



# Proposed Amended Rule 1134 (PAR 1134) Emissions of Oxides of Nitrogen from Stationary Gas Turbines

**Working Group Meeting #2**

**July 8, 2021**

**Join Zoom Meeting:**

**<https://scaqmd.zoom.us/j/93043741522>**

**Meeting ID: 930 4374 1522**

**Teleconference Dial-In: 1-669-900-6833**

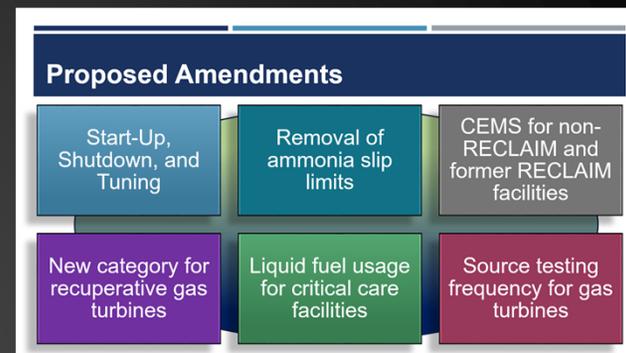
## Agenda

- Summary of Working Group Meeting #1
  - Stakeholder Comments
- Recuperative Gas Turbines
- Proposed Amended Rule 1134 (PAR 1134)  
Preliminary Draft Rule Language
- Next Steps

# Summary of Working Group Meeting #1

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- Discussed Proposed Rule concepts
- Received the following stakeholder comments



Stakeholder Comments	Staff Response
<ul style="list-style-type: none"> <li>• Provide clarification on startup and shutdown requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Will be proposing amendments to Rule 429 – Start-Up and Shutdown Exemption Provisions for Oxides of Nitrogen</li> </ul>
<ul style="list-style-type: none"> <li>• Consider CARB’s certification NOx limits for recuperative turbines</li> </ul>	<ul style="list-style-type: none"> <li>• Will discuss in upcoming slides</li> </ul>
<ul style="list-style-type: none"> <li>• Consider requiring fuel cells as alternative to liquid fuel for natural gas curtailments</li> </ul>	<ul style="list-style-type: none"> <li>• Staff is exploring zero and near-zero alternatives emergency back-up power as part of the 2022 Air Quality Management Plan</li> <li>• Provision to allow use of liquid fuel is acknowledging existing gas turbines at critical care facilities that need to operate during an emergency and a force majeure natural gas curtailment</li> </ul>

# Recuperative Gas Turbines

# Recuperative Gas Turbines

- Staff has been made aware that one recuperative gas turbine in the South Coast AQMD
  - 4.6 MW natural gas turbine with a permit limit of 5 ppm NO<sub>x</sub> @ 15% oxygen, dry
- Recuperative turbines differ in design than a simple or combined cycle turbine
  - Recovers combustion heat from the exhaust which is used to pre-heat the air from the compressor before returning it to the combustor
- PAR 1134 will add a definition for recuperative gas turbine
  - Note included in Table 1 indicating that recuperative gas turbines are subject to the “Other” limit of 12.5 ppm NO<sub>x</sub> @ 15% oxygen, dry
- No additional costs expected

# Preliminary Draft Rule Language

## Applicability and Definitions – Subdivisions (b) and (c)

- Applicability previously excluded landfills and publicly owned treatment works
- PR 1134 will specifically exempt gas turbines located at petroleum refineries or subject to:
  - Rule 1135 - Emissions 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 Reductions from Combustion Equipment at Publicly Owned Treatment Works Facilities
- Definitions for “Landfills” and “Publicly Owned Treatment Works” will be removed
- Definitions for “Recuperative Gas Turbines” and “Critical Care Facility” will be added

## Changes to Emission Limits – Paragraph (d)(3)

- Will identify that recuperative gas turbines are subject to the “Other” limit in Table 1
- Removing ammonia limits in Table I
  - Ammonia limits will continue to be addressed through the permitting process

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

(Corrected to 15% oxygen on a dry basis)

Fuel Type	NO <sub>x</sub> (ppmv)	Ammonia (ppmv)
Liquid Fuel – Turbines Located on Outer Continental Shelf	30	5
Natural Gas – Combined Cycle Turbine	2	5
Natural Gas – Simple Cycle Turbine	2.5	5
Produced Gas	9	5
Produced Gas – Turbines Located on Outer Continental Shelf	15	5
Other <sup>1</sup>	12.5	5

