REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 6
NITROGEN OXIDES EMISSIONS FROM NATURAL GAS-FIRED BOILERS AND WATER HEATERS

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REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 6
NITROGEN OXIDES EMISSIONS FROM NATURAL GAS-FIRED BOILERS AND WATER HEATERS

(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 and boilers.

(Amended November 7, 2007)

9-6-102 Applicability: This Rule applies to any person who sells, purchases, installs, or offers for sale a natural gas-fired water heater ~~for use~~ within the District (Section 9-6-300s Standards and Section 9-6-500s Monitoring and Records) and any manufacturer who ~~intends to~~ sells or distributes for sale or installation a natural gas-fired water heater for use within the District (Section 9-6-400s Administrative Requirements, Section 9-6-500s Monitoring and Records, and Section 9-6-600s Manual of Procedures).

(Adopted March 15, 2023)

9-6-110 Exemptions: The requirements of Sections 9-6-301 and 9-6-303.5 shall not apply to the following:

110.1 Natural gas-fired boilers and water heaters with a rated heat input capacity of greater than 2,000,000 BTU/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 pool/spa heaters with less than 400,000 Btu/Hour rated heat input capacity used exclusively to heat swimming pools, hot tubs or spas.

(Amended November 7, 2007)

9-6-111 Limited Exemptions for Qualifying Projects: Notwithstanding the limitations of Sections 9-6-301.5 and 9-6-303.5, any person may install a natural gas-fired water heater that does not meet the requirements specified in Sections 9-6-301.5 and/or 9-6-303.5 in the following circumstances, provided they obtain an Exemption Certificate pursuant to Section 9-6-405 prior to installation; and any person may sell or purchase a water heater that does not meet the requirements specified in Sections 9-6-301.5 and/or 9-6-303.5 for installation in such circumstances upon presentation of such Exemption Certificate.

111.1 Qualifying Businesses with Specialized Applications and High Hot Water Demand – Installation of a water heater at a business that is classified as a Restaurant, Food Service, Laundry, Dry Cleaner, Healthcare or Assisted Living business, as stated on the business license.

111.2 Ventilation Space Constraint (One-Time) – One-time replacement of an existing natural gas-fired water heater in an enclosed space that (i) is less than 700 cubic feet in volume and (ii) cannot be fitted with a louvered door, transfer grille or air duct(s) because it is not adjacent to a space of greater than 700 cubic feet in volume.

111.3 Ceiling Height Space Constraint (One-Time) – One-time replacement of an existing natural gas-fired water heater in (i) a garage with a ceiling height less than 7.2 feet high or (ii) any other indoor space with ceiling height less than 6 feet high.

111.4 Low-Income Program Qualified Property Owner – Installation of a water heater at a property owned by a person who is a participant in a Low-Income Program as defined in Section 9-6-211.

111.5 Housing Cost Burdened Property Owner – Installation of a water heater at a property owned by a person whose annual property taxes and mortgage - costs are 28 percent or more of annual household gross income.

The "One-Time" exemptions in Subsections 111.2 and 111.3 shall be limited to a single installation of a water heater that does not comply with the requirements specified in Sections 9-6-301.5 and/or 9-6-303.5 at an installation address. Once a non-compliant water heater has been installed at an address, no further non-compliant water heater may be installed at that installation address pursuant to either of the exemptions in Subsections 111.2 and 111.3 (although other exemptions may still apply).

9-6-112 **Time-Limited Exemptions for Water Heaters Larger than 30 gallons and Less than 75,000 BTU/Hour:** Notwithstanding the limitations of Section 9-6-301.5, any person may install a natural gas-fired water heater that does not meet the requirements specified in Sections 9-6-301.5 in the following circumstances, provided they obtain an Exemption Certificate pursuant to Section 9-6-405 prior to installation; and any person may sell or purchase a water heater that does not meet the requirements specified in Section 9-6-301.5 for installation in such circumstances upon presentation of such Exemption Certificate.

