

Proposed Amended Rule 1135 Emissions of Oxides of Nitrogen from Electricity Generating Facilities

and

Proposed Rule 429.2 Startup and Shutdown Exemption Provisions for Oxides of Nitrogen from Electricity Generating Facilities

Working Group Meeting #1
May 28, 2021



Join Zoom Webinar Meeting:

<https://scaqmd.zoom.us/j/94648515982>

Webinar ID: 946-4851-5982

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

Agenda

- Background and Applicability
- Proposed Amended Rule 1135 (PAR 1135)
- Proposed Rule 429.2 (PR 429.2)
- Rule Development Schedule and Next Steps

Rule 1135 – Background and Applicability

- Adopted in 1989
 - Establishes NO_x limits for electric power generating steam boiler systems, repowered units, and alternative electricity generating sources
- Last amended on November 2, 2018
 - Expanded applicability to all combustion equipment at RECLAIM, non-RECLAIM, and former RECLAIM electricity generating facilities (EGFs)
 - Implemented Best Available Retrofit Control Technology (BARCT) for NO_x emissions from boilers, gas turbines, and diesel internal combustion engines
- Applies to electric generating units at EGFs
 - Units include boilers, gas turbines, and Santa Catalina Island diesel internal combustion engines
 - Excludes units located at landfills, petroleum refineries, and publicly owned treatment works



Rule 1135 – Current Requirements

NOx Limits

- NOx limits for boilers, gas turbines, and Santa Catalina Island internal diesel combustion engines

Ammonia Slip and Additional Limits

- Ammonia limits for units with selective catalytic and non-catalytic reduction (SCR and SNCR)
- Carbon monoxide, volatile organic compounds, and particulate matter limits for Santa Catalina Island internal diesel combustion engines

Startup, Shutdown, and Tuning

- Requires facilities to retain and incorporate startup, shutdown, and tuning in permit conditions

Monitoring, Reporting, and Recordkeeping

- Continuous emissions monitoring systems (CEMS) required for all electric generating units

Proposed Amendments



Ammonia Limits



Continuous Emissions
Monitoring Systems
(CEMS)



Startup, Shutdown,
and Tuning

Proposed Amended Rule 1135

Ammonia Limits – Current Requirements

- Current Rule 1135 ammonia limit is 5 ppm
- Increases in ammonia emissions from installation of SCR and SNCR require BACT under Rule 1303 (a)(1)¹
- Staff decided it is more appropriate to address ammonia limits during permitting
 - Ammonia emissions from new SCR systems are an NSR issue
 - Allows evaluation of an ammonia limit relative to the NOx limit in the rule on a case-by-case basis
 - Ammonia limit must be achievable at the time of permitting

¹ Rule 1303 (a)(1) requires BACT to be employed if the ammonia emissions increase by 1 pound/day or more

Proposed Amendments for Ammonia Limits

- Remove ammonia limits from Table 1 – Emissions Limits for Boilers and Gas Turbines and Table 2 – Emissions Limits for Diesel Internal Combustion Engines
 - Will avoid duplication with BACT and potential inconsistencies during permitting
 - No changes for existing SCR and SNCR units with existing ammonia limits in South Coast AQMD permit
- Retain quarterly source tests or CEMS provisions for units with catalytic control devices for ammonia emissions

CEMS – Current Requirements

- Rule 1135 currently requires all electric generating units to have CEMS to demonstrate compliance with NOx limits
- Currently, CEMS certification and operating requirements are specified under:
 - Rule 2012 – Requirements for Monitoring, Reporting, and Recordkeeping for NOx Emissions, for RECLAIM facilities; and
 - Rule 218 – Continuous Emission Monitoring or 40 CFR Part 75, for non-RECLAIM facilities
- As facilities exit RECLAIM, NOx CEMS requirements will change from monitoring mass emissions to concentration-based limits and RECLAIM facilities will be transitioned from Rule 2012 to Rule 218-series rules
- In March 2021, Rule 218-series rules were updated and aligned requirements for RECLAIM and non-RECLAIM facilities
- Rule 1135 will be revised to reference the following two new Rule 218-series CEMS rules that RECLAIM and non-RECLAIM will be required to meet:
 - Rule 218.2 – Continuous Emission Monitoring System: General Provisions
 - Rule 218.3 – Continuous Emission Monitoring System: Performance Specifications

Proposed Amendments for CEMS Requirements

- Facilities will be required to continue meeting Rules 218 and 218.1 for non-RECLAIM facilities and Rule 2012 for RECLAIM facilities
- Non-RECLAIM and former RECLAIM facilities with CEMS will be subject to Rules 218.2 and 218.3 based on the schedule specified in these rules

Proposed Rule 429.2
Startup and Shutdown Exemption
Provisions for Oxides of Nitrogen from
Electricity Generating Facilities

