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://scagmd.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
Summary of Working Group Meeting #1

- Discussed Proposed Rule concepts
- Received the following stakeholder comments

<table>
<thead>
<tr>
<th>Stakeholder Comments</th>
<th>Staff Response</th>
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</thead>
<tbody>
<tr>
<td>Provide clarification on startup and shutdown requirements</td>
<td>Will be proposing amendments to Rule 429 – Start-Up and Shutdown Exemption Provisions for Oxides of Nitrogen</td>
</tr>
<tr>
<td>Consider CARB’s certification NOx limits for recuperative turbines</td>
<td>Will discuss in upcoming slides</td>
</tr>
</tbody>
</table>
| Consider requiring fuel cells as alternative to liquid fuel for natural gas curtailments | Staff is exploring zero and near-zero alternatives emergency back-up power as part of the 2022 Air Quality Management Plan  
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 |
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 NOx @ 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 NOx @ 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

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

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>NOx (ppmv)</th>
<th>Ammonia (ppmv)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid Fuel – Turbines Located on Outer Continental Shelf</td>
<td>30</td>
<td>$</td>
</tr>
<tr>
<td>Natural Gas – Combined Cycle Turbine</td>
<td>2</td>
<td>$</td>
</tr>
<tr>
<td>Natural Gas – Simple Cycle Turbine</td>
<td>2.5</td>
<td>$</td>
</tr>
<tr>
<td>Produced Gas</td>
<td>9</td>
<td>$</td>
</tr>
<tr>
<td>Produced Gas – Turbines Located on Outer Continental Shelf</td>
<td>15</td>
<td>$</td>
</tr>
<tr>
<td>Other\textsuperscript{1}</td>
<td>12.5</td>
<td>$</td>
</tr>
</tbody>
</table>

\textsuperscript{1}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

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**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.
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 ≥ 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\textsubscript{x} facility, shall install, operate, and maintain in calibration a continuous in-stack NO\textsubscript{x} 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\textsubscript{x} 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

PAR 1134 Development Questions

- Lisa Wong
  Assistant Air Quality Specialist
  lwong@aqmd.gov
  909-396-2820

- Uyen-Uyen Vo
  Program Supervisor
  uvo@aqmd.gov
  909-396-2238

- Mike Morris
  Planning and Rules Manager
  mmorris@aqmd.gov
  909-396-3282

General Questions

- Susan Nakamura
  Assistant Deputy Executive Officer
  snakamura@aqmd.gov
  909-396-3105

For more information, visit: PAR 1134 Proposed Rules Page

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