



Model Rule: NO_x Standards for Water Heaters

February 7, 2023

Section XX. NO_x Emissions Control Requirements for Water Heaters

(a) Purpose and Applicability.

This section limits emissions of nitrogen oxides from covered water heaters with a rated heat input capacity of 2,000,000 BTU per hour or less that are sold or offered for sale in [jurisdiction] for use in [jurisdiction] or installed in [jurisdiction] and applies to manufacturers, refurbishers, distributors, retailers, and installers of water heaters.

(b) Definitions.

- (1) “BTU” means British thermal units.
- (2) “Category 1 water heater” means any covered water heater with a rated heat input capacity of 75,000 BTU per hour or less that is designed to combust methane, excluding mobile home water heaters.
- (3) “Category 2 water heater” means any covered water heater with a rated heat input capacity of greater than 75,000 BTU per hour and no more than 2,000,000 BTU per hour that is designed to combust methane, excluding mobile home water heaters.
- (4) “Category 3 water heater” means a mobile home water heater designed to combust methane, propane, or heating oil and any other covered water heater that is not a Category 1 or Category 2 water heater and is designed to combust propane or heating oil.
- (5) “Certification status” means, for a covered water heater, information showing, if applicable, in a format specified by the [Commissioner/Secretary of jurisdiction]:
 - (i) Whether the model of the water heater is certified in [jurisdiction] under subsection (d) of this section; and
 - (ii) If so, the lowest amount of nanograms of nitrogen oxides emissions (calculated as NO₂) per joule of heat output for which the model is so certified.
- (6) “Combination heater” means a water heater that is designed and manufactured exclusively to heat potable water directly within the appliance and to provide space heating directly or indirectly by distributing heated fluid to either a fan coil or similar appliance for space heating purposes and that is designed so that the heating fluid

temperature cannot exceed 210 degrees Fahrenheit (99 degrees Celsius) under any circumstances during normal operation.¹

(7) “Covered water heater” means any water heater with a rated heat input capacity of 2,000,000 BTU per hour or less, except for the following water heaters:

(i) Water heaters that are designed and manufactured exclusively to heat water for use in an industrial process.

(ii) Water heaters that are designed and manufactured exclusively to heat water for space heating.

(iii) Combination heaters.

(iv) Pool heaters.

(v) Water heaters designed and manufactured exclusively for installation and use in a recreational vehicle.

(vi) [Additional exceptions chosen by jurisdiction – adjust category definitions as needed.]

(8) “Distributor” means a person who purchases or obtains a water heater from a manufacturer, refurbisher, or other person for resale. A distributor may also be a manufacturer, refurbisher, retailer, or installer.

(9) “Heat input” means the heat of combustion released by fuels burned in a water heater based on the higher heating value of fuel. This does not include the enthalpy of incoming combustion air.²

(10) “Heat output” means the enthalpy of the working fluid output of a water heater, which is computed as required in Section 9.3 of the Protocol as the term H_o or computed as required in any other certification testing method determined by [Commissioner/Secretary of jurisdiction] to be acceptable.³

(11) “Heating oil” means a distillate fuel oil that has distillation temperatures of 400 degrees Fahrenheit (204 degrees Celsius) at the 10-percent recovery point and 640 degrees Fahrenheit (338 degrees Celsius) at the 90-percent recovery point and meets the specifications defined in ASTM Specification D 396.⁴

(12) “Independent testing laboratory” means a testing laboratory that is approved by the South Coast Air Quality Management District, or the [Commissioner/Secretary of jurisdiction] in her/his sole discretion, to conduct certification testing under the Protocol or any other certification testing method that the [Commissioner/Secretary of

¹ Based on definition in ANSI Z21.10.1-2017/C.S.A. 4-1-2017: Gas water heaters, volume I, storage water heaters with input ratings of 75,000 Btu per hour or less, and ANSI Z21.10.3-2017/C.S.A. 4.3-2017: Gas-fired water heaters, volume III, storage water heaters with input ratings above 75,000 Btu per hour, circulating and instantaneous.

² Based on BAAQMD Rule 9-6-204 and SCAQMD Rule 1121(b)(3).

³ Based on SCAQMD Rule 1146.2(b)(8).

