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

Working Group Meeting #4
July 5, 2018
Agenda

- Summary of Working Group Meeting #3
- Discuss preliminary rule language
- Concepts for Monitoring, Reporting, and Recordkeeping
Working Group Meeting #3

- Presented BARCT analysis
  - Technology assessment
  - Establishing BARCT emission limits
  - Cost-effectiveness
- Provided initial rule concepts
Preliminary Rule Language
Overview

• Rule language based on initial rule concepts with input from stakeholders
• Provides the details necessary for implementation of rule
• Opportunities remain to revise rule language as rule development process progresses
• Requesting further input from stakeholders where issues remain
• Presentation will highlight key provisions of preliminary rule language
Applicability – Subdivision (b)

• Rule applies to electric power generating units operated by:
  • CA Independent System Operator (CAISO) market participant
  • Municipality or public electric utility
  • Electric utility on Santa Catalina Island
Key Definitions – Subdivision (c)

• Annual Capacity Factor – Ratio between actual heat input during a calendar year and the potential heat input had it been operating continuously at the permitted rating
• CAISO Market Participant – Entities that provide power as part of the CAISO system
• Electricity Generating Facility (EGF) – Electricity generators owned, operated, or under contract to sell power to CAISO, electric municipality, or electric utility on Catalina Island
• Electric Power Generating Unit – Boilers, internal combustion engines, and turbines at EGFs; does not include emergency engines or other equipment
• Municipal or Public Electric Utility – Electricity provider for residents of a community or district
Emission Limitations for Boilers and Turbines – Subdivision (d), Table I

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>NOx (ppmv)</th>
<th>Ammonia Slip (ppmv)</th>
<th>Oxygen Correction (% dry)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boilers</td>
<td>5.0</td>
<td>5.0</td>
<td>3</td>
</tr>
<tr>
<td>Turbine - Combined Cycle</td>
<td>2.0</td>
<td>5.0</td>
<td>15</td>
</tr>
<tr>
<td>Turbine – Simple Cycle</td>
<td>2.5</td>
<td>5.0</td>
<td>15</td>
</tr>
</tbody>
</table>

- Limits reflect BARCT assessment provided in last working group meeting
- Limits averaged over one hour (except for existing equipment with alternative averaging time permit conditions)
- Limits exclude start-up and shutdown periods
- Effective Date: January 1, 2024
Emission Limitations for Internal Combustion Engines – Subdivision (d), Table II

- Limits based on Tier IV Final engine
- Limit averaged over one hour
- Limit excludes start-up and shutdown periods
- Effective Date: Under Consideration
- CO, VOC, and PM limits to be included and will be based on Tier IV Final, permit conditions, and Rule 1110.2, as applicable

<table>
<thead>
<tr>
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<th>Ammonia Slip (ppmv)</th>
<th>Oxygen Correction (% dry)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Combustion Engine (Diesel)</td>
<td>45.0</td>
<td>5.0</td>
<td>15</td>
</tr>
</tbody>
</table>
District-Wide Daily Limits – Paragraphs (d)(1), (d)(2), (d)(3), & (d)(4)

- City of Glendale is lone current Rule 1135 facility
- Current rule has District-Wide daily limits
- For City of Glendale, retain existing requirements for SCAQMD-wide daily limits on emissions rate and emissions cap
  - Necessary for compliance during interim period until emission limits become effective
- Remove all other SCAQMD-wide daily limits
  - Provisions are obsolete for RECLAIM facilities
Compliance Plans & Municipal Bubble Options – Subdivisions (d) and (g)

- Compliances plans and municipal bubble options are obsolete
- Subdivisions (d) and (g) will be removed
Start-Up and Shutdown Requirements – Paragraph (d)(6)

- Emission limitations for start-up and shutdown of units already in Permit to Operate
- Start-up and shutdown requirements are equipment specific and evaluated during permitting process
- Violation of Permit to Operate shall constitute a violation of rule
Use of Liquid Petroleum Fuel (f)

- Provisions retained limiting use of liquid petroleum to force majeure natural gas curtailment
- Add provision which prohibits new diesel electric power generating units
- Catalina Island is exempt from these provisions because the island has no access to natural gas
Averaging Times – Paragraph (g)(1)

• For existing units at BARCT
  • For electric power generating units, averaging time requirements are equipment specific and evaluated during permitting process
  • Existing units may maintain permitted averaging times
Gas Turbines & Boilers – Paragraphs (g)(2) - (g)(4)

