



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

Equipment Type	NOx (ppmv)	Ammonia Slip (ppmv)	Oxygen Correction (% , dry)
Boilers	5.0	5.0	3
Turbine - Combined Cycle	2.0	5.0	15
Turbine – Simple Cycle	2.5	5.0	15

- 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

Equipment Type	NOx (ppmv)	Ammonia Slip (ppmv)	Oxygen Correction (% dry)
Internal Combustion Engine (Diesel)	45.0	5.0	15

- 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

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)

- Compliance 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 NO_x 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 NO_x 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)

Requirement	Current Rule 1135	RECLAIM – Rule 2012
Continuous Emission Monitoring System (CEMS) Plan	✓	✓
CEMS and Remote Terminal Unit (RTU)	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - Volumetric flow measurement system, <20% - Emission rate measurement, <20% - Accuracy Test Audit (RATA), once a quarter 	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - RTU constitutes reporting requirements 	<ul style="list-style-type: none"> - 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

July 20, 2018	Stationary Source Committee
August 2, 2018	Public Workshop
September 7, 2018	Set Hearing
October 5, 2018	Public Hearing

Contacts

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