⁴ Based on USEIA Glossary definition.

jurisdiction] determines to be acceptable.

(13) “Installer” means a person who puts a water heater in place and ready for use. An installer may also be a manufacturer, refurbisher, distributor, or retailer.

(14) “Instantaneous water heater” means a water heater that heats water only when it flows through a heat exchanger. Instantaneous water heaters are sometimes referred to as tankless water heaters or on-demand water heaters.⁵

(15) “Joule” means a unit of work or energy equal to the work done by a force of one newton acting through one meter.

(16) “Manufacturer” means a person who produces, assembles, or imports a new water heater for sale. A manufacturer may also be a refurbisher, distributor, retailer, or installer.⁶

(17) “Methane” means a mixture of gaseous hydrocarbons containing at least 80 percent methane by volume as determined according to Standard Method ASTM D1945 (2003).⁷

(18) “Mobile home” means any dwelling that is designed to be made mobile and manufactured or constructed to provide a permanent residence for one or more persons.

(19) “Mobile home water heater” means a water heater designed and manufactured exclusively for use in a mobile home.

(20) “Model” means, for water heaters other than refurbished water heaters, a group of identical or essentially identical water heaters produced, assembled, or imported by a manufacturer or, for refurbished water heaters, a group of previously manufactured water heaters that, after repair or improvement by a refurbisher, are identical or essentially identical.

(21) “Nitrogen oxides” or “NO_x” means the sum of nitric oxide and nitrogen dioxide in the flue gas.

(22) “Person” means any individual, public or private corporation, partnership, association, firm, limited liability company, trust, or estate, government agency, department, or bureau, political subdivision, municipality, or any legal entity whatsoever.

(23) “Pool heater” means a water heater that is designed and manufactured exclusively to heat water for use in a pool, spa, sauna, or hot tub.⁸

(24) “Propane” means a normally gaseous paraffinic compound (C₃H₈).⁹

⁵ Based on SCAQMD Rule 1146.2(b)(10).

⁶ Based on USDOE definitions of “manufacture” and “manufacturer” in 10 CFR 431.2.

⁷ Based on BAAQMD Rule 9-4-205.

⁸ Based on SCAQMD Rule 1146.2(b)(12).

⁹ Based on USEIA Glossary definition.

(25) “Protocol” means the South Coast Air Quality Management District’s protocol, “Nitrogen Oxides Emissions Compliance Testing for Natural Gas-Fired Water Heaters and Small Boilers” (amended January 1998) or the most current version as amended.

(26) “Rated heat input capacity” means the maximum heat input capacity specified on the nameplate of a water heater.

(27) “Recreational vehicle” means a motor home, travel trailer, truck camper, or camping trailer, with or without motive power, designed and manufactured exclusively for temporary human habitation for recreational, emergency, or other occupancy.¹⁰

(28) “Refurbisher” means a person who repairs or improves a previously manufactured water heater for sale. A refurbisher may also be a manufacturer, distributor, retailer, or installer.

(29) “Refurbished water heater” means a previously manufactured water heater that is repaired or improved.

(30) “Retailer” means a person who sells a water heater to another person for use. A retailer may also be a manufacturer, refurbisher, distributor, or installer.

(31) “Sell or offer to sell in [jurisdiction]” means, regarding a water heater, transfer or offer to transfer, in [jurisdiction], ownership of the water heater.

(32) “South Coast Air Quality Management District” means the air quality agency located in southern California that is recognized by the United States Environmental Protection Agency and the State of California as having authority to regulate air pollution sources within a defined geographic area encompassing large portions of Los Angeles, Orange, Riverside, and San Bernardino counties.

(33) “Tank type water heater” means a water heater with an integral closed vessel in which water is heated and stored for use external to the vessel. Tank type water heaters are sometimes referred to as storage tank water heaters.¹¹

(34) “Water heater” means equipment that is used solely to heat water for use external to the equipment and qualifies as tank type or instantaneous. Water heater includes new, pre-owned, or refurbished equipment.¹²

¹⁰ Based on SCAQMD Rule 1121(b)(13).

¹¹ Based on SCAQMD Rule 1146.2(b)(21). SCAQMD uses term “tank type”, while BAAQMD Rule 9-6-214 uses term “storage tank”.

