

(Adopted December 1, 1978)(Amended March 10, 1995)(Amended December 10, 1999)  
(Amended September 3, 2004)

**RULE 1121            CONTROL OF NITROGEN OXIDES FROM RESIDENTIAL  
TYPE, NATURAL GAS-FIRED WATER HEATERS**

(a)    Applicability

This rule applies to manufacturers, distributors, retailers, and installers of natural gas-fired water heaters, with heat input rates less than 75,000 Btu per hour.

(b)    Definitions

For the purpose of this rule:

- (1)    BTU means British thermal unit or units.
- (2)    DIRECT-VENT WATER HEATER means a water heater with air intake and exhaust ducts that use a gravity system to collect air from outside a building for combustion and exhaust combustion byproducts to the outside of a building.
- (3)    HEAT INPUT means the heat of combustion released by fuels burned in a unit based on the higher heating value of fuel. This does not include the enthalpy of incoming combustion air.
- (4)    HEAT OUTPUT means the product  $H_o$  as defined in Section 9.3 of the Protocol.
- (5)    INDEPENDENT TESTING LABORATORY means a testing laboratory that meets the requirements of District Rule 304, subdivision (k) and is approved by the District to conduct certification testing under the Protocol.
- (6)    MITIGATION FEE is an emission reduction option, in which monies collected by the District from water heater manufacturers are placed in a restricted fund and are used to fund stationary and mobile source emission reduction programs targeted at equivalent  $NO_x$  emission reductions as to those that would have otherwise occurred and have been approved by the District's Governing Board.
- (7)    MOBILE HOME WATER HEATER means a closed vessel manufactured exclusively for mobile home use in which water is heated by combustion of gaseous fuel and is withdrawn for use external to the vessel at pressures not exceeding 160 psig, including the apparatus by which heat is generated and all controls and devices necessary to prevent water temperatures from exceeding 210°F (99°C).

- (8) NO<sub>x</sub> EMISSIONS means the sum of nitric oxide and nitrogen dioxide in the flue gas, collectively expressed as nitrogen dioxide.
  - (9) POWER-VENT WATER HEATER means a water heater with a blower installed to assist in the expulsion of exhaust gases.
  - (10) POWER DIRECT-VENT WATER HEATER means a water heater with an air intake duct outside of a building with a blower installed to assist in the expulsion of exhaust gases.
  - (11) PROTOCOL means South Coast Air Quality Management District Protocol: *Nitrogen Oxides Emissions Compliance Testing for Natural Gas-Fired Water Heaters and Small Boilers*, January 1998.
  - (12) RATED HEAT INPUT CAPACITY means the heat input capacity specified on the nameplate of the combustion unit. If the combustion unit has been altered or modified such that its maximum heat input is different from the heat input capacity specified on the nameplate, the new maximum heat input shall be considered as the rated heat input capacity.
  - (13) RECREATIONAL VEHICLE means either a motor home, travel trailer, truck camper, or camping trailer, with or without motive power, designed for human habitation for recreational, emergency, or other occupancy, as defined pursuant to Section 18010 of the California Health and Safety Code.
  - (14) WATER HEATER means a closed vessel other than a mobile home water heater in which water is heated by combustion of gaseous fuel and is withdrawn for use external to the vessel at pressures not exceeding 160 psig, including the apparatus by which heat is generated and all controls and devices necessary to prevent water temperatures from exceeding 210°F (99°C).
- (c) Requirements
- (1) Until July 1, 2002, no person shall manufacture for sale, distribute, sell, offer for sale, or install within the South Coast Air Quality Management District any gas-fired water heaters unless the water heater is certified pursuant to subdivision (d) to a NO<sub>x</sub> emission level of less than or equal to:
    - (A) 40 nanograms of NO<sub>x</sub> (calculated as NO<sub>2</sub>) per joule of heat output (93 lb per billion Btu of heat output); or
    - (B) 55 ppmv at 3% O<sub>2</sub>, dry (71 lb per billion Btu of heat input).