112.1 **Hydronic Units** – Installation of a natural gas-fired storage tank hydronic water heater manufactured prior to January 1, 2031.

112.2 **Multifamily Buildings** – Installation of a water heater manufactured prior to January 1, 2033 in a residential building containing five or more separate dwelling units with separate mailing addresses.

112.3 **Deed-Restricted Affordable Housing** – Installation of a water heater manufactured prior to January 1, 2033 in a building covered by a Federal, State, or Local Deed Restriction/Regulatory Agreement (e.g. HUD HAP, CA HCD, LITC).

9-6-113 **Limited Exemptions for Licensed Contractor Installations:** Notwithstanding the limitations of Sections 9-6-301.5 and 9-6-303.5, a Licensed Contractor may install a natural gas-fired water heater that does not meet the requirements specified in Sections 9-6-301.5 and/or 9-6-303.5 in the following circumstances, provided the Licensed Contractor obtains an Exemption Certificate pursuant to Section 9-6-405 prior to installation; and any person may sell or purchase a water heater that does not meet the requirements specified in Sections 9-6-301.5 and/or 9-6-303.5 for installation in such circumstances upon presentation of such Exemption Certificate.

113.1 **Contractor-Certified Electrical Constraints (One-Time)** – One-time installation of a water heater in a building under any of the following circumstances:

1.1 The building has knob-and-tube wiring and installation of the water heater would require more than 50 feet of conduit connecting the water heater to the electrical panel or subpanel;

1.2 The electrical panel that would serve the water heater is less than 100 amps, or is less than 60 amps for a residential building containing five or more separate dwelling units with separate mailing addresses;

1.3 The water heater would require a new 240v electrical connection with more than 50 feet of conduit; or

1.4 The electrical panel that would serve the water heater has no open circuit breaker space nor expansion slot(s).

113.2 **Contractor Temporary Replacement** – Replacement of an existing natural gas-fired water heater on a temporary basis pending permanent replacement with a compliant water heater, provided that the Licensed Contractor (i) ensures that the temporary replacement water heater is removed within 12 months after installation and (ii) complies with the reporting requirements specified in Section 9-6-406.

The "One-Time" exemption in Subsection 113.1 shall be limited to a single installation of a water heater that does not comply with the requirements specified in Sections 9-6-301.5 and/or 9-6-303.5 at an installation address. Once a non-compliant water heater has been installed at an address, no further non-compliant water heater may

be installed at that installation address pursuant to either of the exemptions in Subsection 113.1 (although other exemptions may still apply).

9-6-114 **Limited Exemption for Wholesale Sales:** The limitations of Sections 9-6-301.5 and 9-6-303.5 do not apply to wholesale sales and purchases in which sales tax is not charged.

9-6-200 DEFINITIONS

9-6-201 **Boilers and Water Heaters**: Any combustion equipment used to heat water or produce steam and that is not exclusively used to produce electricity for sale. For the purposes of this Rule, a boiler does not include any waste heat recovery boiler that is used to recover sensible heat from the exhaust of a combustion turbine or any unfired waste heat recovery boiler that is used to recover sensible from the exhaust of any combustion equipment.

(Adopted November 7, 2007)

9-6-202 **BTU**: British thermal unit or units.

(Adopted November 7, 2007)

9-6-203~~3~~ **Direct-Vent Water Heater**: A storage tank 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.

(Adopted November 7, 2007)

9-6-204 **Distributor:** Any business that sells water heaters primarily to retailers, builders, and contractors.

9-6-205 **Exemption Certificate:** A certificate with a unique authorization number issued by the Air District upon completion of registration pursuant to Section 9-6-405.

9-6-204~~6~~ **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.

(Adopted November 7, 2007)

9-6-205~~5~~7 **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.

(Renumbered November 7, 2007)

9-6-208 **Hydronic Water Heater:** A water heater serving a system that heats water and circulates it through pipes or through an air handler to provide space heating.

