

**REGULATION 9  
INORGANIC GASEOUS POLLUTANTS  
RULE 6  
NITROGEN OXIDES EMISSIONS FROM NATURAL GAS-FIRED WATER  
HEATERS  
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**REGULATION 9  
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(Adopted April 1, 1992)

**9-6-100 GENERAL**

**9-6-101 Description:** This rule limits the emissions of nitrogen oxides from natural gas-fired water heaters.

**9-6-110 Exemptions:** The requirements of Section 9-6-301 shall not apply to the following:

110.1 Natural gas-fired water heaters with an rated heat input capacity rating of greater than or equal to 2,000,000 ~~75,000~~ BTU per hour.

110.2 Natural gas-fired water heaters used in recreational vehicles.

110.3 Water heaters using a fuel other than natural gas.

110.4 Natural gas-fired water heaters used exclusively to heat residential swimming pools, ~~and~~ hot tubs, or spas.

**9-6-200 DEFINITIONS**

**9-6-201 BTU:** British thermal unit or units.

**9-6-202 Direct-Vent Water Heater:** 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.

**9-6-203 Heat Input:** 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.

**9-6-2034 Heat Output:** The product obtained by multiplying the recovery efficiency, as defined by Section 6.1.3 of the Code of Federal Regulation, Title 10, Part 430, Subpart B, Appendix E, by the input rating of the water heater.

**9-6-205 Mobile Home Water Heater:** 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vessel manufactured exclusively for mobile home use in which water is heated by combustion of gaseous fuel and is withdrawn for use external to the vessel at pressures not exceeding 160 psig, including the apparatus by which heat is generated and all controls and devices necessary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).

**9-6-2026 Natural Gas:** A mixture of gaseous hydrocarbons containing at least 80 percent methane by volume as determined according to Standard Method ASTM D1945-64.

**9-6-2047 Natural Gas-Fired Instantaneous Water Heater:** A device in which water is heated by the combustion of natural gas only when the water flows through a heat exchanger.

**9-6-2048 Natural Gas-Fired Water Heater:** A closed vessel, in which water is heated by the combustion of natural gas and is withdrawn for use external to the vessel at pressures not exceeding 160 psig, including the apparatus by which heat is generated and all controls and devices necessary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.

**9-6-209 NO<sub>x</sub> Emissions:** The sum of nitric oxide and nitrogen dioxide in the flue gas, collectively expressed as nitrogen dioxide.

**9-6-210 Power Direct-Vent Water Heater:** A water heater with an air intake duct outside of a building with a blower installed to assist in the expulsion of exhaust gases.

**9-6-211 Power-Vent Water Heater:** A water heater with a blower installed to assist in the expulsion of exhaust gases.

**9-6-20412 Input Rating:** The amount of energy a water heater is rated to consume in one hour (BTU/Hour). **Rated Heat Input Capacity:** 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.

**9-6-300 STANDARDS**

**9-6-301 Natural Gas-Fired Water Heaters with an Rated Heat Input Rating Capacity of 75,000 BTU/Hour or Less:**

301.1 A-No person shall not sell, install, or offer for sale within the District any natural gas-fired water heater, manufactured after July 1, 1992, with an rated heat input capacity rating of 75,000 BTU/Hour or less, that emits more than 40 nanograms of nitrogen oxides (calculated as NO<sub>2</sub>) per joule of heat output.

301.2 No person shall sell, install, or offer for sale within the District any natural gas-fired water heater less than or equal to 50 gallons capacity that is manufactured after January 1, 2009, and that emits more than 10 nanograms of nitrogen oxides (calculated as NO<sub>2</sub>) per joule of heat output. This subsection shall not apply to direct-vent, power-vent, power direct-vent water heaters and water heaters used for manufactured homes.

301.3 No person shall sell, install, or offer for sale within the District any natural gas-fired water heater greater than 50 gallons capacity that is manufactured after January 1, 2010, and that emits more than 10 nanograms of nitrogen oxides (calculated as NO<sub>2</sub>) per joule of heat output. This subsection shall not apply to direct-vent, power-vent, power direct-vent water heaters and water heaters used for manufactured homes.

301.4 No person shall sell, install, or offer for sale within the District any natural gas-fired water heater that is manufactured after January 1, 2011, and that emits more than 10 nanograms of nitrogen oxides (calculated as NO<sub>2</sub>) per joule of heat output.

**9-6-302 Certification of Water Heaters:** No person shall sell, install, or offer for sale within the District any water heaters subject to Section 9-6-301, 303, 304, or 305 shall be unless the water heater is certified in accordance with Sections 9-6-401, 402, and 403.

**9-6-303 Natural Gas-Fired Water Heaters or Steam Boilers with a Rated Heat Input Capacity of 75,001 up to 2,000,000 BTU/Hour:**

303.1 No person shall sell, install, or offer for sale within the District any natural gas-fired water heater with an input rating from 75,001 to 400,000 BTU/Hour, inclusive, manufactured after January 1, 2008, that emits more than 40 nanograms of nitrogen oxides (calculated as NO<sub>2</sub>) per joule of heat output.

