

**RULE 352. NATURAL GAS-FIRED FAN-TYPE CENTRAL FURNACES AND SMALL WATER HEATERS. (Adopted 9/16/1999, revised 10/20/2011)**

**A. Applicability**

This rule applies to any person who manufactures, supplies, sells, offers for sale, installs, or solicits the installation of any natural gas-fired fan-type central furnaces or water heaters for use within the District.

**B. Exemptions**

The provisions of this rule shall not apply to:

1. Units installed in manufactured housing (mobile homes).
2. Water heaters used exclusively in recreational vehicles.
3. Water heaters with a rated heat input of 75,000 British thermal units per hour or greater.
4. Water heaters used exclusively to heat swimming pools or hot tubs.
5. Fan-type central furnaces and water heaters using fuels other than natural gas.

**C. Definitions**

**“Fan-Type Central Furnace”** means a self-contained space heater providing for circulation of heated air at pressures other than atmospheric through ducts more than 10 inches in length that has a rated heat input capacity of less than 175,000 British thermal units per hour and, for combination heating and cooling units, a rated cooling capacity of less than 65,000 British thermal units per hour.

**“Heat Output (Central Furnace)”** means the product obtained by multiplying the annual fuel utilization efficiency as defined by Section 10.1 of the Code of Federal Regulations (CFR), Title 10, Part 430, Subpart B, Appendix N, by the rated heat input capacity of the natural gas-fired central furnace.

**“Heat Output (Water Heater)”** means the product obtained by multiplying the recovery efficiency as defined by Section 6.1.3 of 10 CFR 430, Subpart B, Appendix E, by the rated heat input capacity of the water heater.

**“Manufactured Home”** has the same meaning as defined in 42 United States Code Section 5402 and California Health and Safety Code Section 18007.

**“Natural Gas”** means a mixture of gaseous hydrocarbons containing at least 80% methane by volume as determined by ASTM Method D1945-03(2010), “Standard Test Method for Analysis of Natural Gas by Gas Chromatography,” ASTM International.

**“Rated Cooling Capacity”** means the cooling capacity specified on the nameplate of the cooling unit. Cooling capacity is the amount of heat energy the cooling system can displace in one hour (British thermal units per hour).

**“Rated Heat Input Capacity”** means the heat input capacity specified on the nameplate of the combustion unit. Heat input is the amount of energy consumed in one hour (British thermal units per hour).

**“Water Heater”** means a device that heats water at a thermostatically-controlled temperature of no more than 210 degrees Fahrenheit for delivery on demand.

**D. Requirements – General**

1. Except as specified in Section D.2, no person shall supply, sell, offer for sale, install, or solicit the installation of any natural gas-fired fan-type central furnace or water heater for use within the District:
  - a. With emissions of oxides of nitrogen in excess of 40 nanograms per joule (0.093 pounds of oxides of nitrogen per million British thermal units) of heat output, or 55 parts per million at 3.00 percent stack gas oxygen by volume on a dry basis, and
  - b. That is not certified in accordance with Section E.
2. After July 1, 2012, no person shall supply, sell, offer for sale, install, or solicit the installation of any natural gas-fired water heater for use within the District:
  - a. With emissions of oxides of nitrogen in excess of 10 nanograms per joule (0.023 pounds of oxides of nitrogen per million British thermal units) of heat output, or 15 parts per million at 3.00 percent stack gas oxygen by volume on a dry basis, and
  - b. That is not certified in accordance with Section E.

**E. Requirements – Certification and Identification**

1. Each appliance model shall be tested in accordance with Section F. In lieu of such certification tests, the District will accept certifications issued under South Coast Air Quality Management District Rule 1111 or Rule 1121.
2. The central furnace manufacturer and water heater manufacturer shall display the model number of the appliance complying with Section D on the shipping carton and the rating plate of the appliance.
3. Upon request of the Control Officer, each manufacturer shall submit to the District a statement confirming the appliance subject to this rule is in compliance with the emission limit specified in Section D. The statement shall be signed, dated, and shall attest to the accuracy of all information. The statement shall include:
  - a. Name and address of manufacturer, and
  - b. Brand name, and
  - c. Model number, as it appears on the appliance rating plate, and
  - d. Heat input rating, British thermal units per hour, and
  - e. A source test report verifying compliance with the applicable emission limits in Section D.1.a or D.2.a.

**F. Monitoring – Source Testing**

1. During testing, each tested central furnace shall be operated in accordance with the procedures specified in 10 CFR 430, Subpart B, Appendix N.
2. During testing, each water heater shall be operated in accordance with Section 2.4 of American National Standards ANSI Z21.10.1-1998 at normal pressure, input rates, and with a five-foot stack

installed during the oxides of nitrogen emissions tests.

3. Compliance with the oxides of nitrogen emission requirement in D shall be determined using Air Resources Board Method 100, or Environmental Protection Agency Methods 7E and 3A.
4. The following calculation shall be used to determine the nanograms of oxides of nitrogen per joule of heat output:

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

where:

$4.566 \times 10^4$  = unit conversion factor [parts per million (ppm) to nanograms and British thermal units to joules]

$N$  = nanograms of emitted oxides of nitrogen per joule of heat output

$P$  = concentration of oxides of nitrogen in flue gas in ppm by volume

$U$  = dry volume percent of CO<sub>2</sub> in flue gas necessary for stoichiometric combustion

$H$  = gross heating value of fuel, British thermal units per cubic feet at 60°F and 30 inches of mercury

$C$  = measured dry volume percent of CO<sub>2</sub> in the flue gas, assuming complete combustion and no carbon monoxide present

$E$  = efficiency, annual fuel utilization efficiency for natural gas-fired central furnaces or recovery efficiency for water heaters as referenced in the Section C definitions for *heat output (central furnace)* or *heat output (water heater)*.

**G. Rule Effective Date**

This rule is effective on October 20, 2011.