9-6-20~~6~~9 **Instantaneous Water Heater:** A device in which water is heated only when the water flows through a heat exchanger.

(Adopted November 7, 2007)

9-6-210 **Licensed Contractor:** A plumber, electrician, heating ventilation & air conditioning (HVAC) contractor, or general contractor licensed through the California Contractors State License Board.

9-6-211 **Low-Income Program:** Any of the following programs, or other program designated by the APCO as a "Low Income Program" eligible for an exemption under Section 9-6-111.4:

Covered California Silver 94
Covered California Silver 87
Covered California Silver 73

Medi-Cal for Adults
Medi-Cal for Pregnant Individuals
Bureau of Indian Affairs General Assistance
CalFresh/SNAP (Food Stamps)
CalWorks (TANF) or Tribal TANF
California Alternate Rates for Energy (CARE)
Family Electric Rate Assistance Program (FERA)
Free or Reduced National School Lunch Program (NSLP)
Head Start Income Eligible (Tribal Only)
Women, Infants and Children (WIC)
Supplemental Security Income (SSI)
Low Income Home Energy Assistance Program (LIHEAP)

9-6-212 **Mobile Home:** Any home that is a "manufactured home" or "mobile home" as defined in California Health and Safety Code (H&SC) Sections 18007 and 18008. Mobile home does not include a commercial modular, as defined in H&SC Section 18001.8; factory-built housing, as defined in H&SC Section 19971; a manufactured home, as defined in H&SC Section 18007; or a multifamily manufactured home, as defined in H&SC Section 18008.7.

9-6-2~~07~~13 **Mobile Home Water Heater**: A closed vessel manufactured exclusively for mobile home use in which water is heated 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 210ºF (99ºC).

(Adopted November 7, 2007)

9-6-2~~08~~14 **Natural Gas:** A mixture of gaseous hydrocarbons containing at least 80 percent methane by volume as determined according to Standard Method ASTM D1945-64.

(Renumbered November 7, 2007)

9-6-2~~09~~15 **NO_x Emissions**: The sum of nitric oxide and nitrogen dioxide in the flue gas, collectively expressed as nitrogen dioxide.

(Adopted November 7, 2007)

9-6-2~~10~~16 **Pool/Spa Heater**: A device in which water is heated when pool or spa water circulates through a heat exchanger.

(Adopted November 7, 2007)

9-6-2~~11~~17 **Power Direct-Vent Water Heater**: A storage tank water heater with an air intake duct outside of a building with a blower installed to assist in the expulsion of exhaust gases.

(Adopted November 7, 2007)

9-6-2~~12~~18 **Power-Vent Water Heater**: A storage tank water heater with an air intake duct outside of a building with a blower installed to assist in the expulsion of exhaust gases.

(Adopted November 7, 2007)

9-6-2~~13~~19 **Rated Heat Input Capacity:** The heat input capacity specified on the nameplate of the combustion unit.

(Renumbered November 7, 2007)

9-6-220 **Retailer:** Any business that purchases water heaters from manufacturers, wholesalers or distributors and sells them to individuals, including contractors, for end use and charges sales tax.

9-6-2~~14~~21 **Storage Tank Water Heater:** A closed vessel, in which water is heated 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.

9-6-300 STANDARDS

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

301.1 No person shall sell, install, or offer for sale within the District any natural gas-fired storage tank water heater, manufactured after July 1, 1992, with a rated heat input capacity of 75,000 BTU/Hour or less, that emits more than 40 nanograms of nitrogen oxides (calculated as NO_2) per joule of heat output.

301.2 No person shall sell, install, or offer for sale within the District any natural gas-fired storage tank 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_2) per joule of heat output. This subsection shall not apply to direct-vent, power-vent, power direct-vent water storage tank heaters and water heaters used for mobile homes.

301.3 No person shall sell, install, or offer for sale within the District any natural gas-fired storage tank water heater greater than ~~5~~30 gallons capacity that is manufactured after January 1, 2010, and that emits more than 10 nanograms of nitrogen oxides (calculated as NO_2) per joule of heat output. This subsection shall not apply to direct-vent, power-vent, power direct-vent storage tank water heaters and water heaters used for mobile homes.

