

**RULE 400.2 BOILERS, PROCESS HEATERS AND STEAM GENERATORS**  
(Adopted 02/23/2010; Revised 11/26/2019)

**A. Applicability**

- A.1 This rule limits emissions of oxides of nitrogen (NOx) from Boilers, Process Heaters, or Steam Generators.
- A.2 This rule shall apply to any new or existing Process Heaters, Boilers or Steam Generators with a heat input rating of 5 million British Thermal Units (Btu) per hour or more, unless exempted pursuant to Section D of this rule.
- A.3 Boilers, Process Heaters and Steam Generators that are subject to the provisions of this rule shall not be subject to Rule 400.

**B. Definitions**

Terms applicable to this rule are defined in Rule 101-Definitions and incorporated them to ICAPCD Rule 101–Definitions.

**C. Requirements**

- C.1 All Boilers, Process Heaters and Steam Generators, unless exempted pursuant to Sections C.3 or C4, that are installed prior to January 1, 2020, shall not emit NOx in excess of the following:
- C.1.a 30 parts per million by volume (ppmv) or 0.036 pounds per million BTU of heat input when operated on gaseous fuels.
- C.1.b 40 ppmv or 0.052 pounds per million BTU of heat input when operated on liquid fuels.
- C.1.c The heat-input weighted average of the limits specified in C.1.a and C.1.b, when operated on combinations of gas and liquid fuels.

$$\text{Weighted Average Limit} = \frac{(\text{NOx limit for gaseous fuel} \times G) + (\text{NOx limit for liquid fuel} \times L)}{G + L}$$

Where: G = annual heat input from gaseous fuel  
L = annual heat input from liquid fuel

- C.2 All ppmv emission limits are referenced at dry stack-gas conditions and 3.0% by volume stack-gas oxygen as an hourly average.

C.3 All Boilers, Process Heaters, and Steam Generators, with an Annual Capacity Factor (ACF) less than or equal to 30%, shall not emit NOx in excess of the following:

ACF <sub>cu</sub> ≤ 30%	ppmv
Gaseous Fuel	70
Liquid Fuel	70

C.4 Biomass boilers or process heaters shall not emit NOx in excess of the following:

C.4.a An exhaust concentration of 120 ppmv corrected to 12 percent by volume stack gas carbon dioxide (CO<sub>2</sub>) on a three-hour average dry basis, or

C.4.b NOx emissions shall be reduced minimum 80 percent of the uncontrolled NOx emission concentration in the exhaust gas stream. A corresponding controlled limit shall be established in the Authority to Construct/Permit to Operate condition(s) for the purpose of demonstrating continuous compliance with the 80 percent emission reduction.

C.5 All Boilers, Process Heaters and Steam Generators that are installed or modified on or after January 1, 2020, shall not emit NOx in excess of the emission limits in Table 1 below:

Table 1: NOx Emission Limits for Units Installed on or after January 1, 2020

Rated Heat Input (MM Btu/hr)	Fuel Type	NOx Emission Limit (ppm at 3% O <sub>2</sub> )
5 - 20	Gaseous, except landfill or digester gas	9
Greater than 20	Gaseous, except landfill or digester gas	7
Greater than 5	Landfill Gas	25
Greater than 5	Digester	15
Greater than 5	Liquid	40
Greater than 5	Multiple Fuels	Heat-input weighted average limit, according to C.1.c

D. Exemptions

D.1 The provisions of this rule shall not apply to the following:

D.1.a Waste Heat Recovery Boilers that are used to recover heat from the exhaust of Stationary Gas Turbines or Internal Combustion Engines.

D.1.b Furnaces, Kilns, and any combustion equipment where the material being heated is in direct contact with the products of combustion.

D.1.c Thermal Oxidizers and associated waste heat recovery equipment.

D.1.d Boilers, Process Heaters and Steam Generators used exclusively in connection with a structure that is designed for and used exclusively as a dwelling for not more than four families.

D.1.e Coal fired units, installed or erected prior to December 31, 2009.

D.2 Boilers, Process Heaters, or Steam Generators, during Startup, Shutdown or a change in load, when bringing the combustion process up to operating levels, may not exceed twelve hours (12) for Boilers and Process Heaters of more than 40 MM Btu per hour or six (6) hours per Boilers and Process Heaters of equal to or less than 40 MM Btu per hour, or as specified on the permit to operate.