- (2) On or after July 1, 2002, no person shall manufacture for sale, distribute, sell, offer for sale, or install within the South Coast Air Quality Management District any gas-fired water heaters unless the water heater is certified pursuant to subdivision (d) to a NO<sub>x</sub> emission level of less than or equal to:
  - (A) 20 nanograms of NO<sub>x</sub> (calculated as NO<sub>2</sub>) per joule of heat output (46.5 lb per billion Btu of heat output); or
  - (B) 30 ppmv at 3% O<sub>2</sub>, dry (35 lb per billion Btu of heat input); or
  - (C) the emission limit specified in subparagraph (c)(1)(A) or (c)(1)(B) provided the manufacturer of the water heater meets the requirements of subdivision (e).
- (3) On or after January 1, 2006, for water heaters less than or equal to 50 gallon capacity, excluding direct-vent, power-vent and power direct-vent water heaters; on or after January 1, 2007 for water heaters greater than 50 gallon capacity, excluding direct-vent, power-vent and power direct-vent water heaters; and on and after January 1, 2008 for all direct-vent, power-vent, and power direct-vent water heaters; no person shall manufacture for sale, distribute, sell, offer for sale, or install within the South Coast Air Quality Management District any gas-fired water heaters unless the water heater is certified pursuant to subdivision (d) to a NO<sub>x</sub> emission level of less than or equal to:
  - (A) 10 nanograms of NO<sub>x</sub> (calculated as NO<sub>2</sub>) per joule of heat output (23 lb per billion Btu of heat output); or
  - (B) 15 ppmv at 3% O<sub>2</sub>, dry (17.5 lb per billion Btu of heat input).
- (4) On and after January 1, 2000, no person shall manufacture for sale, distribute, sell, offer for sale, or install within the South Coast Air Quality Management District any gas-fired mobile home water heaters unless the water heater is certified pursuant to subdivision (d) to a NO<sub>x</sub> emission level of less than or equal to:
  - (A) 40 nanograms of NO<sub>x</sub> (calculated as NO<sub>2</sub>) per joule of heat output (93 lb per billion Btu of heat output); or
  - (B) 55 ppmv at 3% O<sub>2</sub>, dry (71 lb per billion Btu of heat input).
- (5) The manufacturer of any water heater manufactured for sale in the district shall clearly display on the shipping carton and the name plate of the water heater:
  - (A) the model number;

- (B) the date of manufacture; and
  - (C) the certification status.
- (6) Notwithstanding the requirements in paragraph (c)(3), until July 1, 2006, any person may distribute, sell, offer for sale, or install ~~any~~ gas-fired water heaters less than or equal to 50 gallon capacity that are manufactured prior to January 1, 2006 and in compliance with paragraph (c)(2).
  - (7) Notwithstanding the requirements in paragraph (c)(3), until July 1, 2007, any person may distribute, sell, offer for sale, or install gas-fired water heaters greater than 50 gallon capacity that are manufactured prior to January 1, 2007 and in compliance with paragraphs (c)(2).
  - (8) Notwithstanding the requirements in paragraph (c)(3), until July 1, 2008, any person may distribute, sell, offer for sale, or install gas-fired direct-vent, power-vent, or power direct-vent water heaters that are manufactured prior to January 1, 2008 and in compliance with paragraphs (c)(2).
- (d) Certification
- (1) The manufacturer shall obtain confirmation that each model of water heater complies with the applicable requirements of subdivision (c) from an independent testing laboratory prior to applying for certification. This confirmation shall be based upon emission tests of a randomly selected unit of each model and the Protocol shall be adhered to during the confirmation testing of all water heaters subject to this rule.
  - (2) When applying for certification of water heaters, the manufacturer shall submit to the Executive Officer the following:
    - (A) A statement that the model is in compliance with subdivision (c). The statement shall be signed by the manufacturer and dated, and shall attest to the accuracy of all statements;
    - (B) General Information
      - (i) Name and address of manufacturer,
      - (ii) Brand name, trade name and
      - (iii) Model number, as it appears on the water heater rating plate;
    - (C) A description of each model being certified; and
    - (D) A source test report verifying compliance with subdivision (c) for each model to be certified. The source test report shall be prepared by the confirming independent testing laboratory and shall contain

all of the elements identified in Section 10 of the Protocol for each unit tested. The source test shall have been conducted no more than ninety days prior to the date of submittal to the Executive Officer.