301.4 No person shall sell, install, or offer for sale within the District any natural gas-fired storage tank water heater with a capacity of 30 gallons or smaller that is manufactured after January 1, 2011, and that emits more than 10 nanograms of nitrogen oxides (calculated as NO_2) per joule of heat output. This subsection shall not apply to water heaters used for mobile homes.

301.5 ~~No~~ Except as provided in Sections 9-6-111 through 114, no person shall purchase, sell or install~~, or offer for sale~~ within the District any natural gas-fired storage tank water heater that is manufactured after January 1, 202~~7~~8, with a capacity greater than 30 gallons and a rated heat input capacity ~~rating~~ of 75,000 BTU/hour or less, that emits more than 0 nanograms of nitrogen oxides (calculated as NO_2) per joule of heat output. This subsection shall not apply to mobile home water heaters.

(Amended 11/7/07and 3/15/23)

9-6-302 Certification of Boilers and Water Heaters: No person shall purchase, sell or install~~, or offer for sale~~ within the District any natural gas-fired boiler or water heaters subject to Section 9-6-301, 303, 304, or 305 unless the water heater manufacturer brand name and model is tested and certified in accordance with Sections 9-6-401 and 402.

(Amended November 7, 2007)

9-6-303 Natural Gas-Fired Boilers and Water Heaters with a Rated Heat Input Capacity of greater than 75,000~~1~~ to 2,000,000 BTU/Hour:

303.1 No person shall sell, install, or offer for sale within the District any large natural gas-fired boiler, storage tank water heater, or instantaneous water heater with a rated heat input capacity of greater than 75,000~~1 from~~ to 400,000 BTU/Hour~~, inclusive,~~ manufactured after January 1, 2008, that emits more than 40 nanograms of nitrogen oxides (calculated as NO_2) per joule of heat output.

303.2 No person shall sell, install, or offer for sale within the District any large natural gas-fired boiler, storage tank water heater, or instantaneous water heater with a rated heat input capacity of greater than 75,000~~1 from~~ to 400,000 BTU/Hour~~, inclusive,~~ manufactured after January 1, 2013, that emits more than 14 nanograms of nitrogen oxides (calculated as NO_2) per joule of heat output.

303.3 No person shall sell, install, or offer for sale within the District any large natural gas-fired boiler, storage tank water heater, or instantaneous water heater with a rated heat input capacity of greater than 400,000~~1 from~~ to 2,000,000 BTU/Hour~~, inclusive,~~ manufactured after January 1, 2008, that emits more

than 20 nanograms of nitrogen oxides (calculated as NO_2) per joule of heat output, or more than 30 ppm NO_x at 3% O_2, dry.

303.4 No person shall sell, install, or offer for sale within the District any large natural gas-fired boiler, storage tank water heater, or instantaneous water heater with a rated heat input capacity of greater than 400,0001 ~~from~~ to 2,000,000 BTU/Hour~~, inclusive,~~ manufactured after January 1, 2013, that emits more than 14 nanograms of nitrogen oxides (calculated as NO_2) per joule of heat output, or more than 20 ppm NO_x at 3% O_2, dry.

303.5 ~~No~~ Except as provided in Sections 9-6-111 through 114, no person shall purchase, sell or install~~, or offer for sale~~ within the District any large natural gas-fired boiler, storage tank water heater, or instantaneous water heater with a rated heat input capacity of greater than 75,0001 ~~from~~ to 2,000,000 BTU/Hour~~, inclusive,~~ manufactured after January 1, 2031~~3~~, that emits more than 0~~.0~~ nanograms of nitrogen oxides (calculated as NO_2) per joule of heat output.