303.2 No person shall sell, install, or offer for sale within the District any natural gas-fired water heater with an input rating from 75,001 to 400,000 BTU/Hour, inclusive, manufactured after January 1, 2013, that emits more than 14 nanograms of nitrogen oxides (calculated as NO<sub>2</sub>) per joule of heat output.

303.2 No person shall sell, install, or offer for sale within the District any natural gas-fired water heater or steam boiler with an input rating from 400,001 up to but not including 2,000,000 BTU/Hour, manufactured after January 1, 2008, that emits more than 20 nanograms of nitrogen oxides (calculated as NO<sub>2</sub>) per joule of heat output.

303.2 No person shall sell, install, or offer for sale within the District any natural gas-fired water heater or steam boiler with an input rating from 400,001 up to but not including 2,000,000 BTU/Hour, manufactured after January 1, 2013, that emits more than 14 nanograms of nitrogen oxides (calculated as NO<sub>2</sub>) per joule of heat output.

**9-6-304 Natural Gas-Fired Water Heaters Used Exclusively to Heat Swimming Pools, Hot Tubs or Spas:**

304.1 No person shall sell, install, or offer for sale within the District any natural gas-fired water heater used exclusively to heat swimming pools, hot tubs or

spas, that is manufactured after January 1, 2008, and that emits more than 40 nanograms of nitrogen oxides (calculated as NO<sub>2</sub>) per joule of heat output.  
304.2 No person shall sell, install, or offer for sale within the District any natural gas-fired water heater used exclusively to heat swimming pools, hot tubs or spas, with an input rating from 75,001 up to but not including 2,000,000 BTU/Hour, manufactured after January 1, 2013, that emits more than 14 nanograms of nitrogen oxides (calculated as NO<sub>2</sub>) per joule of heat output.

**9-6-305 Mobile Home Natural Gas-Fired Water Heaters:** No person shall sell, install, or offer for sale within the District any mobile home natural gas-fired water heater manufactured after January 1, 2008, that emits more than 40 nanograms of nitrogen oxides (calculated as NO<sub>2</sub>) per joule of heat output.

**9-6-400 ADMINISTRATIVE REQUIREMENTS**

**9-6-401 Certification:** The manufacturer shall demonstrate that each water heater model it produces that is subject to the requirements of Section 9-6-301, 303, 304, or 305 has been tested in accordance with the following procedures:

- 401.1 The measurement of nitrogen oxides emissions shall be conducted in accordance with the Manual of Procedures, Volume IV, Method ST-13B or EPA Reference Method RM-7 (40 CFR Part 60, Appendix A, Test Method 7, including 7A-E).
- 401.2 Each tested water heater shall be operated in accordance with Section 2.4 of American National Standards ANSI Z21.10.1-1990 at normal test pressure, input rates, and with a five-foot exhaust stack installed during the nitrogen oxides emissions tests.
- 401.3 The following procedure shall be used to calculate the NO<sub>x</sub> emission rate in nanograms of NO<sub>x</sub> per joule of heat output:

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

Where:

- N = NO<sub>x</sub> Emission Rate in nanograms of NO<sub>x</sub> emitted per joule of heat output
- P = Concentration of NO<sub>x</sub> in the flue gas in parts per million (volume)
- U = Dry volume percent of CO<sub>2</sub> in flue gas necessary for stoichiometric combustion
- H = Gross heating value of the gas, BTU/Cu Ft (at 60°F and 30"Hg)
- C = Dry volume percent of CO<sub>2</sub> in flue gas
- E = Recovery efficiency, percentage, as defined in Section 6.1.3 of the Code of Federal Regulation, Title 10, Part 430, Subpart B, Appendix E

401.4 The manufacturer may submit to the District an approved SCAQMD certification in lieu of conducting duplicative certification tests.

**9-6-402 Compliance Statement:** Each manufacturer shall submit to the APCO a written statement certifying verifying that the water heaters the manufacturer seeks to certify for use under subject to this rule complies are in compliance with the applicable provisions of Section 9-6-301, 303, 304, or 305. The statement shall be signed, dated, and attest to the accuracy of all information submitted to the APCO under this section and Section 9-6-401. The statement shall include the brand name, model number, and the input rating as it appears on the water heater rating plate. The manufacturer shall inform their wholesaler and/or retailer of the District's certification requirement.

**9-6-403 Identification:** The water heater manufacturer shall display the model number of a water heater complying with this rule on the shipping carton and on the rating plate of each unit.

**9-6-600 MANUAL OF PROCEDURES**

**9-6-601** **Determination of Emissions:** Emissions of oxides of nitrogen from water heaters subject to Section 9-6-301, 303, 304, or 305 shall be tested in accordance with the South Coast Air Quality Management District Protocol: "Nitrogen Oxides Emission Compliance Testing for Natural Gas-Fired Water Heaters and Small Boilers, January 1995". ~~measured as prescribed in the Manual of Procedures, Volume IV, Section St-13B or EPA Reference Method RM-7 (40 CFR Part 60, Appendix A, Test Method 7, including 7A-E).~~