

## SAN LUIS OBISPO COUNTY AIR POLLUTION CONTROL DISTRICT

**RULE 429 - OXIDES OF NITROGEN AND CARBON MONOXIDE EMISSIONS FROM ELECTRIC POWER GENERATION BOILERS**

*(Adopted 11/16/93; Revised 4/26/95, 11/13/96, and 11/12/97)*

A. APPLICABILITY. The provisions of this Rule shall apply to all electric power generation facilities.

B. DEFINITIONS. For the purposes of this Rule, the following definitions shall apply:

1. "Boiler": An individual piece of combustion equipment fired with liquid or gaseous fuel and used to produce steam.
  2. "Boiler Rating": The rating of a boiler expressed in million British Thermal Units per hour (mmBTU/hr).
  3. "Clock Hour Average Emissions": Emissions based on a one (1) hour average for each clock hour. The one (1) hour average shall be based on ten (10) consecutive six (6) minute periods. All valid data points within each six (6) minute period shall be averaged to determine the value for that period.
  4. "Day": Any twenty-four hour period from midnight to midnight.
  5. "Electric Power Generation Facility": A facility that generates electricity for offsite use and has a total generating capacity of 100 megawatts or greater .
  6. "Force Majeure Natural Gas Curtailment": An interruption in natural gas service due to one of the following reasons:
    - a. unforeseeable failure or malfunction, not resulting from an intentional act or omission which the California Public Utilities Commission (CPUC) finds to be due to an act of gross negligence on the part of owner or operator of a boiler; or
    - b. a natural disaster; or
    - c. a natural gas curtailment pursuant to CPUC rules or orders; or
    - d. the electric power generation facility provides notice to the Air Pollution Control Officer (APCO) that, with forecasted supplies and demands, natural gas service is expected to be curtailed pursuant to CPUC rules or orders.
- 
1. "Oxides of Nitrogen (NO<sub>x</sub>)": The molecular forms of nitrogen oxide and nitrogen dioxide. When measured or collected, the total of the two molecular forms are collectively expressed as nitrogen dioxide.
  2. "Shut-down Period": The time period during which a boiler unit is reduced below minimum load or below catalytic reaction temperature, if applicable, to a condition where the fires in the boilers are extinguished.
  3. "Start-up": The time period during which a boiler has no fires in it, until the unit that it serves has reached minimum operating load and catalytic reaction temperature, if applicable.
  4. "Steady State Compliance Testing": Testing which is required by the APCO under the authority of the California Health and Safety Code Section 42303 and District Rule 210.B.1 which occurs at or near steady state turbine load.

C. EXEMPTIONS

1. The emission limitations listed in Subsections D.1 and D.2 below shall not apply during:
  - a. periods of start-up, not to exceed twelve (12) hours; or

- b. periods of shut-down, not to exceed eight (8) hours; or
  - c. APCO-approved control system calibration and tuning, not to exceed forty-eight (48) hours, following maintenance or overhaul of a boiler or its control system. To qualify for this exemption, the APCO shall receive notice at least forty-eight (48) hours prior to any calibration and tuning or at the beginning of maintenance if it is of an emergency or unforeseen nature.
1. The provisions of Subsection D.4.a shall not apply for a unit during:
    - a. force majeure natural gas curtailment; or
    - b. oil burn readiness testing or CPUC required performance testing not to exceed a total of twenty-four (24) hours annually between May 1 and October 31 and a total of ninety-six (96) hours per year; or
    - c. oil burn emission testing required by the APCO.

#### D. REQUIREMENTS

##### 1. Oxides of Nitrogen (NO<sub>x</sub>) Emission Limits

- a. Oxides of nitrogen emissions from boilers rated between 1,500 and 2,000 mmBTU/hr shall not exceed the following limits based on a one (1) clock hour average at three percent (3%) oxygen on a dry basis:
  1. operation on natural gas: 150 ppm
  2. operation on fuel oil: 450 ppm
- b. Oxides of nitrogen emissions from boilers rated at 2,000 mmBTU/hr or greater shall not exceed the following limits based on a one (1) clock hour average at three percent (3%) oxygen on a dry basis:
  1. operation on natural gas: 56 ppm
  2. operation on fuel oil: 250 ppm
- c. Effective December 31, 2000, each electric power generation facility shall comply with one of the following two options:
  1. oxides of nitrogen emissions from each boiler rated at 2,000 mmBTU/hr or greater shall not exceed the following limits based on a one (1) clock hour average at three percent (3%) oxygen on a dry basis:
    - i. operation on natural gas: 10 ppm
    - ii. operation on fuel oil: 25 ppm, or
  1. the total oxides of nitrogen emissions from all boilers at an electric power generation facility shall not exceed 3.50 tons per day.
- d. Effective December 31, 2002, the total oxides of nitrogen emissions from all boilers at an electric generation facility shall not exceed 2.50 tons per day.
- e. Oxides of nitrogen emissions during fuel changes shall not exceed the applicable fuel oil limit. Should the duration of the fuel change exceed twelve (12) hours, then the limit expressed in Subsection D.1.f below shall apply. The APCO must be notified in advance of the fuel change in order to qualify for the fuel oil limit except where force majeure natural gas curtailment conditions preclude advanced notification.

f. Oxides of nitrogen emissions for boilers firing on mixture of oil and gas shall not exceed the following calculated limit:

Where:

$$NO_X \text{ limit} = (OF)(oil \ NO_X \ \text{limit}) + (GF)(gas \ NO_X \ \text{limit})$$

$$OF = \text{Total Heat Input From Oil} / \text{Total Heat Input}$$

$$GF = \text{Total Heat Input From Gas} / \text{Total Heat Input}$$

1. Carbon Monoxide Emission Limits. Carbon monoxide emissions from boilers rated above 1,500 mmBTU/hr shall not exceed 1,000 ppm based on a one (1) clock hour average at three percent (3%) oxygen on a dry basis.
2. Ammonia Emission Limit. Ammonia emissions from control devices installed to meet the requirements of this Rule shall not exceed 10 ppm based on a one (1) clock hour average at three percent (3%) oxygen on a dry basis.
3. Fuel Oil Usage
  - a. Until December 31, 2002, when the facility wide emission limit applies, and except as allowed by Subsection C.2 above, fuels oil and mixtures of fuel oil and natural gas shall not be used as fuel for any power generation boiler.
  - b. Operation of a boiler unit on a mixture of oil and gas shall be counted as oil operating hours.