¹² Based on SCAQMD Rule 1146.2(b)(27).

(c) NO_x Emissions Limits.

- (1) No person shall sell or offer to sell in [jurisdiction] for use in [jurisdiction] or install in [jurisdiction] any Category 1 water heater on or after the compliance date[s] in Column A of Table 1 unless the model of such water heater is certified under subsection (d) of this section to emit nitrogen oxides at a rate less than or equal to the emissions limit in Column B of the corresponding row of Table 1, except that
- (i) *Sell-through provision.* Notwithstanding the prohibition in this paragraph, any Category 1 water heater manufactured or refurbished before one or more such compliance dates may be sold or offered for sale in [jurisdiction] for use in [jurisdiction] or installed in [jurisdiction] within [180 days] after the first such compliance date for which its model lacks certification for the corresponding emissions limit.

Table 1: Emissions limit[s] for Category 1 water heaters

A. Compliance date[s]	B. Emissions limit[s]
[date 24 months after rule promulgation]	[10 nanograms of NO _x (calculated as NO ₂) per joule of heat output] ¹³
[January 1, 2030]	[7 nanograms of NO _x (calculated as NO ₂) per joule of heat output]
January 1, [2035]	[0] nanograms of NO _x (calculated as NO ₂) per joule of heat output

- (2) No person shall sell or offer to sell in [jurisdiction] for use in [jurisdiction] or install in [jurisdiction] any Category 2 water heater on or after the compliance date[s] in Column A of Table 2 unless the model of such water heater is certified under subsection (d) of this section to emit nitrogen oxides at a rate less than or equal to the emissions limit in Column B of the corresponding row of Table 2, except that
- (i) *Sell-through provision.* Notwithstanding the prohibition in this paragraph, any Category 2 water heater manufactured or refurbished before one or more such compliance dates may be sold or offered for sale in [jurisdiction] for use in [jurisdiction] or installed in [jurisdiction] within [180 days] after the first such compliance date for which its model lacks certification for the corresponding emissions limit.

¹³ Based on the format in BAAQMD Rule 9-6-301.4 and SCAQMD Rule 1121(c)(4).

Table 2: Emissions limit[s] for Category 2 water heaters

A. Compliance date[s]	B. Emissions limit[s]
[date 24 months after rule promulgation]	[14 nanograms of NO _x (calculated as NO ₂) per joule of heat output]
[January 1, 2030]	[7 nanograms of NO _x (calculated as NO ₂) per joule of heat output]
January 1, [2035]	[0] nanograms of NO _x (calculated as NO ₂) per joule of heat output

(3) No person shall sell or offer to sell in [jurisdiction] for use in [jurisdiction] or install in [jurisdiction] any Category 3 water heater on or after the compliance date[s] in Column A of Table 3 unless the model of such water heater is certified under subsection (d) of this section to emit nitrogen oxides at a rate less than or equal to the emissions limit in Column B of the corresponding row of Table 3, except that

- (i) *Sell-through provision.* Notwithstanding the prohibition in this paragraph, any Category 3 water heater manufactured or refurbished before [one or more] such compliance date[s] may be sold or offered for sale in [jurisdiction] for use in [jurisdiction] or installed in [jurisdiction] within [180 days] after [the first] such compliance date [for which its model lacks certification for the corresponding emissions limit].

Table 3: Emissions limit[s] for Category 3 water heaters

A. Compliance date[s]	B. Emissions limit[s]
January 1, [2035]	[0] nanograms of NO _x (calculated as NO ₂) per joule of heat output

(4) *Safe harbor provision.* A manufacturer, refurbisher, or distributor who sells or offers to sell in [jurisdiction] a covered water heater whose model is not certified under subsection (d) of this section to meet the applicable NO_x emissions limit in Table 1, Table 2, or Table 3 of this subsection shall not be in violation of paragraph (1), (2), or (3) of this subsection (including the applicable sell-through provision) regarding such water heater if:

- (i) The manufacturer or distributor can demonstrate that:
- (a) The water heater is intended for shipment and installation outside of [jurisdiction]; and
 - (b) It has taken reasonable, prudent precautions to assure that the water heater is not sold for installation in [jurisdiction]; and
- (ii) the water heater was not sold by any person to a retail outlet in [jurisdiction].¹⁴

¹⁴ Based on 17 CCR §94510(b) (consumer products) and 30 Texas Admin. Code §117.3203(5) and 117.3205(b) (water heaters).

