0164	0.5247	0.1249	1.2900e-003	0.0320	2.6000e-003	0.0346	9.2100e-003	2.4900e-003	0.0117		137.2242	137.2242	8.6200e-003		137.4396
Worker	0.0905	0.0608	0.8176	2.3000e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		228.8835	228.8835	6.5800e-003		229.0480
<b>Total</b>	<b>0.1069</b>	<b>0.5855</b>	<b>0.9426</b>	<b>3.5900e-003</b>	<b>0.2556</b>	<b>4.3000e-003</b>	<b>0.2599</b>	<b>0.0685</b>	<b>4.0500e-003</b>	<b>0.0726</b>		<b>366.1077</b>	<b>366.1077</b>	<b>0.0152</b>		<b>366.4876</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9160	7.9597	7.6901	0.0128		0.4415	0.4415		0.4253	0.4253	0.0000	1,209.1881	1,209.1881	0.2064		1,214.3491
<b>Total</b>	<b>0.9160</b>	<b>7.9597</b>	<b>7.6901</b>	<b>0.0128</b>		<b>0.4415</b>	<b>0.4415</b>		<b>0.4253</b>	<b>0.4253</b>	<b>0.0000</b>	<b>1,209.1881</b>	<b>1,209.1881</b>	<b>0.2064</b>		<b>1,214.3491</b>

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

**3.4 Building Construction - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0164	0.5247	0.1249	1.2900e-003	0.0320	2.6000e-003	0.0346	9.2100e-003	2.4900e-003	0.0117		137.2242	137.2242	8.6200e-003		137.4396
Worker	0.0905	0.0608	0.8176	2.3000e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		228.8835	228.8835	6.5800e-003		229.0480
<b>Total</b>	<b>0.1069</b>	<b>0.5855</b>	<b>0.9426</b>	<b>3.5900e-003</b>	<b>0.2556</b>	<b>4.3000e-003</b>	<b>0.2599</b>	<b>0.0685</b>	<b>4.0500e-003</b>	<b>0.0726</b>		<b>366.1077</b>	<b>366.1077</b>	<b>0.0152</b>		<b>366.4876</b>

**3.5 Paving - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272		654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.4812</b>	<b>4.5275</b>	<b>4.4659</b>	<b>7.1100e-003</b>		<b>0.2446</b>	<b>0.2446</b>		<b>0.2272</b>	<b>0.2272</b>		<b>654.9767</b>	<b>654.9767</b>	<b>0.1914</b>		<b>659.7619</b>

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

**3.5 Paving - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2800e-003	0.1049	0.0250	2.6000e-004	6.4000e-003	5.2000e-004	6.9200e-003	1.8400e-003	5.0000e-004	2.3400e-003		27.4449	27.4449	1.7200e-003		27.4879
Worker	0.0452	0.0304	0.4088	1.1500e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		114.4418	114.4418	3.2900e-003		114.5240
<b>Total</b>	<b>0.0485</b>	<b>0.1354</b>	<b>0.4338</b>	<b>1.4100e-003</b>	<b>0.1182</b>	<b>1.3700e-003</b>	<b>0.1195</b>	<b>0.0315</b>	<b>1.2800e-003</b>	<b>0.0328</b>		<b>141.8866</b>	<b>141.8866</b>	<b>5.0100e-003</b>		<b>142.0119</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272	0.0000	654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.4812</b>	<b>4.5275</b>	<b>4.4659</b>	<b>7.1100e-003</b>		<b>0.2446</b>	<b>0.2446</b>		<b>0.2272</b>	<b>0.2272</b>	<b>0.0000</b>	<b>654.9767</b>	<b>654.9767</b>	<b>0.1914</b>		<b>659.7619</b>

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

**3.5 Paving - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2800e-003	0.1049	0.0250	2.6000e-004	6.4000e-003	5.2000e-004	6.9200e-003	1.8400e-003	5.0000e-004	2.3400e-003		27.4449	27.4449	1.7200e-003		27.4879
Worker	0.0452	0.0304	0.4088	1.1500e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		114.4418	114.4418	3.2900e-003		114.5240
<b>Total</b>	<b>0.0485</b>	<b>0.1354</b>	<b>0.4338</b>	<b>1.4100e-003</b>	<b>0.1182</b>	<b>1.3700e-003</b>	<b>0.1195</b>	<b>0.0315</b>	<b>1.2800e-003</b>	<b>0.0328</b>		<b>141.8866</b>	<b>141.8866</b>	<b>5.0100e-003</b>		<b>142.0119</b>

**4.0 Operational Detail - Mobile**

**4.1 Mitigation Measures Mobile**

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	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

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	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

Land Use	Miles			Trip %			Trip Purpose %		
	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

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**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

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**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>		<b>2.3000e-004</b>

**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>		<b>2.3000e-004</b>

**7.0 Water Detail**

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Summer

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**7.1 Mitigation Measures Water**

**8.0 Waste Detail**

**8.1 Mitigation Measures Waste**

**9.0 Operational Offroad**

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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**10.0 Stationary Equipment**

**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

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PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Winter

**PAR1134\_Construction\_SCR and NH3 Tank**  
**South Coast AQMD Air District, Winter**

**1.0 Project Characteristics**

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**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**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	31
<b>Climate Zone</b>	9			<b>Operational Year</b>	2020
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	702.44	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Winter

Project Characteristics -

Land Use -

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

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

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Rubber Tired Dozers (1): 3 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Cranes (1): 2 hours per day

Off-road Equipment - Cement and Mortar Mixers (2): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Plate Compactors (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day

Off-road Equipment - Rubber Tired Dozers (1): 7 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Trenchers (1): 4 hours per day

Trips and VMT - Demolition: 20 Worker Trips, 0 Vendor Trips, 10 Hauling Trips

Site Preparation: 10 Work Trips, 0 Vendor Trips, 0 Hauling Trips

Building Construction: 20 Worker Trips, 5 Vendor Trips, 0 Hauling

Paving: 10 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	180.00
tblConstructionPhase	NumDays	0.00	15.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Winter

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	UsageHours	4.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	3.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00

2.0 Emissions Summary

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Winter

**2.1 Overall Construction (Maximum Daily Emission)**

**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.3085	12.8999	8.5655	0.0162	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,556.5175	1,556.5175	0.3387	0.0000	1,562.0633
<b>Maximum</b>	<b>1.3085</b>	<b>12.8999</b>	<b>8.5655</b>	<b>0.0162</b>	<b>5.3811</b>	<b>0.6951</b>	<b>6.0762</b>	<b>2.9261</b>	<b>0.6395</b>	<b>3.5656</b>	<b>0.0000</b>	<b>1,556.5175</b>	<b>1,556.5175</b>	<b>0.3387</b>	<b>0.0000</b>	<b>1,562.0633</b>

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.3085	12.8999	8.5655	0.0162	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,556.5175	1,556.5175	0.3387	0.0000	1,562.0633
<b>Maximum</b>	<b>1.3085</b>	<b>12.8999</b>	<b>8.5655</b>	<b>0.0162</b>	<b>5.3811</b>	<b>0.6951</b>	<b>6.0762</b>	<b>2.9261</b>	<b>0.6395</b>	<b>3.5656</b>	<b>0.0000</b>	<b>1,556.5175</b>	<b>1,556.5175</b>	<b>0.3387</b>	<b>0.0000</b>	<b>1,562.0633</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

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**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.3000e-004</b>

**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.3000e-004</b>

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/22/2020	5	15	
2	Site Preparation	Site Preparation	1/23/2020	1/29/2020	5	5	
3	Building Construction	Building Construction	1/30/2020	10/7/2020	5	180	
4	Paving	Paving	10/8/2020	10/14/2020	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

#### OffRoad Equipment

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	1	2.00	231	0.29
Demolition	Rubber Tired Dozers	1	3.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Trenchers	1	4.00	78	0.50
Building Construction	Aerial Lifts	1	4.00	63	0.31
Building Construction	Cranes	1	2.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	5.00	130	0.42
Paving	Plate Compactors	1	4.00	8	0.43
Paving	Rollers	1	4.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	4.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	20.00	0.00	10.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	6	20.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	10.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

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**3.1 Mitigation Measures Construction**

**3.2 Demolition - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.0411	9.9487	6.9046	0.0125		0.5284	0.5284		0.5020	0.5020		1,192.9997	1,192.9997	0.2317		1,198.7923
<b>Total</b>	<b>1.0411</b>	<b>9.9487</b>	<b>6.9046</b>	<b>0.0125</b>	<b>1.0000e-005</b>	<b>0.5284</b>	<b>0.5284</b>	<b>0.0000</b>	<b>0.5020</b>	<b>0.5020</b>		<b>1,192.9997</b>	<b>1,192.9997</b>	<b>0.2317</b>		<b>1,198.7923</b>

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Winter

**3.2 Demolition - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.2100e-003	0.1838	0.0389	5.1000e-004	0.0117	5.9000e-004	0.0122	3.1900e-003	5.7000e-004	3.7600e-003		54.8599	54.8599	3.9100e-003		54.9577
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0987	0.0666	0.7362	2.1500e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		214.0730	214.0730	6.1400e-003		214.2265
<b>Total</b>	<b>0.1039</b>	<b>0.2504</b>	<b>0.7750</b>	<b>2.6600e-003</b>	<b>0.2352</b>	<b>2.2900e-003</b>	<b>0.2375</b>	<b>0.0625</b>	<b>2.1300e-003</b>	<b>0.0646</b>		<b>268.9329</b>	<b>268.9329</b>	<b>0.0101</b>		<b>269.1842</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.0411	9.9487	6.9046	0.0125		0.5284	0.5284		0.5020	0.5020	0.0000	1,192.9997	1,192.9997	0.2317		1,198.7923
<b>Total</b>	<b>1.0411</b>	<b>9.9487</b>	<b>6.9046</b>	<b>0.0125</b>	<b>1.0000e-005</b>	<b>0.5284</b>	<b>0.5284</b>	<b>0.0000</b>	<b>0.5020</b>	<b>0.5020</b>	<b>0.0000</b>	<b>1,192.9997</b>	<b>1,192.9997</b>	<b>0.2317</b>		<b>1,198.7923</b>

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**3.2 Demolition - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	5.2100e-003	0.1838	0.0389	5.1000e-004	0.0117	5.9000e-004	0.0122	3.1900e-003	5.7000e-004	3.7600e-003		54.8599	54.8599	3.9100e-003		54.9577
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0987	0.0666	0.7362	2.1500e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		214.0730	214.0730	6.1400e-003		214.2265
<b>Total</b>	<b>0.1039</b>	<b>0.2504</b>	<b>0.7750</b>	<b>2.6600e-003</b>	<b>0.2352</b>	<b>2.2900e-003</b>	<b>0.2375</b>	<b>0.0625</b>	<b>2.1300e-003</b>	<b>0.0646</b>		<b>268.9329</b>	<b>268.9329</b>	<b>0.0101</b>		<b>269.1842</b>

**3.3 Site Preparation - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2693	0.0000	5.2693	2.8965	0.0000	2.8965			0.0000			0.0000
Off-Road	1.2592	12.8666	6.0732	0.0107		0.6943	0.6943		0.6387	0.6387		1,037.7150	1,037.7150	0.3356		1,046.1054
<b>Total</b>	<b>1.2592</b>	<b>12.8666</b>	<b>6.0732</b>	<b>0.0107</b>	<b>5.2693</b>	<b>0.6943</b>	<b>5.9636</b>	<b>2.8965</b>	<b>0.6387</b>	<b>3.5352</b>		<b>1,037.7150</b>	<b>1,037.7150</b>	<b>0.3356</b>		<b>1,046.1054</b>

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**3.3 Site Preparation - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0494	0.0333	0.3681	1.0700e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		107.0365	107.0365	3.0700e-003		107.1132
<b>Total</b>	<b>0.0494</b>	<b>0.0333</b>	<b>0.3681</b>	<b>1.0700e-003</b>	<b>0.1118</b>	<b>8.5000e-004</b>	<b>0.1126</b>	<b>0.0296</b>	<b>7.8000e-004</b>	<b>0.0304</b>		<b>107.0365</b>	<b>107.0365</b>	<b>3.0700e-003</b>		<b>107.1132</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2693	0.0000	5.2693	2.8965	0.0000	2.8965			0.0000			0.0000
Off-Road	1.2592	12.8666	6.0732	0.0107		0.6943	0.6943		0.6387	0.6387	0.0000	1,037.7150	1,037.7150	0.3356		1,046.1054
<b>Total</b>	<b>1.2592</b>	<b>12.8666</b>	<b>6.0732</b>	<b>0.0107</b>	<b>5.2693</b>	<b>0.6943</b>	<b>5.9636</b>	<b>2.8965</b>	<b>0.6387</b>	<b>3.5352</b>	<b>0.0000</b>	<b>1,037.7150</b>	<b>1,037.7150</b>	<b>0.3356</b>		<b>1,046.1054</b>

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**3.3 Site Preparation - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0494	0.0333	0.3681	1.0700e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		107.0365	107.0365	3.0700e-003		107.1132
<b>Total</b>	<b>0.0494</b>	<b>0.0333</b>	<b>0.3681</b>	<b>1.0700e-003</b>	<b>0.1118</b>	<b>8.5000e-004</b>	<b>0.1126</b>	<b>0.0296</b>	<b>7.8000e-004</b>	<b>0.0304</b>		<b>107.0365</b>	<b>107.0365</b>	<b>3.0700e-003</b>		<b>107.1132</b>

**3.4 Building Construction - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9160	7.9597	7.6901	0.0128		0.4415	0.4415		0.4253	0.4253		1,209.1881	1,209.1881	0.2064		1,214.3491
<b>Total</b>	<b>0.9160</b>	<b>7.9597</b>	<b>7.6901</b>	<b>0.0128</b>		<b>0.4415</b>	<b>0.4415</b>		<b>0.4253</b>	<b>0.4253</b>		<b>1,209.1881</b>	<b>1,209.1881</b>	<b>0.2064</b>		<b>1,214.3491</b>

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**3.4 Building Construction - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0172	0.5241	0.1393	1.2500e-003	0.0320	2.6400e-003	0.0346	9.2100e-003	2.5200e-003	0.0117		133.2564	133.2564	9.2500e-003		133.4877
Worker	0.0987	0.0666	0.7362	2.1500e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		214.0730	214.0730	6.1400e-003		214.2265
<b>Total</b>	<b>0.1159</b>	<b>0.5907</b>	<b>0.8755</b>	<b>3.4000e-003</b>	<b>0.2556</b>	<b>4.3400e-003</b>	<b>0.2599</b>	<b>0.0685</b>	<b>4.0800e-003</b>	<b>0.0726</b>		<b>347.3294</b>	<b>347.3294</b>	<b>0.0154</b>		<b>347.7142</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9160	7.9597	7.6901	0.0128		0.4415	0.4415		0.4253	0.4253	0.0000	1,209.1881	1,209.1881	0.2064		1,214.3491
<b>Total</b>	<b>0.9160</b>	<b>7.9597</b>	<b>7.6901</b>	<b>0.0128</b>		<b>0.4415</b>	<b>0.4415</b>		<b>0.4253</b>	<b>0.4253</b>	<b>0.0000</b>	<b>1,209.1881</b>	<b>1,209.1881</b>	<b>0.2064</b>		<b>1,214.3491</b>

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Winter

**3.4 Building Construction - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0172	0.5241	0.1393	1.2500e-003	0.0320	2.6400e-003	0.0346	9.2100e-003	2.5200e-003	0.0117		133.2564	133.2564	9.2500e-003		133.4877
Worker	0.0987	0.0666	0.7362	2.1500e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		214.0730	214.0730	6.1400e-003		214.2265
<b>Total</b>	<b>0.1159</b>	<b>0.5907</b>	<b>0.8755</b>	<b>3.4000e-003</b>	<b>0.2556</b>	<b>4.3400e-003</b>	<b>0.2599</b>	<b>0.0685</b>	<b>4.0800e-003</b>	<b>0.0726</b>		<b>347.3294</b>	<b>347.3294</b>	<b>0.0154</b>		<b>347.7142</b>

**3.5 Paving - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272		654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.4812</b>	<b>4.5275</b>	<b>4.4659</b>	<b>7.1100e-003</b>		<b>0.2446</b>	<b>0.2446</b>		<b>0.2272</b>	<b>0.2272</b>		<b>654.9767</b>	<b>654.9767</b>	<b>0.1914</b>		<b>659.7619</b>

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Winter

**3.5 Paving - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.4400e-003	0.1048	0.0279	2.5000e-004	6.4000e-003	5.3000e-004	6.9300e-003	1.8400e-003	5.0000e-004	2.3500e-003		26.6513	26.6513	1.8500e-003		26.6976
Worker	0.0494	0.0333	0.3681	1.0700e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		107.0365	107.0365	3.0700e-003		107.1132
<b>Total</b>	<b>0.0528</b>	<b>0.1381</b>	<b>0.3960</b>	<b>1.3200e-003</b>	<b>0.1182</b>	<b>1.3800e-003</b>	<b>0.1196</b>	<b>0.0315</b>	<b>1.2800e-003</b>	<b>0.0328</b>		<b>133.6878</b>	<b>133.6878</b>	<b>4.9200e-003</b>		<b>133.8108</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272	0.0000	654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.4812</b>	<b>4.5275</b>	<b>4.4659</b>	<b>7.1100e-003</b>		<b>0.2446</b>	<b>0.2446</b>		<b>0.2272</b>	<b>0.2272</b>	<b>0.0000</b>	<b>654.9767</b>	<b>654.9767</b>	<b>0.1914</b>		<b>659.7619</b>

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Winter

**3.5 Paving - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.4400e-003	0.1048	0.0279	2.5000e-004	6.4000e-003	5.3000e-004	6.9300e-003	1.8400e-003	5.0000e-004	2.3500e-003		26.6513	26.6513	1.8500e-003		26.6976
Worker	0.0494	0.0333	0.3681	1.0700e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		107.0365	107.0365	3.0700e-003		107.1132
<b>Total</b>	<b>0.0528</b>	<b>0.1381</b>	<b>0.3960</b>	<b>1.3200e-003</b>	<b>0.1182</b>	<b>1.3800e-003</b>	<b>0.1196</b>	<b>0.0315</b>	<b>1.2800e-003</b>	<b>0.0328</b>		<b>133.6878</b>	<b>133.6878</b>	<b>4.9200e-003</b>		<b>133.8108</b>

**4.0 Operational Detail - Mobile**

**4.1 Mitigation Measures Mobile**

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	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

Land Use	Miles			Trip %			Trip Purpose %		
	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

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Winter

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Winter

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**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

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Winter

**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>		<b>2.3000e-004</b>

**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>		<b>2.3000e-004</b>

**7.0 Water Detail**

PAR1134\_Construction\_SCR and NH3 Tank - South Coast AQMD Air District, Winter

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### 7.1 Mitigation Measures Water

### 8.0 Waste Detail

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### 8.1 Mitigation Measures Waste

### 9.0 Operational Offroad

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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### 10.0 Stationary Equipment

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#### Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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#### Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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#### User Defined Equipment

Equipment Type	Number
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### 11.0 Vegetation

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## **APPENDIX B-2**

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### **CalEEMod Files And Assumptions**

#### **PAR1134 Construction Stationary Gas Turbine**

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Annual

**PAR1134\_Construction\_Stationary Gas Turbine**  
**South Coast AQMD Air District, Annual**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	31
<b>Climate Zone</b>	9			<b>Operational Year</b>	2020
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	702.44	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Annual

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - Stationary Gas Turbine: Demolition: 20 days; Site Preparation: 5 days; Building Construction: 180 days; Paving: 5 days

Off-road Equipment - Cranes (1): 3 hours per day; Forklifts (1): 6 hours per day; Generator Sets (1): 8 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Welders (1): 4 hours per day; Aerial Lifts (1): 4 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Rubber Tired Dozers (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Cranes (1): 3 hours per day

Off-road Equipment - Cement and Mortar Mixers (2): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Plate Compactors (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day

Off-road Equipment - Rubber Tired Dozers (1): 7 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Trenchers (1): 4 hours per day

Trips and VMT - Demolition: 20 Worker Trips, 0 Vendor Trips, 10 Hauling Trips

Site Preparation: 10 Work Trips, 0 Vendor Trips, 0 Hauling Trips

Building Construction: 20 Worker Trips, 5 Vendor Trips, 0 Hauling

Paving: 10 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	180.00
tblConstructionPhase	NumDays	0.00	20.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	4.00	3.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00

**2.0 Emissions Summary**

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Annual

**2.1 Overall Construction**

**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1149	0.9976	0.9090	1.7500e-003	0.0386	0.0513	0.0899	0.0141	0.0491	0.0631	0.0000	152.4164	152.4164	0.0238	0.0000	153.0124
<b>Maximum</b>	<b>0.1149</b>	<b>0.9976</b>	<b>0.9090</b>	<b>1.7500e-003</b>	<b>0.0386</b>	<b>0.0513</b>	<b>0.0899</b>	<b>0.0141</b>	<b>0.0491</b>	<b>0.0631</b>	<b>0.0000</b>	<b>152.4164</b>	<b>152.4164</b>	<b>0.0238</b>	<b>0.0000</b>	<b>153.0124</b>

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1149	0.9976	0.9090	1.7500e-003	0.0386	0.0513	0.0899	0.0141	0.0491	0.0631	0.0000	152.4162	152.4162	0.0238	0.0000	153.0123
<b>Maximum</b>	<b>0.1149</b>	<b>0.9976</b>	<b>0.9090</b>	<b>1.7500e-003</b>	<b>0.0386</b>	<b>0.0513</b>	<b>0.0899</b>	<b>0.0141</b>	<b>0.0491</b>	<b>0.0631</b>	<b>0.0000</b>	<b>152.4162</b>	<b>152.4162</b>	<b>0.0238</b>	<b>0.0000</b>	<b>153.0123</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Annual

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.0000e-005</b>

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**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
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.0000e-005</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	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**

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Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/29/2020	5	20	
2	Site Preparation	Site Preparation	1/30/2020	2/5/2020	5	5	
3	Building Construction	Building Construction	2/6/2020	10/14/2020	5	180	
4	Paving	Paving	10/15/2020	10/21/2020	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	1	3.00	231	0.29
Demolition	Rubber Tired Dozers	1	4.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Trenchers	1	4.00	78	0.50
Building Construction	Aerial Lifts	1	4.00	63	0.31
Building Construction	Cranes	1	3.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	5.00	130	0.42
Paving	Plate Compactors	1	4.00	8	0.43
Paving	Rollers	1	4.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	4.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	20.00	0.00	10.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	6	20.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	10.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

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**3.1 Mitigation Measures Construction**

**3.2 Demolition - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0123	0.1204	0.0769	1.4000e-004		6.2600e-003	6.2600e-003		5.9100e-003	5.9100e-003	0.0000	12.3946	12.3946	2.6100e-003	0.0000	12.4598
<b>Total</b>	<b>0.0123</b>	<b>0.1204</b>	<b>0.0769</b>	<b>1.4000e-004</b>	<b>0.0000</b>	<b>6.2600e-003</b>	<b>6.2600e-003</b>	<b>0.0000</b>	<b>5.9100e-003</b>	<b>5.9100e-003</b>	<b>0.0000</b>	<b>12.3946</b>	<b>12.3946</b>	<b>2.6100e-003</b>	<b>0.0000</b>	<b>12.4598</b>

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**3.2 Demolition - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.4000e-003	2.8000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	3.0000e-005	0.0000	0.3773	0.3773	3.0000e-005	0.0000	0.3780
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.9000e-004	6.8000e-004	7.5700e-003	2.0000e-005	2.1900e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	1.9753	1.9753	6.0000e-005	0.0000	1.9768
<b>Total</b>	<b>9.3000e-004</b>	<b>2.0800e-003</b>	<b>7.8500e-003</b>	<b>2.0000e-005</b>	<b>2.2800e-003</b>	<b>2.0000e-005</b>	<b>2.3000e-003</b>	<b>6.0000e-004</b>	<b>2.0000e-005</b>	<b>6.3000e-004</b>	<b>0.0000</b>	<b>2.3527</b>	<b>2.3527</b>	<b>9.0000e-005</b>	<b>0.0000</b>	<b>2.3547</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0123	0.1204	0.0769	1.4000e-004		6.2600e-003	6.2600e-003		5.9100e-003	5.9100e-003	0.0000	12.3945	12.3945	2.6100e-003	0.0000	12.4598
<b>Total</b>	<b>0.0123</b>	<b>0.1204</b>	<b>0.0769</b>	<b>1.4000e-004</b>	<b>0.0000</b>	<b>6.2600e-003</b>	<b>6.2600e-003</b>	<b>0.0000</b>	<b>5.9100e-003</b>	<b>5.9100e-003</b>	<b>0.0000</b>	<b>12.3945</b>	<b>12.3945</b>	<b>2.6100e-003</b>	<b>0.0000</b>	<b>12.4598</b>

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**3.2 Demolition - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	1.4000e-003	2.8000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	3.0000e-005	0.0000	0.3773	0.3773	3.0000e-005	0.0000	0.3780
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.9000e-004	6.8000e-004	7.5700e-003	2.0000e-005	2.1900e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	1.9753	1.9753	6.0000e-005	0.0000	1.9768
<b>Total</b>	<b>9.3000e-004</b>	<b>2.0800e-003</b>	<b>7.8500e-003</b>	<b>2.0000e-005</b>	<b>2.2800e-003</b>	<b>2.0000e-005</b>	<b>2.3000e-003</b>	<b>6.0000e-004</b>	<b>2.0000e-005</b>	<b>6.3000e-004</b>	<b>0.0000</b>	<b>2.3527</b>	<b>2.3527</b>	<b>9.0000e-005</b>	<b>0.0000</b>	<b>2.3547</b>

**3.3 Site Preparation - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0132	0.0000	0.0132	7.2400e-003	0.0000	7.2400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1500e-003	0.0322	0.0152	3.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	2.3535	2.3535	7.6000e-004	0.0000	2.3725
<b>Total</b>	<b>3.1500e-003</b>	<b>0.0322</b>	<b>0.0152</b>	<b>3.0000e-005</b>	<b>0.0132</b>	<b>1.7400e-003</b>	<b>0.0149</b>	<b>7.2400e-003</b>	<b>1.6000e-003</b>	<b>8.8400e-003</b>	<b>0.0000</b>	<b>2.3535</b>	<b>2.3535</b>	<b>7.6000e-004</b>	<b>0.0000</b>	<b>2.3725</b>

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**3.3 Site Preparation - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	9.0000e-005	9.5000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2469	0.2469	1.0000e-005	0.0000	0.2471
<b>Total</b>	<b>1.1000e-004</b>	<b>9.0000e-005</b>	<b>9.5000e-004</b>	<b>0.0000</b>	<b>2.7000e-004</b>	<b>0.0000</b>	<b>2.8000e-004</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>0.2469</b>	<b>0.2469</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.2471</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0132	0.0000	0.0132	7.2400e-003	0.0000	7.2400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1500e-003	0.0322	0.0152	3.0000e-005		1.7400e-003	1.7400e-003		1.6000e-003	1.6000e-003	0.0000	2.3535	2.3535	7.6000e-004	0.0000	2.3725
<b>Total</b>	<b>3.1500e-003</b>	<b>0.0322</b>	<b>0.0152</b>	<b>3.0000e-005</b>	<b>0.0132</b>	<b>1.7400e-003</b>	<b>0.0149</b>	<b>7.2400e-003</b>	<b>1.6000e-003</b>	<b>8.8400e-003</b>	<b>0.0000</b>	<b>2.3535</b>	<b>2.3535</b>	<b>7.6000e-004</b>	<b>0.0000</b>	<b>2.3725</b>

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**3.3 Site Preparation - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	9.0000e-005	9.5000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2469	0.2469	1.0000e-005	0.0000	0.2471
<b>Total</b>	<b>1.1000e-004</b>	<b>9.0000e-005</b>	<b>9.5000e-004</b>	<b>0.0000</b>	<b>2.7000e-004</b>	<b>0.0000</b>	<b>2.8000e-004</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>0.2469</b>	<b>0.2469</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.2471</b>

