

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

## **Preliminary Draft Staff Report**

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

**September 2021**

#### **Deputy Executive Officer**

Planning, Rule Development, and Area Sources  
Sarah L. Rees, Ph.D.

#### **Assistant Deputy Executive Officer**

Planning, Rule Development, and Area Sources  
Susan Nakamura

#### **Planning and Rules Manager**

Planning, Rule Development, and Area Sources  
Michael Morris

---

Author: Lisa Wong – Air Quality Specialist

Contributors: Barbara Radlein – Program Supervisor  
Brian Vlasich – Air Quality Specialist  
Charlene Nguyen – Air Quality Specialist  
Chris Perri – Air Quality Engineer  
Christian Aviles – Air Quality Engineer  
Ryan Bañuelos – Air Quality Specialist  
Shah Dabirian – Program Supervisor  
Yanrong Zhu – Air Quality Specialist

Reviewed By: Uyen-Uyen Vo – Program Supervisor  
Barbara Baird – Chief Deputy Counsel  
Mary Reichert – Senior Deputy District Counsel

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
GOVERNING BOARD**

Chair: BEN J. BENOIT  
Mayor Pro Tem, Wildomar  
Cities of Riverside County

Vice Chair: VANESSA DELGADO  
Senator (Ret.)  
Senate Rules Committee Appointee

**MEMBERS:**

LISA BARTLETT  
Supervisor, Fifth District  
County of Orange

JOE BUSCAINO  
Council Member, 15<sup>th</sup> District  
City of Los Angeles Representative

MICHAEL A. CACCIOTTI  
Mayor Pro Tem, South Pasadena  
Cities of Los Angeles County/Eastern Region

GIDEON KRACOV  
Governor's Appointee

SHEILA KUEHL  
Supervisor, Third District  
County of Los Angeles

LARRY MCCALLON  
Mayor Pro Tem, Highland  
Cities of San Bernardino County

VERONICA PADILLA-CAMPOS  
Speaker of the Assembly Appointee

V. MANUEL PEREZ  
Supervisor, Fourth District  
County of Riverside

REX RICHARDSON  
Vice Mayor, City of Long Beach  
Cities of Los Angeles County/Western Region

CARLOS RODRIGUEZ  
Mayor Pro Tem, Yorba Linda  
Cities of Orange County

JANICE RUTHERFORD  
Supervisor, Second District  
County of San Bernardino

**EXECUTIVE OFFICER:**

WAYNE NASTRI

# TABLE OF CONTENTS

## CHAPTER 1: BACKGROUND

INTRODUCTION .....	1-1
BACKGROUND .....	1-1
REGULATORY BACKGROUND .....	1-2
<i>STATIONARY GAS TURBINES AND RECLAIM</i> .....	1-2
PUBLIC PROCESS .....	1-3

## CHAPTER 2: SUMMARY OF PROPOSALS

INTRODUCTION .....	2-1
APPLICABILITY (SUBDIVISION (B)).....	2-1
DEFINITIONS (SUBDIVISION (C)).....	2-1
EMISSIONS LIMITS (SUBDIVISION (D)) .....	2-2
MONITORING, RECORDKEEPING, AND REPORTING (SUBDIVISION (E)) .....	2-4
EXEMPTIONS (SUBDIVISION (H)) .....	2-4

## CHAPTER 3: IMPACT ASSESSMENT

POTENTIALLY IMPACTED FACILITIES.....	3-1
EMISSION INVENTORY AND EMISSION REDUCTIONS .....	3-1
COST-EFFECTIVENESS .....	3-1
INCREMENTAL COST-EFFECTIVENESS.....	3-1
RULE ADOPTION RELATIVE TO COST-EFFECTIVENESS .....	3-1
SOCIOECONOMIC ASSESSMENT .....	3-1
CALIFORNIA ENVIRONMENTAL QUALITY ACT .....	3-1
DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727.....	3-2
<i>Requirements to Make Findings</i> .....	3-2
<i>Necessity</i> .....	3-2
<i>Authority</i> .....	3-2
<i>Clarity</i> .....	3-2
<i>Consistency</i> .....	3-2
<i>Non-Duplication</i> .....	3-2
<i>Reference</i> .....	3-2
COMPARATIVE ANALYSIS .....	3-2