- Combined cycle turbines with existing permit limit of 2.5 ppmv @ 15% O2
  - Will be required to meet NOx concentration in Permit to Operate
  - Not cost-effective for combined cycle turbines to reduce limit from 2.5 ppm to 2.0 ppm

- Boilers with existing permit limit of 7.0 ppmv @ 3% O2
  - Will be required to meet NOx concentration in Permit to Operate
  - Not cost-effective for boilers to reduce emissions from 7.0 ppm to 5.0 ppm
Once-Through-Cooling Boilers – Paragraph (g)(4)

- Coordinate compliance date for PAR 1135 NOx concentration limit with compliance dates in Clean Water Act
- Avoids stranded costs of adding pollution controls for interim period of time but will hold to current schedule in Clean Water Act
- All but two boilers subject to Once-Through-Cooling will be repowered by 2024. The last two boilers will be repowered in 2029 to maintain grid reliability
Low-Use Electric Power Generating Units – Paragraph (g)(5)

- Many electric power generating units are operated sporadically to support renewables
  - Low-use units are not cost-effective to install additional control equipment
- Low-use Exemption
  - Turbines that operate less than 25% of annual capacity factor in one year or 10% averaged over three years are exempt from NOx concentration limit in the rule; must retain current NOx Permit to Operate limit
  - Boilers that operate less than 2.5% of annual capacity factor in one year or 1% averaged over three years are exempt from NOx concentration limit in the rule; must retain current NOx Permit to Operate limit
  - Annual capacity factor is the ratio between actual annual heat input and annual maximum permitted heat input if operated continuously over a year
- If low-use threshold exceeded, unit shall not operate two years after date of exceedance unless it meets the NOx concentration limit
- Power supplied during emergencies not included in calculation of annual capacity factor
Concepts for Monitoring, Reporting, and Recordkeeping
## Current Monitoring, Reporting, and Recordkeeping (MRR)

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Current Rule 1135</th>
<th>RECLAIM – Rule 2012</th>
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<tbody>
<tr>
<td>Continuous Emission Monitoring System (CEMS) Plan</td>
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</table>
| CEMS and Remote Terminal Unit (RTU)              | - CEMS data gathered once per minute (90% valid data)  
- Missing data procedures for up to 72 hours in any one calendar month  
- Each RTU requires a backup data gathering and storage system  | - CEMS data gathered once every 15 minutes  
- Missing data procedures required for each invalid hour  
- Requires RTU and strip chart recorder or electronic recorder  |
| Relative Accuracy Requirements                   | - Volumetric flow measurement system, <20%  
- Emission rate measurement, <20%  
- Accuracy Test Audit (RATA), once a quarter  | - Volumetric flow measurement system, <15%  
- Emission rate measurement, <20%  
- Nitrogen oxide gas analyzer, <20%  |
| Source Tests                                     | None              | Annual or semi-annual certification of Relative Accuracy Test Audits (RATA) including source testing |
| Reporting                                        | - RTU constitutes reporting requirements  | - Monthly Emissions Reports  
- Annual Permit Emissions Program (APEP)  
- RTU to electronically report daily mass emissions of NOx and status codes  |
Overview of Proposed MRR

- Current Rule 1135 facility will retain existing Rule 1135 monitoring and recordkeeping
- RECLAIM facilities will retain Rule 2012 monitoring and recordkeeping
- Internal combustion engines will have monitoring and recordkeeping similar to Rule 1110.2
- Considering options to transition from current requirements into consistent and comprehensive MRRs for all PAR 1135 facilities
Interim MRR Requirements for Current Rule 1135 Facility

- Retain from rule
  - CEMS
  - Valid data
  - Testing facilities
- Remove from rule
  - Remote terminal unit
  - Monthly compliance report
  - Backup data gathering and storage system
- Add into rule
  - Data acquisition system
  - Ammonia slip calculation
- Facility would be required to continue complying with their Compliance Plan
Interim MRR Requirements for Current RECLAIM Facilities

- Comply with monitoring and recordkeeping in Rule 2012
- Revise reporting requirements
  - Require records to be maintained on site and made available upon request
Source Testing

• Will include Source Testing provisions for internal combustion engines
  • Requirements will be included for CO, VOC, and PM
  • Provisions to be based on permit conditions and requirements from Rule 1110.2
• Maintain CEMS for NOx
## Tentative Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>July 20, 2018</td>
<td>Stationary Source Committee</td>
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<tr>
<td>August 2, 2018</td>
<td>Public Workshop</td>
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<tr>
<td>September 7, 2018</td>
<td>Set Hearing</td>
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<tr>
<td>October 5, 2018</td>
<td>Public Hearing</td>
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