

## Rule 1121

### Natural Gas-Fired Water Heaters

#### (A) General

##### (1) Purpose

- (a) The purpose of this rule is to limit Oxides of Nitrogen (NO<sub>x</sub>) emissions from residential types of natural gas-fired water heaters.

##### (2) Applicability

- (a) This rule applies to manufacturers, distributors, retailers, and installers of natural gas-fired Water Heaters, located within the Federal Ozone Non-Attainment Area (FONA), with Heat Input rates less than 75,000 BTU per hour.

#### (B) Definitions

The definitions contained in Mojave Desert Air Quality District (District) Rule 102 – *Definition of Terms* shall apply unless the term is otherwise defined herein. Defined terms are capitalized for ease of recognition.

- (1) “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.
- (2) “Input Rating” - The amount of energy a water heater consumes in one hour (BTU/Hour).
- (3) “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vessel manufactured exclusively for mobile home use in which water is heated by combustion of Gaseous Fuel and is withdrawn for use external to the vessel at pressures not exceeding 160 psig, including the apparatus by which heat is generated and all controls and devices necessary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).
- (4) “Recreational Vehicle” - 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.
- (5) “Water Heater” - A closed vessel other than a Mobile Home Water Heater in which water is heated by combustion of Gaseous Fuel and is withdrawn for use external to the vessel at pressures not exceeding 160 psig, including the apparatus by which heat is generated and all controls and devices necessary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

No person shall manufacture for sale, distribute, sell, offer for sale, or install within the District's FONAs:

- (1) Natural gas-fired Water Heaters that emit NO<sub>x</sub>:
  - (a) In excess of 10 nanograms of NO<sub>x</sub> (calculated as NO<sub>2</sub>) per joule of Heat Output (23 lbs. per billion BTU); or
  - (b) In excess of 15 ppmv at 3% O<sub>2</sub>, dry (17.5 lb. per billion BTU of Heat Input); or
  - (c) Which are not certified in accordance with Section (D).
- (2) Natural gas-fired Mobile Home Water Heaters that emit NO<sub>x</sub>:
  - (a) In excess of 40 nanograms of NO<sub>x</sub> (calculated as NO<sub>2</sub>) per joule of Heat Output (93 lbs. per billion BTU); or
  - (b) In excess of 55 ppmv at 3% O<sub>2</sub>, dry (71 lb. per billion BTU of Heat Input); or
  - (c) Which are not certified in accordance with Section (D).
- (3) The manufacturer of any natural gas-fired 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.
- (4) Notwithstanding the requirements in Sections (C)(1) and (C)(2), until July 1, 2026, any person may distribute, sell, offer for sale, or install within the District, any natural gas-fired water heater that was manufactured prior to January 1, 2026.

## (D) Certification

- (1) The manufacturer shall demonstrate that each water heater model subject to the requirements of Section (C) has been tested in accordance with EPA Reference Test Method 7E, 40 CFR Part 60, Appendix A.
- (2) On or after July 1, 2026 all-natural gas-fired Water Heaters sold, offered for sale or installed shall be tested and certified by the manufacturer to comply with the provisions of Section (C) of this rule. Each water heater undergoing testing shall be operated in accordance with Section 2.4 of American National Standards ANSI Z21.10.1-1990, Z21.10.3-2004, or Z21.56-2006, as applicable, at normal test

pressure, Input Rates, and with a five-foot exhaust stack installed during the nitrogen oxides emission tests.

- (3) The following formula shall be used to calculate the emissions of NO<sub>x</sub> in nanograms of NO<sub>x</sub> per Joule of Heat Output:

$$N = (4.566 \times 10^4 \times P \times U) / (H \times C \times E)$$

Where:

N	=	NO <sub>x</sub> emission rate in nanograms of NO <sub>x</sub> emitted per Joule of Heat Output
4.566 x 10 <sup>4</sup>	=	unit conversion factor (ppm to nanograms and BTU to Joules)
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

- (4) The manufacturer may submit to the APCO an approved South Coast Air Quality Management District Rule 1121 (Control of NO<sub>x</sub> from Residential Type, Natural Gas-Fired Water Heaters), certification in lieu of conducting duplicative certification tests pursuant to Section (D).
- (5) All test methods referenced in this section shall be those incorporated by reference into the Federal Register or by USEPA for use in State Implementation Plan (SIP) rules.
- (6) Alternative Test Methods
- (a) Other test methods demonstrated to provide results that are acceptable for purposes of determining compliance with any provisions of this rule may also be used after review and approval in writing by the District, CARB and USEPA.

(E) Enforcement

The Executive Officer may periodically inspect distributors, retailers, and installers of natural gas-fired water heaters located in the District and conduct such tests as are deemed necessary to insure compliance with Section (C).

(F) Exemptions

The provisions of this rule shall not apply to:

- (1) Water heaters using fuels other than California Public Utility Commission quality natural gas.
- (2) Natural gas-fired water heaters used in Recreational Vehicles.