**3.4 Building Construction - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0875	0.7770	0.7159	1.2200e-003		0.0422	0.0422		0.0406	0.0406	0.0000	104.4290	104.4290	0.0187	0.0000	104.8965
<b>Total</b>	<b>0.0875</b>	<b>0.7770</b>	<b>0.7159</b>	<b>1.2200e-003</b>		<b>0.0422</b>	<b>0.0422</b>		<b>0.0406</b>	<b>0.0406</b>	<b>0.0000</b>	<b>104.4290</b>	<b>104.4290</b>	<b>0.0187</b>	<b>0.0000</b>	<b>104.8965</b>

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**3.4 Building Construction - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5100e-003	0.0480	0.0119	1.1000e-004	2.8400e-003	2.4000e-004	3.0700e-003	8.2000e-004	2.3000e-004	1.0400e-003	0.0000	11.0678	11.0678	7.3000e-004	0.0000	11.0860
Worker	8.0400e-003	6.1600e-003	0.0682	2.0000e-004	0.0198	1.5000e-004	0.0199	5.2400e-003	1.4000e-004	5.3900e-003	0.0000	17.7780	17.7780	5.1000e-004	0.0000	17.7907
<b>Total</b>	<b>9.5500e-003</b>	<b>0.0542</b>	<b>0.0801</b>	<b>3.1000e-004</b>	<b>0.0226</b>	<b>3.9000e-004</b>	<b>0.0230</b>	<b>6.0600e-003</b>	<b>3.7000e-004</b>	<b>6.4300e-003</b>	<b>0.0000</b>	<b>28.8458</b>	<b>28.8458</b>	<b>1.2400e-003</b>	<b>0.0000</b>	<b>28.8767</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0875	0.7770	0.7159	1.2200e-003		0.0422	0.0422		0.0406	0.0406	0.0000	104.4289	104.4289	0.0187	0.0000	104.8964
<b>Total</b>	<b>0.0875</b>	<b>0.7770</b>	<b>0.7159</b>	<b>1.2200e-003</b>		<b>0.0422</b>	<b>0.0422</b>		<b>0.0406</b>	<b>0.0406</b>	<b>0.0000</b>	<b>104.4289</b>	<b>104.4289</b>	<b>0.0187</b>	<b>0.0000</b>	<b>104.8964</b>

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**3.4 Building Construction - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5100e-003	0.0480	0.0119	1.1000e-004	2.8400e-003	2.4000e-004	3.0700e-003	8.2000e-004	2.3000e-004	1.0400e-003	0.0000	11.0678	11.0678	7.3000e-004	0.0000	11.0860
Worker	8.0400e-003	6.1600e-003	0.0682	2.0000e-004	0.0198	1.5000e-004	0.0199	5.2400e-003	1.4000e-004	5.3900e-003	0.0000	17.7780	17.7780	5.1000e-004	0.0000	17.7907
<b>Total</b>	<b>9.5500e-003</b>	<b>0.0542</b>	<b>0.0801</b>	<b>3.1000e-004</b>	<b>0.0226</b>	<b>3.9000e-004</b>	<b>0.0230</b>	<b>6.0600e-003</b>	<b>3.7000e-004</b>	<b>6.4300e-003</b>	<b>0.0000</b>	<b>28.8458</b>	<b>28.8458</b>	<b>1.2400e-003</b>	<b>0.0000</b>	<b>28.8767</b>

**3.5 Paving - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2000e-003	0.0113	0.0112	2.0000e-005		6.1000e-004	6.1000e-004		5.7000e-004	5.7000e-004	0.0000	1.4855	1.4855	4.3000e-004	0.0000	1.4963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>1.2000e-003</b>	<b>0.0113</b>	<b>0.0112</b>	<b>2.0000e-005</b>		<b>6.1000e-004</b>	<b>6.1000e-004</b>		<b>5.7000e-004</b>	<b>5.7000e-004</b>	<b>0.0000</b>	<b>1.4855</b>	<b>1.4855</b>	<b>4.3000e-004</b>	<b>0.0000</b>	<b>1.4963</b>

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**3.5 Paving - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.7000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0615	0.0615	0.0000	0.0000	0.0616
Worker	1.1000e-004	9.0000e-005	9.5000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2469	0.2469	1.0000e-005	0.0000	0.2471
<b>Total</b>	<b>1.2000e-004</b>	<b>3.6000e-004</b>	<b>1.0200e-003</b>	<b>0.0000</b>	<b>2.9000e-004</b>	<b>0.0000</b>	<b>3.0000e-004</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>8.0000e-005</b>	<b>0.0000</b>	<b>0.3084</b>	<b>0.3084</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.3087</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2000e-003	0.0113	0.0112	2.0000e-005		6.1000e-004	6.1000e-004		5.7000e-004	5.7000e-004	0.0000	1.4855	1.4855	4.3000e-004	0.0000	1.4963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>1.2000e-003</b>	<b>0.0113</b>	<b>0.0112</b>	<b>2.0000e-005</b>		<b>6.1000e-004</b>	<b>6.1000e-004</b>		<b>5.7000e-004</b>	<b>5.7000e-004</b>	<b>0.0000</b>	<b>1.4855</b>	<b>1.4855</b>	<b>4.3000e-004</b>	<b>0.0000</b>	<b>1.4963</b>

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**3.5 Paving - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.7000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0615	0.0615	0.0000	0.0000	0.0616
Worker	1.1000e-004	9.0000e-005	9.5000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2469	0.2469	1.0000e-005	0.0000	0.2471
<b>Total</b>	<b>1.2000e-004</b>	<b>3.6000e-004</b>	<b>1.0200e-003</b>	<b>0.0000</b>	<b>2.9000e-004</b>	<b>0.0000</b>	<b>3.0000e-004</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>8.0000e-005</b>	<b>0.0000</b>	<b>0.3084</b>	<b>0.3084</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.3087</b>

**4.0 Operational Detail - Mobile**

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**4.1 Mitigation Measures Mobile**

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	ROG	NOx	CO	SO2	Fugitive 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

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	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

Land Use	Miles			Trip %			Trip Purpose %		
	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

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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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>							

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**5.2 Energy by Land Use - Natural Gas**

**Mitigated**

	Natural Gas 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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>							

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

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**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**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

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**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
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.0000e-005</b>

**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
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.0000e-005</b>

**7.0 Water Detail**

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**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

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**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**8.0 Waste Detail**

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**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

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**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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## 10.0 Stationary Equipment

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### Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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### Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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### User Defined Equipment

Equipment Type	Number
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## 11.0 Vegetation

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PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Summer

**PAR1134\_Construction\_Stationary Gas Turbine**  
**South Coast AQMD Air District, Summer**

**1.0 Project Characteristics**

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**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**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	31
<b>Climate Zone</b>	9			<b>Operational Year</b>	2020
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	702.44	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Summer

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - Stationary Gas Turbine: Demolition: 20 days; Site Preparation: 5 days; Building Construction: 180 days; Paving: 5 days

Off-road Equipment - Cranes (1): 3 hours per day; Forklifts (1): 6 hours per day; Generator Sets (1): 8 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Welders (1): 4 hours per day; Aerial Lifts (1): 4 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Rubber Tired Dozers (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Cranes (1): 3 hours per day

Off-road Equipment - Cement and Mortar Mixers (2): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Plate Compactors (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day

Off-road Equipment - Rubber Tired Dozers (1): 7 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Trenchers (1): 4 hours per day

Trips and VMT - Demolition: 20 Worker Trips, 0 Vendor Trips, 10 Hauling Trips

Site Preparation: 10 Work Trips, 0 Vendor Trips, 0 Hauling Trips

Building Construction: 20 Worker Trips, 5 Vendor Trips, 0 Hauling

Paving: 10 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

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Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	180.00
tblConstructionPhase	NumDays	0.00	20.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	4.00	3.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00

**2.0 Emissions Summary**

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Summer

**2.1 Overall Construction (Maximum Daily Emission)**

**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.3270	12.8970	8.8971	0.0172	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,645.1446	1,645.1446	0.3389	0.0000	1,651.2502
Maximum	1.3270	12.8970	8.8971	0.0172	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,645.1446	1,645.1446	0.3389	0.0000	1,651.2502

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.3270	12.8970	8.8971	0.0172	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,645.1446	1,645.1446	0.3389	0.0000	1,651.2502
Maximum	1.3270	12.8970	8.8971	0.0172	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,645.1446	1,645.1446	0.3389	0.0000	1,651.2502

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	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

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**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.3000e-004</b>

**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.3000e-004</b>

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/29/2020	5	20	
2	Site Preparation	Site Preparation	1/30/2020	2/5/2020	5	5	
3	Building Construction	Building Construction	2/6/2020	10/14/2020	5	180	
4	Paving	Paving	10/15/2020	10/21/2020	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

#### OffRoad Equipment

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	1	3.00	231	0.29
Demolition	Rubber Tired Dozers	1	4.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Trenchers	1	4.00	78	0.50
Building Construction	Aerial Lifts	1	4.00	63	0.31
Building Construction	Cranes	1	3.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	5.00	130	0.42
Paving	Plate Compactors	1	4.00	8	0.43
Paving	Rollers	1	4.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	4.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	20.00	0.00	10.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	6	20.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	10.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

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**3.1 Mitigation Measures Construction**

**3.2 Demolition - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.2327	12.0391	7.6855	0.0142		0.6256	0.6256		0.5914	0.5914		1,366.2663	1,366.2663	0.2877		1,373.4598
<b>Total</b>	<b>1.2327</b>	<b>12.0391</b>	<b>7.6855</b>	<b>0.0142</b>	<b>0.0000</b>	<b>0.6256</b>	<b>0.6256</b>	<b>0.0000</b>	<b>0.5914</b>	<b>0.5914</b>		<b>1,366.2663</b>	<b>1,366.2663</b>	<b>0.2877</b>		<b>1,373.4598</b>

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**3.2 Demolition - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.8000e-003	0.1361	0.0271	3.9000e-004	8.7400e-003	4.4000e-004	9.1800e-003	2.3900e-003	4.2000e-004	2.8100e-003		41.9165	41.9165	2.8100e-003		41.9868
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0905	0.0608	0.8176	2.3000e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		228.8835	228.8835	6.5800e-003		229.0480
<b>Total</b>	<b>0.0943</b>	<b>0.1969</b>	<b>0.8447</b>	<b>2.6900e-003</b>	<b>0.2323</b>	<b>2.1400e-003</b>	<b>0.2344</b>	<b>0.0617</b>	<b>1.9800e-003</b>	<b>0.0637</b>		<b>270.8000</b>	<b>270.8000</b>	<b>9.3900e-003</b>		<b>271.0348</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.2327	12.0391	7.6855	0.0142		0.6256	0.6256		0.5914	0.5914	0.0000	1,366.2663	1,366.2663	0.2877		1,373.4598
<b>Total</b>	<b>1.2327</b>	<b>12.0391</b>	<b>7.6855</b>	<b>0.0142</b>	<b>0.0000</b>	<b>0.6256</b>	<b>0.6256</b>	<b>0.0000</b>	<b>0.5914</b>	<b>0.5914</b>	<b>0.0000</b>	<b>1,366.2663</b>	<b>1,366.2663</b>	<b>0.2877</b>		<b>1,373.4598</b>

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**3.2 Demolition - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.8000e-003	0.1361	0.0271	3.9000e-004	8.7400e-003	4.4000e-004	9.1800e-003	2.3900e-003	4.2000e-004	2.8100e-003		41.9165	41.9165	2.8100e-003		41.9868
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0905	0.0608	0.8176	2.3000e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		228.8835	228.8835	6.5800e-003		229.0480
<b>Total</b>	<b>0.0943</b>	<b>0.1969</b>	<b>0.8447</b>	<b>2.6900e-003</b>	<b>0.2323</b>	<b>2.1400e-003</b>	<b>0.2344</b>	<b>0.0617</b>	<b>1.9800e-003</b>	<b>0.0637</b>		<b>270.8000</b>	<b>270.8000</b>	<b>9.3900e-003</b>		<b>271.0348</b>

**3.3 Site Preparation - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2693	0.0000	5.2693	2.8965	0.0000	2.8965			0.0000			0.0000
Off-Road	1.2592	12.8666	6.0732	0.0107		0.6943	0.6943		0.6387	0.6387		1,037.7150	1,037.7150	0.3356		1,046.1054
<b>Total</b>	<b>1.2592</b>	<b>12.8666</b>	<b>6.0732</b>	<b>0.0107</b>	<b>5.2693</b>	<b>0.6943</b>	<b>5.9636</b>	<b>2.8965</b>	<b>0.6387</b>	<b>3.5352</b>		<b>1,037.7150</b>	<b>1,037.7150</b>	<b>0.3356</b>		<b>1,046.1054</b>

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**3.3 Site Preparation - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0452	0.0304	0.4088	1.1500e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		114.4418	114.4418	3.2900e-003		114.5240
<b>Total</b>	<b>0.0452</b>	<b>0.0304</b>	<b>0.4088</b>	<b>1.1500e-003</b>	<b>0.1118</b>	<b>8.5000e-004</b>	<b>0.1126</b>	<b>0.0296</b>	<b>7.8000e-004</b>	<b>0.0304</b>		<b>114.4418</b>	<b>114.4418</b>	<b>3.2900e-003</b>		<b>114.5240</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2693	0.0000	5.2693	2.8965	0.0000	2.8965			0.0000			0.0000
Off-Road	1.2592	12.8666	6.0732	0.0107		0.6943	0.6943		0.6387	0.6387	0.0000	1,037.7150	1,037.7150	0.3356		1,046.1054
<b>Total</b>	<b>1.2592</b>	<b>12.8666</b>	<b>6.0732</b>	<b>0.0107</b>	<b>5.2693</b>	<b>0.6943</b>	<b>5.9636</b>	<b>2.8965</b>	<b>0.6387</b>	<b>3.5352</b>	<b>0.0000</b>	<b>1,037.7150</b>	<b>1,037.7150</b>	<b>0.3356</b>		<b>1,046.1054</b>

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**3.3 Site Preparation - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0452	0.0304	0.4088	1.1500e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		114.4418	114.4418	3.2900e-003		114.5240
<b>Total</b>	<b>0.0452</b>	<b>0.0304</b>	<b>0.4088</b>	<b>1.1500e-003</b>	<b>0.1118</b>	<b>8.5000e-004</b>	<b>0.1126</b>	<b>0.0296</b>	<b>7.8000e-004</b>	<b>0.0304</b>		<b>114.4418</b>	<b>114.4418</b>	<b>3.2900e-003</b>		<b>114.5240</b>

**3.4 Building Construction - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9727	8.6336	7.9545	0.0136		0.4693	0.4693		0.4509	0.4509		1,279.0369	1,279.0369	0.2290		1,284.7626
<b>Total</b>	<b>0.9727</b>	<b>8.6336</b>	<b>7.9545</b>	<b>0.0136</b>		<b>0.4693</b>	<b>0.4693</b>		<b>0.4509</b>	<b>0.4509</b>		<b>1,279.0369</b>	<b>1,279.0369</b>	<b>0.2290</b>		<b>1,284.7626</b>

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**3.4 Building Construction - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0164	0.5247	0.1249	1.2900e-003	0.0320	2.6000e-003	0.0346	9.2100e-003	2.4900e-003	0.0117		137.2242	137.2242	8.6200e-003		137.4396
Worker	0.0905	0.0608	0.8176	2.3000e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		228.8835	228.8835	6.5800e-003		229.0480
<b>Total</b>	<b>0.1069</b>	<b>0.5855</b>	<b>0.9426</b>	<b>3.5900e-003</b>	<b>0.2556</b>	<b>4.3000e-003</b>	<b>0.2599</b>	<b>0.0685</b>	<b>4.0500e-003</b>	<b>0.0726</b>		<b>366.1077</b>	<b>366.1077</b>	<b>0.0152</b>		<b>366.4876</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9727	8.6336	7.9545	0.0136		0.4693	0.4693		0.4509	0.4509	0.0000	1,279.0368	1,279.0368	0.2290		1,284.7626
<b>Total</b>	<b>0.9727</b>	<b>8.6336</b>	<b>7.9545</b>	<b>0.0136</b>		<b>0.4693</b>	<b>0.4693</b>		<b>0.4509</b>	<b>0.4509</b>	<b>0.0000</b>	<b>1,279.0368</b>	<b>1,279.0368</b>	<b>0.2290</b>		<b>1,284.7626</b>

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**3.4 Building Construction - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0164	0.5247	0.1249	1.2900e-003	0.0320	2.6000e-003	0.0346	9.2100e-003	2.4900e-003	0.0117		137.2242	137.2242	8.6200e-003		137.4396
Worker	0.0905	0.0608	0.8176	2.3000e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		228.8835	228.8835	6.5800e-003		229.0480
<b>Total</b>	<b>0.1069</b>	<b>0.5855</b>	<b>0.9426</b>	<b>3.5900e-003</b>	<b>0.2556</b>	<b>4.3000e-003</b>	<b>0.2599</b>	<b>0.0685</b>	<b>4.0500e-003</b>	<b>0.0726</b>		<b>366.1077</b>	<b>366.1077</b>	<b>0.0152</b>		<b>366.4876</b>

**3.5 Paving - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272		654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.4812</b>	<b>4.5275</b>	<b>4.4659</b>	<b>7.1100e-003</b>		<b>0.2446</b>	<b>0.2446</b>		<b>0.2272</b>	<b>0.2272</b>		<b>654.9767</b>	<b>654.9767</b>	<b>0.1914</b>		<b>659.7619</b>

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Summer

**3.5 Paving - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2800e-003	0.1049	0.0250	2.6000e-004	6.4000e-003	5.2000e-004	6.9200e-003	1.8400e-003	5.0000e-004	2.3400e-003		27.4449	27.4449	1.7200e-003		27.4879
Worker	0.0452	0.0304	0.4088	1.1500e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		114.4418	114.4418	3.2900e-003		114.5240
<b>Total</b>	<b>0.0485</b>	<b>0.1354</b>	<b>0.4338</b>	<b>1.4100e-003</b>	<b>0.1182</b>	<b>1.3700e-003</b>	<b>0.1195</b>	<b>0.0315</b>	<b>1.2800e-003</b>	<b>0.0328</b>		<b>141.8866</b>	<b>141.8866</b>	<b>5.0100e-003</b>		<b>142.0119</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272	0.0000	654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.4812</b>	<b>4.5275</b>	<b>4.4659</b>	<b>7.1100e-003</b>		<b>0.2446</b>	<b>0.2446</b>		<b>0.2272</b>	<b>0.2272</b>	<b>0.0000</b>	<b>654.9767</b>	<b>654.9767</b>	<b>0.1914</b>		<b>659.7619</b>

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Summer

**3.5 Paving - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2800e-003	0.1049	0.0250	2.6000e-004	6.4000e-003	5.2000e-004	6.9200e-003	1.8400e-003	5.0000e-004	2.3400e-003		27.4449	27.4449	1.7200e-003		27.4879
Worker	0.0452	0.0304	0.4088	1.1500e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		114.4418	114.4418	3.2900e-003		114.5240
<b>Total</b>	<b>0.0485</b>	<b>0.1354</b>	<b>0.4338</b>	<b>1.4100e-003</b>	<b>0.1182</b>	<b>1.3700e-003</b>	<b>0.1195</b>	<b>0.0315</b>	<b>1.2800e-003</b>	<b>0.0328</b>		<b>141.8866</b>	<b>141.8866</b>	<b>5.0100e-003</b>		<b>142.0119</b>

**4.0 Operational Detail - Mobile**

**4.1 Mitigation Measures Mobile**

PAR1134\_Construction\_Stationary Gas Turbine - 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	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

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	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

Land Use	Miles			Trip %			Trip Purpose %		
	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

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Summer

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Summer

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**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

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**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>		<b>2.3000e-004</b>

**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>		<b>2.3000e-004</b>

**7.0 Water Detail**

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Summer

**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
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**10.0 Stationary Equipment**

**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Winter

**PAR1134\_Construction\_Stationary Gas Turbine**  
**South Coast AQMD Air District, Winter**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	31
<b>Climate Zone</b>	9			<b>Operational Year</b>	2020
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	702.44	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Winter

Project Characteristics -

Land Use -

Construction Phase - Construction Phase - Stationary Gas Turbine: Demolition: 20 days; Site Preparation: 5 days; Building Construction: 180 days; Paving: 5 days

Off-road Equipment - Cranes (1): 3 hours per day; Forklifts (1): 6 hours per day; Generator Sets (1): 8 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Welders (1): 4 hours per day; Aerial Lifts (1): 4 hours per day

Off-road Equipment - Concrete/Industrial Saws (1): 8 hours per day; Rubber Tired Dozers (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Cranes (1): 3 hours per day

Off-road Equipment - Cement and Mortar Mixers (2): 6 hours per day; Pavers (1): 5 hours per day; Rollers (1): 4 hours per day; Plate Compactors (1): 4 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day

Off-road Equipment - Rubber Tired Dozers (1): 7 hours per day; Tractors/Loaders/Backhoes (1): 4 hours per day; Trenchers (1): 4 hours per day

Trips and VMT - Demolition: 20 Worker Trips, 0 Vendor Trips, 10 Hauling Trips

Site Preparation: 10 Work Trips, 0 Vendor Trips, 0 Hauling Trips

Building Construction: 20 Worker Trips, 5 Vendor Trips, 0 Hauling

Paving: 10 Worker Trips, 1 Vendor Trips, 0 Hauling

Demolition -

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Winter

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	180.00
tblConstructionPhase	NumDays	0.00	20.00
tblConstructionPhase	NumDays	0.00	5.00
tblConstructionPhase	NumDays	0.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	4.00	3.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	1.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00

**2.0 Emissions Summary**

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Winter

**2.1 Overall Construction (Maximum Daily Emission)**

**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.3353	12.8999	8.8299	0.0170	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,626.3662	1,626.3662	0.3387	0.0000	1,632.4768
<b>Maximum</b>	<b>1.3353</b>	<b>12.8999</b>	<b>8.8299</b>	<b>0.0170</b>	<b>5.3811</b>	<b>0.6951</b>	<b>6.0762</b>	<b>2.9261</b>	<b>0.6395</b>	<b>3.5656</b>	<b>0.0000</b>	<b>1,626.3662</b>	<b>1,626.3662</b>	<b>0.3387</b>	<b>0.0000</b>	<b>1,632.4768</b>

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.3353	12.8999	8.8299	0.0170	5.3811	0.6951	6.0762	2.9261	0.6395	3.5656	0.0000	1,626.3662	1,626.3662	0.3387	0.0000	1,632.4768
<b>Maximum</b>	<b>1.3353</b>	<b>12.8999</b>	<b>8.8299</b>	<b>0.0170</b>	<b>5.3811</b>	<b>0.6951</b>	<b>6.0762</b>	<b>2.9261</b>	<b>0.6395</b>	<b>3.5656</b>	<b>0.0000</b>	<b>1,626.3662</b>	<b>1,626.3662</b>	<b>0.3387</b>	<b>0.0000</b>	<b>1,632.4768</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

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**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.3000e-004</b>

**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.3000e-004</b>

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2020	1/29/2020	5	20	
2	Site Preparation	Site Preparation	1/30/2020	2/5/2020	5	5	
3	Building Construction	Building Construction	2/6/2020	10/14/2020	5	180	
4	Paving	Paving	10/15/2020	10/21/2020	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

#### OffRoad Equipment

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Cranes	1	3.00	231	0.29
Demolition	Rubber Tired Dozers	1	4.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Site Preparation	Trenchers	1	4.00	78	0.50
Building Construction	Aerial Lifts	1	4.00	63	0.31
Building Construction	Cranes	1	3.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	5.00	130	0.42
Paving	Plate Compactors	1	4.00	8	0.43
Paving	Rollers	1	4.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	4.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	20.00	0.00	10.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	6	20.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	10.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

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**3.1 Mitigation Measures Construction**

**3.2 Demolition - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.2327	12.0391	7.6855	0.0142		0.6256	0.6256		0.5914	0.5914		1,366.2663	1,366.2663	0.2877		1,373.4598
<b>Total</b>	<b>1.2327</b>	<b>12.0391</b>	<b>7.6855</b>	<b>0.0142</b>	<b>0.0000</b>	<b>0.6256</b>	<b>0.6256</b>	<b>0.0000</b>	<b>0.5914</b>	<b>0.5914</b>		<b>1,366.2663</b>	<b>1,366.2663</b>	<b>0.2877</b>		<b>1,373.4598</b>

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**3.2 Demolition - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.9100e-003	0.1378	0.0292	3.8000e-004	8.7400e-003	4.5000e-004	9.1800e-003	2.3900e-003	4.3000e-004	2.8200e-003		41.1449	41.1449	2.9300e-003		41.2183
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0987	0.0666	0.7362	2.1500e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		214.0730	214.0730	6.1400e-003		214.2265
<b>Total</b>	<b>0.1026</b>	<b>0.2044</b>	<b>0.7653</b>	<b>2.5300e-003</b>	<b>0.2323</b>	<b>2.1500e-003</b>	<b>0.2344</b>	<b>0.0617</b>	<b>1.9900e-003</b>	<b>0.0637</b>		<b>255.2179</b>	<b>255.2179</b>	<b>9.0700e-003</b>		<b>255.4448</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.2327	12.0391	7.6855	0.0142		0.6256	0.6256		0.5914	0.5914	0.0000	1,366.2663	1,366.2663	0.2877		1,373.4598
<b>Total</b>	<b>1.2327</b>	<b>12.0391</b>	<b>7.6855</b>	<b>0.0142</b>	<b>0.0000</b>	<b>0.6256</b>	<b>0.6256</b>	<b>0.0000</b>	<b>0.5914</b>	<b>0.5914</b>	<b>0.0000</b>	<b>1,366.2663</b>	<b>1,366.2663</b>	<b>0.2877</b>		<b>1,373.4598</b>

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**3.2 Demolition - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.9100e-003	0.1378	0.0292	3.8000e-004	8.7400e-003	4.5000e-004	9.1800e-003	2.3900e-003	4.3000e-004	2.8200e-003		41.1449	41.1449	2.9300e-003		41.2183
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0987	0.0666	0.7362	2.1500e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		214.0730	214.0730	6.1400e-003		214.2265
<b>Total</b>	<b>0.1026</b>	<b>0.2044</b>	<b>0.7653</b>	<b>2.5300e-003</b>	<b>0.2323</b>	<b>2.1500e-003</b>	<b>0.2344</b>	<b>0.0617</b>	<b>1.9900e-003</b>	<b>0.0637</b>		<b>255.2179</b>	<b>255.2179</b>	<b>9.0700e-003</b>		<b>255.4448</b>

**3.3 Site Preparation - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2693	0.0000	5.2693	2.8965	0.0000	2.8965			0.0000			0.0000
Off-Road	1.2592	12.8666	6.0732	0.0107		0.6943	0.6943		0.6387	0.6387		1,037.7150	1,037.7150	0.3356		1,046.1054
<b>Total</b>	<b>1.2592</b>	<b>12.8666</b>	<b>6.0732</b>	<b>0.0107</b>	<b>5.2693</b>	<b>0.6943</b>	<b>5.9636</b>	<b>2.8965</b>	<b>0.6387</b>	<b>3.5352</b>		<b>1,037.7150</b>	<b>1,037.7150</b>	<b>0.3356</b>		<b>1,046.1054</b>