## **CHAPTER 1: BACKGROUND**

---

**INTRODUCTION**

**BACKGROUND**

**REGULATORY BACKGROUND**

**PUBLIC PROCESS**

## INTRODUCTION

In March 2017, the South Coast AQMD adopted the Final 2016 Air Quality Management Plan (2016 AQMP) which includes a series of control measures to achieve the National Ambient Air Quality Standards for ozone. The adoption resolution of the 2016 AQMP directed staff to achieve additional NOx emission reductions and to transition the Regional Clean Air Incentives Market (RECLAIM) program to a command-and-control regulatory structure requiring Best Available Retrofit Control Technology (BARCT) as soon as practicable. 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 and mostly recently amended in April 2019 to facilitate the transition of the NOx RECLAIM program to a command-and-control regulatory structure and to implement Control Measure CMB-05 – Further NOx Reductions from RECLAIM Assessment (Control Measure CMB-05) of the 2016 AQMP. Rule 1134 applies to stationary gas turbines that are located at RECLAIM, former RECLAIM, and non-RECLAIM facilities. Rule 1134 does not apply to gas turbines that are located at petroleum refineries or those subject to Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities (Rule 1135), Rule 1150.3 – Emissions of Oxides of Nitrogen from Combustion Equipment at Landfills (Rule 1150.3), Rule 1179.1 – NOx Emission Reductions from Combustion Equipment at Publicly Owned Treatment Works Facilities (Rule 1179.1).

Proposed Amended Rule (PAR) 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines will remove the ammonia emission limits for gas turbines and the provisions for startup, shutdown, and tuning to be consistent with policy changes that been implemented after 2019. Additionally, PAR 1134 clarifies that recuperative gas turbines are included in a category referred to as “other” and adds new provisions for liquid fuel usage for health facilities to ensure Rule 1134 is consistent with state law provisions for use of liquid fuel for certain situations for health facilities.

## BACKGROUND

The South Coast AQMD Governing Board adopted the RECLAIM program in October 1993. The purpose of RECLAIM is to reduce NOx and SOx emissions through a market-based approach. The program replaced a series of existing and future command-and-control rules and was designed to provide facilities with the flexibility to seek the most cost-effective solution to reduce their emissions. It also was designed to provide equivalent emission reductions, in the aggregate, for the facilities in the program compared to what would occur under a command-and-control 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 NOx and SOx facility emissions allocations, program requirements, as well as monitoring, reporting, and recordkeeping requirements for RECLAIM facilities.

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). Among the requirements of this bill is an expedited schedule for implementing BARCT for cap-and-trade facilities. The highest priority are given to older, higher polluting units that 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 South Coast AQMD prior to August 4, 1989. The origin of the rule can be traced to a 1979 United States Environmental Protection Agency (U.S. 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 four times as summarized below.

- 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.
- In April 2019, Rule 1134 was amended to expand applicability to include gas turbines installed after 1989 and RECLAIM facilities, lower NO<sub>x</sub> concentration limits for gas turbines based on BARCT assessment, establish new ammonia slip limits and exemptions for low-use and near-NO<sub>x</sub>-limit gas turbines, clarify monitoring, recordkeeping, and reporting compliance for former RECLAIM and Non-RECLAIM facilities, and exclude gas turbines located at electricity generating facilities, petroleum refineries, publicly-owned treatment works, landfills, and turbines utilizing landfill gas.

U.S. EPA approved Rule 1134 amendments through 1997 and were included into the SIP on August 1, 2000. The 2019 amendments were not submitted into the SIP because amendments were needed for the startup and shutdown provisions. The April 2019 amendment along with the current amendment will be submitted into the SIP.

## **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. The 2019 amendment to Rule 1134 revised the applicability to all stationary gas turbines located at non-RECLAIM, former RECLAIM, and RECLAIM facilities (excluding those located at petroleum refineries or those subject to Rule 1135, Rule 1150.3, Rule 1179.1), 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. South Coast AQMD held two working group meetings on April 21, 2021 and May 12, 2021. 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 held on September 23, 2021.

## **CHAPTER 2: SUMMARY OF PROPOSALS**

---

**INTRODUCTION**

**APPLICABILITY (Subdivision (b))**

**DEFINITIONS (Subdivision (c))**

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

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

**EXEMPTIONS (Subdivision (h))**

## INTRODUCTION

Proposed Amended Rule 1134 – Emissions of Oxides of Nitrogen from Stationary Gas Turbines (PAR 1134) removes the ammonia emission limits for gas turbines and the provisions for startup, shutdown, and tuning. Additionally, PAR 1134 addresses recuperative gas turbines by inclusion into the “Other” category of stationary gas turbines and adds new provisions for liquid fuel usage for health facilities.