Startup and Shutdown – Background

- U.S. EPA requested Startup and Shutdown requirements be incorporated into the rule to attain and maintain National Ambient Air Quality Standards (NAAQS)
- U.S. EPA has commented that referencing startup and shutdown provisions in the rule is not sufficient, and requirements when units are exempt from NO_x emission limits during startup and shutdown periods must be specified in the rule
- During startup and shutdown events, units cannot meet NO_x emission limits when:
 - Unit is not at steady-state conditions
 - Temperature is not optimal for pollution control equipment such as SCR
- A limit on the frequency and duration of startup and shutdown events is needed to curb emission limit exceedances during long periods of time

Proposed Approach for Startup, Shutdown, and Tuning Requirements

- Current Rule 1135 refers startup, shutdown, and tuning provisions to permits
- Staff is currently addressing startup and shutdown provisions for other sources in separate rules:
 - Other boilers and turbines in Rule 429 – Startup and Shutdown Exemption Provisions for Oxides of Nitrogen
 - Proposed Rule 429.1 – Start-Up and Shutdown Exemption Provisions for Oxides of Nitrogen at Petroleum Refineries and Associated Facilities
- To address U.S. EPA's comments, staff proposes to move startup, shutdown, and tuning provisions to a separate rule, Proposed Rule 429.2 – Startup and Shutdown Exemption Provisions for Oxides of Nitrogen from Electricity Generating Facilities
 - EGFs have unique issues for startup and shutdown provisions:
 - Frequent startup and shutdown during high energy demand (can be multiple times per day) and varying operation schedules dependent on grid requirements
 - Startup conditions vary based on how long electric generating unit has been off-line

Proposed Rule 429.2 (PR 429.2)

- Applicable to all electric generating units at EGFs
- Will address startup, shutdown, and tuning provisions for each category of electric generating units
- Proposing limiting the following for startup, shutdown, and tuning periods:
 - Maximum duration
 - Number of scheduled startup events
- Staff is seeking input from stakeholders on startup, shutdown, and tuning provisions

Definitions for Startup, Shutdown, and Tuning

Startup	<p>Begins when the unit starts combusting fuel after a period of zero fuel flow</p> <p>Ends when the unit generates electricity for sale over the grid for power distribution</p>
Shutdown	<p>Begins when the unit starts to reduce load or no steam is being used to generate electricity</p> <p>Ends when the unit both has zero fuel flow and no electricity is being generated</p>
Tuning	<p>Includes adjusting, optimizing, rebalancing, and other operations</p> <p>Does not include normal operations to meet load fluctuations</p>

What is a “Scheduled Startup”?

Planned event known to the facility prior to January 1 for the upcoming year

Includes:

- Turnaround (catalyst changeout)
- Planned maintenance

Does not include:

- Response to demand
- Unscheduled maintenance
- Equipment failure
- Breakdowns or malfunctions

Approach for Establishing Startup and Shutdown, and Tuning Duration Limits

Review all existing Rule 1135 equipment permits

Compile startup, shutdown, and tuning duration limits provided in permit conditions for each electric generating unit

Based on the information obtained, establish startup, shutdown, and tuning duration limits based on the most inclusive value

If the equipment category has major variation or outliers, may establish multiple duration limits for that equipment category

Proposed Maximum Startup and Shutdown Times and Number of Scheduled Startups

Updated Slide

Equipment	Maximum Startup Event Duration	Maximum Shutdown Event Duration	Maximum Scheduled Startup Events
Boilers	Six hours	Six hours	10 events/year
Combined Cycle Turbines	<ul style="list-style-type: none"> • Four hours for non-cold start • Six hours for cold start 	Two hours	
Simple Cycle Turbines	One hour	Thirty minutes	
Internal Combustion Engines	One hour	Fifteen minutes	

- Maximum tunings, if applicable, at 10 hours per year
- Permit conditions shall be followed if equipment has more stringent startup, shutdown, and tuning requirements in their permits

* Cold start: Turbine shut down for 72 hours or more
 Non-cold start: Turbine shut down for less than 72 hours