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**3.3 Site Preparation - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0494	0.0333	0.3681	1.0700e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		107.0365	107.0365	3.0700e-003		107.1132
<b>Total</b>	<b>0.0494</b>	<b>0.0333</b>	<b>0.3681</b>	<b>1.0700e-003</b>	<b>0.1118</b>	<b>8.5000e-004</b>	<b>0.1126</b>	<b>0.0296</b>	<b>7.8000e-004</b>	<b>0.0304</b>		<b>107.0365</b>	<b>107.0365</b>	<b>3.0700e-003</b>		<b>107.1132</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2693	0.0000	5.2693	2.8965	0.0000	2.8965			0.0000			0.0000
Off-Road	1.2592	12.8666	6.0732	0.0107		0.6943	0.6943		0.6387	0.6387	0.0000	1,037.7150	1,037.7150	0.3356		1,046.1054
<b>Total</b>	<b>1.2592</b>	<b>12.8666</b>	<b>6.0732</b>	<b>0.0107</b>	<b>5.2693</b>	<b>0.6943</b>	<b>5.9636</b>	<b>2.8965</b>	<b>0.6387</b>	<b>3.5352</b>	<b>0.0000</b>	<b>1,037.7150</b>	<b>1,037.7150</b>	<b>0.3356</b>		<b>1,046.1054</b>

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**3.3 Site Preparation - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0494	0.0333	0.3681	1.0700e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		107.0365	107.0365	3.0700e-003		107.1132
<b>Total</b>	<b>0.0494</b>	<b>0.0333</b>	<b>0.3681</b>	<b>1.0700e-003</b>	<b>0.1118</b>	<b>8.5000e-004</b>	<b>0.1126</b>	<b>0.0296</b>	<b>7.8000e-004</b>	<b>0.0304</b>		<b>107.0365</b>	<b>107.0365</b>	<b>3.0700e-003</b>		<b>107.1132</b>

**3.4 Building Construction - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9727	8.6336	7.9545	0.0136		0.4693	0.4693		0.4509	0.4509		1,279.0369	1,279.0369	0.2290		1,284.7626
<b>Total</b>	<b>0.9727</b>	<b>8.6336</b>	<b>7.9545</b>	<b>0.0136</b>		<b>0.4693</b>	<b>0.4693</b>		<b>0.4509</b>	<b>0.4509</b>		<b>1,279.0369</b>	<b>1,279.0369</b>	<b>0.2290</b>		<b>1,284.7626</b>

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**3.4 Building Construction - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0172	0.5241	0.1393	1.2500e-003	0.0320	2.6400e-003	0.0346	9.2100e-003	2.5200e-003	0.0117		133.2564	133.2564	9.2500e-003		133.4877
Worker	0.0987	0.0666	0.7362	2.1500e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		214.0730	214.0730	6.1400e-003		214.2265
<b>Total</b>	<b>0.1159</b>	<b>0.5907</b>	<b>0.8755</b>	<b>3.4000e-003</b>	<b>0.2556</b>	<b>4.3400e-003</b>	<b>0.2599</b>	<b>0.0685</b>	<b>4.0800e-003</b>	<b>0.0726</b>		<b>347.3294</b>	<b>347.3294</b>	<b>0.0154</b>		<b>347.7142</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9727	8.6336	7.9545	0.0136		0.4693	0.4693		0.4509	0.4509	0.0000	1,279.0368	1,279.0368	0.2290		1,284.7626
<b>Total</b>	<b>0.9727</b>	<b>8.6336</b>	<b>7.9545</b>	<b>0.0136</b>		<b>0.4693</b>	<b>0.4693</b>		<b>0.4509</b>	<b>0.4509</b>	<b>0.0000</b>	<b>1,279.0368</b>	<b>1,279.0368</b>	<b>0.2290</b>		<b>1,284.7626</b>

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**3.4 Building Construction - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0172	0.5241	0.1393	1.2500e-003	0.0320	2.6400e-003	0.0346	9.2100e-003	2.5200e-003	0.0117		133.2564	133.2564	9.2500e-003		133.4877
Worker	0.0987	0.0666	0.7362	2.1500e-003	0.2236	1.7000e-003	0.2253	0.0593	1.5600e-003	0.0609		214.0730	214.0730	6.1400e-003		214.2265
<b>Total</b>	<b>0.1159</b>	<b>0.5907</b>	<b>0.8755</b>	<b>3.4000e-003</b>	<b>0.2556</b>	<b>4.3400e-003</b>	<b>0.2599</b>	<b>0.0685</b>	<b>4.0800e-003</b>	<b>0.0726</b>		<b>347.3294</b>	<b>347.3294</b>	<b>0.0154</b>		<b>347.7142</b>

**3.5 Paving - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272		654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.4812</b>	<b>4.5275</b>	<b>4.4659</b>	<b>7.1100e-003</b>		<b>0.2446</b>	<b>0.2446</b>		<b>0.2272</b>	<b>0.2272</b>		<b>654.9767</b>	<b>654.9767</b>	<b>0.1914</b>		<b>659.7619</b>

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**3.5 Paving - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.4400e-003	0.1048	0.0279	2.5000e-004	6.4000e-003	5.3000e-004	6.9300e-003	1.8400e-003	5.0000e-004	2.3500e-003		26.6513	26.6513	1.8500e-003		26.6976
Worker	0.0494	0.0333	0.3681	1.0700e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		107.0365	107.0365	3.0700e-003		107.1132
<b>Total</b>	<b>0.0528</b>	<b>0.1381</b>	<b>0.3960</b>	<b>1.3200e-003</b>	<b>0.1182</b>	<b>1.3800e-003</b>	<b>0.1196</b>	<b>0.0315</b>	<b>1.2800e-003</b>	<b>0.0328</b>		<b>133.6878</b>	<b>133.6878</b>	<b>4.9200e-003</b>		<b>133.8108</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4812	4.5275	4.4659	7.1100e-003		0.2446	0.2446		0.2272	0.2272	0.0000	654.9767	654.9767	0.1914		659.7619
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.4812</b>	<b>4.5275</b>	<b>4.4659</b>	<b>7.1100e-003</b>		<b>0.2446</b>	<b>0.2446</b>		<b>0.2272</b>	<b>0.2272</b>	<b>0.0000</b>	<b>654.9767</b>	<b>654.9767</b>	<b>0.1914</b>		<b>659.7619</b>

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**3.5 Paving - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.4400e-003	0.1048	0.0279	2.5000e-004	6.4000e-003	5.3000e-004	6.9300e-003	1.8400e-003	5.0000e-004	2.3500e-003		26.6513	26.6513	1.8500e-003		26.6976
Worker	0.0494	0.0333	0.3681	1.0700e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304		107.0365	107.0365	3.0700e-003		107.1132
<b>Total</b>	<b>0.0528</b>	<b>0.1381</b>	<b>0.3960</b>	<b>1.3200e-003</b>	<b>0.1182</b>	<b>1.3800e-003</b>	<b>0.1196</b>	<b>0.0315</b>	<b>1.2800e-003</b>	<b>0.0328</b>		<b>133.6878</b>	<b>133.6878</b>	<b>4.9200e-003</b>		<b>133.8108</b>

**4.0 Operational Detail - Mobile**

**4.1 Mitigation Measures Mobile**

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	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

Land Use	Miles			Trip %			Trip Purpose %		
	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

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Winter

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Winter

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**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

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Winter

**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>		<b>2.3000e-004</b>

**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
<b>Total</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>		<b>2.3000e-004</b>

**7.0 Water Detail**

PAR1134\_Construction\_Stationary Gas Turbine - South Coast AQMD Air District, Winter

**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
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**10.0 Stationary Equipment**

**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

## **APPENDIX C**

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### **CEQA Impact Evaluations – Assumptions and Calculations**

## **APPENDIX C-1**

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### **CEQA Impact Evaluations – Assumptions and Calculations**

#### **Construction Summary**

Appendix C-1  
CEQA Construction Impact Evaluations - Summary

Criteria Pollutant Emissions Summary

PAR 1134 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
2 Facilities Installing 2 SCR Systems	2.6	25.8	17.3	0.03	12.2	7.1
1 Facility Replacing 1 Stationary Gas Turbine	1.3	12.9	8.9	0.02	6.1	3.6
<b>Peak Day - Worst Case Construction Emissions</b>	4.0	38.7	26.2	0.05	18.2	10.7
<b>SIGNIFICACNE THRESHOLD FOR CONSTRUCTION</b>	75	100	550	150	150	55

Notes:

1. The emissions are estimated using CalEEMod.
2. Construction activities are expected to occur on different days in multiple stages.

GHG Emissions Summary

PAR 1134 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr	Amortized CO2e (MT/yr)
2 Facilities Installing 2 SCR Systems	283.88	0.04	0.00	284.93	Total GHG Emissions Amortized over 30 Years
1 Facility Replacing 1 Stationary Gas Turbine	152.42	0.02	0.00	153.01	
<b>Total Emissions During Construction</b>	436	0	0	438	

Notes:

1. The emissions are estimated using CalEEMod.

## **APPENDIX C-2**

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### **CEQA Impact Evaluations – Assumptions and Calculations**

#### **Operations Summary**

Appendix C-2

CEQA Operational Impact Evaluations - Summary

Emissions Summary - Operations

PAR 1134 Requirement	VOC, lb/day	NOx, lb/day	CO, lb/day	SOx, lb/day	PM10, lb/day	PM2.5, lb/day
Increased Ammonia Deliveries for 4 Facilities	0.31	2.08	1.35	0.01	0.14	0.08
Increased Catalyst Delivery and Spent Catalyst Haul for 1 Facility	0.15	1.04	0.68	0.00	0.07	0.04
Daily Peak Operational Emissions	<b>0.46</b>	<b>3.11</b>	<b>2.03</b>	<b>0.01</b>	<b>0.21</b>	<b>0.12</b>
<b>SIGNIFICACNE THRESHOLD FOR OPERATION</b>	55	55	550	150	150	55

Note

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

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

Note

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

## **APPENDIX C-3**

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### **CEQA Impact Evaluations – Assumptions and Calculations**

**SCR**

Appendix C-3

CEQA Construction Impact Evaluations

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

PAR 1134 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
1 SCR and Ammonia Tank	1.3	12.9	8.6	0.0	6.1	3.6
Daily Peak Construction Emissions	1.3	12.9	8.6	0.0	6.1	3.6
<b>SIGNIFICANCE THRESHOLD FOR CONSTRUCTION</b>	75	100	550	150	150	55

Notes:

1. The emissions are estimated using CalEEMod.
2. SCR replacement is expected to occur on different days in multiple stages.

GHG Emissions Summary - 1 SCR and Aqueous Ammonia Tank

PAR 1134 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr
1 SCR and Aqueous Ammonia Tank	141.9	0.02	0.0	142.5
<b>Total Emissions During Construction</b>	141.9	0.0	0.0	142.5

4.75 Amortized Over 30 Years

Notes:

1. The emissions are estimated using CalEEMod.

## **APPENDIX C-4**

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### **CEQA Impact Evaluations – Assumptions and Calculations**

#### **Stationary Gas Turbine**

Appendix C-4  
CEQA Construction Impact Evaluations

Emissions Summary - Replacement Stationary Gas Turbine

PAR 1134 Requirement	VOC (lbs/day)	NOx (lbs/day)	CO (lbs/day)	SOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Replacement Stationary Gas Turbine	1.3	12.9	8.9	0.0	6.1	3.6
<b>Daily Peak Construction Emissions</b>	1.3	12.9	8.9	0.0	6.1	3.6
<b>SIGNIFICACNE THRESHOLD FOR CONSTRUCTION</b>	75	100	550	150	150	55

Notes:

1. The emissions are estimated using CalEEMod.
2. Equipment demolition and installation is expected to occur on different days in multiple stages.

GHG Emissions Summary

PAR 1134 Requirement	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr
Replacement Stationary Gas Turbine	152	0.0	0.0	153.0
<b>Total Emissions During Construction</b>	152	0.0	0.0	153

5.100 Amortized over 30 Years

Notes:

1. The emissions are estimated using CalEEMod.

## **APPENDIX C-5**

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### **CEQA Impact Evaluations – Assumptions and Calculations**

#### **Operational Calculations**

Appendix C-5  
CEQA Impact Evaluations - Assumptions and Calculations

Operational Emissions Summary - Increased Delivery of Aqueous Ammonia at 1 Facility and Increased Delivery/Haul of SCR Catalyst at 1 Facility on a Peak Day

PAR 1134	CO, lb/day	NOx, lb/day	PM10, lb/day	PM2.5, lb/day	VOC, lb/day	SOX, lb/day
Increased Delivery Trucks for Ammonia	0.34	0.52	0.03	0.02	0.08	0.002
Increased Truck Trips for New Catalyst Delivery and Spent Catalyst Haul Trip	0.68	1.04	0.07	0.04	0.15	0.004
<b>Total</b>	<b>1.01</b>	<b>1.56</b>	<b>0.10</b>	<b>0.06</b>	<b>0.23</b>	<b>0.01</b>

By Vehicle Class	CO, lb/day	NOx, lb/day	PM10, lb/day	PM2.5, lb/day	VOC, lb/day	SOX, lb/day	CO2, MT/yr	CH4, MT/yr	N2O, MT/yr	CO2e, MT/yr
Diesel Delivery Trucks (T6 Construction Truck)	0.34	0.52	0.03	0.02	0.08	0.00	18.19	0.00	0.00	18.20
Diesel Delivery Trucks (T6 Construction Truck)	0.68	1.04	0.07	0.04	0.15	0.00	2.85	0.00	0.00	2.86
<b>Total</b>	<b>1.01</b>	<b>1.56</b>	<b>0.10</b>	<b>0.06</b>	<b>0.23</b>	<b>0.01</b>	<b>21.05</b>	<b>0.00</b>	<b>0.00</b>	<b>21.06</b>

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

Note:

1. Peak daily trips assume one new ammonia delivery. Truck trip distances to deliver ammonia are assumed to be 100 miles round-trip
2. No additional employees are anticipated to be needed as a result to the increased ammonia usage. As such, no workers' travel emissions are anticipated from the operation of the replaced SCR catalys
3. It is assumed medium-heavy duty diesel instate construction trucks would be used to deliver ammonia and catalyst.

Delivery Trucks (Ammonia and Catalyst) - T6 instate construction heavy (T6) - each

	CO	NOx	PM10	PM2.5	VOC	SOX	CO2	CH4	N2O	CO2e
lb/mile	0.0034	0.0052	0.0003	0.0002	0.0008	0.00002	1.97	0.00		1.97
lb/day, MT/day for GHG	0.34	0.52	0.03	0.02	0.08	0.002	0.09	0.00	0.00	0.09

VMT, mile/day
100.0

Emission Factors: from EMFAC2017, EPA AP-42

## **APPENDIX D**

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### **PAR 1134 List of Affected Facilities and NAICS Code**

## Appendix D: PAR 1134 List of Affected Facilities

Facility ID	Facility Name	Address	On List per Government Code 65962.5 (Envirostor)?	Distance from School (meters)	Distance from Sensitive Receptor (meters)	Located Within Two Miles of an Airport?
176708	Altagas Pomona Energy Co.	1507 Mount Vernon, Pomona, CA, 91768	No	231	231	No
177120	Providence Saint John's Health Center	1328 22nd Street, Santa Monica, CA, 90404	No	331	22	No
3093	LA Co., Olive View/UCLA Medical Center	14445 Olive View Drive, Sylmar, CA, 91342	No	1,676	331	No
800234	Loma Linda University	11100 Anderson Street, Loma Linda, CA, 92350	Yes	545	125	No
185801	Berry Petroleum Company, LLC	25121 North Sierra Highway, Santa Clarita, CA, 91321	No	1,382	1,382	No
4242	San Diego Gas & Electric	14601 Virginia Street, Moreno Valley, CA, 92555	No	4,485	26	No
51620	Wheelabrator Norwalk Energy Co. Inc.	11500 Balsam Street, Norwalk, CA, 90650	No	1,205	0	No
7117	LA City, Department of Airports	275 Center Way, Los Angeles, CA, 90045	No	1,557	1,451	No
47781	OLS Energy-Chino	5601 Eucalyptus Avenue, Chino, CA, 91710	No	2,393	717	No
58949	LA Co. Sheriff Department	29300 The Old Road, Saugus, CA, 91350	No	848	418	No
550	LA Co. Internal Services Department	301 N Broadway, Los Angeles, CA, 90012	No	540	387	No
15507	California State University, Fullerton	800 N State College Boulevard, Fullerton, CA, 92831	No	503	22	No
166073	Beta Offshore	OCS Lease Parcels P-300 Huntington Beach, CA 92648 (Pacific Ocean)	No	14,000	14,000	No
117290	B Braun Medical, Inc.	2525 McGaw Ave, Irvine, CA, 92614	No	714	267	No
129497	Thums Long Beach Co.	1411 Pier D Street, Long Beach, CA, 90802	No	1,165	784	No
185600	Bridge Energy, LLC	2000 Tonner Canyon Road, Brea, CA, 92821	No	813	400	No

Note: Distances between facilities and sensitive receptors were estimated using ArcGIS from facility center point to receptor parcel boundary. Distances between facilities and schools or airports were estimated using ArcGIS from facility center point to school or airport center point.

Note: See Appendix D: PAR 1134 List of Affected Facilities that were Previously Evaluated in the December 2015 Final Program EA for NOx RECLAIM.

## Appendix D: NAICS Codes for PAR 1134 Affected Industry

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

## Appendix D: PAR 1134 List of Affected Facilities that were Previously Evaluated in the December 2015 Final Program EA for NOx RECLAIM

<u>Facility Name</u>	<u>Address</u>	<u>Evaluated in December 2015 Program EA for NOx RECLAIM</u>
<u>Allagas Pomona Energy Co.</u>	<u>1507 Mount Vernon, Pomona, CA, 91768</u>	<u>NO</u>
<u>Providence Saint John's Health Center</u>	<u>1328 22nd Street, Santa Monica, CA, 90404</u>	<u>NO</u>
<u>LA Co., Olive View/UCLA Medical Center</u>	<u>14445 Olive View Drive, Sylmar, CA, 91342</u>	<u>NO</u>
<u>Loma Linda University</u>	<u>11100 Anderson Street, Loma Linda, CA, 92350</u>	<u>NO</u>
<u>Berry Petroleum Company, LLC</u>	<u>25121 North Sierra Highway, Santa Clarita, CA, 91321</u>	<u>YES</u>
<u>San Diego Gas &amp; Electric</u>	<u>14601 Virginia Street, Moreno Valley, CA, 92555</u>	<u>YES</u>
<u>Wheelabrator Norwalk Energy Co. Inc.<sup>1</sup></u>	<u>11500 Balsam Street, Norwalk, CA, 90650</u>	<u>YES</u>
<u>LA City, Department of Airports (LAX)<sup>2</sup></u>	<u>275 Center Way, Los Angeles, CA, 90045</u>	<u>YES</u>
<u>OLS Energy-Chino</u>	<u>5601 Eucalyptus Avenue, Chino, CA, 91710</u>	<u>NO</u>
<u>LA Co. Sheriff Department</u>	<u>29300 The Old Road, Saugus, CA, 91350</u>	<u>NO</u>
<u>LA Co. Internal Services Department</u>	<u>301 N Broadway, Los Angeles, CA, 90012</u>	<u>NO</u>
<u>California State University, Fullerton</u>	<u>800 N State College Boulevard, Fullerton, CA, 92831</u>	<u>NO</u>
<u>Beta Offshore</u>	<u>OCS Lease Parcels P-300 Huntington Beach, CA 92648 (This facility is an oil platform in the Pacific Ocean)</u>	<u>YES</u>
<u>B Braun Medical, Inc.</u>	<u>2525 McGaw Ave, Irvine, CA, 92614</u>	<u>NO</u>
<u>Thums Long Beach Co.</u>	<u>1411 Pier D Street, Long Beach, CA, 90802</u>	<u>YES</u>
<u>Bridge Energy, LLC</u>	<u>2000 Tonner Canyon Road, Brea, CA, 92821</u>	<u>NO</u>
<u>Tin, Inc., International Paper<sup>3</sup></u>	<u>5110 E. Jurupa Ave, Ontario, CA, 91761</u>	<u>YES</u>
<u>SoCalGas Aliso Canyon<sup>4</sup></u>	<u>12801 Tampa Avenue, Northridge, CA, 91326</u>	<u>YES</u>

<sup>1</sup> Wheelabrator underwent a change of ownership in 2018 and is now DSH-Metropolitan State Hospital. In addition, the stationary gas turbines at this facility location are no longer in operation and they do not have any active permits with the SCAQMD. The Final SEA evaluates the physical changes and the environmental impacts that may be associated with these turbines. Because these turbines are no longer operational, the analysis in the Final SEA overestimates the environmental impacts.

<sup>2</sup> Prior to the adoption of PAR 1134, Los Angeles City, Department of Airports (LAX) replaced their turbines with equipment that currently meets the emission limits in PAR 1134. However, the Final SEA evaluates the physical changes and the environmental impacts that may be associated with the old turbines. Because these turbines no longer exist, the analysis in the Final SEA overestimates the environmental impacts.

<sup>3</sup> Tin, Inc., International Paper underwent a change of ownership and is now New-Indy. This facility was originally evaluated in the December 2015 Program EA for NOx RECLAIM. Prior to the adoption of PAR 1134, New-Indy submitted applications to replace their existing turbines. As such, these units were not analyzed in this Final SEA.

<sup>4</sup> This facility was originally identified as having equipment subject to PAR 1134; however this facility electrified the affected units prior to the adoption of PAR 1134. As such, these units were not analyzed in this Final SEA.

December 2015 Final Program EA for NOx RECLAIM: <http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2015/regxxfinalpeaplusappendices.pdf>

## **APPENDIX E**

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### **Hazards Analysis**

## Appendix E: Hazards Analysis for PAR 1134 - Aqueous Ammonia

Facility	Additional Monthly Aqueous Ammonia Needed (gal/month)	Size of Tank (gallons)	Maximum Quantity Released (gallons)	Maximum Quantity Released (lbs)	RMP Value (miles)	Distance (feet)	Distance to Nearest Receptor (feet)	Significant?
A	3500	5,500	3,685	28,551	0.3	1584	0	Yes
B	84	250	168	1,298	0.1	528	72	Yes
C	2500	5,000	3,350	25,956	0.3	1584	876	Yes
D	3668	5,000	3,350	25,956	0.3	1584	410	Yes
E	2336	5,000	3,350	25,956	0.3	1584	85	Yes
F	2500	5,000	3,350	25,956	0.3	1584	4760	No
G	2500	5,000	3,350	25,956	0.3	1584	1312	Yes
H	1834	3,000	2,010	15,573	0.2	1056	1086	No
I	167	300	201	1,557	0.1	528	72	Yes

**Notes:**

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

## Appendix E: Hazards Analysis for PAR 1134 - Aqueous Ammonia

## Estimated Ammonia Usage Increase

Facility	Increased Ammonia Usage per Year (gal/year)	Increased Ammonia Usage per Year (pounds/year)	Increased Ammonia Usage per Day (tons/year)	Increased Ammonia Usage per Day (tons/day)
A	42000	325,416	163	0.45
B	1000	7,748	4	0.01
C	30000	232,440	116	0.32
D	44000	340,912	170	0.47
E	28000	216,944	108	0.30
F	30000	232,440	116	0.32
G	30000	232,440	116	0.32
H	22000	170,456	85	0.23
I	2000	15,496	8	0.02
J	111000	860,028	430	1.18
K	12000	92,976	46	0.13
L	7000	54,236	27	0.07
M	6000	46,488	23	0.06
N	7000	54,236	27	0.07
O	7000	54,236	27	0.07
Total Ammonia Usage per Year				4.02

## **APPENDIX F**

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### **Example Facility NOx Emission Reductions After Implementing PAR 1134**

**Appendix F****EXAMPLE FACILITY NO<sub>x</sub> EMISSION REDUCTIONS AFTER IMPLEMENTING PAR 1134**

The following examples illustrate the quantity of NO<sub>x</sub> emission reductions that may be achieved after implementing PAR 1134 at three different facilities with three different stationary gas turbines.

**TABLE F-1**  
**Example Turbines Existing Setting**

Example Facility	Turbine Rating		Equipped with Post Combustion Control?	Current NO <sub>x</sub> Permit Limit (ppmv)	Current Ammonia Permit Limit (ppmv)	Reported NO <sub>x</sub> Emissions in 2015 (tons)
	MMBTU	MW				
Facility 1 – Small Turbine	16	1.1	No	41	None	2.4
Facility 2 – Medium Turbine	246	23	No	42	None	26.1
Facility 3 – Large Turbine	410	60	SCR	102	5	193

**TABLE F-2**  
**Expected NO<sub>x</sub> Emission Reductions After Compliance With PAR 1134**

Example Facility	Expected Post-Combustion Control	Proposed NO <sub>x</sub> Limit (ppmv)	Proposed Ammonia Limit (ppmv)	Projected NO <sub>x</sub> Emissions Reductions after Implementation of PAR 1134		Expected NO <sub>x</sub> Emissions after Implementation of PAR 1134	
				tons/year	lbs/day	tons/year	lbs/day
Facility 1 – Small Turbine	SCR	2	5	(2.3)	(12.6)	0.1	0.55
Facility 2 – Medium Turbine	SCR	2.5	5	(24.5)	(134)	1.6	8.8
Facility 3 – Large Turbine	SCR	2	2	(189)	(1,035)	3.8	20.8

## **APPENDIX G**

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### **Comment Letters Received on the Draft SEA**

**Comment Letter #1**

**Gabrieleno Band of Mission Indians – Kizh Nation**

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**From:** Administration Gabrieleno <admin@gabrielenoindians.org>  
**Sent:** Tuesday, January 29, 2019 1:21 PM  
**To:** CEQA\_Admin  
**Subject:** Re: Notice of Completion of a Draft SEA for PAR 1134 and Opportunity for Public Comment

To whom this may concern,

If there will be any ground disturbance taking place regarding the above project our Tribal government will like to consult with your lead agency.  
Thank you

Sincerely,

Brandy Salas

1-1

Admin Specialist  
Gabrieleno Band of Mission Indians - Kizh Nation  
PO Box 393  
Covina, CA 91723  
Office: 844-390-0787  
website: [www.gabrielenoindians.org](http://www.gabrielenoindians.org)

## Responses to Comment Letter #1

### Response 1-1

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**From:** CEQA\_Admin  
**Sent:** Friday, February 22, 2019 3:49 PM  
**To:** 'Administration Gabrieleno'  
**Cc:** Barbara Raclein; Ryan Banuelos (RBanuelos@aqmd.gov)  
**Subject:** RE: Notice of Completion of a Draft SEA for PAR 1134 and Opportunity for Public Comment

Dear Ms. Salas,

Thank you for your email regarding the availability of the Draft Subsequent Environmental Assessment (SEA) for Proposed Amended Rule (PAR) 1134 for public comment and review. In response to your inquiry as to whether there will be any ground disturbances taking place if the project is implemented, the analysis in the Draft SEA indicates that the following facilities may need to replace existing turbines with new turbines, or retrofit existing turbines with air pollution control equipment:

Facility Name	Address
Altogas Pomona Energy Co.	1507 Mount Vernon, Pomona, CA, 91768
Providence Saint John's Health Center	1328 22nd Street, Santa Monica, CA, 90404
LA Co., Olive View/UCLA Medical Center	14445 Olive View Drive, Sylmar, CA, 91342
Loma Linda University	11100 Anderson Street, Loma Linda, CA, 92350
Berry Petroleum Company, I.L.C.	25121 North Sierra Highway, Santa Clarita, CA, 91321
San Diego Gas & Electric	14601 Virginia Street, Moreno Valley, CA, 92555
Wheelabrator Norwalk Energy Co. Inc.	11500 Balsam Street, Norwalk, CA, 90650
LA City, Department of Airports (LAX)	275 Center Way, Los Angeles, CA, 90045
OLS Energy-Chino	5601 Eucalyptus Avenue, Chino, CA, 91710
LA Co. Sheriff Department	29300 The Old Road, Saugus, CA, 91350
LA Co. Internal Services Department	301 N Broadway, Los Angeles, CA, 90012
California State University, Fullerton	800 N State College Boulevard, Fullerton, CA, 92831
Beta Offshore	OCS Lease Parcels P-300 Huntington Beach, CA 92648 (This facility is an oil platform in the Pacific Ocean)
B Braun Medical, Inc.	2525 McGaw Ave, Irvine, CA, 92614
Thums Long Beach Co.	1411 Pier D Street, Long Beach, CA, 90802
Bridge Energy, I.L.C.	2000 Tommer Canyon Road, Brea, CA, 92821

**Responses to Comment Letter #1 (Continued)****Response 1-1 (Concluded)**

In order to make the aforementioned modifications, there will be some construction activities at these facilities which may involve some minor ground disturbances associated with demolishing old concrete pads or footings and pouring new concrete pads or footings. It is important to note that these anticipated construction activities are expected to be confined within the existing footprint of each facility's boundaries which are located on existing industrial properties that have been fully developed and paved. Further, the above-listed facilities do not appear to be located in or adjacent to the San Gabriel Valley which I understand to be the area of concern for the Gabrieleño Band of Mission Indians - Kizh Nation. Since the ground disturbing activities associated with PAR 1134 would not occur at locations of concern for your Tribal Government, it does not appear that a consultation is necessary.