## APPLICABILITY (Subdivision (b))

PAR 1134 applies to all stationary gas turbines located at non-RECLAIM and RECLAIM facilities, regardless of the date they were permitted, excluding those subject to other facility specific Regulation XI rules. PAR 1134 will move the following rules to the exemption section: Rule 1135 – Emission of Oxides of Nitrogen from Electricity Generating Facilities, Rule 1150.3 – Emissions of Oxides of Nitrogen from Combustion Equipment at Landfills, Rule 1179.1 – NOx Emission Reduction from Combustion Equipment at Publicly Owned Treatment Work Facilities, and Proposed Rule 1109.1 – Emissions of Oxides of Nitrogen from Petroleum Refineries and Related Operations.

## 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:	Cogeneration Gas Turbine Landfill Petroleum Refinery Publicly Owned Treatment Works
Proposed Added Definitions:	Force Majeure Natural Gas Curtailment Health Facility Recuperative Gas Turbine
Proposed Modified Definitions:	Combined Cycle/Cogeneration Gas Turbine Existing Gas Turbine Former RECLAIM NOx Facility Shutdown Startup Thermal Stabilization Period Tuning

## EMISSIONS LIMITS (Subdivision (d))

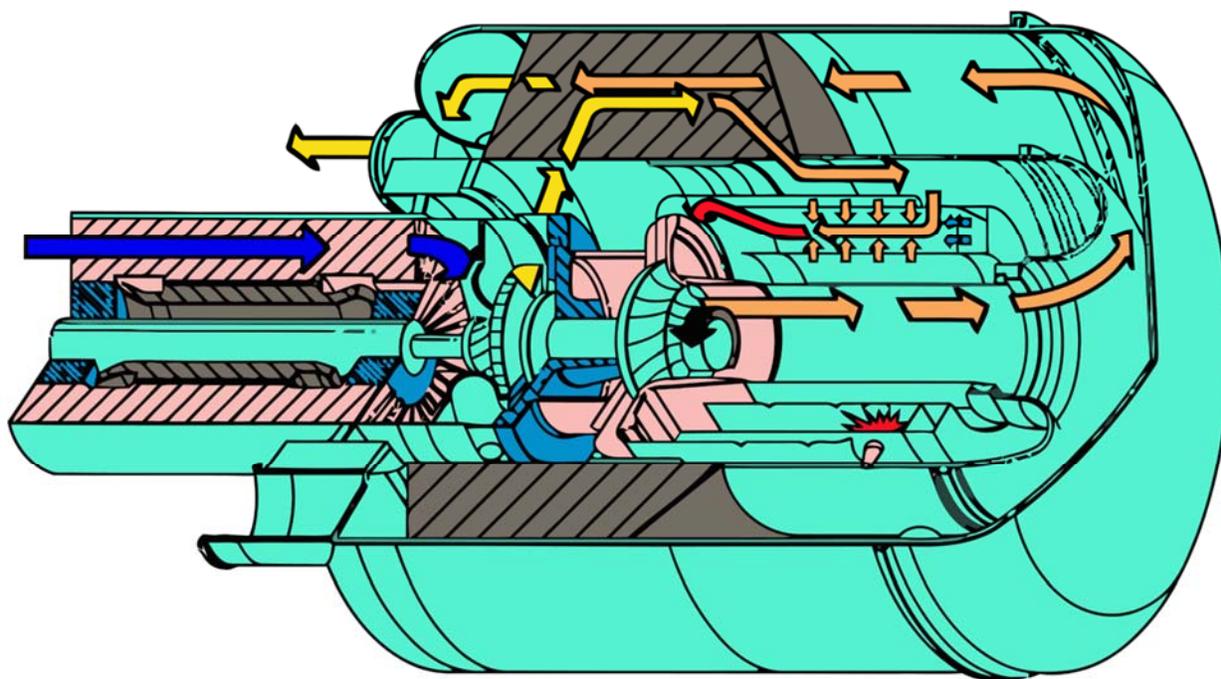
### Paragraph (d)(3)

The ammonia emissions limits in paragraph (d)(3) of Table I will be removed for all turbines currently subject to Rule 1134 and will be effective on January 1, 2024.

Staff conducted a BARCT assessment for stationary gas turbines as part of the 2019 amendment to Rule 1134. The BARCT assessment did not include recuperative gas turbines as staff was only aware of their use at landfills which are subject to Rule 1150.3. Subsequently, staff has learned that one recuperative gas turbine is subject to Rule 1134.