Other PR 429.2 Provisions

Updated Slide

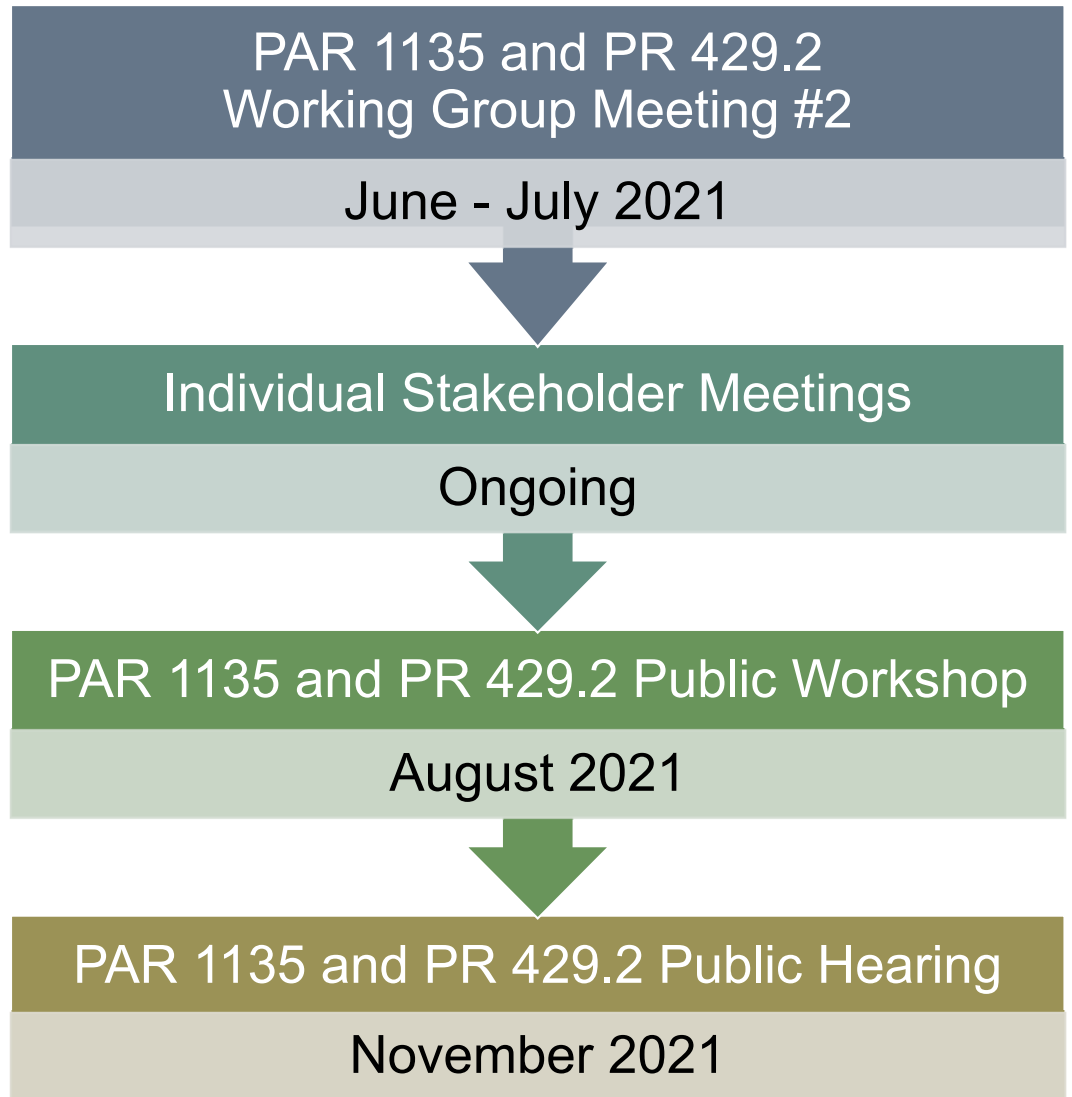
- Incorporate Best Management Practices to limit emissions during these periods
 - Startup time may not last longer than the time necessary to reach the minimum temperature of any post-combustion control
 - Requirement to operate post-combustion control equipment when inlet gas temperature reaches manufacturer specified temperature
 - Startup time shall not last longer than is necessary to reach stable conditions
 - Include equipment repairs and adjusting temperature of post-combustion controls
- Include recordkeeping requirements
 - Operating log
 - Submitted plan for scheduled startup(s)

Rule Development Schedule

- Staff's goal is to bring PAR 1135 and PR 429.2 together at the same Public Hearing
- Plan to move Public Hearing for PAR 1135 from August 2021 to November 2021
 - PR 429.2 will also have a November 2021 Public Hearing



Next Steps



Staff Contacts

PAR 1135 & PR 429.2

To receive e-mail notifications for PAR 1135, sign up at: www.aqmd.gov/sign-up

Charlene Nguyen, Air Quality Specialist
909-396-2648, cnguyen@aqmd.gov

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

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

RECLAIM

To receive e-mail notifications for Regulation XX or Regulation XIII, sign up at: www.aqmd.gov/sign-up

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

Gary Quinn, P.E., Program Supervisor
909-396-3121, gquinn@aqmd.gov

Yanrong Zhu, Air Quality Specialist
909-396-3289, yzhu@aqmd.gov

Rules 218.2 and 218.3

Gary Quinn, P.E., Program Supervisor
909-396-3121, gquinn@aqmd.gov

Michael Krause, Planning and Rules Manager
909-396-2706, mkrause@aqmd.gov