(d) Certification Procedures.

- (1) A manufacturer may request certification from the [Commissioner/Secretary of jurisdiction] that one or more of its models of new water heaters comply, and a refurbisher may request certification from the [Commissioner/Secretary of jurisdiction] that one or more of its models of refurbished water heaters comply, with one or more applicable emissions limits in Table 1, Table 2, or Table 3 of subsection (c) of this section by submitting:
 - (i) The certification information specified in subsection (e) of this section; or
 - (ii) Proof that the model(s) have a currently valid certification by any of the following authorities that they emit nitrogen oxides at a rate less than or equal to one or more such emissions limits:
 - (a) South Coast Air Quality Management District; or
 - (b) Any other air pollution control agency that is designated by the [Commissioner/Secretary of jurisdiction] in her/his sole discretion as having acceptable emissions testing and certification requirements for water heaters;
 - (c) Provided that, if such air pollution control agency subsequently requires that the model(s) be recertified regarding such emissions limit(s), the manufacturer or refurbisher must request recertification from the [Commissioner/Secretary of jurisdiction] by submitting proof of the air pollution control agency's recertification.
- (2) The [Commissioner/Secretary of jurisdiction] may approve a request for certification under subparagraph (1)(i) of this subsection and certify the model(s) of water heater involved as in compliance with one or more applicable emissions limits in Table 1, Table 2, or Table 3 of subsection (c) of this section if the [Commissioner/Secretary of jurisdiction] determines in her/his sole discretion that the submitted certification information demonstrates such compliance.
- (3) A request for certification under subparagraph (1)(ii) of this subsection shall be deemed approved, and the model(s) of water heater involved shall be deemed certified as in compliance with one or more applicable emissions limits in Table 1, Table 2, or Table 3 of subsection (c) of this section, by the [Commissioner/Secretary of jurisdiction] unless, within [90 days] of receipt of the request, the [Commissioner/Secretary of jurisdiction] requests more information from the manufacturer or refurbisher or determines in her/his sole discretion that the certification is not based on emissions test results demonstrating such compliance.

(e) Certification Information.

- (1) Any manufacturer or refurbisher requesting certification of one or more of its models of water heater under subparagraph (d)(1)(i) of this section shall submit to the [Commissioner/Secretary of jurisdiction] the following information in an electronic format specified by the [Commissioner/Secretary of jurisdiction]:
 - (i) A statement that each model complies with one or more applicable emissions limits in Table 1, Table 2, or Table 3 of subsection (c) of this section and an explanation of how the model achieves compliance;
 - (ii) Name and address of the manufacturer or refurbisher;
 - (iii) Brand name, product line, and model number of each model;
 - (iv) A description of each model in terms of rated heat input capacity and fuel(s) that the model is designed to combust;
 - (v) For any model designed to combust methane, a source test report verifying compliance with one or more applicable emissions limits in Table 1, Table 2, or Table 3 of subsection (c) of this section. The report shall be prepared by an independent testing laboratory and shall contain, for the water heater(s) tested:
 - (a) All the elements identified in the forms in Section 10.2 of the Protocol, or in the provision of other certification testing method(s) determined by [Commissioner/Secretary of jurisdiction] to be acceptable, and applicable to the model; and
 - (b) The following statement signed and dated by the person responsible for the report at the independent testing laboratory: “Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information in this source test report are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant civil and criminal penalties for submitting false statements or information or omitting required statements or information, including the possibility of fine or imprisonment.”; and
 - (vi) The following statement signed and dated by a managerial level employee responsible for the certification request at the manufacturer or refurbisher: “Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information in this request for certification are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant civil and criminal penalties for submitting false statements or information or omitting required statements or information, including the possibility of fine or imprisonment.”

(f) Enforcement and Penalties.