The 4.6MW recuperative gas turbine is fired on natural gas with a NO<sub>x</sub> permit limit of 5 ppm NO<sub>x</sub> @ 15% oxygen, dry. Recuperative gas turbines differ in design from a simple or combined cycle/cogeneration turbine. The recuperative gas turbine recovers combustion heat from the exhaust which is used to pre-heat the air from the compressor before returning it to the combustor. Figure 1 depicts a recuperated microturbine showing the recovery and reuse of combustion heat from the exhaust.

**Figure 1 – Cutaway of Recuperated Microturbine**



Harold F. Weaver - <http://www.grc.nasa.gov/WWW/RT2002/5000/5960weaver.html>

Recuperative gas turbines will be subject to the “Other” NO<sub>x</sub> limit in paragraph (d)(3) of Table I. The facility operating the gas turbine will not need to make any changes to the equipment to meet the “Other” NO<sub>x</sub> limit. As a result the cost-effectiveness is zero, since there is no feasible alternative more stringent than the NO<sub>x</sub> limit to conduct the incremental cost-effectiveness.

**Table 2-1**  
**PAR 1134 Table I: Emissions Limits for Stationary Gas Turbines**

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

<sup>1</sup> – Includes recuperative gas turbines

#### Paragraph (d)(4)

The U.S. EPA has commented that interim emission limits are needed for former RECLAIM facilities that have compliance dates after the facility transitions out of RECLAIM. Only compressor gas turbines have NO<sub>x</sub> BARCT limits that are likely to be implemented after the sunset of RECLAIM. PAR 1134 will establish an interim NO<sub>x</sub> limit of 68 ppm for compressor gas turbines under paragraph (d)(4) which is consistent with current permit limits for this equipment.

#### Former Paragraph (d)(5)

PAR 1134 will remove startup and shutdown provisions under subparagraph (d)(5). Currently, Rule 429 – Start-up and Shutdown Exemption Provisions for Oxides of Nitrogen establishes provisions for simple cycle and combined cycle gas turbines regulated under Rule 1134. Proposed Amended Rule 429 will address startup and shutdown provisions for compressor gas turbines and recuperative turbines. Additional requirements for startup, shutdown, and tuning of existing stationary gas turbines are currently included in most operating permits for that equipment. The permit conditions are tailored to each unit and evaluated during the permitting process.

#### Paragraph (d)(5), (d)(8), and (d)(9)

Currently Rule 1134 prohibits the use of liquid fuel for stationary turbines except for outer continental shelf gas turbines which do not have access to natural gas. Paragraphs (d)(5) and (d)(8) includes provisions to allow turbines the use of liquid fuel during a force majeure natural gas curtailment at health facilities such as hospitals. This is consistent with the Office of Statewide Health Planning and Development (OSHPD) 2019 California Electrical Code, Title 24, Part 3, Articles 517.29 and 517.30 which requires a facility to have two independent power sources. Without this set of provisions, a turbine supplying power, or emergency power, for a health facility would be unable to operate during a natural gas curtailment. This would likely result in the health facility utilizing a diesel engine which would generate far more emissions than the turbine which is vented to air pollution control equipment that would remain operating at all times the turbine is operating. When conducting fuel readiness testing, paragraphs (d)(5) and (d)(9) exempts stationary gas turbines burning a liquid fuel from the NO<sub>x</sub> emission limits specified in paragraph (d)(3) but specifies how the readiness testing shall be conducted and requires NO<sub>x</sub> emission limits and duration limits be included in the Permit to Construct or Permit to Operate.

**MONITORING, RECORDKEEPING, AND REPORTING (Subdivision (e))**Paragraph (e)(1)

In March 2021 Rule 218 – Continuous Emission Monitoring was amended and Rule 218.2 – Continuous Emission Monitoring System: General Provisions and 218.3 – Continuous Emission Monitoring System: Performance Specification were adopted to address the continuous emission monitoring system (CEMS) requirements for non-RECLAIM and former RECLAIM facilities. Under paragraph (e)(2), Rules 218.2 and 218.3 require the installment of a continuous in-stack NOx and oxygen monitoring system to demonstrate that the turbine is in compliance with the emission limits in subdivision (d). Paragraph (e)(3) applies to non-RECLAIM NOx facilities.