Of course, if you believe that consultation is necessary or if you have additional questions or concerns that may arise from this response, please do not hesitate to contact me or Ryan Bañuelos of my staff at [rbanuelos@aqmd.gov](mailto:rbanuelos@aqmd.gov) or (909) 396-3479. Thank you.

Sincerely,  
Barbara Radlein  
Program Supervisor, CEQA  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765  
(t) 909.396.2716  
(f) 909.396.3982  
(e) [bradlein@aqmd.gov](mailto:bradlein@aqmd.gov)

Ryan Bañuelos  
Air Quality Specialist, CEQA  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765  
909.396.3479  
[rbanuelos@aqmd.gov](mailto:rbanuelos@aqmd.gov)

**Comment Letter #2**  
**SoCalGas and SDG&E**



**Karin Fickerson**  
 Air Quality Team Lead  
 1650 Mountainview Avenue  
 Oxnard, CA 93030  
 805-681-8013  
[kfickerson@semprautilities.com](mailto:kfickerson@semprautilities.com)

March 15, 2019

Mr. Ryan Bafuelos (c/o CEQA)  
 South Coast Air Quality Management District  
 21865 Copley Drive  
 Diamond Bar, CA 91765

Sent via email: [rbanuelos@aqmd.gov](mailto:rbanuelos@aqmd.gov)

**RE: Comments on Draft CEQA Subsequent Environmental Assessment for Proposed Amended Rule 1134 – Emissions of NOx from Stationary Gas Turbines**

Dear Mr. Bafuelos:

We are submitting these comments on behalf of SoCalGas and SDG&E, utilities regulated by the California Public Utility Commission (CPUC). SoCalGas operates a total of seven facilities subject to the Regional Clean Air Incentives Market (RECLAIM) program and is impacted by the transition to a command-and-control regulatory structure. SDG&E owns and SoCalGas operates the Moreno Valley Compressor Station within the jurisdiction of the South Coast Air Quality Management District (SCAQMD). SoCalGas has been actively engaged in the development of Proposed Amended Rule (PAR) 1134 Emissions of NOx from Stationary Gas Turbines. This letter provides our comments related to the Draft California Environmental Quality Act (CEQA) Subsequent Environmental Assessment (SEA) for PAR 1134.

2-1

***Consistency with PAR 1134 (030519 version)***

Based on our review of the SEA prepared for PAR 1134, we observed the following differences between the SEA and PAR 1134 (030519 version).

- Page 2-5: Table I: Emission limits for “Pipeline Gas Turbines” are listed as 8 ppm NOx and 5 ppm NH3 whereas Table II of PAR 1134 lists the emission limits as 3.5 ppm NOx and 10 ppm NH3.
- Page 4-12: Project Specific AQ Impacts During Operation. Based on review of the discussion, it is unclear whether the proposed replacement of the four gas turbine compressors at the Moreno Valley Compressor Station was included in this analysis.
- Page 4-16: PM Impacts from Ammonia Usage. The analysis seems to be based on ammonia slip limit of 5 ppm whereas PAR 1134 Table II emission limit is 10 ppm NH3.

2-2

2-3

2-4

**Comment Letter #2 (Continued)****SoCalGas and SDG&E*****Concern with CEQA Analysis for Equipment Subject to Multiple Landing Rules at the same Facility***

Based on our review of the SEA prepared for PAR 1134, we are concerned that the SEA hasn't properly analyzed the impacts of PAR 1134. There are additional logical and reasonable environmental consequences that will follow the implementation of PAR 1134.

The SEA only addresses the CEQA impacts associated with PAR 1134. However, our facilities are subject to multiple Landing Rules. In terms of PAR 1134, our Moreno Valley Compressor Station operates gas turbine compressors subject to PAR 1134, as well as engine compressors subject to PAR 1110.2 Emissions from Gaseous and Liquid Fueled Engines. Therefore, the CEQA impact associated with the transition from RECLAIM to Command and Control regulations for the Moreno Valley Compressor Station has not been fully analyzed by the SEA.

For example, the assumption listed in the last sentence of the last bullet on Page 4-8 is that "The maximum number of SCR systems expected to be installed at one facility is four." In addition to the four gas turbine compressors that will each require selective catalytic reduction (SCR), the Moreno Valley Compressor Station also has six reciprocating engine compressors. PAR 1134 requires the demonstration of reduced NOx emissions by 2023 as compared to 2017 in order to request a time extension for demonstration of BARCT on the compressor gas turbines. These NOx reductions will likely be achieved with the installation of SCR on some or all of the existing six reciprocating engine compressors. Additionally, PAR 1110.2 may require the installation of SCR on some or all of the six reciprocating engine compressors. As a result, the maximum number of SCR systems expected to be installed at a single facility assumed to be four in the SEA may be exceeded.

Please contact me with any questions regarding this comment letter at 805.681.8013 or [kfickerson@semprautilities.com](mailto:kfickerson@semprautilities.com).

Sincerely,



Karin Fickerson  
Air Quality Team Lead

cc: Michael Krause (SCAQMD)  
Barbara Radlein (SCAQMD)  
Darrell Johnson (SoCalGas)

2-5

## Responses to Comment Letter #2

### Response 2-1

This comment begins by introducing the parties represented by the letter; no response to this comment is necessary. SCAQMD staff appreciates your participation with our rule development process.

### Response 2-2

Subsequent to the release of the Draft SEA for public review and comment, minor modifications were made to PAR 1134, which included revisions to Table I - Emissions Limits for Stationary Gas Turbines and the addition of new Table II - Emissions Limits for Compressor Gas Turbines with a NO<sub>x</sub> emission limit of 3.5 ppmv and ammonia emission limit of 10 ppmw. Staff has reviewed these modifications to PAR 1134 and has incorporated the aforementioned revisions into the Final SEA. To facilitate identification of the changes that are reflected in the Final SEA, modifications to the document are presented as underlined text and text removed from the document is indicated by ~~strikethrough~~.

### Response 2-3

While the term used in this comment, “gas turbine compressors,” does not appear in PAR 1134, the term “compressor gas turbines” is defined in PAR 1134 as a stationary gas turbine used to transport gases or liquids in a pipeline. To the extent this comment is referring to “compressor gas turbines,” the SEA evaluated 30 stationary gas turbines, four of which are the stationary compressor gas turbines located at the Moreno Valley Compressor Station. The Final SEA provides a summary of the affected units analyzed in Table 4-2 and a list of the affected facilities in Appendix D, which identifies four stationary gas turbines for the facility located in Moreno Valley. However, Appendix D does not specifically state that the four stationary gas turbines are located at the Moreno Valley facility but rather lists each of the industries affected by PAR 1134 with a short description, the associated North American Industry Classification System (NAICS) code, and the number of units. The analysis in the SEA is not facility-specific, but rather uses assumptions to estimate the “worst-case” construction- and operational-related emissions associated with repowering or replacing an existing stationary gas turbine or installing new SCR systems to comply with the NO<sub>x</sub> emission limits in PAR 1134 on a peak day. For example, Table 4-10 in the Final SEA illustrates the peak daily overlapping construction and operational emissions as a result of the following activities: 1) installation of two new SCR systems and two new ammonia storage tanks, 2) replacement of one stationary gas turbine, 3) increased truck trips for ammonia delivery for four facilities, and 4) increased truck trips for new catalyst delivery and hauling of spent catalyst at one facility. Thus, any physical changes to a facility that are not a direct result of complying with PAR 1134 are outside the scope of the CEQA analysis and are not required to be analyzed in the Final SEA.

### Response 2-4

The analysis in the Draft SEA to determine PM impacts from ammonia usage is based on a series of regional simulations conducted by SCAQMD staff for the December 2015 Final Program EA for NO<sub>x</sub> RECLAIM to determine the impacts of reducing NO<sub>x</sub> while increasing the potential for creating ammonia slip due to increased use of ammonia needed for the operation of SCR systems.

In the analysis, NO<sub>x</sub> emissions were estimated to be reduced at RECLAIM facilities by a total of 14 tons per day while increasing ammonia slip emissions from the same facilities by 1.63 tons per day. The simulations were run for the 2021 draft baseline emissions inventory to estimate the impact when full implementation of the RECLAIM shave was expected to be achieved. The effect of decreasing 14 tons per day of NO<sub>x</sub> would result in a decrease of annual PM<sub>2.5</sub> of approximately 0.7 µg per cubic meter. However, since ammonia is necessary to achieve the 14 tons per day of NO<sub>x</sub> emission reductions, the use of ammonia would cause a concurrent increase in annual PM<sub>2.5</sub> of approximately 0.6 µg per cubic meter. Thus, increasing the amount of ammonia slip was shown to result in a net average 0.1 µg per cubic meter decrease in annual PM<sub>2.5</sub>. Further, the simulations showed that no change in ozone would be expected compared to what would occur with no increase in ammonia slip. As such, the December 2015 Final Program EA for NO<sub>x</sub> RECLAIM concluded that full implementation of the NO<sub>x</sub> RECLAIM shave would not create a significant adverse impact for either PM<sub>2.5</sub> or ozone emissions from the creation of ammonia slip. The decrease in annual PM<sub>2.5</sub> for NO<sub>x</sub> RECLAIM was based on an ammonia demand of approximately 39.5 tons per day (equivalent to approximately 10,284 gallons per day) of aqueous ammonia needed to operate the equipment. In addition, for the non-refinery equipment categories analyzed in the December 2015 Final Program EA, there were seven facilities with 13 turbines that had an expected demand of approximately 3.86 tons per day (equivalent to approximately 1,008 gallons per day) of aqueous ammonia (see Appendix E of the December 2015 Final Program EA, Page 71 <http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2015/regxxfinalpeaplusappendices.pdf>).

For PAR 1134, the analysis in the SEA evaluated 16 facilities and 30 turbines. However, the ammonia demand was only calculated for the 15 facilities and 24 turbines that were expected to use ammonia for the operation of SCR systems with an expected demand of approximately 4.02 tons per day (equivalent to approximately 1,038 gallons per day) of aqueous ammonia (see Appendix E of this Final SEA, pp. E-1 through E-2). The difference between the amount of aqueous ammonia demand for non-refinery facilities as analyzed in the December 2015 Final Program EA versus the ammonia demand analyzed in the Final SEA for PAR 1134 is approximately an additional 30 gallons per day that would be needed to implement PAR 1134. When compared to the total quantity of aqueous ammonia that was previously evaluated in the December 2015 Final Program EA for NO<sub>x</sub> RECLAIM, the increased demand in aqueous ammonia and corresponding ammonia slip emissions associated with implementing PAR 1134 is essentially a subset of the overall ammonia slip emissions previously evaluated in the December 2015 Final Program EA for NO<sub>x</sub> RECLAIM.

Thus, even with a change in the ammonia slip limit from 5 ppmv to 10 ppmv for the four existing compressor gas turbines with the remaining turbines subject to the 5 ppmv ammonia slip limit, overall the impact to regional PM<sub>2.5</sub> would continue to result in a net reduction and thus, would not create a significant adverse air quality impact.

## **Response 2-5**

The commentator's suggestion that PAR 1134 has not been properly analyzed because the Final SEA only addresses the CEQA impacts associated with PAR 1134 and improperly excludes

impacts from future rule amendments to other landing rules such as Rule 1110.2 is incorrect. As explained below, the “engine compressors” that would be subject to the upcoming amendments to Rule 1110.2 are not required to be analyzed in the Final SEA for PAR 1134 and thus were not included in the analysis.

At the beginning of the process when SCAQMD staff was considering how to “unwind” the RECLAIM regulation and move NO<sub>x</sub> RECLAIM equipment to a command-and-control structure subject to various landing rules in Regulation XI, SCAQMD received a similar comment which was addressed in the Final Subsequent Environmental Assessment for Proposed Amended Regulation XX- Regional Clean Air Incentives Market (RECLAIM): Proposed Amended Rule 2001 – Applicability, and Proposed Amended Rule 2002 – Allocations for Oxides of Nitrogen (NO<sub>x</sub>) and Oxides of Sulfur (SO<sub>x</sub>)<sup>1</sup> which was certified on October, 5, 2018. PAR 1134 was one of the several landing rules that was identified at the time for a future rule amendment. SCAQMD’s practice in conducting CEQA analyses for rule projects, including PAR 1134 and the upcoming amendments to Rule 1110.2, is that the project being contemplated undergoes its own CEQA analysis to address any impacts that were not addressed in a prior CEQA document. All SCAQMD rules and regulations are related to each other in that they are adopted and/or amended to meet the clean air goals outlined in the 2016 AQMP. The CEQA document for the 2016 AQMP, the March 2017 Final Program EIR, contains the programmatic analyses of the overall effects of SCAQMD’s clean air goals. However, CEQA neither requires the SCAQMD to simultaneously amend every rule that may be affected by a control measure in the 2016 AQMP nor requires one CEQA document to be prepared that encompasses every rule.

The decision to transition from NO<sub>x</sub> RECLAIM into a source-specific command-and-control regulatory structure was approved by the SCAQMD Governing Board as control measure CMB-05 in the 2016 AQMP. CMB-05 is required by the California Health and Safety Code to implement BARCT in the RECLAIM program, which will be completed upon rule amendment or adoption of various landing rules. The California Health and Safety Code also requires other stationary sources to meet BARCT so the landing rules may also apply to non-RECLAIM sources. CMB-05 identifies a series of approaches that can be explored to make the RECLAIM program more effective in ensuring equivalency with command-and-control regulations implementing BARCT and to generate further NO<sub>x</sub> emissions reductions at RECLAIM facilities, including sunseting the RECLAIM program.

CMB-05 specifically contemplates the unwinding of the RECLAIM program (see Final 2016 AQMP, Appendix IV-A, pp. IV-A-67 to IV-A-71 - <http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/appendix-iv-a.pdf>). In the Revised Draft 2016 AQMP that was released in October 2016<sup>2</sup>, control measure CMB-05 was revised to include the following language: “*One approach*

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<sup>1</sup> SCAQMD, Final Subsequent Environmental Assessment for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM): Proposed Amended Rule 2001 – Applicability, and Proposed Amended Rule 2002 – Allocations for Oxides of Nitrogen (NO<sub>x</sub>) and Oxides of Sulfur (SO<sub>x</sub>), October 2018. Responses to Comment Letter #2 – Latham & Watkins LLP, Comment 2-6 and Response 2-6. <http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2018/finalseaforpars2001-2002-fullmerge.pdf>

<sup>2</sup> Revised Draft 2016 AQMP, Appendix IV-A, October 2016, p. IV-A-84.

*under serious consideration is a long-term transition to a traditional command-and-control regulatory structure. As many of the program's original advantages appear to be diminishing and generating increased scrutiny, an orderly sunset of the RECLAIM program may be the best way to create more regulatory certainty and reduce compliance burdens for RECLAIM facilities, while also achieving more actual and SIP creditable emissions reductions.*" Thus, the March 2017 Final Program EIR for the 2016 AQMP analyzed control measure CMB-05, which did contemplate the potential for sunsetting the RECLAIM program, even though the final decision was not made until the adoption of the 2016 AQMP at the March 2017 Governing Board hearing.

Furthermore, the potential environmental impacts associated with the 2016 AQMP, including CMB-05, were specifically analyzed in the March 2017 Final Program EIR. In particular, the March 2017 Final Program EIR addressed the environmental effects of reasonably foreseeable environmental consequences for the RECLAIM Transition project and determined that the overall implementation has the potential to generate adverse environmental impacts to seven topic areas: air quality; energy; hazards and hazardous materials; hydrology and water quality; noise; solid and hazardous waste; and transportation. More specifically, the March 2017 Final Program EIR evaluated and identified the impacts from the installation and operation of additional control equipment, such as selective catalytic reduction (SCR) equipment, potentially resulting in construction emissions, increased electricity demand, hazards from the 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 catalyst replacements, as well as changes in traffic patterns and volume. The time to challenge the assessments for the analyses of March 2017 Final Program EIR for the 2016 AQMP relied upon has passed (see Public Resources Code Sections 21167 and 21167.2).

The environmental impacts of the entire RECLAIM Transition project were analyzed in the 2016 AQMP and the associated March 2017 Final Program EIR was a program level analysis. The SCAQMD has and will continue to evaluate each individual RECLAIM Transition rule that is developed pursuant to the 2016 AQMP, to determine if any additional CEQA review is required. This has been consistent with SCAQMD's past practice and is not considered piecemealing, as explained in SCAQMD's response letter to BizFed on April 25, 2018<sup>3</sup>.

To date, separate rule developments and corresponding CEQA analyses have been conducted and completed for Rules 2001 and 2002<sup>4</sup> (amended September, 2018 and Final SEA certified on October 5, 2018), Rule 1135 (amended October, 2018 and Final SEA certified on November 2, 2018), Rules 1100, 1146, 1146.1, and 1146.2 (amended November, 2018 and Final SEA certified on December 7, 2018), and Rule 1118.1 (adopted December, 2018 and Final EA certified on January 4, 2019). The rule development process and CEQA analysis for PAR 1134 is on its own schedule. Further, Table G-1 identifies several additional source-specific landing rules as

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<sup>3</sup> SCAQMD, Regulation XX – NOx RECLAIM, SCAQMD Response to BizFed – April 25, 2018.

[http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/regxx/5\\_response-042518\\_bizfed-letter.pdf](http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/regxx/5_response-042518_bizfed-letter.pdf)

<sup>4</sup> SCAQMD, Final Subsequent Environmental Assessment for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM): Proposed Amended Rule 2001 – Applicability, and Proposed Amended Rule 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), October 2018. <http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2018/finalseaforpars2001-2002-fullmerge.pdf>

identified by the SCAQMD in its monthly rule forecast report as scheduled to be undergoing separate, future rule amendments which includes PAR 1110.2.

**Table G-1  
Rule Development Forecast for Source-Specific Rules  
Affected by NOx RECLAIM Transition<sup>5</sup>**

<b>Rule Number</b>	<b>Rule Title</b>	<b>Rule Development Forecast (subject to change)</b>
1109.1	Emissions of Oxides of Nitrogen from Boilers and Process Heaters in Refineries	October 2019
1110.2	Emissions from Gaseous- and Liquid-Fueled Engines	September 2019
1117	Emissions of Oxides of Nitrogen from Glass Melting Furnaces	December 2019
1147	NOx Reductions from Miscellaneous Sources	September 2019
1147.1	NOx Reductions from Large Miscellaneous Combustion	September 2019
1147.2	NOx Reductions from Metal Melting and Heat Treating Furnaces	November 2019
1147.3	NOx Reductions from Aggregate Facilities	December 2019
1153.1	Emissions of Oxides of Nitrogen from Commercial Food Ovens	TBD 2019
1159.1	Nitric Acid Units – Oxides of Nitrogen	TBD 2019

Key: TBD = to be determined

Since the schedule of each individual RECLAIM Transition rule is very different, it is not feasible to predict or speculate on each potential facility modifications or timing as may be required for compliance with each RECLAIM Transition rule development. Additionally, the SCAQMD makes significance determinations for construction and operational impacts based on the maximum or peak daily emissions during the construction or operation period, which provides a “worst-case” analysis of the construction and operational emissions. The type of emission reduction projects that may occur or are expected to be undertaken to comply with PAR 1110.2 are unknown at this time because the rule development process is currently in its early stages. Even if SCR technology is analyzed as a compliance option for PAR 1110.2, the assumptions and

<sup>5</sup> Table G-1 rule development forecast is from the March 1, 2019 Rule and Control Measure Forecast: <http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2019/2019-mar1-017.pdf>

schedule for implementation are unknown at this time. As the rule development progresses for PAR 1110.2, a CEQA document specific to the impacts associated with PAR 1110.2 will be prepared.

Further, because the details of future rule implementation mechanisms and timing is not currently available, SCAQMD staff is unable to predict or forecast, when and what actions a facility would undertake to comply with other future rule amendments until the rule development processes for those rules are completed. As such, the Final SEA for PAR 1134 is not required to speculate about the exact modifications every facility will use to comply with future RECLAIM Transition rule developments such as the upcoming amendments to Rule 1110.2. The CEQA analysis for the upcoming amendments to Rule 1110.2 will analyze the environmental impacts that may be associated with the six reciprocating engine compressors along with all the other equipment/engines that may be subject to Rule 1110.2.

Comment Letter #3

Latham & Watkins, LLP

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March 15, 2019

VIA E-MAIL

Mr. Ryan Banuelos (rbanelos@aqmd.gov)
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Re: Proposed Amended Rule 1134 Draft Subsequent Environmental Assessment

Dear Mr. Banuelos:

We are submitting these comments on behalf of our client the Regulatory Flexibility Group ("RFG") regarding the Draft Subsequent Environmental Assessment ("Draft SEA") for Proposed Amended Rule 1134 ("PAR 1134"). The RFG is an industry coalition comprised of companies in the refining, utility and aerospace sectors that operate facilities within the jurisdiction of the South Coast Air Quality Management District ("SCAQMD"). RFG member facilities are subject to the Regional Clean Air Incentives Market ("RECLAIM") program and will be seriously affected by the transition to a command-and-control regulatory structure that is currently underway. The RFG participated in the development of the RECLAIM program from its inception and has been an active participant in all major amendments to the program, including those currently underway.

3-1

Please refer to our March 13, 2019 comments on PAR 1134, including the attached letter of September 7, 2018 submitted on behalf of the Western States Petroleum Association, both of which provide comments on staff's approach to satisfying the requirements of the California Environmental Quality Act ("CEQA") in connection with the RECLAIM transition. Our prior comments are attached and hereby incorporated by reference. In addition to the more general concerns identified in our previous comments, we provide the following specific comments on the Draft SEA.

3-2

1. The "project" analyzed in the Draft SEA (i.e., PAR 1134) is not consistent with the currently proposed amendments. For example, Table 1 of the Draft SEA identifies the emission limits for "Pipeline Gas Turbines" as 8 parts per million ("ppm") NOx and 5 ppm NH3; however, the current draft rule language proposes limits of 3.5 ppm NOx and 10 ppm NH3 for this type of engine (referred to as "Compressor Gas Turbines" in current rule language). The Draft SEA also assumes that permit conditions will limit ammonia slip to 5 ppm for all turbines covered by PAR 1134. (p. 4-15 and p. 4-16) However, the latest draft rule language has

3-3

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ammonia limits as high as 10 ppm, and even higher limits may be appropriate in some cases. Therefore, the Draft SEA likely underestimates impacts associated with ammonia slip. 3-3 cont'd

2. The "previous CEQA analyses conducted for the installation of one SCR system and one ammonia storage tank" referred to at page 4-5 should be provided as an appendix to the Draft SEA so that the public can access its validity. Please provide a copy in the response to comments. 3-4

3. The Draft SEA assumes that facilities with existing SCR systems will continue to use existing ammonia tanks to store ammonia for new SCR systems required to comply with PAR 1134, and simply increase ammonia deliveries to meet the new demand. (p. 4-6) Existing ammonia storage tanks may not have adequate storage capacity to meet the needs of simultaneous operation of all of the new SCR systems required to comply with PAR 1134. Furthermore, some facilities may have to install additional SCR systems to comply with other updated BARCT rules such as Rule 1110.2. If existing capacity is insufficient to meet instantaneous demand, increased deliveries will not address this problem. Therefore, the assumption that only those facilities that do not currently have ammonia storage tanks will be required to install tanks is not reasonable. 3-5

4. The Draft SEA assumes that for any facility with multiple gas turbines, the installation of SCR systems and associated ammonia storage tanks, or the replacement of the turbines, will occur in sequential order, and that the four phases of installation would also occur sequentially. (p. 4-7 – p. 4-9) However, because different phases of the installation process require different types of construction workers and equipment, it is more likely that multiple installations would be underway simultaneously in different phases. Once the demolition crew completed work on the turbine, it would move on to the next turbine, while the site preparation crew began work on the first turbine. The assumptions used in the Draft SEA are not reasonable because the assumed approach would be highly inefficient due to the need to mobilize and demobilize the same crew multiple times for each installation. 3-6

5. Please provide in the response to comments the basis for the assumed construction equipment and hours of operation associated with the replacement of a turbine contained in Table 4-5. (p. 4-10) 3-7

6. Facilities that have a high need for reliability, and that decide to replace turbines, may have to continue operating the existing turbines while installation of the new turbines is underway. The Draft SEA fails to assess the cumulative effects of simultaneous operation and installation. 3-8

7. The Draft SEA states that "[t]he maximum number of SCR systems expected to be installed at one facility is four." (p. 4-8) This assumption is based only on an analysis of installations that are required to comply with PAR 1134. However, there are facilities that may be required to install new SCR systems to comply with PAR 1134 and additional SCR systems to comply with other updated BARCT rules, such as Rule 1110.2. Furthermore, these installations may have to occur simultaneously, given that the compliance dates in the updated BARCT rules 3-9

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are all quite close to each other. This is an example of the piecemealing concern that we raised in our earlier comment letters identified above and attached hereto. Even if it were acceptable to review the impacts associated with each rule in separate CEQA documents, which it is not, the impacts associated with compliance with rules other than PAR 1134 should be identified as cumulative impacts in the Draft SEA since they will occur at the same facility.

3-9  
cont'd

8. The ammonia transportation release analysis compares the number of deliveries and the volume delivered on any given day to achieve compliance with PAR 1134 to the same parameters analyzed for two other previously-approved projects where the impacts were determined to be less than significant to reach the conclusion that the impacts associated with PAR 1134 are less than significant. (p. 4-23 – p. 4-26) This approach suffers from a number of critical flaws.

First, the analysis focuses only on the number of deliveries and volumes delivered, and ignores the most critical factor in assessing this type of risk, which is the number of vehicle miles traveled. As stated in the Draft SEA “[a] common reference frequently used in measuring risk of an accident is the number of accidents per million miles traveled.” (p. 4-24) As further explained in the Draft SEA, accident rates based on vehicle miles travelled was the basis of the analysis in the two other projects referred to in the Draft SEA – “accident rates developed based on transportation in California were used to predict the accident rate associated with trucks transporting aqueous ammonia to the facility.” (p. 4-24) The Draft SEA must assess the change in vehicle miles travelled as a result of Rule 1134.

Furthermore, the analysis focuses on the increased risk on any given day, which is an inappropriately short time horizon for assessing this type of risk. Thus, even if the analysis had correctly evaluated vehicle miles travelled, doing so on a daily basis only would have masked the true effects of PAR 1134. It may be that on a daily basis, the number of truck trips and miles travelled remain the same, but that the number of days on which truck trips are occurring increases. A scenario in which daily truck trips remain the same, but the number of days on which truck trips occur increases, would result in effects that would not be identified under the approach utilized in the Draft SEA. As the Draft SEA acknowledges, PAR 1134 will result in increased truck trips to deliver ammonia to affected facilities, which results in increased vehicle miles travelled. In fact, the Draft SEA relies on the assumption of increased truck trips to support its conclusion that there will not be impacts associated with increasing ammonia storage capacity at facilities with existing storage tanks - “ammonia usage will only affect the number of truck trips to deliver the ammonia and not the amount of ammonia stored on site.” (p. 4-6)

3-10

Finally, comparing the effects of PAR 1134 to other projects to determine whether or not the effects are significant is contrary to the requirements of CEQA, which is very specific regarding the baseline against which project effects are to be evaluated. As correctly stated in the Draft SEA, “[i]n order to determine the significance of the impacts associated with a proposed project, it is necessary to evaluate the project’s impacts against the backdrop of the environment as it exists at the time the environmental analysis is commenced.” (p. 3-1) “Therefore, the ‘environment’ or ‘existing setting’ against which a project’s impacts are compared consists of the immediate, contemporaneous physical conditions at and around the

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project site. (Remy, et al; 1996.)” (p. 3-1) The existing setting in this case is the number of vehicle miles traveled currently to deliver ammonia to the facilities affected by PAR 1134. This is the baseline against which the effects of PAR 1134 must be evaluated; not conclusions reached with regard to some other projects.