#### 1. Continuous Emission Monitoring Systems (CEMS)

a. For all boilers subject to this Rule, continuous emission monitoring systems which meet the federal requirements referenced below shall be installed, certified, maintained and operated for continuous in-stack monitoring necessary to calculate CO emission rates corrected to three percent (3%) oxygen on a dry basis:

1. 40 CFR Pt. 60, App. B, Performance Specification 4 -Specifications and Test Procedures for Carbon Monoxide Continuous Emissions Monitoring Systems in Stationary Sources; and

b. For all boilers subject to this Rule, continuous emission monitoring systems which meet the federal requirements referenced below shall be installed, certified, maintained and operated for continuous in-stack monitoring necessary to calculate NO<sub>X</sub> emission rates corrected to three percent (3%) oxygen on a dry basis:

1. 40 CFR Pt. 60, App. B, Performance Specification 2 -Specifications and Test Procedures for SO<sub>2</sub> and NO<sub>X</sub> Continuous Emissions Monitoring Systems in Stationary Sources; and
2. 40 CFR Pt. 60, App. B, Performance Specification 3 -Specifications and Test Procedures for O<sub>2</sub> and CO<sub>2</sub> Continuous Emissions Monitoring Systems in Stationary Sources; and
3. 40 CFR Pt. 75, Continuous Emission Monitoring and Appendices.

c. Operators of the continuous emission systems (CEMS) must follow the EPA quality assurance procedures referenced below:

1. 40 CFR Pt. 75, Appendix B to Part 75 - Quality Assurance and Quality Control Procedures; and
2. 40 CFR Pt. 60, Appendix F - Quality Assurance Procedures, "Procedure 1. Quality Assurance Requirements for Gas Continuous Emission Monitoring Systems Used for Compliance Determination".

d. Calculation of Average Emissions for CEMS

1. Average emissions shall be calculated as clock hour averages. Conversions shall be calculated according to the procedures within 40 CFR Part 75, Appendix F - "Conversion Procedures".
2. Data recorded during periods of CEMS breakdown, repairs, calibrations, checks, zero and span adjustments shall not be included in the data averages computed under this section. Missing data shall be estimated according to the procedures of 40 CFR Part 75, Appendix C - "Missing Data Statistical Estimation Procedures".

e. Where 40 CFR Part 60 and Part 75 have conflicting requirements, those requirements contained in Part 75 shall supersede those contained in Part 60.

#### E. RECORDKEEPING REQUIREMENTS

1. For boilers subject to this Rule, permanent records shall be maintained for a period of five (5) years after creation and shall be made available for inspection by the APCO upon request. The records shall include, but are not limited to:
  - a. gross and net energy production in megawatt hours (MW-hrs) calculated on a daily basis;
  - b. quantity of natural gas burned on an hourly basis;
  - c. quantity of fuel oil burned on an hourly basis or on a federally permitted and accepted alternative;
  - d. type of fuel oil burned and its sulfur content for each period of operation on fuel oil. Sulfur content shall be determined by methods referenced in 40 CFR Part 75, Appendix D, Subsections 2.2.3 and 2.2.4 or by a federally permitted and accepted alternative;
  - e. the injection rate of reactant chemicals used for NO<sub>x</sub> emission reduction on an hourly basis;
  - f. the CO emissions rate in lb/hr and ppm, corrected to three percent (3%) O<sub>2</sub> on dry basis, based on data from the in-stack CEM system on an hourly basis;
  - g. the NO<sub>x</sub> emissions rate in lb/hr and ppm, corrected to three percent (3%) O<sub>2</sub> on dry basis, based on data from the in-stack CEM system on an hourly basis; and
  - h. the dates, times and durations of any start-up and shut-down periods.
1. For CEM systems subject to this Rule, records of all raw and processed emissions data for parameters measured shall be maintained for a period of five (5) years after creation and shall be made available for inspection by the APCO upon request. These records may be kept in an electronic format subject to the APCO's approval. Raw data shall be considered to be uncorrected clock hour averages of measured parameters.

#### F. TEST METHODS

1. Steady state compliance testing for oxides of nitrogen emission limits shall be determined by California Air Resources Board Method 100 or EPA Method 7E.
2. Steady state compliance testing for carbon monoxide emission limits shall be determined by California Air Resources Board Method 100 or EPA Method 10.
3. Steady state compliance testing for O<sub>2</sub> concentrations shall be determined by California Air Resources Board Method 100 or EPA Method 3A.
4. For steady state compliance testing, the emission limits of Section D shall be based on a sixty (60) consecutive minute average instead of the specified one (1) clock hour average.

5. A violation of the oxides of nitrogen limits shall be defined as the following which includes error for testing equipment:
  - a. for steady state compliance testing, when the limit applicable to the unit is exceeded by five percent (5%).
  - b. for continuous in-stack monitoring, when the limit applicable to the unit is exceeded by ten percent (10%) or 2 ppm whichever is greater.