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

## Compressor Gas Turbine Interim Limits – Paragraph (d)(4)

- U.S. EPA commented that interim emission limits are needed for former RECLAIM facilities that have compliance dates after the facility transitions out of RECLAIM
- Interim limits would only apply to former RECLAIM facilities that have NOx BARCT limits that are effective after facilities exit RECLAIM
- It is expected that facilities would not exit RECLAIM earlier than January 2024
- Only compressor gas turbines have NOx BARCT limits that will be implemented after January 1, 2024
- PR 1134 will establish an interim NOx limit of 68 ppm for compressor gas turbines
  - Interim limit of 68 ppm is based on current permit limits
- No change to final implementation date or BARCT limit for compressor gas turbines

## Startup and Shutdown – Paragraph (d)(5)

- Currently Rule 1134 requires that all stationary gas turbines perform startup, shutdown, and tuning requirements pursuant to the permit to operate
- PAR 1134 will remove all startup and shutdown provisions
- Startup and shutdown provisions will be addressed in Rule 429
- Public Hearing for PAR 429 scheduled concurrently with PAR 1134

## Force Majeure Natural Gas Curtailment – Paragraphs (d)(7), (d)(9), and (d)(10)

- Currently Rule 1134 prohibits the use of liquid fuel for stationary turbines
- A stakeholder has informed staff that they currently provide emergency power for a critical care facility (hospital) using a turbine operating on liquid fuel
- PAR 1134 will include a provision for turbines at critical care facilities to allow the use of liquid fuel during an emergency, a natural gas curtailment, and for readiness testing

### Proposed Rule 1134 Provision

- Paragraph (c)(5): CRITICAL CARE FACILITY is a health care facility that provides general or critical care where failure of equipment or a system is likely to cause injury or death to patients, staff, or visitors as defined in Category 1 and 2 of the 2019 California Electrical Code, Title 24, Part 3, Article 517.2.
- Paragraph (d)(10): Fuel Readiness Testing - An owner or operator of a stationary gas turbine burning a liquid fuel is exempt from the NOx emissions limits specified in paragraph (d)(3) when conducting fuel readiness testing.

## CEMS for Non-RECLAIM and Former RECLAIM Facilities – Paragraphs (e)(1) and (e)(5)

- In March 2021 Rule 218 – Continuous Emission Monitoring was adopted and Rule 218.2 – Continuous Emission Monitoring System: General Provisions and 218.3 – Continuous Emission Monitoring System: Performance Specification were adopted to address CEMS requirements
- Rule 1134 will reference recently adopted CEMS rules 218.2 and 218.3 for turbines  $\geq 2.9$  MW

### Proposed Rule 1134 Provision

- Paragraph (e)(1): Gas turbines 2.9 MW and larger (continuous rating by the manufacturer without power augmentation) located at a non-RECLAIM NO<sub>x</sub> facility, shall install, operate, and maintain in calibration a continuous in-stack NO<sub>x</sub> and oxygen monitoring system which meets the requirements of South Coast AQMD Rules 218, 218.1, 218.2 and 218.3.
- Paragraph (e)(5): 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 South Coast AQMD Rule 218.2 and 218.3.

## Source Testing Frequency for Gas Turbines – Clause (e)(3)(C)(ii)

- PAR 1134 will clarify that each stationary gas turbine emitting less than 25 tons of NOx per calendar year shall perform a source test once every three years
- Ammonia source testing will be required at the same time as NOx source testing for turbines not equipped with a CEMS
- Per clause (e)(2)(C)(iii), gas turbines with a NOx CEMS not using an ammonia CEMS must perform four consecutive source tests to show ammonia emission limit compliance, followed with a source test every calendar year thereafter
  - Gas turbines with an ammonia CEMS not utilizing a NOx CEMS would conduct NOx source tests pursuant to clauses (e)(2)(C)(i) and (ii)

# Next Steps



Next Working Group Meeting	August 2021
Public Workshop	September 2021
Stationary Source Committee	October 22, 2021
Set Hearing	November 5, 2021
Public Hearing	December 3, 2021

# Contacts

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For more information, visit:  
[PAR 1134 Proposed Rules Page](#)

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