3-10  
cont'd

In summary, the appropriate methodology for assessing the increased risk associated with the transport of ammonia to comply with PAR 1134 is to determine the increase in vehicle miles travelled as a result of PAR 1134 and determine the resulting increase in risk. This is the methodology typically used by the SCAQMD, including in the projects cited in the Draft SEA.

9. Consequence analyses associated with hazards materials releases typically evaluate three scenarios – i) accidental release during transport; ii) storage tank rupture; and iii) releases as a result of malfunction during tank loading. The Draft SEA does not evaluate the third scenario even though it acknowledges that there will be an increased number of deliveries at facilities affected by PAR 1134.

3-11

Thank you for your attention to these comments. We look forward to receiving your responses.

Best regards,



Michael J. Carroll  
of LATHAM & WATKINS LLP

Attachment

- cc: Philip Fine, SCAQMD
- Barbara Baird, SCAQMD
- Robert Wyman, Latham & Watkins LLP
- John Heintz, Latham & Watkins LLP
- RFG Members

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**ATTACHMENT**  
**March 13, 2019 Letter**


**LATHAM & WATKINS LLP**

March 13, 2019

**VIA E-MAIL** (see attached distribution)

Governing Board  
 South Coast Air Quality Management District  
 21865 Copley Drive  
 Diamond Bar, CA 91765

**Re: Proposed Amended Rule 1134**

Dear SCAQMD Governing Board Member:

We are submitting these comments on behalf of our client the Regulatory Flexibility Group ("RFG") regarding Proposed Amended Rule 1134 ("PAR 1134"). The RFG is an industry coalition comprised of companies in the refining, utility and aerospace sectors that operate facilities within the jurisdiction of the South Coast Air Quality Management District ("SCAQMD"). RFG member facilities are subject to the Regional Clean Air Incentives Market ("RECLAIM") program and will be seriously affected by the transition to a command-and-control regulatory structure that is currently underway. The RFG participated in the development of the RECLAIM program from its inception and has been an active participant in all major amendments to the program, including those currently underway.

The PAR 1134 rulemaking raises a number of issues that have been raised previously with staff and Governing Board members in written and verbal comments at working group meetings, public workshops and hearings. Nevertheless, staff continues to proceed with RECLAIM transition rulemaking in the same flawed manner. Following is a brief summary of each of the issues about which we have concerns, and attached to this letter are more detailed comment letters previously submitted to the SCAQMD on these issues.

***Mandating Equipment Replacement Exceeds The SCAQMD's Authority***

As it has in previous rulemakings, SCAQMD staff takes the position that a best available retrofit control technology ("BARCT") standard may require total replacement of the emitting piece of equipment.<sup>1</sup> As we have explained in previously filed comments, mandating replacement projects exceeds the authority of the SCAQMD to adopt BARCT standards for

<sup>1</sup> PAR 1134 Draft Staff Report, March 2019, Chapter 2.

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*existing* sources, as set forth in the California Health & Safety Code, and, therefore, runs afoul of the well-established legal principle that a regulatory agency must act within the scope of the authority delegated to it by the legislature.

As illustrated by PAR 1134, staff's interpretation that a BARCT standard may require complete replacement of the subject equipment leads to nonsensical results. With respect to four out of the six equipment categories identified in PAR 1134, the Draft Staff Report describes the proposed standards as "[t]he initial BARCT recommendation for both new installations and retrofits . . ."<sup>2</sup> It does not make any sense to establish a BARCT standard for new installations because BARCT does not apply to new installations. New installations are subject to "best available control technology" (BACT) requirements. As explained elsewhere in the Draft Staff Report:

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."<sup>3</sup>

Thus, it is not at all clear what staff means when it refers to BARCT for new installations. New installations will be subject to BACT requirements that will be determined at the time the new installation is permitted and which may or may not be the same as the proposed BARCT standards "for new installations" contained in the Draft Staff Report. Furthermore, this confusing approach masks the true costs of compliance for those units that must be replaced. Staff's cost-effectiveness analysis looks only at the costs of installing selective catalytic reduction ("SCR") to meet the proposed BARCT standards. The costs of installing an entirely new piece of equipment that meets BACT standards that could be more stringent than the proposed BARCT standards could be much higher.

Our concerns regarding the BARCT update process to compel installation of new emissions units are addressed in more detail in the following attachments:

- August 24, 2018 comments from Latham & Watkins LLP on behalf of RFG
- November 1, 2018 comments from Latham & Watkins LLP on behalf of RFG

<sup>2</sup> Draft Staff Report, Chapter 2.

<sup>3</sup> Draft Staff Report, Chapter 2.

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### ***Staff's Proposed NOx BARCT Standards Do Not Adequately Consider Other Pollutants***

Staff's BARCT analysis focuses almost exclusively on proposed standards for NOx, including what is currently being achieved, and what might be achieved with identified control technologies. What staff often fails to adequately consider are trade-offs that can occur in terms of emissions of other pollutants, including particulate matter resulting from ammonia emissions. Use of ammonia in selective catalytic reduction ("SCR"), which is the preferred approach for achieving the NOx standards in PAR 1134, results in ammonia emissions that form particulates. Furthermore, the more stringent the NOx standard is, the more difficult it becomes to limit ammonia slip. In its evaluation of what is currently being achieved, staff often fails to acknowledge that the lowest emissions of NOx are being achieved with units that have high or non-existent limits on ammonia slip. Staff is then recommending NOx standards that are at or below the lowest levels currently being achieved, and then, to avoid impacts associated with increases in particulate emissions, is imposing stringent limits on ammonia. This approach ignores the inherent technological trade-off between these two pollutants and results in combinations of standards that may not be achievable, and certainly not at the costs identified by staff.

### ***Staff Has Failed To Provide Information That Forms The Bases Of Its BARCT Recommendations***

We are deeply concerned that staff is not making available to the public certain information upon which it is relying as the basis of its proposed BARCT standards. This is a significant deviation from the manner in which the SCAQMD has conducted BARCT determinations in the past and contrary to California Health & Safety Code ("H&S Code") requirements. H&S Code Section 40440(e) makes H&S Code Section 40703 applicable to SCAQMD rulemaking and requires that when adopting any regulation "the district shall consider, pursuant to Section 40922, and make available to the public, its findings related to the cost-effectiveness of a control measure, as well as the basis for the findings and the consideration involved." (emphasis added). Thus, the SCAQMD is required by statute, to make public the basis of its findings that the proposed and adopted BARCT standards are cost-effective.

It is not possible for the public to critically evaluate the basis of staff's recommendations if it does not have access to the information upon which staff is relying. Conclusory assertions contained in staff reports, without access to the underlying information that purportedly supports the assertions, is not sufficient to provide for meaningful evaluation and comment. Furthermore, because this information is not contained in the public record, it is not clear that it is being provided to the Governing Board. As a result, not only are certain staff recommendations unsupported by anything in the record, Governing Board action on those recommendations are equally unsupported.

When describing the technology assessment undertaken by staff, the PAR Draft Staff Report Staff states simply that staff "reviewed scientific literature, vendor information, and

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LATHAM & WATKINS <sup>4</sup>

strategies utilized in practice.<sup>4</sup> Not all of the information reviewed by staff is included in the PAR Draft Staff Report, and there are no specific references or citations to the sources of the information. It is impossible for the public to know precisely what staff has reviewed, or to critically evaluate the information in any way. This is particularly troubling because, in virtually every case, staff has proposed standards that are as stringent or more stringent than the most stringent existing standards, and well below the emission rates currently being met by most or all of the existing units in the class of equipment. Throughout the Draft Staff Report, staff justifies its proposals with the simple phrase “the technology assessment found.” Thus, staff’s recommendations are being driven primarily by information that is currently unavailable to the public.

We have addressed this concern regarding the adequacy of the rulemaking record in more detail in the following comments:

- March 4, 2019 comments from Latham & Watkins LLP on behalf of RFG and WSPA

***New Source Review Issues Must Be Addressed Comprehensively And Expeditionly***

While there has been additional discussion of new source review (“NSR”) issues in recent RECLAIM Working Group meetings, none of the fundamental issues have yet been resolved. Furthermore, although SCAQMD staff has indicated that it is communicating with U.S. Environmental Protection Agency (“USEPA”) staff regarding the nature of the NSR program that will apply to RECLAIM facilities once they exit the program, we are not aware of the specifics of those communications. Addressing fundamental programmatic issues, such as NSR, early in the transition process will result in a more orderly and efficient transition. This issue is addressed in more detail in the following attachment:

- September 7, 2018 comments from Latham & Watkins LLP on behalf of WSPA

***The California Environmental Quality Act Analysis For The Transition Project Is Piecemealed***

It is a fundamental principle of California Environmental Quality Act (“CEQA”) review that all environmental impacts for the whole of the project be analyzed together. In this case, the “project” is the RECLAIM transition as a whole as required by Control Measure CMB-05 as adopted in the 2016 AQMP. Yet, staff is conducting the CEQA review through a series of Supplemental Environmental Assessments (“SEA”) that analyze only the impacts associated with the particular landing rule under consideration. Staff argues that this approach is acceptable because each SEA “ties off” the March 2017 Final Program Environmental Impact Report for the 2016 AQMP and several other earlier certified CEQA documents, which analyzed the transition as a whole. However, the March 2017 Final Program EIR for the 2016 AQMP, which was completed in January 2018, did not analyze the transition of the RECLAIM program because the transition was not part of Control Measure CMB-05 as proposed at that time.

<sup>4</sup> PAR 1134 Draft Staff Report, March 2019, Chapter 2.

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#### LATHAM & WATKINS LLP

Therefore, tying off of the earlier CEQA documents to support rule amendments that seek to implement the transition is not possible because there is no comprehensive analysis in the earlier documents. In the absence of a program level CEQA analysis that includes the whole of the RECLAIM transition, staff's segmented analysis of each proposed rulemaking action constitutes classic "piecemealing" in violation of CEQA. This issue is addressed in more detail in the following attachment:

- September 7, 2018 comments from Latham & Watkins LLP on behalf of WSPA

#### *Incremental Socioeconomic Assessment*

By analyzing the socioeconomic impacts associated with the transition in an incremental fashion in the context of each rulemaking, as opposed to a comprehensive analysis of the entire transition, staff is either underestimating the cumulative impacts or failing to identify them at all. An illustration of this problem can be found in the two sets of amendments to Rules 2001 and 2002 in 2018. In the January 2018 amendments to these rules, staff did not even address the impact that the removal of 38 facilities from the RECLAIM program that would then be eligible to take advantage of offset exemptions in Rule 1304 might have on the internal offset bank. In contrast, the Staff Report supporting the October 2018 amendments to these same rules expressed serious concerns about the potential impacts to the internal bank. Either staff erred in January by failing to analyze the potential impacts on the internal bank, or it overstated the potential impacts associated with the October amendments. In either case, this inconsistency illustrates the problem with undertaking analysis of the impacts associated with the RECLAIM transition in an incremental fashion. This issue is addressed in more detail in the following attachment:

- September 7, 2018 comments from Latham & Watkins LLP on behalf of WSPA

#### *Inappropriate Cost-Effectiveness Methodology*

RFG objects to certain aspects of the cost-effectiveness methodology that SCAQMD staff is using to determine BARCT requirements for the landing rules currently under development. First, staff typically assumes a useful life for equipment of 25 years even though rulemaking requires replacement of technology much sooner. Use of a 25-year assumption makes the control equipment appear more cost-effective by diluting the significant capital costs of required projects over a much longer time period than is likely to occur. Second, staff utilizes the discounted cash flow ("DCF") method instead of the levelized cash flow ("LCF") method as used by several other air districts. The LCF method is a better representation of cost-effectiveness than the DCF method. Finally, staff utilizes a \$50,000 per ton cost-effectiveness threshold for determining BARCT, which is much higher than that applied by other air quality agencies, and, in some cases, staff has concluded that controls with a cost-effectiveness above \$50,000 per ton constitute BARCT. This issue is addressed in more detail in the following attachment:

- July 3, 2018 comments from WSPA

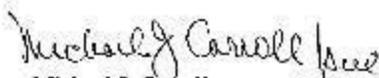
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March 13, 2019  
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I thank you for your attention to these comments. We are available to discuss these issues with you and/or your Governing Board Assistant at any time.

Best regards,

  
Michael J. Carroll  
of LATHAM & WATKINS LLP

Attachments

cc: Clerk of the Boards, SCAQMD  
Wayne Nistri, SCAQMD  
Philip Fine, SCAQMD  
Barbara Baird, SCAQMD  
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AUGUST 24, 2018  
ATTACHMENT



**LATHAM & WATKINS** LLP

August 24, 2018

**VIA EMAIL**

Dr. Philip Fine  
Deputy Executive Officer  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765

Re: SCAQMD Staff Proposal to Require Equipment Replacement as BARCT

Dear Dr. Fine:

We are submitting these comments on behalf of our client the Regulatory Flexibility Group ("RFG"). The RFG is an industry coalition comprised of companies in the refining, utility and aerospace sectors that operate facilities within the jurisdiction of the South Coast Air Quality Management District ("SCAQMD"). RFG member facilities are subject to the Regional Clean Air Incentives Market ("RECLAIM") program, and will be seriously affected by the transition to a command-and-control regulatory structure that is currently underway. The RFG participated in the development of the RECLAIM program from its inception, and has been an active participant in all major amendments to the program, including those currently underway.

**Introduction**

These comments are focused on recent assertions by SCAQMD staff that a best available retrofit control technology ("BARCT") standard may require total replacement of the emitting piece of equipment. SCAQMD staff has asserted this position in various meetings and documents pertaining to the RECLAIM transition and development of command-and-control BARCT rules. The most detailed explanation of the staff's position that we are aware of is contained in the July 2018 Draft Staff Report in support of proposed amendments to SCAQMD Rule 1135 ("Rule 1135 Staff Report") at pages 2-1 through 2-2, wherein staff makes two arguments in support of its position. First, it cites to dictionary definitions of "retrofit" and concludes that "replacement" is not specifically excluded from those definitions. Second, it cites to a California Supreme Court case, *American Coatings Ass'n v. South Coast Air Quality Mgt. Dist.*, 54 Cal 4<sup>th</sup> 446 (2012), for the proposition that a BARCT standard may require replacement of the emitting equipment in its entirety.

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Dr. Philip Fine  
August 24, 2018  
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The RFG concurs with the comments of the Western States Petroleum Association ("WSPA") submitted on August 15, 2018 pertaining to this issue ("WSPA Comments"). We hereby supplement those comments with further analysis of the relevant statutory provisions, which illustrates that the staff's interpretation is inconsistent with the whole of Division 26 of the California Health & Safety Code, which addresses Air Resources, and runs contrary to standard principles of statutory construction. In addition, we provide additional analysis distinguishing SCAQMD Rule 1113, which is the subject of the *American Coatings* case, from the BARCT rules currently under development to replace the RECLAIM program.

#### Relevant Statutory Provisions

At question is the scope of the SCAQMD's authority to require the use of BARCT for existing sources. That authority is both granted and limited by Health & Safety Code Section 40440(b)(1), which provides, in relevant part:

(b) The rules and regulations adopted pursuant to subdivision (a) [authorizing SCAQMD board to adopt rules and regulations to carry out air quality management plan] shall do all of the following:

(1) Require the use of best available control technology for new and modified sources and the use of best available retrofit control technology for existing sources.

Health & Safety Code Section 40406 defines BARCT as follows:

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.

Finally, Health & Safety Code Section 40920.6, specifies the procedures the SCAQMD is required to follow when establishing a BARCT standard, and provides, in part:

(a) Prior to adopting rules or regulations to meet the requirement for best available retrofit control technology pursuant to Sections 40918, 40919, 40920 and 40920.5, or for a feasible measure pursuant to Section 40914, districts shall, in addition to other requirements of this division, do all of the following:

(1) Identify one or more potential control options which achieves the emission reduction objectives for the regulation.

(2) Review the information developed to assess the cost-effectiveness of the potential control option. For purposes of this paragraph, "cost-effectiveness" means the cost, in dollars, of

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the potential control option divided by emission reduction potential, in tons, of the potential control option.

(3) Calculate the incremental cost-effectiveness for the potential control options identified in paragraph (1). To determine the incremental cost-effectiveness under this paragraph, the district shall calculate 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.

(4) Consider, and review in a public meeting, all of the following:

(A) The effectiveness of the proposed control option in meeting the requirements of this chapter and the requirements adopted by the state board pursuant to subdivision (b) of Section 39610.

(B) The cost-effectiveness of each potential control option as assessed pursuant to paragraph (2).

(C) The incremental cost-effectiveness between the potential control options as calculated pursuant to paragraph (3).

(5) Make findings at the public hearing at which the regulation is adopted stating the reasons for the district's adoption of the proposed control option or options.

#### **Interpreting The Meaning Of BARCT**

##### ***Staff's "Common Sense Definition" Argument Is Flawed***

In the Rule 1135 Staff Report, staff sets forth what it refers to as a "common sense definition" argument in which it reaches the conclusion that the term "retrofit" as used in Section 40406 encompasses "replacement" because "replacement" is not specifically excluded from the cited definitions of "retrofits." At first blush, this argument appears similar to a basic rule of statutory construction known as the "plain meaning rule," which means giving words their ordinary meaning. However, the staff's "common sense definition" argument is directly contrary to the "plain meaning rule" which is codified in the California Code of Civil Procedure as follows: "In the construction of a statute or instrument, the office of the Judge is simply to ascertain and declare what is in terms or in substance contained therein, *not to insert what has been omitted*, or to omit what has been inserted . . ." See Cal. Civ. Proc. Code § 1858 (emphasis added). "Replacement" has been very clearly and specifically omitted from Section 40406, and that ends the analysis under the "plain meaning rule." Staff's argument violates that rule by seeking to insert "replacement" where it simply does not exist.

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#### ***“Control Options” Connote “Retrofits;” Not “Replacements”***

Use of the phrases “control option” and “control options” in Health & Safety Code Section 40920.6 is informative. Those phrases are used elsewhere in Health & Safety Code Division 26, which pertains to Air Resources, in ways that make it clear that they refer to emission controls to be applied to the underlying source (i.e., retrofits). For example, Section 40140.11(a) provides:

“In establishing the best available control technology . . . the south coast district shall consider only *control options* or emission limits *to be applied to the basic production or process equipment existing in that source category or a similar source category.*” (emphasis added).

Thus, when Health & Safety Code Section 40920.6 uses the phrases “control option” and “control options” repeatedly to specify the procedures the SCAQMD is required to follow when establishing a BARCT standard it is referring to measures *to be applied to the emitting source*, not replacement of the emitting source in its entirety.

#### ***When The Legislature Means “Replacement,” It Says “Replacement”***

There are many provisions in Division 26 where the terms “replace” or “replacement” are used, indicating that when the legislature means “replace” it states so explicitly. Furthermore, the terms “replace” or “replacement” are frequently used in conjunction with “retrofit” or terms similar to “retrofit,” such as “modify” or “alter” (or variations thereof). This makes it clear that there is a distinction between actions that result in changes to an existing emissions source, and actions that result in its elimination altogether.

For example, Section 43021(a) provides:

“. . . the retirement, *replacement*, *retrofit*, or repower of a self-propelled commercial motor vehicle . . . shall not be required until the later of the following:” (emphasis added).

Similarly, Section 44281(a) which identifies projects eligible to participate in the Carl Moyer Program, provides:

“Emission-reducing *retrofit* of covered engines, *or replacement* of old engines powering covered sources with newer engines . . .” (emphasis added).

Use of the term “replacement” in the provisions cited above illustrates that when the legislature means “replacement” it states so explicitly. Furthermore, use of both “replacement”

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and "retrofit" illustrates that the legislature intends to distinguish between the two terms, and that that "retrofit" does not encompass "replacement" as suggested by staff's interpretation of the definition of BARCT in Section 40406. If staff's interpretation was correct, then the use of both terms in the cited provisions would be redundant. Generally, if the legislature chose to include language, it must be given some meaning, and statutes are to be interpreted in a manner that avoids rendering some words surplusage, null or absurd. See *Ingredient Communications Council, Inc. v. Jamron*, 2 Cal. App. 4th 1480, 1492, 4 Cal. Rptr. 2d 216, 224 (3d Dist. 1992), rev. denied (April 23, 1992).

#### *The Legislature Has Defined "Retrofit" And Distinguished It From "Replacement"*

Finally, Division 26 includes a specific definition of "retrofit" in Sections 44275(a)(19) and 44299.80(a), which provide:

"Retrofit" means making modifications to the engine and fuel system so that the retrofitted engine does not have the same specifications as the original engine.

This definition makes clear that in the case of a "retrofit," the existing emissions source continues to exist following the retrofit, but in an altered state. Furthermore, while Division 26 does not include a definition of "replacement," it frequently makes distinctions between the terms "retrofit" and "repower," which is defined in Sections 44274(a)(18) and 44299.80(n) (immediately preceding the definitions of "retrofit") as follows:

"Repower" means *replacing* an engine with a different engine."

Thus, in the context of Division 26, "repower" and "replace" are synonymous, and very specifically and explicitly distinguished from "retrofit." The legislature was very deliberate in its use of these terms throughout the air quality statute. To suggest, as staff does, that "retrofit" as used in Section 40406, implicitly encompasses "replacement" flies in the face of the numerous distinctions between these terms made in the statute, and violates accepted rules of statutory construction.

#### **Distinguishing *American Coatings***

As correctly pointed out in the WSPA comments, there is nothing in the holdings of the *American Coatings* decision that supports the proposition that BARCT may include replacement of the emitting equipment in its entirety; that question wasn't even before the court. Furthermore, even if the decision supported staff's position, which it does not, it would be distinguishable based on the fundamental differences between SCAQMD Rule 1113, which was the subject of the case, and the BARCT rules currently under development to replace the RECLAIM program.

SCAQMD Rule 1113 regulates architectural coatings, and the control strategy is reformulation of the covered coatings over time to reduce the VOC content. The rule does not impose limits on emitting equipment, and emission control equipment (i.e., hardware) is not required by, or even mentioned in the rule. In contrast, the BARCT rules currently under

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development to replace the RECLAIM program would impose emission limits on process or production equipment to be achieved through add-on emission control equipment (or, according to staff's current theory, replacement of the process or production equipment). There are fundamental differences between these two types of rules that make it impossible to draw any parallels between them. Thus, even if there was something in the *American Coatings* decision that supported staff's position, and again there is not, it would be of no relevance to the rules currently under development.

In the case of coatings reformulation, the control strategy involves research and development that can be undertaken completely independent of ongoing production. The work is undertaken in laboratories, and ongoing production processes and equipment are unaffected. Once the reformulated coating has been developed, production switches to the new coating with no need to modify the production equipment, and in most cases, no lost production time. Thus, there is little or no risk to ongoing production while the control strategy is implemented or if the control strategy proves to be infeasible (i.e., effective reformulations that meet the lower limits cannot be developed). Furthermore, while coating reformulation can require a significant investment of time and money, it does not typically involve the manufacture of modified production equipment or new add-on controls, permitting required to modify or install emitting or control equipment, and physical installation of modified or new equipment.

By contrast, control strategies that rely on physical modification of emitting equipment and/or installation of new add-on control equipment, which also typically involve a research and development stage, also require the manufacture of new equipment, permitting prior to commencing installation of the new equipment, and a physical modification or installation process. Thus, the lead times and costs associated with implementing this type of control strategy are typically much longer and higher. Furthermore, implementation of such strategies can seldom be accomplished without significant disruption to the operation of the facility, particularly at complicated facilities such as those currently covered by the RECLAIM program. And if the control strategy proves to be ineffective in achieving desired emission levels, significant investments of time, money, and lost production may have been for naught.

Trying to draw any parallels between a "technology-forcing" reformulation rule, such as SCAQMD Rule 1113, and the "landing rules" currently under development misses the fundamental differences between these two types of BARCT rules. Furthermore, as stated at the outset, staff has not drawn any parallels that would support its position that BARCT standards may compel replacement of the underlying production equipment even if such parallels could be drawn.

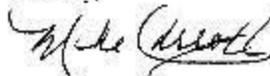
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Thank you for considering these comments. We look forward to continuing to work with you on these rulemakings which are critically important to stakeholders as well as the regional economy. If you have any questions, please contact me at (714) 401-8105 or by email at [michael.carroll@lw.com](mailto:michael.carroll@lw.com).

Sincerely,



Michael J. Carroll  
OF LATHAM & WATKINS LLP

cc: Robert Wyman, L&W  
John Heintz, L&W  
RFG Members

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NOVEMBER 1, 2018  
ATTACHMENT


  
**LATHAM & WATKINS LLP**

November 1, 2018

**VIA EMAIL**

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Madrid	Tokyo
Wako	Washington, D.C.

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Re: SCAQMD Staff Proposal to Require Equipment Replacement as BARCT

Dear Bayron and Barbara:

Thank you for your October 3, 2018 letter responding to our August 15, 2018 comments submitted on behalf of the Western States Petroleum Association ("WSPA"), and our August 24, 2018 comments submitted on behalf of the Regulatory Flexibility Group ("RFG"), regarding South Coast Air Quality Management District ("SCAQMD") staff's position that a best available retrofit control technology ("BARCT") standard may require total replacement of the emitting piece of equipment. Portions of your response reassert arguments that staff has made in the past in support of its position; namely, that neither the statutory definition of BARCT nor common dictionary definitions of "retrofit" specifically exclude replacements, and that the *American Coatings Ass'n v. South Coast Air Quality Mgt. Dist.*, 54 Cal 4th 446 (2012) case ("*American Coatings*") is supportive of staff's position. We responded to those arguments in our previous comment letters and will not revisit them here. This letter responds on behalf of WSPA and RFG to your assertions that the staff's position is supported by public policy considerations, and that we have failed to present any policy rationale for our position.

Staff asserts that requiring replacements under certain circumstances is supported by policy justifications, and, therefore, public policy supports an expansive interpretation of its authority that would include the authority to mandate replacements. This reasoning is contrary to two important public policies that are also well enshrined in administrative law. The first is that regulatory agencies must act within the scope of the authority delegated to them by the legislature, even if that means the agency may not undertake certain actions that it might otherwise view as sound public policy. The second is that public agencies may not substitute their own judgment for that of the legislature as reflected in the statutory grant of authority. These public policies and legal requirements support our position that staff cannot mandate replacements as BARCT.

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*Public policy and well established law dictate that the SCAQMD act within the scope of authority granted to it by the legislature.*

An agency can adopt, administer or enforce a regulation only if it is within the scope of authority conferred on it by other provisions of law. Cal Gov. Code § 11342.1. No regulation is valid unless it is consistent and not in conflict with the statute conferring authority to the agency. Cal Gov. Code § 11342.2. As explained in our previous comment letters, the statutory provisions defining BARCT and the SCAQMD's authority to adopt and implement BARCT standards are clear. "In the construction of a statute or instrument, the office of the Judge is simply to ascertain and declare what is in terms or in substance contained therein, *not to insert what has been omitted, or to omit what has been inserted . . .*" Cal. Civ. Proc. Code § 1858 (emphasis added). The role of an agency charged with implementing a statute is no different. In this case, staff seeks to insert what has been omitted by arguing that the term "retrofit" encompasses replacement, notwithstanding that there are numerous examples of the distinction between those terms throughout the statute.