- (3) When applying for certification of water heaters, the manufacturer shall submit the items identified in paragraph (d)(2) no more than ninety days after the date of the source test identified in subparagraph (d)(2)(D).
- (4) When applying for certification of water heaters for compliance with the emission limit specified in paragraph (c)(2) or (c)(3), the manufacturer shall submit the information identified in paragraph (d)(2) at least 90 days prior to the effective compliance date specified in either paragraph (c)(2) or (c)(3), respectively.
- (5) The Executive Officer shall certify a water heater model which complies with the provisions of subdivision (c) and of paragraphs (d)(1), (d)(2), and (d)(3).
- (6) Certification status shall be valid for three years from the date of approval by the Executive Officer. After the third year, recertification shall be required according to the requirements of paragraphs (d)(1) and (d)(2).

(e) **Mitigation Fee**

Any manufacturer that elects to submit a mitigation fee to the District to meet the NO<sub>x</sub> emission level established under subparagraph (c)(2)(C) shall:

- (1) submit a Mitigation Fee Plan to the Executive Officer 180 days prior to complying with the provisions of paragraph (c)(2), where the Mitigation Fee Plan includes:
  - (A) the name of the manufacturer;
  - (B) the compliance period that the mitigation fee covers shall not exceed a 12-month time period; and
  - (C) the number of water heaters sold over the compliance period, which shall be based on sales records or invoices of water heaters in a similar model and size that were sold in the district over the past 12 months.
- (2) receive written verification from the Executive Officer that the Mitigation Fee Plan was approved prior to complying with the provisions of paragraph (c)(2);

- (3) on and after January 1, 2005, pay a mitigation fee at the beginning of the compliance period in the amount of \$3.00 per water heater sold as specified in subparagraph (e)(1)(C), over the time period the mitigation fee covers as specified in subparagraph (e)(1)(B); and before January 1, 2005, pay a mitigation fee in the amount of \$5,400 per ton of NO<sub>x</sub> multiplied by the amount of NO<sub>x</sub> emission reductions needed as specified in Equation 1;

*Equation 1:*

$$MF = \$5,400 / ton \times \left[ \frac{t \times n \times (190 \text{therms} / \text{yr}) \times (93 - 46.5 \text{lbs} / \text{billionBtu} - \text{output}) \times 0.76}{2000 \times 10,000} \right]$$

where:

MF = Mitigation fee, Dollars

$t$  = Time period that mitigation fee covers as specified in subparagraph (f)(1)(C)

$n$  = Number of water heaters sold as specified in subparagraph (f)(1)(D)

- (4) label water heaters identified in the Mitigation Fee Plan;
- (5) maintain records and report sales of water heaters covered by the Mitigation Fee Plan and if the number of water heaters originally estimated exceed the number of water heaters identified in subparagraph (e)(1)(C), the water heater manufacturer shall update the Mitigation Fee Plan within 60 days after the end of the compliance period. Make these records available to the Executive Officer upon request, for a period of at least three years after the end of the compliance period.
- (f) Enforcement
- The Executive Officer may periodically inspect distributors, retailers, and installers of water heaters located in the District and conduct such tests as are deemed necessary to insure compliance with subdivision (c).

(g) Exemptions

The provisions of this rule shall not apply to:

- (1) Water heaters with a rated heat input capacity of 75,000 Btu per hour or greater.
- (2) Water heaters used in recreational vehicles.

(h) Final Progress Report

On or before April 1, 2007, any person that manufactures direct-vent, power-vent or power direct-vent water heaters for sale within the South Coast Air Basin shall submit to the Executive Officer a final progress report that shall include:

- (1) Identification of efforts that have been made to reach commercialization of direct-vent, power-vent, and power direct-vent water heaters that meet the NO<sub>x</sub> emission level specified under paragraph (c)(3);
- (2) A description of the technologies used to meet the NO<sub>x</sub> emission level for direct-vent, power-vent, and power direct-vent water heaters specified under paragraph (c)(3); and
- (3) Complete documentation for at least three laboratory test results each for direct-vent, power-vent, and power direct-vent water heaters developed to meet the NO<sub>x</sub> emission level specified under paragraph (c)(3) that shall include the emissions rate measured by an independent testing laboratory using the SCAQMD protocol specified under paragraph (b)(11) or other protocol approved in advance by the Executive Officer.

(i) Program Administration

On and after September 3, 2004, the Executive Officer is authorized to use up to 5% of the mitigation fee funds collected in any given year for program administration.