D.3 Section C.1.b shall not apply to Boilers while forced to burn nongaseous fuel during times of natural gas curtailment. This exemption shall not exceed 168 cumulative hours of operation per calendar year excluding equipment testing time not exceeding 24 hours per calendar year.

E. Monitoring and Recordkeeping Requirements

E.1 The owner or operator of Boilers, Process Heaters or Steam Generators with a continuous emission monitoring system (CEMS) which has been installed to measure NOx emissions pursuant to any federal regulation shall certify, calibrate and maintain the CEMS in accordance with applicable federal regulations including the reporting requirements of Sections 60.7(c), 60.7(d), and 60.13 of Title 40, Code of Federal Regulations Part 60 (40 CFR 60), performance specifications of Appendix B, quality assurance procedures of Appendix F, and a protocol approved in writing by the Air Pollution Control Officer (APCO).

E.2 The owner or operator of Boilers, Process Heaters or Steam Generators subject to this rule shall maintain an operating log and record actual times and duration of all Startups, Shutdowns and Fuel Changes, and the type and quantity of each fuel used.

- E.3 For the purposes of a compliance determination based on CEMS data, the averaging period to calculate NO<sub>x</sub> emissions concentration shall be one clock hour.
  - E.4 For the purpose of determine compliance with Section C.4.b to evaluate percentage NO<sub>x</sub> emission reductions, the owner or operator has the option to run a one-time uncontrolled NO<sub>x</sub> emission source testing and use these results as reference for future annual compliance testing determination.
- F. Test Methods
- F.1 Compliance with the NO<sub>x</sub> emission limits in Section C shall be determined using United States Environmental Protection Agency (U.S. EPA) Method 7, 7A, 7C, 7E, California Air Resources Board (CARB) Method 100, or any other applicable U.S. EPA approved test method.
- G. Source Test Requirements
- G.1 Any required source testing shall be performed at no less than 80% of the power rating. If an owner or operator of a Boilers, Process Heaters or Steam Generators demonstrates to the satisfaction of the APCO that the equipment cannot operate at these conditions, then emissions sources testing shall be performed at the highest achievable continuous power rating.
  - G.2 Boilers, Process Heaters or Steam Generators subject to the requirements of Section C shall demonstrate compliance through emission compliance testing not less than once every 12 months. All emission rates shall be based on an hourly average. Frequency of compliance testing may be extended under the following:
    - G.2.a The frequency of compliance testing may be extended to not less than every 36 months for Boilers, Process Heaters, or Steam Generators which operate less than 100 hours per a 12 month period (as demonstrated by operational logs) and which emit less than 5 tons of NO<sub>x</sub> per a 12 month period.
    - G.2.b The frequency of compliance testing may be extended to not less than every five (5) years for secondary fuel testing for Boilers, Process Heaters, or Steam Generators which operate less than 100 hours per a 12 month period operating secondary fuel (as demonstrated by operational logs) and which emit less than 5 tons of NO<sub>x</sub> per a 12 month period operating secondary fuel. This period may be extended if a source can prove no secondary fuel has been fired.

- G.3 Test reports shall include the operational characteristics recommended by the manufacturer to ensure compliance with the applicable emission limits of this rule for Boilers, Process Heaters and Steam Generators and all add-on NOx control systems.
- G.4 For the purposes of a compliance determination based on source testing, the NOx emissions concentration shall be calculated as an average of three test runs.
- G.5 At least 30 days prior to the scheduled source test date, the owner or operator of a unit subject to this rule shall submit a source test plan to the APCO. At least seven (7) days prior to the source test, the owner or operator shall notify the APCO of the exact date and time of the source test. A final source test result shall be submitted to the APCO within 60 days following the actual source test date.

#### H. Records Retention

- H.1 The owner or operator of Boilers, Process Heaters and Steam Generators subject to this rule shall maintain all records required by this rule for a minimum of two (2) calendar years. Title V facilities shall maintain these records for five (5) calendar years. These records shall be maintained on the premises and made available to the District upon request.