Finding ambiguity where there is none, staff then invokes "public policy" to support an expansive interpretation of its authority. Relying on the example of replacing engines on Santa Catalina Island, staff argues that because the replacements would further the broader statutory purpose of reducing emissions, a mandate to do so is sound public policy, and, therefore, public policy supports an expansive interpretation of the agency's authority to impose such a mandate.

According to staff's reasoning, the scope of the agency's authority should be interpreted to encompass any action which the agency deems sound public policy, regardless of the specific language contained in the statutory grant of authority. In fact, you argue in your letter, citing *American Coatings*, that the agency's authority is essentially unbounded as long as the requirement is not arbitrary and capricious, or without reasonable or rational basis, or lacking in evidentiary support. However, as the cases relied upon in *American Coatings* make clear, a critical consideration in evaluating whether or not an agency action meets this standard is whether or not the action is within the scope of the agency's delegated authority. As stated in *Yamaha Corp. of America v. State Bd. of Equalization* (1998) 19 Cal.4th 1, citing *Wallace Berri & Co. v. State Bd. of Equalization* (1985) 40 Cal.3d 60, 65: "[I]n reviewing the legality of a regulation adopted pursuant to a delegation of legislative power, the judicial function is limited to determining whether the regulation (1) is "within the scope of the authority conferred" [citation] and (2) is "reasonably necessary to effectuate the purpose of the statute" [citation]." [Citation.]"

The scope of authority delegated to an agency may not authorize it to take any and all actions that the agency deems sound public policy in light of its overall mission. In fact, acting as it does from a broader perspective, and balancing a broader range of policy considerations, the very reason the legislature imposes limitations on the authority of regulatory agencies is to prevent them from undertaking actions that they might otherwise be inclined to take because they deem them sound public policy. The fact that a proposed action may reflect sound public policy in the view of the agency does not mean that it is within the scope of the authority granted by the legislature.

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*Staff's position is contrary to the legislature's policy considerations embedded in the relevant statutory provisions.*

By including economic impacts as one of the factors in the definition of BARCT, and by specifying the process for evaluating the cost-effectiveness of proposed BARCT standards, it is clear that one of the policies of the legislature was to balance the goal of achieving additional emission reductions from existing sources against the costs of achieving those reductions, and to impose limits on the costs that would be borne by existing sources to further control emissions.<sup>1</sup> The legislature determined that stationary sources should bear the cost of implementing cost-effective retrofits. If cost-effective retrofits are determined to be unavailable, then that is the end of the inquiry. There may be specific cases where the outcome results in foregone emission reductions, but it was the judgment of the legislature that this regulatory scheme struck the proper public policy balance between achieving air quality goals and imposing additional costs on regulated sources. It is not the place of the agency to substitute its own public policy considerations for those of the legislature when the language of the statute is clear, as it is here.

Furthermore, the fact that a replacement project may be cost-effective in a situation where available retrofits are not is irrelevant. Staff seems to suggest that if a replacement project would cost no more than a cost-effective retrofit project (if one existed), then the cost to the source is no greater than what the legislature intended, and, therefore, requiring replacement in such situations does not undercut any economic considerations that the legislature may have had in mind when adopting the statute. However, in situations where there are no available cost-effective retrofits, the legislature determined that the cost to the source for installing additional controls would be zero. Therefore, staff's determination that it can mandate replacement when there are no cost-effective retrofits, as long as the replacement is cost-effective, imposes costs on existing sources that go beyond what the legislature contemplated. The fact that the cost of a replacement may be less than, or more cost-effective than, available retrofits does not mean that the agency is entitled to mandate replacements.

### *Conclusion*

SCAQMD staff is attempting to use policy rationale to read something into the statute that simply is not there. That approach is not only poor public policy, it is contrary to the law. Whether or not a particular course of action may be good public policy in the judgment of the agency does not mean it is within the authority of the agency to mandate it. Furthermore, in this case, that rationale elevates the judgment of the agency over that of the legislature with regards to the appropriate balance between furthering air quality objectives and maintaining a viable economy. There are limits on the rulemaking authority of the SCAQMD, and those limits may well preclude it from pursuing what it might otherwise view as good public policy in order to accomplish the broader policy objectives of the legislature.

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<sup>1</sup> Health & Safety Code Sections 40406 and 40920.6.

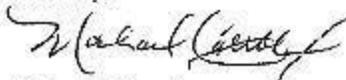
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Eeyron T. Gish/Barbara Baird  
November 1, 2016  
Page 4

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Thank you for considering these comments. We look forward to continuing to work with you on these refinements which are critically important to stakeholders as well as the regional economy. If you have any questions, please contact me at (714) 755-8105 or by email at [michael.carroll@lw.com](mailto:michael.carroll@lw.com).

Sincerely,

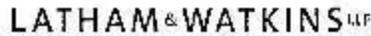


Michael J. Carroll  
of LATHAM & WATKINS LLP

cc: Robert Wyman, Latham & Watkins LLP  
John Heinz, Latham & Watkins LLP  
RFG Members  
Bridget McCann, WSPA

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MARCH 4, 2019  
ATTACHMENT


**LATHAM & WATKINS** LLP

March 4, 2019

**VIA EMAIL**

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Re: Availability Of Information Relied Upon To Support RECLAIM Rulemaking

Dear Dr. Fine:

We are submitting these comments on behalf of our clients the Regulatory Flexibility Group ("RFG") and the Western States Petroleum Association ("WSPA").

The RFG is an industry coalition comprised of companies in the refining, utility and aerospace sectors that operate facilities within the jurisdiction of the South Coast Air Quality Management District ("SCAQMD"). RFG member facilities are subject to the Regional Clean Air Incentives Market ("RECLAIM") program and will be seriously affected by the transition to a command-and-control regulatory structure that is currently underway. The RFG participated in the development of the RECLAIM program from its inception and has been an active participant in all major amendments to the program, including those currently underway.

WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in five western states, including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that will be impacted by the transition out of the RECLAIM program.

The RFG and WSPA are deeply concerned that staff is not making available to the public certain information upon which it is relying as the basis of its proposed best available retrofit control technology ("BARCT") standards. This is a significant deviation from the manner in which the SCAQMD has conducted BARCT determinations in the past and contrary to California Health & Safety Code ("H&S Code") requirements. H&S Code Section 40440(e) makes H&S Code Section 40703 applicable to SCAQMD rulemaking and requires that when adopting any regulation "the district shall consider, pursuant to Section 40922, and make available to the public, its findings related to the cost-effectiveness of a control measure, as well

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as the basis for the findings and the consideration involved.” (emphasis added). Thus, the SCAQMD is required by statute, to make public the basis of its findings that the proposed and adopted BARCT standards are cost-effective.

It is not possible for the public to critically evaluate the basis of staff’s recommendations if it does not have access to the information upon which staff is relying. Conclusory assertions contained in staff reports, without access to the underlying information that purportedly supports the assertions, is not sufficient to provide for meaningful evaluation and comment. Furthermore, because this information is not contained in the public record, it is not clear that it is being provided to the Governing Board. As a result, not only are certain staff recommendations unsupported by anything in the record, Governing Board action on those recommendations are equally unsupported.

The recent adoption of amendments to the Rule 1146 series of rules is illustrative of the problem identified above. Draft staff reports contained numerous references to information upon which staff relied in making its proposed BARCT recommendations, but the referenced information was not included in the staff report. Among the types of information referenced was vendor data and data from facilities located within and outside of SCAQMD. When industry representatives requested the subject information, they were told that it could only be obtained by filing California Public Records Act (“CPRA”) requests. This is highly unusual, and the SCAQMD has not taken this position in the hundreds of BARCT rules it has adopted in the past.

In response, the consulting firm Ramboll filed eight CPRA requests on November 8, 2018 seeking the following information:

1. PAR1146 WGM#7 Slide 7 states that “980 units located within SJVAPCD are able to comply with 7 ppm limit without use of mitigation fee option.” Please provide copies of all data and any District analyses used to support this finding. Please include control type for each unit reviewed.
2. PAR1146 WGM#7 Slide 7 states that “>1000 ST results from both SCAQMD and SJVAPCD support the feasibility of 7 ppm BARCT.” Please provide copies of all data and any District analyses used to support this finding. Please include control type (ex. SCR, ULNB) for each unit reviewed.
3. The Draft Staff Report for PAR1146, 1146.1 and 1146.2 states: “Permit limits from thermal fluid heaters located within SCAQMD were also analyzed.... From analysis of existing permitted limits, the unit with the lowest permitted emission limit was identified to be located in SJVAPCD with a permitted limit of 5 ppm utilizing only ULNB technology. The unit was permitted as new equipment subject to BACT. The analysis was able to show that the lowest achieved controlled emission from thermal fluid heaters utilizing burner replacements was 12 ppm.” (page 2-4). Please provide copies of all data and the District analysis referenced by this statement.

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4. The Draft Staff Report for PAR1146, 1146.1 and 1146.2 states: "From vendor provided installation lists and source test data, one new natural gas fired unit was identified in SJVAPCD with a permitted limit of 5 ppm with only ULNB. One new natural gas fired unit was identified within SCAQMD with permit limit of 7 ppm utilizing only ULNB as control technology." (page 2-3). Please provide copies of all data and any District analyses referenced by this statement.
5. The Draft Staff Report for PAR1146, 1146.1 and 1146.2 states: "Facility submitted source test results were analyzed to determine the technical feasibility of establishing a lower BARCT limit. Within SCAQMD, there is a total of 1,072 non-RECLAIM units subject to Rule 1146.1, 1,068 non-RECLAIM units subject to Rule 1146, and 259 units subject to RECLAIM rules. A total of 196 units was surveyed for real world emissions via facility submitted source test reports. Total units surveyed make up for 8.2% of total units located in SCAQMD with 105 units from the non-RECLAIM universe and 91 units from the RECLAIM universe. Source tests were obtained from SCAQMD database which consists of reports submitted by facilities to demonstrate compliance to various monitoring and testing requirements. SCAQMD requires equipment source tests to be conducted in an "as found" condition and emissions results are an average of the testing period. Some source test are conducted at different "loads" at a set time span. To account for source tests conducted at multiple load settings, the highest emission result was used for the analysis." (Page 2-4). Please provide copies of the referenced source test reports and any District analyses of such source test reports which were used to support the above statements and/or conclusions.
6. The Draft Staff Report for PAR1146, 1146.1 and 1146.2 states: "Results displayed in Table 2 show that it is technically feasible for Rule 1146 Group III and Group II units to achieve an emission limit of 7 ppm with burner replacements; and Rule 1146 units equipped with SCR to achieve an emission limit of 4 ppm, both providing a 10% buffer for possible compliance demonstration. Table 2 also shows that it is not technically feasible for Rule 1146 atmospheric units to achieve an emission level of 9 ppm with burner replacements." (Page 2-5). Please provide copies of the source data referenced in Table 2, as well as any District analyses of that data used to support the above statements and/or conclusions.
7. The Draft Staff Report for PAR1146, 1146.1 and 1146.2 states: "Based on the information obtained through vendor discussions, lower NOx emissions with ultra-low NOx burners are feasible for burner replacements and new installations. For certain applications and for new installations, achieving 5 ppm NOx limit with an ultra-low NOx burner without SCR is feasible. Based on discussions with three vendors, burner replacements on existing units could potentially meet 7 ppm or less. With the exception of one vendor, 7 ppm or less with ultra-low NOx burners are limited to fire-tube boilers and not currently available for water-tube boilers. The difference between water-tube and fire-tube boilers is that a water-tube boiler circulates water through a series of tubes, the tubes are heated externally by the combustion gas, and the surrounding hot gases heat the water in the steam-generating tubes; whereas a fire-tube boiler passes combustion

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gases inside a series of tubes that are surrounded by a closed vessel of water that is heated to produce steam. Two of the three vendors stated they would be able to provide 7 ppm ultra-low NOx burner replacements for existing units with a rated heat input capacity greater than 2 MMBtu/hr and up to 30 MMBtu/hr for one vendor and 60 MMBtu/hr for the other. The third vendor that could provide 7 ppm ultra-low NOx burner replacements specified a rated heat input capacity of at least 8.4 MMBtu/hr, since a minimum furnace size would be required, and up to 50 MMBtu/hr. In addition to these size requirements, based on discussions with the third vendor, the proper back and steam pressure, as well as the age of the unit would be factors in whether an existing unit could achieve a NOx emission limit of 7 ppm or less with a burner replacement. Additionally, for existing units to achieve 7 ppm or less with ultra-low NOx burner replacements additional controls, such as variable frequency drive (VFD) and oxygen trim are also needed. In addition to the information gather from vendor discussions, the source test results summarized above show that it is technically feasible for existing Rule 1146 Group II and Group III and Rule 1146.1 units to achieve an emission limit of 7 ppm or less with burner replacements." (Pages 2-11 and 2-12). Please provide the following information:

- A. Data or other information "obtained through vendor discussions" concerning ULNB burners which was used to support the above statements and/or conclusions.
- B. Data or other information and/or District analysis which was used to support the District's statement that "burner replacements on existing units could potentially meet 7 ppm or less," including any information concerning performance differences between water-tube boilers versus fire-tube boilers.
- C. Data or other information and/or District analysis related to the following statement: "Two of the three vendors stated they would be able to provide 7 ppm ultra-low NOx burner replacements for existing units with a rated heat input capacity greater than 2 MMBtu/hr and up to 30 MMBtu/hr for one vendor and 60 MMBtu/hr for the other. The third vendor that could provide 7 ppm ultra-low NOx burner replacements specified a rated heat input capacity of at least 8.4 MMBtu/hr, since a minimum furnace size would be required, and up to 50 MMBtu/hr. In addition to these size requirements, based on discussions with the third vendor, the proper back and steam pressure, as well as the age of the unit would be factors in whether an existing unit could achieve a NOx emission limit of 7 ppm or less with a burner replacement. Additionally, for existing units to achieve 7 ppm or less with ultra-low NOx burner replacements additional controls, such as variable frequency drive (VFD) and oxygen trim are also needed. In addition to the information gather from vendor discussions, the source test results summarized above show that it is technically feasible for existing Rule 1146 Group II and Group III and Rule 1146.1 units to achieve an emission limit of 7 ppm or less with burner replacements."
8. Concerning the Draft Staff Report for PAR1146, 1146.1 and 1146.2, please provide copies of all data, information and/or the District analyses concerning the cost effectiveness of Ultra Low NOx Burner (ULNB) technology used to support the

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Dr. Philip Fine  
March 4, 2019  
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District's cost effectiveness analysis as summarized in the Draft Staff Report. Please include both capital cost estimates and installation cost estimates for all sizes of units assessed.

As of the date of Governing Board adoption of the staff recommendations on the Rule 1146 series, December 7, 2018, none of the requested information had been made available to the public. It was not until January 9, 2019, more than one month after Governing Board adoption of the staff proposal, that staff responded to the CPRA requests. Obviously, any information that might have been provided at that point would have been of limited value since the rulemaking action was already complete. However, staff failed to provide any substantive information in response to any of the CPRA requests. Staff indicated that the information requested in CPRA request #1 above would not be provided because the subject documents belonged to the San Joaquin Valley Air Pollution Control District, and SCAQMD did not have authority to release documents belonging to a sister agency.<sup>1</sup> With respect to CPRA requests #2 through #8 above, staff responded that all of the requested information was exempt from disclosure based on assertions of confidentiality.<sup>2</sup> Staff's BARCT recommendations, and the Governing Board's adoption thereof, are based on determinations regarding the maximum level of control that meets the cost-effectiveness threshold. All of the information sought in the CPRA requests identified above pertains to the basis of those findings of cost-effectiveness. This lack of transparency and failure to create a public record that supports staff's recommendations and Governing Board action is deeply troubling and contrary to applicable law.

We respect that some of the information on which SCAQMD relied during the Rule 1146 series rulemaking, including some of the information requested in requests #2 through #8 above, is considered confidential business information. While it may require some effort, we respectfully request that SCAQMD review all documents relied upon in its Rule 1146 series rulemaking and provide to the public all information that is not confidential.

Draft staff reports for future proposed rulemaking contain references to information relied upon by staff that are similar to those identified above with respect to the Rule 1146 series amendments, and for which the underlying information has not been made public. We have no reason to believe that staff will proceed in a manner that is in any way different than it did in the case of the Rule 1146 series amendments, or that the Governing Board will insist on supporting information being made public before it acts on staff recommendations. As evidenced by what occurred with respect to the Rule 1146 series amendments, because of timing issues, the CPRA process is not an adequate remedy to address this serious deficiency in the rulemaking process. If staff intends to require CPRA requests to obtain supporting documents, then it must build sufficient time into the rulemaking schedule to allow the CPRA process to play out, including resolution of any claims that requested information is exempt from disclosure according to the SCAQMD's Guidelines for Implementing the California Public Records Act.

<sup>1</sup> E-mail communication from Stacey Walkowiak, SCAQMD Public Records Act Office, January 9, 2019.

<sup>2</sup> E-mails and personal communications between Stacey Walkowiak, SCAQMD Public Records Office, and Ramboll, January 9 and 17, 2019.

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We are hopeful that in future RECLAIM rulemakings staff will publicly disclose all non-confidential information upon which it relies in arriving at proposed BARCT determinations as it is required to do by law. If you would like to discuss our concerns, please contact me at (714) 755-8105 or by email at [michael.carroll@lw.com](mailto:michael.carroll@lw.com).

Sincerely,



Michael J. Carroll  
of LATHAM & WATKINS LLP

cc: Wayne Natri, SCAQMD  
Barbara Baird, SCAQMD  
SCAQMD Governing Board  
SCAQMD Clerk of the Board  
RFG Members  
Bridget McCann, WSPA  
Tom Limenhofer, WSPA  
Patty Senecal, WSPA  
Robert Wyman, Latham & Watkins LLP  
John Heintz, Latham & Watkins LLP

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SEPTEMBER 7, 2018  
ATTACHMENT

## LATHAM &amp; WATKINS LLP

September 7, 2018

VIA EMAIL

Dr. Philip Fine  
Deputy Executive Officer  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765

Re: Proposed Amended Rules 2001 and 2002

Dear Dr. Fine:

We are submitting these comments on behalf of our client Western States Petroleum Association ("WSPA") on the most recent round of proposed amendments to South Coast Air Quality Management District ("SCAQMD") Rules 2001 and 2002. The amendments are being proposed in connection with the transition of the Regional Clean Air Incentives Market ("RECLAIM") program to a command-and-control regulatory structure. WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that will be impacted by the transition out of the RECLAIM program.

General Comments

The proposed amendments to Rules 2001 and 2002 are primarily interim measures intended to establish new eligibility criteria for exiting RECLAIM, provide opt-out procedures, and address, on a temporary basis, unresolved issues surrounding compliance of new source review ("NSR") for former RECLAIM facilities once they have transitioned out of the RECLAIM program. As WSPA and others have expressed in numerous meetings, workshops and hearings conducted in connection with the RECLAIM transition, we have serious concerns about the lack of clarity surrounding NSR in a post-RECLAIM regime.

We believe current SCAQMD staff's ("staff") proposed approach is premature, as staff has not addressed all of the underlying issues surrounding a RECLAIM sunset. RECLAIM is a comprehensive, complex program that was adopted as a whole. In the development of RECLAIM, staff not only determined current and future effective best available retrofit control

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technology ("BARCT"), but also examined and addressed NSR, reviewed socioeconomic impacts, mitigated implications of emissions trading, resolved enforcement and monitoring issues, and understood a host of other consequences of adopting such a program. This comprehensive approach ensured the overwhelming success of the RECLAIM program as it was designed. In contrast for this rulemaking, staff is dismantling the RECLAIM program without analyzing any of the consequences of the proposed approach. Most importantly, staff has not addressed NSR, nor the environmental and socioeconomic impacts of a RECLAIM sunset.

Our strong preference is that staff prioritizes resolution of the NSR issues and conduct an analysis of the entire RECLAIM transition project comparable with the same full analysis that was done during the implementation of RECLAIM before initiating rulemaking. There is no evidence that this has been done to date. We believe that addressing fundamental programmatic issues that will affect all former RECLAIM facilities, such as NSR, early in the transition process, and then moving on to the more narrowly applicable pending rules, would result in a more orderly and efficient transition in the following ways:

- It would provide facilities with an understanding of the NSR requirements and procedures that will apply to modifications required to comply with updated BARCT rules. It is not possible to develop a final and comprehensive plan for implementing new BARCT requirements without knowing the NSR requirements and procedures and how those will impact post-RECLAIM operating permits.
- It would result in a more efficient use of staff resources. For example, the proposed amendments to Rules 2001 and 2002 are essentially "stop-gap" measures that are necessary because the NSR and other programmatic issues remain unresolved. If the NSR and other programmatic issues were addressed, it would not be necessary to develop and implement such measures.
- It would avoid the current ad hoc, piecemeal approach to the RECLAIM Transition Project which results in additional confusion and uncertainty. This is illustrated by the fact that staff's positions with respect to certain issues related to the proposed amendments to Rules 2001 and 2002 are quite different than positions taken when these two rules were amended in January of this year in what we view as a rush to get the RECLAIM transition process underway.
- It would avoid legal vulnerabilities that we believe are inherent in the current ad hoc, piecemeal approach because the environmental and socioeconomic assessments of incremental rulemaking are disjointed and incomplete.

Should the District continue with this piecemeal approach, we offer the comments set forth below on the proposed amendments:

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**Specific Comments on Proposed Amended Rule 2002(f)(11) – “Stay-In” Provision**

The proposed amendments to Rule 2002 would allow facilities to remain in the RECLAIM program, and thereby avail themselves of the RECLAIM NSR program set forth in SCAQMD Rule 2005 for some period of time. Our understanding, which was confirmed by staff during the RECLAIM Working Group meeting on August 9, 2018, is that the decision of whether or not to remain in the RECLAIM program is completely within the discretion of the facility (assuming the facility meets the specified criteria). Some of the language in the proposed amendments could be read to grant the Executive Officer discretion (beyond merely confirming that the facility meets the specified criteria) to decide whether or not the facility may remain in the program. The following proposed changes are intended to better reflect staff's intent.

- (11) An owner of or operator of a RECLAIM facility that receives an initial determination notification may elect ~~that~~ for the facility to remain in RECLAIM by submitting if a request to the Executive Officer to remain in RECLAIM is submitted, together with including any equipment information required pursuant to paragraph (f)(6).
  - (A) Upon receiving a request to remain in RECLAIM and any equipment information required pursuant to paragraph (f)(6), written approval by the Executive Officer shall notify the owner or operator in writing that the facility shall remain in RECLAIM subject to the following:
    - (i) The facility shall remain in RECLAIM until a subsequent notification is issued to the facility that it must exit by a date no later than December 31, 2023.
    - (ii) The facility is required to submit any updated information within 30 days of the date of the subsequent notification.
    - (iii) The facility shall comply with all requirements of any non-RECLAIM rule that does not exempt NOx emissions from RECLAIM facilities.

**Specific Comments on Proposed Amended Rule 2002(f)(10) – “Opt-Out” Provision**

Proposed Amended Rule 2002 includes an “opt-out” provision for those facilities that may be ready to voluntarily exit RECLAIM prior to the time that they might otherwise be transitioned out. The current staff proposal differs from previous proposals in that it places

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certain restrictions on facilities after they have exited the program that we believe are unfair and unwarranted. Specifically, proposed paragraph (f)(10)(B) would prohibit such facilities from taking advantage of otherwise available offset exemptions in SCAQMD Rule 1304. In the event that an NSR event requiring offsets were to occur after the facility exited the RECLAIM program, it would be required to obtain emission reduction credits on the open market, which the staff acknowledges are “scarce.” (July 20 Preliminary Draft Staff Report, p. 8).<sup>1</sup> We believe that it is unnecessary, unfair, and possibly contrary to state law, to deny former RECLAIM facilities advantages that they would otherwise be entitled to and that are available to all other non-RECLAIM facilities.

The Preliminary Draft Staff Report expresses concern that the potential impacts associated with emission increases from facilities that might exit the RECLAIM program, even if limited to the 37 facilities the staff initially identified as eligible to exit, could impose a demand on Rule 1304 offset exemptions that could approach or surpass the cumulative emissions increase thresholds of SCAQMD Rule 1315. (Preliminary Draft Staff Report, p. 8). In other words, staff is concerned that if former RECLAIM facilities were permitted to utilize Rule 1304 offset exemptions, the demand on the SCAQMD’s internal emission offset bank, which supports the offset exemptions, might exceed previously analyzed levels. This concern seems inconsistent with positions taken by staff in connection with the January 2018 amendments to these two rules, and with more recent statements by staff suggesting that it believes the internal emission offset bank is the most viable source of emission offsets for former RECLAIM facilities on a long-term basis.

The January 2018 amendments established the criteria and procedures pursuant to which eligible facilities would be identified and exited from RECLAIM. According to the Final Staff Report, “. . . the proposed amendments would remove approximately 38 facilities from NOx RECLAIM.” (January 5 Final Staff Report, p. 2).<sup>2</sup> Staff determined that the impact of exiting the initial round of facilities, including impacts associated with reduced demand for RTCs, would be minimal:

Given the analysis above and the fact that the 38 facilities—which are potentially ready to exit out of the NOx RECLAIM program into command-and-control—account for about one percent of NOx emissions and NOx RTC holdings in the NOx RECLAIM universe, staff concludes that the potential impact of PAR 2002 on the demand and supply of NOx RTC market is expected to be

<sup>1</sup> References herein to “July 20 Preliminary Draft Staff Report” refer to the Preliminary Draft Staff Report, Proposed Amendments to Regulation XX- Regional Clean Air Incentives Market (RECLAIM), Proposed Amended Rules 2001 – Applicability and 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), dated July 20, 2018.

<sup>2</sup> References herein to “January 5 Final Staff Report” refer to the Final Staff Report Proposed Amendments to Regulation XX – Regional Clean Air Incentives Market (RECLAIM) Proposed Amended Rules 2001 – Applicability and 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), dated January 5, 2018.

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minimal and large price fluctuations in the NO<sub>x</sub> RTC market are unlikely to result directly from the potential exit of the 38 directly affected facilities out of the NO<sub>x</sub> RECLAIM program. Therefore, PAR 2002 would have minimal impacts on the existing facilities that are not yet ready to exit the NO<sub>x</sub> RECLAIM program. (January 5 Final Staff Report, p. 12.)

To support its conclusion that exiting the initial round of facilities from the program would have minimal impacts as a result of foregone market demand for RTCs, staff analyzed three scenarios in which NO<sub>x</sub> emissions from the subject facilities were: i) 5% below 2015 NO<sub>x</sub> emissions; ii) the same as 2015 NO<sub>x</sub> emissions; and iii) 5% above 2015 NO<sub>x</sub> emissions. (January 5 Final Staff Report, p. 11). Staff determined that foregone market demand for RTCs associated with exiting the initial group of facilities under each of the three scenarios would be 0.073 tons per day (TPD), 0.080 TPD, and 0.086 TPD, respectively. Based on this analysis, staff concluded that the anticipated future demand for NO<sub>x</sub> RTCs associated with the exiting facilities was minimal, and that eliminating that demand would not materially impact the remaining market. In other words, staff concluded that the exiting facilities would have a negligible demand for RTCs in the future, including RTCs required to satisfy NSR requirements. As stated in the Summary of the Proposal:

Considering the past market behavior by these facilities, staff concludes that the potential impact of PAR 2002 on the demand and supply of NO<sub>x</sub> RTC market is expected to be minimal and large price fluctuations in the NO<sub>x</sub> RTC market are unlikely to result directly from the potential exit of these facilities out of the NO<sub>x</sub> RECLAIM program. (Summary of Proposal, Agenda Item No. 18, January 5, 2018, p. 3.)

Notably, staff did not even address the impact that the January 2018 amendments might have on the internal bank even though those amendments were intended to result in precisely the situation about which staff is now expressing concern – the removal of 38 facilities from the RECLAIM program that would then be eligible to take advantage of offset exemptions in Rule 1304 like any other RECLAIM facility.