- (1) The [Commissioner/Secretary of jurisdiction] or her/his agent may periodically, as the [Commission/Secretary of jurisdiction] or her/his agent deems necessary to ensure compliance with this section, conduct on-site inspections (including inspection of records) in [jurisdiction] of manufacturers, refurbishers, distributors, retailers, or installers.
- (2) If [jurisdiction] determines that a manufacturer, refurbisher, distributor, retailer, or installer or other person is in violation of any provision of this section, that violation is subject to [daily] fines and penalties according to [jurisdiction's authority].
- (3) For purposes of this subsection, a violation constitutes a separate violation with respect to each water heater involved, except that the maximum fines and penalties per person shall not exceed [x] thousand dollars for any related series of violations, according to [jurisdiction's authority].
- (4) For purposes of this subsection, fines or penalties may be levied against an installer who installs a water heater in violation of this section but not against such installer's non-managerial employee(s), if any, who perform such installation.
- (5) [Fines and penalties collected under this subsection may be used for supplemental environmental programs to offset the cost of water heater replacements in low-income homes according to jurisdiction's authority to use fines and penalties for purposes related to this regulation.]

(g) Record Keeping, Reporting, and Labeling Requirements.

- (1) Starting on [date 24 months after rule promulgation], a manufacturer or refurbisher who sells in [jurisdiction] any covered water heater (including any such water heater that is intended for shipment and installation outside of [jurisdiction]) shall:
 - (i) Maintain, for at least [5] years from the later of the date of creation of the record or the date of manufacture or refurbishing of the water heater, copies of all measurements, tests, reports, logs, and other records necessary to demonstrate compliance with this section, including the following, and make these records or information available to [jurisdiction] upon request:
 - (a) For each water heater, all records addressing any information submitted by the manufacturer or refurbisher under subsection (d) or (e) of this section about the model of the water heater;
 - (b) For each water heater, its brand name, product line, model number, serial number, date of manufacture or refurbishment, certification status, date of sale by the manufacturer or refurbisher, and date and destination (including recipient and address) of shipment by the manufacturer or refurbisher.
- (2) Starting on [date 24 months after rule promulgation], a manufacturer or refurbisher who sells or offers to sell in [jurisdiction] for use in [jurisdiction] any covered water heater shall display:

- (i) On the individual shipping container of each water heater, its brand name, product line, model number, serial number, date of manufacture or refurbishment, and certification status; and
 - (ii) On a nameplate permanently affixed to each water heater and in a format specified by [Commissioner/Secretary in jurisdiction], its model number, serial number, maximum heat input capacity, date of manufacture or refurbishment, and certification status.
- (3) Starting on [date 24 months after rule promulgation], a distributor who sells in [jurisdiction] any covered water heater (including any such water heater that is intended for shipment and installation outside of [jurisdiction]) shall:
 - (i) Maintain for at least [5] years from the later of the date of creation of the record or the date of sale of the water heater, copies of all records necessary to demonstrate compliance with this section, including the following, and make these records or information available to [jurisdiction] upon request:
 - (a) For each water heater, the brand name, product line, model number, serial number, date of manufacture or refurbishment, certification status, date of sale by the distributor, and date and destination (recipient and address) of shipment by the distributor.
- (4) Starting on [date 24 months after rule promulgation], a retailer who sells in [jurisdiction] any covered water heater (including any such water heater that is intended for shipment and installation outside of [jurisdiction]) shall:
 - (i) Maintain, for at least [5] years from the later of the date of creation of the record or the date of sale of the water heater, copies of all records necessary to demonstrate compliance with this section, including the following, and make these records or information available to [jurisdiction] upon request:
 - (a) For each water heater, the brand name, product line, model number, serial number, date of manufacture or refurbishment, certification status, date of sale by the retailer, and date and destination (recipient and address) of shipment by the retailer.
- (5) A manufacturer, refurbisher, distributor, or retailer, as applicable who makes available to [jurisdiction] upon request any record or information under paragraph (1), (3), or (4) of this subsection shall provide to [jurisdiction], along with such record or information, the following statement signed and dated by a managerial level employee responsible for responding to the request at the manufacturer, refurbisher, distributor, or retailer: “Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the records or information provided, as applicable, are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant civil and criminal penalties for submitting false statements or information or omitting required statements or information, including the possibility of fine or imprisonment.”