Paragraph (e)(2)

The source testing frequency is clarified for stationary gas turbines emitting less than 25 tons of NOx per calendar year to specify that the facility will need to perform a source test every three years. Additionally, source testing is required to be performed simultaneously for NOx and ammonia. Because of their interdependency, simultaneous testing will ensure that compliance with one pollutant emission limit does not come at the expense of the other.

Paragraph (e)(3)

Continuous emission monitoring parameters pursuant to Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen (NOx) Emissions were previously included for former RECLAIM NOx facilities. With the recent adoption of Rules 218.2 – Continuous Emission Monitoring System: General Provisions and 218.3 – Continuous Emission Monitoring System, the monitoring parameters will reference the newly adopted rules. Stationary gas turbines at RECLAIM facilities will still be subject to the provisions under Rule 2012.

**EXEMPTIONS (Subdivision (h))**Paragraph (h)(1)

The facility specific stationary gas turbines previously excluded in the applicability subdivision are now listed in the exemptions.

## **CHAPTER 3: IMPACT ASSESSMENT**

---

**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**

**DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE  
SECTION 40727**

**COMPARATIVE ANALYSIS**

## **POTENTIALLY IMPACTED FACILITIES**

There are 39 facilities subject to Rule 1134. The amendments to monitoring, recordkeeping, and reporting, and removal of ammonia limits and startup and shutdown requirements will apply to all facilities subject to the rule but is not expected to have any impacts. One facility is subject to each of the following: the recuperative gas turbine (“Other”) NO<sub>x</sub> limit, interim gas compressor NO<sub>x</sub> limit, and force majeure natural gas curtailment allowance for health facilities. In each case, the revisions are not expected to result in equipment modifications or additional costs. The turbines currently in operation can comply with the revisions without making any changes.

## **EMISSION INVENTORY AND EMISSION REDUCTIONS**

The NO<sub>x</sub> emission inventory for turbines subject to Rule 1134 is 3.2 tons per day in 2015. With full implementation of the April 2019 amendments, 2.8 tons per day of NO<sub>x</sub> will be reduced by 2024. The proposed revisions in PAR 1134 will not impact the emission inventory or emission reductions.

## **COST-EFFECTIVENESS**

The provisions in PAR 1134 are not expected to impose any additional costs.

## **INCREMENTAL COST-EFFECTIVENESS**

H&SC Section 40920.6 requires an incremental cost-effectiveness analysis for 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, CO, SO<sub>x</sub>, NO<sub>x</sub>, and their precursors. PAR 1134 does not reduce emissions or provide more than one control option.

## **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 implement Control Measure CMB-05. The 2016 AQMP ranked Control Measure CMB-05 sixth in cost-effectiveness.

## **SOCIOECONOMIC ASSESSMENT**

The Proposed Amended Rule 1134 does not impose any additional costs to the affected facilities and does not result in any adverse socioeconomic impacts.

## **CALIFORNIA ENVIRONMENTAL QUALITY ACT**

Pursuant to the California Environmental Quality Act (CEQA) and South Coast AQMD’s certified regulatory program (Public Resources Code Section 21080.5, CEQA Guidelines Section 15251(l) and South Coast AQMD Rule 110), the South Coast AQMD, as lead agency, is currently

reviewing the proposed project (PAR 1134) to determine if it will result in any potential adverse environmental impacts. Appropriate CEQA documentation will be prepared based on the analysis.

## **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 South Coast AQMD 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 address 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 South Coast AQMD 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.

#### **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 South Coast AQMD.

#### **Reference**

In amending Rule 1134, the following statutes which the South Coast AQMD 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 2.

Table 2: 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 (South Coast AQMD 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/Cogeneration Gas Turbine and Associated Duct Burner: NOx 2 ppmv @ 15% O<sub>2</sub>;</li> <li>• Simple Cycle Gas Turbine: NOx 2.5 ppmv @ 15% O<sub>2</sub>;</li> <li>• Produced Gas Turbine: NOx 9 ppmv @ 15% O<sub>2</sub>;</li> <li>• Outer Continental Shelf Produced Gas Turbine: NOx 15 ppmv @ 15% O<sub>2</sub>;</li> <li>• Outer Continental Shelf Produced Gas Turbine (Liquid Fuel): NOx 30 ppmv @ 15% O<sub>2</sub>;</li> <li>• Compressor Gas Turbine: NOx 3.5 ppmv @ 15% O<sub>2</sub>;</li> <li>• Other Gas Turbine: NOx 12.5 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> MMBtu/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> MMBtu/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 and those supplying power for health facilities	None	None	None