In contrast with the January 2018 Final Staff Report, the July 2018 Preliminary Draft Staff Report expresses serious concerns about the potential for increased NO<sub>x</sub> emissions from facilities exiting the program, stating that “[e]ven among the first 37 facilities identified that may be eligible to exit, any impacts from potential emissions increases are unknown and if significant enough, can approach or surpass the cumulative emissions increase thresholds of Rule 1315.” (July 2018 Preliminary Draft Staff Report, p. 8).

Clearly, the conclusions reached by staff in the January 2018 Final Staff Report, upon which the Governing Board relied when it adopted the current versions of Rules 2001 and 2002, are inconsistent with the concerns being raised by staff in the current proposal. Either staff erred in January by underestimating the impacts on the RECLAIM market and failing to even analyze

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the potential impacts on the internal bank, or it is overstating the potential impacts associated with the current proposal. In either case, this inconsistency illustrates the problem with undertaking the RECLAIM transition in an ad hoc, piecemeal fashion.

#### California Environmental Quality Act Considerations

WSPA and others have expressed concerns regarding the “piecemeal” manner in which the California Environmental Quality Act (“CEQA”) analysis for the RECLAIM transition is being conducted. “. . . CEQA’s requirements ‘cannot be avoided by chopping up proposed projects into bite-size pieces which, individually considered, might be found to have no significant effect on the environment or to be only ministerial.’ [Fn. omitted.]” *Lincoln Place Tenants Assn. v. City of Los Angeles* (2005) 130 Cal.App.4th 1491, 1507 quoting *Plan for Arcadia, Inc. v. City Council of Arcadia* (1974) 42 Cal.App.3d 712, 726. Staff explained its CEQA strategy for the RECLAIM transition in an April 25, 2018 letter to the Los Angeles County Business Federation in which it stated:

The potential environmental impacts associated with the 2016 AQMP, including CMB-05, were analyzed in Program Environmental Impact Report (PEIR) certified in March, 2017 . . . In other words, the environmental impacts of the entire RECLAIM Transition project . . . were analyzed in the 2016 AQMP and the associated PEIR, which was a program level analysis . . . Since the SCAQMD has already prepared a program-level CEQA analysis for the 2016 AQMP, including the RECLAIM Transition, no additional program-level analysis is required and further analysis will be tiered off the 2016 AQMP PEIR.  
(<http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/regxx/aqmd-response-letter-to-bizfed-042518.pdf?sfvrsn=6>).

Consistent with the staff’s explanation described above, SCAQMD staff has prepared a Draft Subsequent Environmental Assessment (“Draft SEA”) to analyze environmental impacts from the proposed amendments to Rules 2001 and 2002. (<http://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmd-projects>). The Draft SEA attempts to tier off of the March 2017 Final Program Environmental Impact Report for the 2016 AQMP and tries to obscure the issue by citing to several other previously certified CEQA documents, including the December 2015 Final Program Environmental Assessment completed for the amendments to the NOx RECLAIM program that were adopted on December 4, 2015, and the October 2016 Addendum to the December 2015 Final Program Environmental Assessment completed for amendments to Rule 2002 to establish criteria and procedures for facilities undergoing a shutdown and for the treatment of RTCs. Consistent with the staff’s earlier explanation, the Draft SEA states:

“The decision to transition from NOx RECLAIM into a source-specific command-and-control regulatory structure was approved by the SCAQMD Governing Board as control measure CMB-05 in

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the 2016 AQMP and the potential environmental impacts associated with the 2016 AQMP, including CMB-05, were analyzed in the Final Program EIR certified in March 2017. This Draft SEA relies on the analysis in the March 2017 Final Program EIR for the 2016 AQMP." (Draft SEA, p. 2-5).

The proposed amendments to Rules 2001 and 2002 implement that portion of control measure CMB-05, written after the Governing Board's adoption of the 2016 AQMP that calls for the transition of the RECLAIM program to a command and control regulatory structure. As stated in the July 2018 Preliminary Draft Staff Report, "Proposed Amended Rules 2001 and 2002 will continue the efforts to transition RECLAIM facilities to a command-and-control regulatory structure . . ." (July 2018 Preliminary Draft Staff Report, p. 2). The problem with the proposal to tier the CEQA analysis for the currently proposed amendments to Rules 2001 and 2002 off from the March 2017 Final Program EIR for the 2016 AQMP is that control measure CMB-05 as proposed at the time the March 2017 Final Program EIR was prepared did not include a transition out of the RECLAIM program. That language was added well after the CEQA analysis was complete. Furthermore, no additional CEQA analysis was conducted to address the changes to CMB-05.

The Final Draft 2016 AQMP, which was ultimately presented to the SCAQMD Governing Board, was released in December 2016. Control measure CMB-05 called for an additional five tons per day of NOx reductions from sources covered by the RECLAIM program by the year 2031. CMB-05 also called for convening a Working Group to consider replacing the RECLAIM program with a more traditional command-and-control regulatory program, but did not include a mandate to undertake such a transition. SCAQMD Governing Board action on the Final Draft 2016 AQMP was noticed for February 3, 2017. When the 2016 AQMP item came up on the agenda, SCAQMD staff made a presentation, as is typical. No substantive questions were asked of the staff by Board Members, and no Board Members indicated an intention to offer amendments to the staff proposal. The public was then provided an opportunity to comment, and approximately five hours of public comment ensued.

Following the close of the public comment period, Board Member Mitchell stated her intention to introduce amendments to the staff proposal for control measure CMB-05 that would: i) accelerate the additional five TPD of reductions to 2025 from 2031; and ii) transition to a command-and-control program as soon as practicable. Board Member Mitchell did not provide any specific proposed language and did not make a formal motion to amend the staff proposal. For reasons that are not relevant here, action on the item was continued to the March 3, 2017 Governing Board hearing. The Governing Board stated its intention not to take additional public comment on the item at the March 3, 2017 hearing.

At the hearing on March 3, 2017, Board Member Mitchell introduced the following amendments to CMB-05 that included a direction to staff to develop a transition out of the RECLAIM program:

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BE IT FURTHER RESOLVED, that the SCAQMD Governing Board does hereby direct staff to modify the 2016 AQMP NOx RECLAIM measure (CMB-05) to achieve the five (5) tons per day NOx emission reduction commitment as soon as feasible, and 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 and to request staff to return in 60 days to report feasible target dates for sunseting the RECLAIM program.

There was no Board Member discussion of the proposed amendments, and they were approved on a vote of 7-6.

The CEQA analysis supporting the 2016 AQMP commenced with a Notice of Preparation of a Draft Environmental Impact Report ("EIR") released on July 5, 2016. The Draft EIR was released on September 16, 2016, with the comment period closing on November 15, 2016. In mid-November 2016, four public hearings related to the AQMP were held in each of the four counties within the SCAQMD territory, at which comments on the Draft EIR were taken. After incorporating comments and making minor textual changes, the Final EIR was released in January 2017. No material changes or additional analysis were undertaken subsequent to the release of the Final EIR, which was certified by the Governing Board on March 3, 2017 as the March 2017 Final Program Environmental Impact Report for the 2016 AQMP, upon which staff now seeks to rely.

Thus, the transition out of the RECLAIM program, which the currently proposed amendments to Rules 2001 and 2002 seek to implement, was not included in the version of CMB-05 presented to the Governing Board as part of the 2016 AQMP. The March 2017 Final Program EIR for the 2016 AQMP, which was completed in January 2018, did not analyze the transition of the RECLAIM program because that was not prescribed by the CMB-05 measure at that time. Therefore, tiering off of the March 2017 Final Program EIR for the 2016 AQMP to support rule amendments that seek to implement the transition is not possible since there is no analysis from which to tier off. In the absence of a program level CEQA analysis that includes the RECLAIM transition, staff's segmented analysis of each proposed rulemaking action in the transition process constitutes classic "piecemealing" contrary to the requirements of CEQA.

Staff's attempt to tier without having completed a programmatic analysis of the RECLAIM Transition Project ignores the fact that RECLAIM is a comprehensive program that includes an assessment of BARCT for all of the sources in the program. It was adopted as a whole, a single package, not as a series of individual rules and regulations. There are no separate BARCT regulations in the RECLAIM program. Because RECLAIM allows for BARCT to be implemented on an aggregate basis, all BARCT determinations had to be made together. Furthermore, all RECLAIM rules are dependent upon one another, and none of these can stand alone. By attempting to analyze the impact of a single RECLAIM rule, i.e., BARCT determination, staff is ignoring the interdependency of the program, and thus, improperly disregarding the impacts of the comprehensive program.

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In the draft SEA, staff claims that it is speculative to determine what BARCT may be for all the various sources under the RECLAIM program. This underscores the fact that a comprehensive program transitioning RECLAIM sources to command and control rules was never developed or analyzed. Rather, staff is piecemealing the analysis of the RECLAIM transition. Such an approach has been rejected by the courts: "Instead of itself providing an analytically complete and coherent explanation, the FEIR notes that a full analysis of the planned conjunctive use program must await environmental review of the Water Agency's zone 40 master plan update, which was pending at the time the FEIR was released. The Board's findings repeat this explanation. To the extent the FEIR attempted, in effect, to tier from a *future* environmental document, we reject its approach as legally improper under CEQA." *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 440 [emphasis in original].

Furthermore, RECLAIM is an emissions trading program. It allows facilities to choose to implement specific controls or to purchase emissions credits. Staff's piecemealing of the analysis does not account for those facilities that have implemented other means to comply with the program and the additional impacts the transition to individual command and control rules may have on these facilities. Additionally, these impacts cannot be captured in a single rule analysis. Rather, staff's piecemealing further ignores the impacts on facilities that are subject to multiple BARCT determinations.

#### Health & Safety Code Section 39616

The current staff proposal for amending Rule 2002 to prevent former RECLAIM facilities from accessing offset exemptions in Rule 1304 would place former RECLAIM facilities at a significant disadvantage relative to other non-RECLAIM facilities. California Health & Safety Code Section 39616(c)(7) prohibits imposing disproportionate impacts, measured on an aggregate basis, on those stationary sources included in the RECLAIM program compared to other permitted stationary sources. Creating a new category of sources without access to either RTCs or Rule 1304 offset exemptions to satisfy NSR requirements runs afoul of this prohibition.

#### Statement Pertaining to SCAQMD Rule 1306

The July 2018 Preliminary Draft Staff Report contains the following statement: "Moreover, Rule 1306 - Emission Calculations would calculate emission increases of exiting RECLAIM facilities based on actual to potential emissions, thereby further exacerbating the need for offsets." (Preliminary Draft Staff Report, p. 8). It is not clear why this would be the case. Furthermore, it is premature to make such assertions outside the context of an overall analysis of what the NSR requirements for former RECLAIM facilities might be. This is a critical issue that must be addressed in the overall development of the NSR program for former RECLAIM facilities.

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**Conclusion**

Thank you for considering these comments. We look forward to continuing to work with you on these rulemakings which are critically important to stakeholders as well as the regional economy. If you have any questions, please contact me at (714) 401-8105 or by email at michael.carroll@lw.com or Bridget McCann of WSPA at (310) 808-2146 or by email at hmccann@wspa.org.

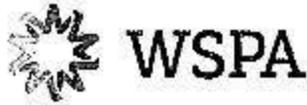
Sincerely,

  
Michael J. Carroll *for*  
of LATHAM & WATKINS LLP

cc: Cathy Reheis-Boyd, WSPA  
Patty Senecal, WSPA  
Bridget McCann, WSPA  
Wayne Nasti, SCAQMD  
Barbara Baird, SCAQMD  
Michael Krause, SCAQMD

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JULY 3, 2018  
ATTACHMENT



July 3, 2018

Dr. Philip Fine  
Deputy Executive Officer  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765

Via e-mail at: [pfine@aqmd.gov](mailto:pfine@aqmd.gov)

**Re: WSPA Comments on RECLAIM Transition Project Rules**

- **Proposed Amended Rule 1135 (NO<sub>x</sub> Emissions from Electric Power Generating Systems)**
- **Proposed Amended Rule 1134 (NO<sub>x</sub> Emissions from Stationary Gas Turbines)**
- **Proposed Rule 1109.1 (Refinery Equipment)**

Dear Dr. Fine:

Western States Petroleum Association (WSPA) appreciates this opportunity to provide feedback on the transition of the Regional Clean Air Incentives Market (RECLAIM) program to a command-and-control regulatory structure (RECLAIM Transition Project). WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that are within the purview of the RECLAIM program administered by the South Coast Air Quality Management District (District or SCAQMD) and they will be impacted by the RECLAIM Transition Project. We have several comments concerning pending rulemakings to implement new Best Available Retrofit Control Technology (BARCT) requirements.

WSPA and its members are active participants in the working groups related to the RECLAIM Transition Project. We respectfully offer the following comments on Proposed Amended Rule (PAR) 1135, NO<sub>x</sub> Emissions from Electric Power Generating Systems, PAR 1134, NO<sub>x</sub> Emissions from Stationary Gas Turbines, and Proposed Rule (PR) 1109.1, Refinery Equipment.

- 1. BARCT must be established, for each class and category of equipment. BARCT determinations for one class may be different than another class. Caution should be exercised when referencing or applying BARCT determinations from other classes within a category.**

1

The California Health and Safety Code (CHSC) defines BARCT as follows:

*“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.”<sup>1</sup> [Emphasis added]*

Under District BARCT rules, an equipment category may consist of multiple classes. These classes may be defined by different design criteria or operational factors. Examples might include throughput ratings, duty cycles, or usage level (e.g., low v. high use). Such classifications within a category are necessary to establish what is technologically feasible and cost effective as required in the determination of BARCT.

The District is presently considering BARCT rules for a number of equipment types within the RECLAIM Transition Project. Due to their inclusion in the RECLAIM program, many of these equipment types have not undergone an evaluation for command-and-control BARCT since the RECLAIM program's launch in 1993, at least with respect to equipment situated at RECLAIM facilities. In many cases, an equipment category is comprised of several different classes and therefore addressed under several different rules. Some notable examples include:

- Stationary gas turbines, which will be covered under a number of different classes pursuant to PAR 1134, PAR 1135 and PR 1109.1.
- Process heaters and boilers, which will be addressed under a number of different classes pursuant to PAR 1146, PAR 1146.1, PAR 1146.2, and PR 1109.1.

Despite similarities within the broader categories, BARCT determinations must be conducted specific to each class of equipment within a category. Take for example a stationary gas turbine; a given make/model of turbine might be deployed in a refinery cogeneration system, or an electric generating facility (EGF). However, operational design differences would place this equipment in different classes. That classification could be defined based on differences in fuel type (e.g., refinery fuel gas and/or utility quality natural gas), or duty (e.g., baseload vs. demand response, etc.).

We appreciate that the District is in the process of conducting a thorough BARCT analysis for these sources across the different proposed rules including PR 1109.1. Such BARCT analyses for refinery sources must be specific to refinery applications and BARCT determinations for similar types of equipment in non-refinery application may not be relevant because what is technologically feasible and cost effective in one application may not be in another application. For this reason, caution should be exercised when referencing or applying BARCT determinations from other classes within a category.

2. **If a technically feasible endpoint is not cost effective, it cannot be considered BARCT since cost effectiveness is a fundamental requirement of BARCT. Some**

<sup>1</sup> CHSC §40406.

endpoints presented by SCAQMD Staff to recent RECLAIM landing rule working groups exceed the District's \$50,000 per ton NO<sub>x</sub> reduced cost effectiveness threshold.<sup>2</sup>

In establishing BARCT, a district must do all of the following:<sup>3</sup>

- 1) Identify one or more potential control options which achieves the emission reduction objectives for the regulation.
- 2) Review the information developed to assess the cost-effectiveness of the potential control option. For purposes of this paragraph, "cost-effectiveness" means the cost, in dollars, of the potential control option divided by emission reduction potential, in tons, of the potential control option.
- 3) Calculate the incremental cost-effectiveness for the potential control options. To determine the incremental cost-effectiveness under this paragraph, the district shall calculate 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.
- 4) Consider the effectiveness of the proposed control option, the cost-effectiveness of each potential control option, and the incremental cost-effectiveness between the potential control options.

In short, BARCT must represent an emission limitation which is both technologically feasible and cost effective.

We note that District Staff recently presented at least one preliminary BARCT recommendation which Staff's (preliminary) analysis indicated was not cost effective. Staff presented the PAR 1135 Working Group with a "BARCT Recommendation" for "Combined-Cycle Turbines" as 2 ppm NO<sub>x</sub>, despite data suggesting that every affected unit in the class would exceed the District's cost effectiveness threshold.<sup>4</sup> Given that data, BARCT cannot be 2 ppm NO<sub>x</sub> for the class/category and the District's BARCT recommendation would require revision.

**3. BARCT must be established at a class/category level. Device-level limitations are not appropriate unless the source class/category is classified to include a single device.**

As noted above, BARCT must represent an emission limitation which is both technologically feasible and cost effective for each class/category of source.<sup>5</sup> In one instance, the District Staff presented a working group with a preliminary BARCT recommendation that would effectively establish device-level throughput limits as part of the BARCT rule.<sup>6</sup> The District Staff's analysis for the category (i.e., EGF Utility Boilers) clearly indicated that the Staff's proposed BARCT level was not cost effective for the class/category. As part of that (preliminary) determination, Staff proposed "low use

<sup>2</sup> SCAQMD presentation to Proposed Amended Rule 1135 Working Group Meeting, 13 June 2018, Slides 30-46

<sup>3</sup> CHSC §40920.6.

<sup>4</sup> SCAQMD presentation to Proposed Amended Rule 1135 Working Group Meeting, 13 June 2018, Slides 27 and 30

<sup>5</sup> CHSC §40406.

<sup>6</sup> SCAQMD presentation to Proposed Amended Rule 1135 Working Group Meeting, 13 June 2018, Slides 40-43.

exemptions" would be imposed in the form of new operating limits for each of the individual devices to be calculated as a function of cost effectiveness. Such device-level limitations are not appropriate for a BARCT determination when the class/category consists of multiple devices. If the District wishes to establish a low-use exemption, it must set a class/category threshold above which the BARCT recommendation would be cost effective for the class/category.

4. **Requirements which effectively force retirement of basic equipment must be accounted for in the cost effectiveness analysis for the proposed rule. Such a requirement would also need to be accounted for in the District's socioeconomic analysis for the Proposed Rule.**

In the recent working group meetings for PAR 1135 and PAR 1134, District Staff indicated they are considering a "replacement requirement" for older equipment.<sup>7,8</sup> In both cases, the concept of a replacement requirement appeared to be driven by Staff's desire to impose a control level that was not demonstrated to be cost effective. BARCT is by definition a retrofit standard that applies to existing sources. The requirement that BARCT standards be both technologically achievable and cost effective is an acknowledgement that it may not be possible to achieve the same level of control on an existing source as might be possible with a new source. If there are no more stringent controls that are cost effective for a class or category of source, then that source is at BARCT and the analysis is concluded. To instead require replacement of that source (perhaps without any regard to the technological feasibility or cost effectiveness) with a new source (presumably equipped with best available control technology) renders the technological feasibility and cost effectiveness limitations in the BARCT definition meaningless. The Health and Safety Code grants the District authority to impose best available control technology (BACT) on new and modified sources and BARCT on existing sources.<sup>9</sup> We are not aware of any authority that allows the District to compel replacement of an existing source when it finds that there are no cost effective retrofit controls. We do, however, support measures that would make it easier for a facility to replace aging equipment if it elects to do so on a voluntary basis, including streamlined new source review and available sources of emission offsets.

5. **The timetable for transition to command-and-control BARCT could materially affect what is achievable, and whether it is cost effective.**

Under RECLAIM's market-based design, covered facilities have successfully reduced aggregate program emissions for NO<sub>x</sub> and SO<sub>x</sub> in accordance with the program's declining RTC caps. Facilities have implemented custom compliance strategies to meet these caps, which included installing emissions controls on equipment where it was cost effective and using the compliance market where physical changes were not cost effective. The District is now planning to transition RECLAIM facilities to command-and-control (under various directives).

Due to program design, RECLAIM facilities within a given sector may have pursued widely varied strategies and now find themselves in widely varied situations with respect

<sup>7</sup> SCAQMD presentation to Proposed Amended Rule 1135 Working Group Meeting, 13 June 2018, Slide 46.

<sup>8</sup> SCAQMD presentation to Proposed Amended Rule 1134 Working Group Meeting, 13 June 2018, Slide 42.

<sup>9</sup> CHSC §40440(b)(1).

to their basic equipment and currently installed emissions controls. The investments and construction needed to achieve command-and-control BARCT limits have not yet been defined. Given these varied starting points, the implementation schedule for command-and-control BARCT rules could be an important factor in defining what is achievable or cost effective as BARCT. We recommend that BARCT discussions need to include consideration of both what will be required (i.e., the emission limit) and when (i.e., the schedule). This is especially true for refinery sector facilities where such investments must be coordinated with turnaround schedules and capital projects that require long planning and engineering timetables.

Thank you for considering these comments. We look forward to continuing to work with you and your Staff on these rulemakings which are critically important to stakeholders as well as the regional economy.

If you have any questions, please contact me at (310) 808-2146 or by email at [bmccann@wspa.org](mailto:bmccann@wspa.org).

Sincerely,



cc: Wayne Nasti, SCAQMD  
Susan Nakamura, SCAQMD  
Michael Morris, SCAQMD  
Michael Krause, SCAQMD  
Patty Senecal, WSPA

### Responses to Comment Letter #3

#### Response 3-1

This comment begins by introducing the parties represented by the letter; no response to this comment is necessary. SCAQMD staff appreciates your participation with our rule development process.

#### Response 3-2

This comment, combined with two referenced letters of March 13, 2019 (a general letter from the commentator to the SCAQMD Governing Board regarding PAR 1134, BARCT, CEQA, and Socioeconomic impacts) and September 7, 2018 (a letter from the commentator previously submitted relative to the proposed amendments to Rules 2001 and 2002) address the commenter's position on how a CEQA analysis should be conducted during the RECLAIM transition, repeats the same CEQA issues presented in Comment Letter #2, Comment 2-6 that was submitted by the commenter relative to the Draft SEA for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM): Proposed Amended Rule 2001 – Applicability, and Proposed Amended Rule 2002 – Allocations for Oxides of Nitrogen (NO<sub>x</sub>) and Oxides of Sulfur (SO<sub>x</sub>) (see Appendix C, pp. C-8 to C-9). See Response 2-6 contained in Appendix C (pp. C-14 to C-17) of the Final SEA for PARs 2001 and 2002 (<http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2018/finalseaforpars2001-2002-fullmerge.pdf>). This comment is also similar to Comment Letter #2, Comment 2-5 that was submitted relative to the Draft SEA for PAR 1134. See also Response 2-5 of this Final SEA.

The commentator also attached four additional letters to Comment Letter #3, as follows:

1. Latham & Watkins letter dated August 24, 2018: This letter is referenced in the March 13, 2019 letter to the Governing Board and raises issues relative to Rules 1135 and 1113. This letter does not raise any CEQA issues relative to PAR 1134 and does not appear to be germane to PAR 1134. No response to this letter is necessary.
2. Latham & Watkins letter dated November 1, 2018: This letter is also referenced in the March 13, 2019 letter to the Governing Board and raises issues relative to equipment replacement and BARCT. This letter does not raise any CEQA issues relative to PAR 1134 and does not appear to be germane to PAR 1134. No response to this letter is necessary.
3. Latham & Watkins letter dated March 4, 2019: This letter raises issues regarding supporting documentation relative to the RECLAIM program and the previously proposed amendments to Rules 1146, 1146.1 and 1146.2 that were adopted in 2018. This letter does not raise any CEQA issues relative to PAR 1134 and does not appear to be germane to PAR 1134. No response to this letter is necessary.
4. Western States Petroleum Association letter dated July 3, 2018: This letter raises issues regarding BARCT and cost-effectiveness of PAR 1134, Rule 1135 and PAR 1109.1. This letter does not raise any CEQA issues relative to PAR 1134. No response to this letter is necessary.

**Response 3-3**

This comment raises the same issues presented in Comment Letter #2, Comments 2-2 and 2-4. See Responses 2-2 and 2-4. In addition, Table 4-11 has been revised to also include an ammonia slip concentration of 10 ppm. As shown with the 5 ppm ammonia slip concentration limit, there are also no significant impacts to non-carcinogenic chronic and acute reference exposure levels when the ammonia slip concentration at the exit of a stack is 10 ppm. Further, the ammonia emission limit of 10 ppm is specific to compressor gas turbines, of which there are only four affected units. Therefore, the Final SEA presents all of the environmental impacts that may be associated with concentrations of both 5 ppm and 10 ppm ammonia slip.

**Response 3-4**

The analysis for the installation of one ammonia storage tank and one SCR system on page 4-7 (not 4-5 as indicated by the commenter) has been updated to include a footnote, which references the previous analysis conducted for the same type of equipment in the Final Subsequent Environmental Assessment for Proposed Amended Rules 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; 1146.2 - Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters; and Proposed Rule 1100 – Implementation Schedule for NO<sub>x</sub> Facilities, November 2018. (<http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2018/pars-1146-series---final-sea---full-merge-113018.pdf>).

**Response 3-5**

Contrary to the comment, the Final SEA actually contains an analysis of the potential for the construction and operation of new ammonia tanks as the worst-case scenario on a peak day (see Appendix E, pp. E1 through E2). The Final SEA merely acknowledges that the analysis may overestimate these impacts since some facilities may elect to continue using their existing aqueous ammonia storage tanks, if feasible and cost-effective. For operational impacts, the Final SEA takes into account the projected increased use of aqueous ammonia as a result of PAR 1134 and analyses the associated emissions from the truck deliveries of aqueous ammonia regardless of whether the delivery is being made to a new tank or an existing tank. Finally, at the time of publication of the Draft SEA and subsequent to its release, SCAQMD staff has not received any comments from individual facilities specifically indicating that their existing ammonia tank(s) would not have sufficient capacity to meet the projected aqueous ammonia demand that may be needed to comply with PAR 1134. As such, SCAQMD staff believes the foundation of assumptions regarding new ammonia tanks and usage are reasonable for the analysis relative to PAR 1134.

Relative to the future amendments to Rule 1110.2 or the rule development of any other RECLAIM landing rule, if additional ammonia use and storage becomes necessary as part of that project a separate CEQA analysis will be conducted to evaluate the construction and operation impacts associated with new aqueous ammonia tanks. Further, the Final SEA for PAR 1134 is not required to consider the exact modifications every facility will use to comply with future RECLAIM transition rule developments such as for Rule 1110.2, including installation of any additional SCR systems. Such consideration would be speculative as that information is not currently available

and SCAQMD staff is unable to predict or forecast when and what actions a facility would undergo to comply with those rules.

See Response 2-5 for more information related to how SCAQMD prepares CEQA analyses for each individual RECLAIM Transition rule.

### **Response 3-6**

Affected facilities have indicated to SCAQMD staff that in order to avoid having all gas turbines simultaneously offline, which in turn means avoiding having to be entirely shutdown and to lose production capability, they would undergo construction in a sequential manner. For example, during the rule development for PAR 1135 which included similar affected technology as what is being considered in PAR 1134, “Facility 5” emphasized the need for sequential construction in order to ensure a facility was still operational. For this reason, the analysis in the Final SEA assumed that each facility would have the affected turbines undergo sequential construction. At the time of publication of the Draft SEA and subsequent to its release, SCAQMD staff has not received any comments from individual facilities specifically indicating that installation of the SCR systems would need to occur concurrently in lieu of sequentially. The commentator claims that the assumption of sequential construction is unreasonable but fails to provide evidence or specifically identify the facility or facilities that may elect to shut down their entire operations during construction in order to comply with PAR 1134. As such, SCAQMD staff is unable to verify this claim. In addition, Comment 3-8 below suggests that the need for reliability would actually support a sequential, not concurrent, construction implementation as assumed in the Final SEA, and directly contradicts the sentiments in Comment 3-6.

### **Response 3-7**

The assumptions for the number and type of construction equipment and hours of operation that may be needed to replace one stationary gas turbine at one facility that were presented in Table 4-5 were based on the assumptions for the same equipment contained in the Final Subsequent Environmental Assessment for Proposed Amended Rules 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; 1146.2 - Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters; and Proposed Rule 1100 – Implementation Schedule for NO<sub>x</sub> Facilities, November 2018 (<http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2018/pars-1146-series---final-sea---full-merge-113018.pdf>).

