

RULE 2.44 CENTRAL FURNACES

Adopted May 13, 2009

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100 GENERAL

- 101 **PURPOSE:** The purpose of this Rule is to limit the emissions of oxides of nitrogen (NO_x) from the use of natural gas-fired, fan-type central furnaces.
- 102 **APPLICABILITY:** The provisions of this Rule shall apply to any person that manufactures, offers for sale, sells, or installs any natural gas-fired, fan-type central furnace with a rated heat input capacity of less than 175,000 British thermal units per hour (Btu/hr) and for combination heating and cooling units with a cooling rate of less than 65,000 Btu/hr.
- 103 **SEVERABILITY:** If any provision, clause, sentence, paragraph, section or part of this rule for any reason is judged to be unconstitutional or invalid, such judgement shall not affect or invalidate the remainder of the rule.
- 110 **EXEMPTIONS:** The provisions of this rule shall not apply to the following:
- 110.1 Units installed in manufactured homes.
 - 110.2 Units using fuels other than natural gas.

200 DEFINITIONS

- 201 **ANNUAL FUEL UTILIZATION EFFICIENCY (AFUE):** The efficiency as defined in Section 430.2 of the Code of Federal Regulations, Title 10, Part 430, Subpart A.
- 202 **BRITISH THERMAL UNITS (Btu):** The amount of heat required to raise the temperature of one pound of water from 59° F to 60° F at one atmosphere.
- 203 **FAN-TYPE CENTRAL FURNACE:** A self contained space heater that provides circulation of heated air at pressures other than atmospheric through ducts more than 10 inches in length.
- 204 **HEAT OUTPUT:** The product obtained by multiplying the annual fuel utilization efficiency (AFUE) by the rated heat input capacity of the natural gas-fired central furnace.
- 205 **MANUFACTURED HOME:** As defined in 42 United States Code Section 5402 and California Health and Safety Code Section 18007.
- 206 **RATED HEAT INPUT CAPACITY:** The heat input capacity specified on the nameplate of the combustion unit.

300 STANDARDS

- 301 **PROHIBITIONS:** Effective January 1, 2010, no person shall manufacture, offer for sale, sell, or install any unit as described in Section 102 of this rule that emits more than 40 nanograms (ng) per joule (J) of heat output of oxides of nitrogen (NO_x).

400 ADMINISTRATIVE REQUIREMENTS

- 401 **COMPLIANCE REPORT:** Each manufacturer subject to the provisions of this Rule shall submit to the Air Pollution Control Officer (APCO) a Compliance Report that demonstrates compliance with Section 301 above. A manufacturer shall submit a new Compliance Report for any natural gas-fired, fan-type central furnace model whose design is changed in any manner which may alter NO_x emissions. These Compliance Reports, for either new or altered models, shall be submitted to the District at least 30 days before the model is offered for sale, sold, or installed within the District. The Compliance Report shall contain all of the following information:

401.1 General Information:

- a. Name and address of manufacturer;
- b. Brand name and model;
- c. Model number as it appears on the rating plate of each unit;
- d. Description of each natural gas-fired fan-type central furnace model being certified; and
- e. Heat input rating.

401.2 Test Report:

- a. All compliance test procedures and results for each natural gas-fired, fan-type central furnace model.
- b. All calculations used in determining compliance for each natural gas-fired, fan-type central furnace model.
- c. The manufacturer may submit to the District an approved Bay Area AQMD Regulation 9 Rule 4 or South Coast AQMD Rule 1111 certification in lieu of conducting duplicative compliance tests.

- 401.3 **Compliance Statement:** A signed and dated statement attesting to the accuracy of all statements and information in the Compliance Report.

- 402 **LABELING:** The manufacturer shall display the model number of the natural gas-fired, fan-type central furnace complying with the requirements specified in Section 301 of this Rule on the unit's shipping carton and rating plate.

500 MONITORING AND RECORDS

501 **TEST METHODS:** The manufacturer shall have each natural gas-fired, fan-type central furnace model tested in accordance with the following:

501.1 NO_x measurements, test equipment, and other required test procedures shall be in accordance with methods approved by the APCO.

501.2 Operation of the furnace shall be in accordance with the procedures specified in Section 3.1 of the Code of Federal Regulations, Title 10, Part 430, Subpart B, Appendix N.

501.3 Compliance with the emission requirements in Section 301 shall be determined using ARB Method 100, or other EPA approved method for NO_x. NO_x samples shall be taken simultaneously with the CO₂ sample specified in Section 3.1 of Code of Federal Regulations, Title 10, Part 430, Subpart B, Appendix N.

501.4 The following calculation shall be used to determine the nanograms of NO_x per Joule of heat output:

$$N = \frac{4.566 \times 10^4 \times P \times U}{H \times C \times E}$$

Where:

N = nanograms (ng) of emitted NO_x per Joule of heat output.

4.566 x 10⁴ = unit conversion factor (ppm to ng and Btu to Joules)

P = concentration (expressed in parts per million) of NO_x in the flue gas as tested.

U = volume percent of carbon dioxide in water-free flue gas for stoichiometric combustion

H = gross heating value of the fuel, Btu/ft³ (60°F, 30-inches Hg)

C = measured volume percent of carbon dioxide in water-free flue gas, assuming complete combustion and no carbon monoxide present

E = AFUE (percentage)

502 **RECORDS:** A manufacturer shall keep Compliance Reports, test reports, and compliance statements for as long as the natural gas-fired, fan-type central furnace model is offered for sale, sold, or installed within the District, or for five years, whichever is longer.