### **Response 3-8**

SCAQMD staff agrees with the comment that facilities have a high need for reliability and that in order to avoid all gas turbines being offline simultaneously and to maintain operations at each facility, the modifications to retrofit existing stationary gas turbines with new air pollution control equipment (e.g., SCR technology/systems installation), modify existing SCR systems, or repower or replace existing stationary gas turbines are assumed to occur in sequential order. Existing turbines may continue to operate during this process but the continued operation of existing turbines is not an impact of PAR 1134.

The analysis in the Final SEA concluded that air quality impacts from construction and operation activities would be less than significant as a result of implementing the proposed project. As used here, operation refers to operation of the new project having impacts different from the existing setting. Thus, the air quality impacts due to construction and operation are not considered to be cumulatively considerable pursuant to CEQA Guidelines Section 15064(h)(1) and therefore, there are no significant adverse cumulative air quality impacts. Further, it should be noted that the air quality analysis is a conservative, “worst case” analysis so the actual construction and operational impacts are not expected to be as great as estimated in this Final SEA. Additionally, the construction activities are temporary when compared to the permanent long-term NO<sub>x</sub> emission reductions to be achieved as a result of implementing the proposed project. Even though the proposed project will cause a temporary less than significant increase in air emissions during the construction and operation phase, the temporary net increase in construction emissions combined with the total permanent emission reductions projected overall during operation would not interfere with the expected overall NO<sub>x</sub> reductions as part of the proposed project.

**Response 3-9**

This comment repeats the sentiments expressed in Comments 2-5 and 3-2. See Responses 2-5 and 3-2.

**Response 3-10**

The air quality analysis in the Final SEA actually considers the round-trip vehicle miles traveled (VMT) distances that may be driven to deliver aqueous ammonia to the affected facilities and these VMT distances were used to quantify the air impacts that may result from these trips. In particular, Chapter 4 of the Final SEA analyzes the Greenhouse Gas (GHG) impacts and states that the number of total increased truck trips expected annually as a result of PAR 1134 is 236 truck trips (see page 4-20 of the Final SEA). In addition, the distance for one truck to deliver ammonia to one facility was assumed to be 100 miles round-trip (see page 4-14 of the Final SEA and Appendix C-5, p. C-5-1), which equates to approximately 23,600 vehicle miles traveled annually as a result of ammonia deliveries that are expected to occur as part of implementing PAR 1134 at all of the affected facilities. However, the analysis in the Draft SEA inadvertently included VMT for ammonia deliveries to Beta-Offshore, an off-shore oil platform. However, this facility has indicated that they do not intend to utilize ammonia to reduce the NO<sub>x</sub> emissions from their six turbines. Thus, the analysis over-estimated the VMT associated with ammonia deliveries by 1,200 miles per year (e.g., one ammonia delivery trip per month at 100 miles per trip). As such, the amount of VMT to be attributed to ammonia delivery trips for PAR 1134 is actually 22,400 miles per year.

By applying the same composite truck accident rate from Table 4-13 (e.g., 0.28 accidents per million miles traveled), and conducting a similar calculation as presented in Transportation Release Scenario 1, the estimated accident rate associated with transporting aqueous ammonia for PAR 1134 for 23,600 VMT is 0.006608 per year, or about one accident every 151 years, and for 22,400 VMT is 0.006272 per year or about one accident every 159 years.

Further, it is important to note that a portion of the PAR 1134 universe of equipment and the associated ammonia storage, use and truck deliveries were previously evaluated in the Final

Program EA for NO<sub>x</sub> RECLAIM that was certified in December 2015<sup>6</sup>. The following table presents the list of facilities that would be subject to PAR 1134 and identifies which facilities were previously evaluated in the December 2015 Final Program EA for NO<sub>x</sub> RECLAIM.

**Table G-2**  
**PAR 1134 List of Affected Facilities that were Previously Evaluated in the December 2015 Final Program EA for NO<sub>x</sub> RECLAIM**

Facility Name	Address	Evaluated in December 2015 Program EA for NO <sub>x</sub> RECLAIM
Altgas Pomona Energy Co.	1507 Mount Vernon, Pomona, CA, 91768	NO
Providence Saint John's Health Center	1328 22nd Street, Santa Monica, CA, 90404	NO
LA Co., Olive View/UCLA Medical Center	14445 Olive View Drive, Sylmar, CA, 91342	NO
Loma Linda University	11100 Anderson Street, Loma Linda, CA, 92350	NO
Berry Petroleum Company, LLC	25121 North Sierra Highway, Santa Clarita, CA, 91321	YES
San Diego Gas & Electric	14601 Virginia Street, Moreno Valley, CA, 92555	YES
Wheelabrator Norwalk Energy Co. Inc. <sup>1</sup>	11500 Balsam Street, Norwalk, CA, 90650	YES
LA City, Department of Airports (LAX) <sup>2</sup>	275 Center Way, Los Angeles, CA, 90045	YES
OLS Energy-Chino	5601 Eucalyptus Avenue, Chino, CA, 91710	NO
LA Co. Sheriff Department	29300 The Old Road, Saugus, CA, 91350	NO
LA Co. Internal Services Department	301 N Broadway, Los Angeles, CA, 90012	NO
California State University, Fullerton	800 N State College Boulevard, Fullerton, CA, 92831	NO
Beta Offshore	OCS Lease Parcels P-300 Huntington Beach, CA 92648 (This facility is an oil platform in the Pacific Ocean)	YES
B Braun Medical, Inc.	2525 McGaw Ave, Irvine, CA, 92614	NO
Thums Long Beach Co.	1411 Pier D Street, Long Beach, CA, 90802	YES
Bridge Energy, LLC	2000 Tonner Canyon Road, Brea, CA, 92821	NO
Tin, Inc., International Paper <sup>3</sup>	5110 E. Jurupa Ave, Ontario, CA, 91761	YES
SoCalGas Aliso Canyon <sup>4</sup>	12801 Tampa Avenue, Northridge, CA, 91326	YES

<sup>1</sup> Wheelabrator underwent a change of ownership in 2018 and is now DSH-Metropolitan State Hospital. In addition, the stationary gas turbines at this facility location are no longer in operation and they do not have any active permits with the SCAQMD. The Final SEA evaluates the physical changes and the environmental impacts that may be associated with these turbines. Because these turbines are no longer operational, the analysis in the Final SEA overestimates the environmental impacts.

<sup>2</sup> Prior to the adoption of PAR 1134, Los Angeles City, Department of Airports (LAX) replaced their turbines with equipment that currently meets the emission limits in PAR 1134. However, the Final SEA evaluates the physical changes and the environmental impacts that may be associated with the old turbines. Because these turbines no longer exist, the analysis in the Final SEA overestimates the environmental impacts.

<sup>3</sup> Tin, Inc., International Paper underwent a change of ownership and is now New-Indy. This facility was originally evaluated in the December 2015 Program EA for NO<sub>x</sub> RECLAIM. Prior to the adoption of PAR 1134, New-Indy submitted applications to replace their existing turbines. As such, these units were not analyzed in this Final SEA.

<sup>4</sup> This facility was originally identified as having equipment subject to PAR 1134; however this facility electrified the affected units prior to the adoption of PAR 1134. As such, these units were not analyzed in this Final SEA.

<sup>6</sup> SCAQMD, <http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2015/regxxfinalpeaplusappendices.pdf>

Appendix E-5 (see p. 71) of the December 2015 Final Program EA for NO<sub>x</sub> RECLAIM estimated 126 ammonia delivery trips per year at 100 miles per round-trip (which is equivalent to 12,600 VMT) would be specifically attributed to non-refinery turbines. Of the 23,600 VMT analyzed for PAR 1134, 12,600 VMT were previously evaluated in the December 2015 Final Program EA for NO<sub>x</sub> RECLAIM. Thus, the incremental increase of VMT due to ammonia deliveries for PAR 1134 is approximately 11,000 VMT (e.g., 23,600 – 12,600 = 11,000) with an estimated accident rate of 0.00308 or about one accident every 325 years.

For all of these VMT values, based on the low probability of an ammonia tanker truck accident with a major release and the potential for exposure to low concentrations because aqueous ammonia is comprised of 81 percent water, if any, the conclusion of less than significant impacts due to an accidental release of ammonia during transportation scenario would remain unchanged.

### **Response 3-11**

As explained in the hazards and hazardous materials impacts discussion in the Final SEA, the proposed project is not expected to generate significant adverse impacts related to the accidental release of ammonia during transport. However, because some of the affected facilities are located within ¼-mile of a sensitive receptor, implementation of the proposed project is expected to generate significant adverse impacts related to the potential for a rupture of an aqueous ammonia storage tank. Mitigation measures were crafted and applied to the proposed project, but they will not conclusively reduce the impacts to less than significant levels at all of the affected facilities. Thus, the overall conclusion in the Final SEA is that hazards and hazardous materials impacts for the proposed project due to ammonia tank rupture will remain significant after mitigation measures are applied.

If an aqueous ammonia delivery truck malfunctions and spills the entire contents of the truck (which could be up to 6,000 gallons) during a delivery, the contents will be routed to same berm/ammonia containment system in place for when there is a storage tank rupture and the same mitigation measures would apply. The offsite consequence analysis conducted for a storage tank rupture actually assumed a larger volume of aqueous ammonia spilled than what would occur if a truck spills its entire contents during a delivery. As such, there is no need to conduct a separate analysis for a truck spill during delivery, since the offsite consequence analysis for the aqueous ammonia storage tank already analyzes a larger quantity of ammonia released, and is therefore, more conservative and representative of a worst-case analysis at a given facility. Thus, the Final SEA does not need to include a third analysis specific to a spill during truck offloading.

In addition, facilities retrofitting units with SCR systems and installing an accompanying ammonia storage tank are required to submit permit applications to modify their equipment. Thus, SCAQMD staff will conduct a CEQA evaluation of the facility-specific project to determine if the project is covered by the analysis in the Final SEA. If significant adverse environmental impacts are identified that are specific to the facility's applications, the facility will also be required to employ the mitigation measures (HZ-1 through HZ-6) as part of their overall project to reduce the risk of an offsite consequence to any nearby sensitive receptor(s). It is important to note that mitigation measure HZ -5 specifically addresses an accidental release as a result of truck loading or unloading of aqueous ammonia. HZ-5 is stated as follows:

*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.*

Comment Letter #4

WSPA



Bridget McCann  
Manager, Technical and Regulatory Affairs

March 15, 2019

Dr. Philip Fine  
Deputy Executive Officer, Planning and Rules  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765

sent via email: pfine@aqmd.gov

**Re: WSPA Comments on Subsequent Environmental Assessment (SEA) for Proposed Amended Rule 1134, Emissions of Oxides of Nitrogen from Stationary Gas Turbines**

Dear Dr. Fine:

Western States Petroleum Association (WSPA) is a non-profit trade association representing companies that explore for, produce, refine, transport, and market petroleum, petroleum products, natural gas, and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that will be impacted by the transition out of the Regional Clean Air Incentives Market (RECLAIM) Program.

Proposed Amended Rule (PAR) 1134 intends to transition stationary gas turbines at RECLAIM facilities to a command-and-control regulatory structure. This rulemaking has raised a number of issues that cut across other RECLAIM "landing rules" that are slated for amendment or adoption and that will directly affect our member companies. Many of these issues have been raised with staff and, in some cases, with Governing Board members through written and verbal comments at working group meetings, public workshops, public hearings, committee meetings, and individual company or coalition meetings.

4-1

WSPA offers the following comments on the Subsequent Environmental Assessment (SEA) for PAR 1134<sup>1</sup> which was prepared to satisfy the District's obligations under the California Environmental Quality Act (CEQA).

<sup>1</sup> SCAQMD, Draft Subsequent Environmental Assessment for Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines, January 25, 2019.

Dr. Philip Fine  
 March 15, 2019  
 Page 2

### 1. Piecemealing of the California Environmental Quality Act (CEQA) Analysis

It is a fundamental principle of California Environmental Quality Act (CEQA) review that all environmental impacts for the whole of a project be analyzed together. In this case, the "project" is the RECLAIM Transition as a whole as required by Control Measure CMB-05 as adopted in the 2016 Air Quality Management Plan (AQMP).<sup>2</sup> Yet, District staff is conducting the CEQA review through a series of Subsequent Environmental Assessments (SEAs) that analyze only the impacts associated with the particular landing rule under consideration. Staff argues that this approach is acceptable because the SEA "tiers off" of the March 2017 Final Program Environmental Impact Report for the 2016 AQMP<sup>3</sup> and several other earlier certified CEQA documents, which analyzed the transition as a whole. However, the March 2017 PEIR, which was completed in January 2018, did not analyze the transition of the RECLAIM program because that transition was not part of Control Measure CMB-05 as proposed at that time. Therefore, tiering off of the earlier CEQA documents to support rule amendments that seek to implement the transition is not possible because there is no comprehensive analysis in the earlier documents. In the absence of a program-level CEQA analysis that includes the whole of the RECLAIM transition project, staff's segmented analysis of each proposed rulemaking action constitutes a classic "piecemealing" in violation of CEQA. This issue is addressed in more detail in the following attachments:

4-2

- Attachment 1: May 1, 2018 comments from WSPA
- Attachment 2: September 7, 2018 comments from Latham & Watkins LLP on behalf of WSPA

### 2. Incomplete and Inappropriate CEQA Baseline

The Draft SEA for PAR 1134 relies on a baseline representing implementation of control measure CMB-05 from the 2016 AQMP and the current version of Rule 1134. While the Draft SEA correctly notes that CEQA allows for baselines other than when the NOP/IS is circulated, the baseline used in the SEA is not time shifted. Rather, the baseline is incomplete and inappropriate as it reinforces the piecemealing discussed above. A more appropriate baseline would be the existing setting based on current conditions, or the existing setting used in the March 2017 PEIR.

4-3

This selection of the baseline inflates the starting point of the analysis and thus may miss impacts that could be significant. The SEA notes that PAR 1134, even with this distortion, is expected to have "significant effects that were not discussed in the March 2017 Final Program EIR" and "significant effects that were previously examined that will be substantially more severe than what was discussed in the March 2017 Final Program EIR for the 2016 AQMP." But the inflating of the baseline may also cause an understatement of the severity of the impacts which are already deemed significant.

<sup>2</sup> SCAQMD, Final Air Quality Management Plan, March 2017.

<sup>3</sup> SCAQMD, Final Program Environmental Impact Report for the 2016 Air Quality Management Plan, State Clearinghouse #2016071006, January 2017.

Dr. Philip Fine  
March 15, 2019  
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**3. Incremental Socioeconomic Analysis**

For other landing rules included in the RECLAIM transition project, the SCAQMD has analyzed the socioeconomic impacts in an incremental fashion for each rulemaking. By analyzing the socioeconomic impacts associated with the transition in an incremental fashion for each rulemaking, as opposed to conducting a comprehensive analysis of the entire transition, staff is either underestimating the cumulative socioeconomic impacts or failing to identify them at all. The SCAQMD's current incremental approach to dismantling the program could cause serious economic harm to both RECLAIM facilities and the broader regional economy. In addition, the SCAQMD should analyze the potential future impacts of NOx RECLAIM Trading Credits (RTCs) to the reported emissions.

4-4

In the case of the PAR 1134, the District has attempted to analyze the potential economic impacts from the imposition of new BARCT requirements which "include one-time costs and annual recurring costs." <sup>4</sup> However, the analysis completely ignores other potential impacts which may be caused by the elimination of the current Regulation XX market-based program. As a result, the Governing Board is being provided a partial and incomplete assessment of the potential socioeconomic impacts associated with the proposal.

Thank you for considering these comments. If you have any questions, please contact me at (310) 808-2146, or via e-mail at [bridget@wspa.org](mailto:bridget@wspa.org).

Sincerely,



Bridget McCann  
Manager, Technical and Regulatory Affairs

Cc: Wayne Nastri, SCAQMD  
Barbara Radlein, SCAQMD  
Michael Krause, SCAQMD  
Tom Umenhofer, WSPA  
Patty Senecal, WSPA

<sup>4</sup> SCAQMD, Draft Socioeconomic Impact Assessment for Proposed Amended Rule 1134 - Emissions of Oxides of Nitrogen from Stationary Gas Turbines, March 2019, page II.

## Responses to Comment Letter #4

### Response 4-1

This comment begins by introducing the parties represented by the letter; no response to this comment is necessary. SCAQMD staff appreciates your participation with our rule development process.

### Response 4-2

This comment raises the same issues as presented in Comment Letter #2, Comment 2-5, and Comment Letter #3, Comment 3-2. See Responses 2-5 and 3-2 of this Final SEA. Also, the commentator references Attachment 1, a letter dated May 1, 2018. This letter was not included with the comment letter so SCAQMD staff is unable to respond to Attachment 1. The commentator references Attachment 2, a letter from Latham & Watkins dated September 7, 2008. Attachment 2 was provided as an attachment to Comment Letter #3, and is addressed as part of Comment 3-2/Response 3-2.

### Response 4-3

Between the time when the amendments to the NO<sub>x</sub> RECLAIM program were adopted in December 2015 (and the corresponding Final Program EA was certified) and when the 2016 AQMP was adopted in March 2017 (and the corresponding Final Program EIR was certified), RECLAIM facilities that have equipment that will now be subject to Rule 1134 (and all the other landing rules) did not previously make any physical modifications to reduce NO<sub>x</sub> emissions from the affected equipment. As explained in Response 2-5, that is why CMB-05 was revised to specifically contemplate the unwinding of the RECLAIM program, as follows. “One approach under serious consideration is a long-term transition to a traditional command-and-control regulatory structure. As many of the program’s original advantages appear to be diminishing and generating increased scrutiny, an orderly sunset of the RECLAIM program may be the best way to create more regulatory certainty and reduce compliance burdens for RECLAIM facilities, while also achieving more actual and SIP creditable emissions reductions.”

Thus, the baseline or existing setting for equipment subject to PAR 1134 as well as the other RECLAIM landing rules is the same at the time of the adoption of the 2016 AQMP and the analysis in the Final Program EIR for the 2016 AQMP. In addition, the Final SEA for PAR 1134 does not include an analysis of the full implementation of CMB-05 but rather only analyzes impacts that have not been previously analyzed in relation to the implementation of PAR 1134.

### Response 4-4

The SCAQMD is required to examine the socioeconomic impacts of rule changes to the extent data is available. In addition, while the SCAQMD is not legally required to conduct cumulative socioeconomic analyses, the Final Socioeconomic Report for the 2016 AQMP fully analyzed the socioeconomic impacts for the 2016 AQMP, including the entire RECLAIM transition project. CMB-5 was presented in the socioeconomic report where the potential cost of reducing 5 TPD NO<sub>x</sub> emissions were estimated and the associated regional economic impacts projected. Specifically, the costs presented were scaled from a thorough BARCT assessment conducted as part of the 2015 NO<sub>x</sub> RECLAIM Amendments, and the analysis conservatively assumed that the estimated cost per ton of NO<sub>x</sub> emission reduction would be 50 percent higher than the cost-per-ton of installing all BARCT control equipment identified in the 2015 NO<sub>x</sub> RECLAIM

Amendments. The analysis comports with the applicable Governing Board resolutions and statutory requirements.

The PAR 1134 Socioeconomic Impact Assessment only accounts for the “one-time capital costs and annual recurring costs” in the net present worth and annual cost estimates, as well as the costs inputs in the Regional Economic Modeling Inc. (REMI) software used to project macroeconomic impacts from direct compliance costs. Comments provided by WSPA state that the socioeconomic analysis “ignores other potential impacts which may be caused by the elimination of the current Regulation XX market-based program”. As it currently stands, facilities that received initial determination notifications and meet the proposed criteria to exit, would not receive a final determination notification to exit RECLAIM until key elements such as NSR and permitting are resolved. However, these facilities may request to opt-out of RECLAIM before these key elements are resolved, upon meeting specific conditions specified in subdivision (g) of Rule 2001. Beginning with PAR 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities and in each subsequent RECLAIM landing rule staff has made attempts to perform basic accounting of potential market impacts of potentially eligible facilities transitioned out of RECLAIM upon rule amendment. The current PAR 1134 Socioeconomic Assessment provides estimates of the foregone market supply and foregone market demand if all eligible facilities elect to exit upon rule amendment. In addition, the socioeconomic analysis provides estimated cost impacts across all facilities eligible to exit as a result of PAR 1134 being amended. Staff believes that attempting to quantify ancillary market impacts resulting from the RECLAIM transitions is highly speculative, and does not warrant inclusion in annual compliance cost estimates and REMI model inputs.

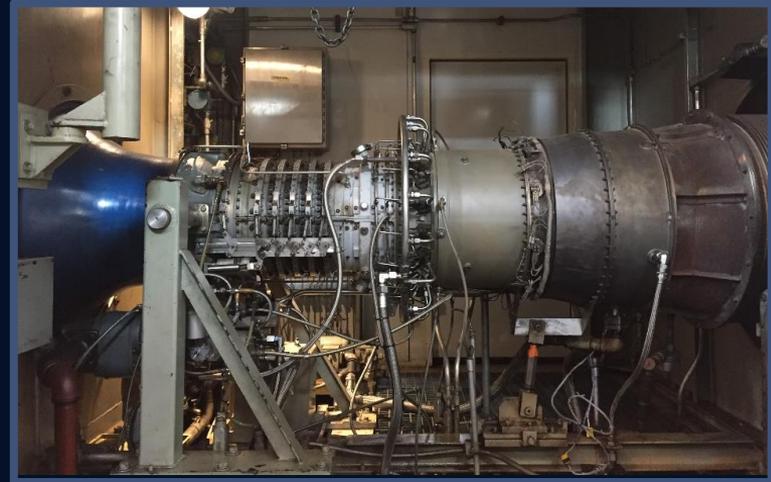


# Proposed Amended Rule 1134

Emissions of Oxides of Nitrogen  
from Stationary Gas Turbines

# Regulatory Background for Rule 1134 Stationary Gas Turbines

- ▀ Command-and-control landing rule for turbines
- ▀ Adopted in 1989 – applies only to turbines  $\geq 0.3$  MW installed before August 4, 1989
- ▀ PAR 1134 affects 73 turbines at 35 facilities
  - Most are in RECLAIM or have been replaced since 1989



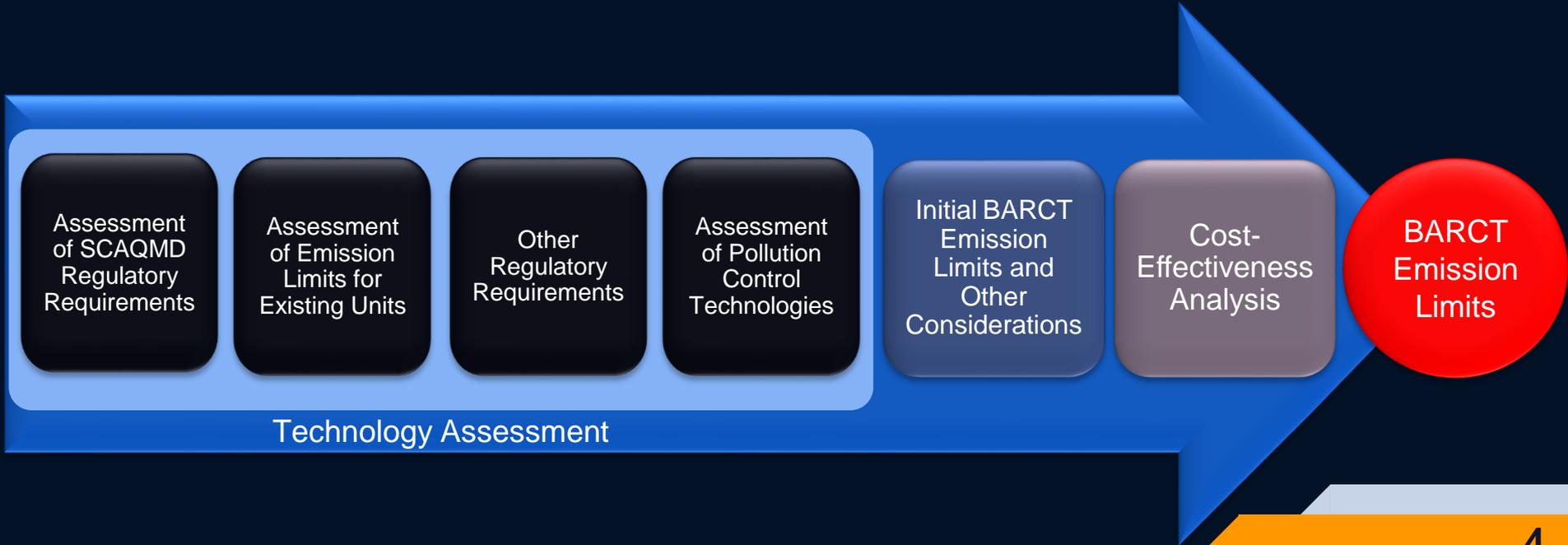
# Key Features of Proposed Rule 1134

- **Technology-Based Emission Limits:**
  - ▷ Lowers NOx limits based on BARCT assessment
  - ▷ Adds ammonia limits and quantifies impacts
- **Expanded Applicability:** Includes units installed after 1989
- **Significant Emission Reductions:** 2.8 tons of NOx per day
- **Cost-Effective Reductions:** < \$12,000 per ton of NOx reduced<sup>1</sup>
  - ▷ Exempted low-use and near-limits turbines where cost-effectiveness is >> \$50,000 per ton of NOx reduced

<sup>1</sup> Average cost-effectiveness for each class and category is <\$12,000

# BARCT Assessment

BARCT analysis is conducted for each equipment category and fuel type



# Proposed Emission Limits

## Emission Limits for Stationary Gas Turbines

Category and Fuel Type	NOx (ppmv @ 15% O2)	Ammonia (ppmv @ 15% O2)
Natural Gas – Combined Cycle	2	5
Natural Gas – Simple Cycle	2.5	5
Natural Gas – Compressor Turbine	3.5	10
Produced Gas	9	5
Produced Gas – Outer Continental Shelf	15	5
Liquid – Outer Continental Shelf	30	5
Other	12.5	5

- Effective Date: January 1, 2024
  - Additional time for compressor turbines meeting certain criteria

# Key Issues

- WSPA and the Regulatory Flexibility Group have commented on PAR 1134 and issues related to the overall transition for RECLAIM
- Comments are similar to other rulemakings
- Refineries are not subject to PAR 1134
- Comment 1: SCAQMD lacks authority to require replacement as BARCT
  - ▷ SCAQMD has authority to require replacement as BARCT
  - ▷ Statutory definition of BARCT supports a broad interpretation
  - ▷ BARCT is not a limitation on SCAQMD's authority to adopt emission control requirements for stationary sources

## Key Issues (*Continued*)

- Comment 2: Proposed NOx BARCT standards do not adequately consider other pollutants
  - ▷ PAR 1134 includes ammonia limits for each class and category
  - ▷ Staff report includes discussion of particulate matter
- Comment 3: Staff failed to provide information that forms the bases of its BARCT recommendations
  - ▷ Information presented during Working Group meetings and staff report

## Key Issues (*Continued*)

- Comment 4: New Source Review (NSR) issues must be addressed comprehensively and expeditiously before facilities exit RECLAIM
  - ▷ Rule 2002 allows facilities to remain in RECLAIM until NSR is resolved
  - ▷ Staff continues to work with U.S. EPA and stakeholders to resolve NSR issues
- Comment 5: CEQA and Socioeconomic impacts are piecemealed
  - ▷ 2016 AQMP contains programmatic analyses
  - ▷ A CEQA document and socioeconomic impact analysis were conducted on changes in PAR 1134
  - ▷ Consistent with other rulemaking projects

## Recommended Actions

- Adopt the Resolution:
  - Certifying Subsequent Environmental Assessment
  - Amending Rule 1134