(Adopted 11/7/07; Amended 3/15/23)

9-6-304 Natural Gas-Fired Mobile Home Water Heaters: No person shall sell, install, or offer for sale within the District any natural gas-fired mobile home water heater manufactured after January 1, 2008, that emits more than 40 nanograms of nitrogen oxides (calculated as NO_2) per joule of heat output.

(Adopted November 7, 2007)

9-6-305 Natural Gas-Fired Pool/Spa Heaters:

305.1 No person shall sell, install, or offer for sale within the District any natural gas-fired pool/spa heater with an input rating from 400,001 to 2,000,000 BTU/Hour, inclusive, manufactured after January 1, 2008, that emits more than 40 nanograms of nitrogen oxides (calculated as NO_2) per joule of heat output, or more than 55 ppm NO_x at 3% O_2, dry.

305.2 No person shall sell, install, or offer for sale within the District any natural gas-fired pool/spa heater with an input rating from 400,001 to 2,000,000 BTU/Hour, inclusive, manufactured after January 1, 2013, that emits more than 14 nanograms of nitrogen oxides (calculated as NO_2) per joule of heat output, or more than 20 ppm NO_x at 3% O_2, dry.

(Adopted November 7, 2007)

9-6-400 ADMINISTRATIVE REQUIREMENTS

9-6-401 Compliance with Emissions Standards: The manufacturer shall obtain confirmation from an independent testing laboratory that each boiler or water heater model it intends to sell or distribute for sale into the District that is subject to the requirements of Sections 9-6-301, 303, 304, or 305 has been tested in accordance with the procedures in Section 9-6-601.

(Amended November 7, 2007)

9-6-402 ~~Compliance Statement~~Equipment Certification: To certify a boiler or water heater for sale and installation in the District pursuant to Section 9-6-302, the manufacturer shall submit to the APCO either of the following:

402.1 The manufacturer shall submit a statement to the APCO that ~~each~~ the boiler or water heater model meets the emission standard set forth in Section 9-6-301 or 303. The compliance statement must:

~~402.~~1.1 Provide the following general information: name and address of manufacturer, brand name, trade name, model number and heat input rating as it appears on the water heater rating plate.

~~402.~~1.2 Provide a description of the model being certified.

~~402.~~1.3 Include a complete certification source test report demonstrating that the boiler or water heater model was tested in accordance with procedures in Section 9-6-601 and a written statement that the

model complies with Section 9-6-301.1 through 301.4, 303.1 through 303.4, 304, or 305.

~~402.~~1.4 Be submitted to the APCO no more than 90 days after the date of the emissions compliance test conducted in accordance with Section 9-6-401.

~~402.~~1.5 Be submitted to the APCO no less than 90 days before ~~the intention to~~ selling or distributing~~e~~ a new water heater model within the District, or no less than 90 days before the effective dates in Section 9-6-301.1 through 301.4, 303.1 through 303.4, 304, or 305.

402.2 The manufacturer shall submit to the APCO an approved South Coast Air Quality Management District (SCAQMD) certification issued pursuant to SCAQMD Rules 1121 and 1146.2 to demonstrate compliance with Section 9-6-301.1 through 301.4, 303.1 through 303.4, 304, or 305.

(Amended 11/7/07 and 3/15/23)

9-6-403 **Identification:** ~~The water heater manufacturer shall display~~ No person shall sell, install, or offer for sale within the District any natural gas-fired water heater subject to Section 9-6-301, 303, 304, or 305 unless the model number, ~~and~~ certification status, and date of manufacture of ~~a~~ the water heater ~~complying with this rule~~ is displayed on the shipping carton and on the rating plate of ~~each~~ the unit.

(Amended November 7, 2007)

9-6-404 **Interim Report:** At least two years prior to the compliance date listed in Section~~s~~ 9-6-~~301.5 and~~ 303.5, the APCO shall present to the Air District Board of Directors for consideration at a public meeting a report that includes the technology options currently (and projected to be) available to be sold, installed or offered for sale that do not conflict with the standard in Section 9-6-301.3; the projected costs of purchase and installation of such technology, including any ancillary costs, as applicable; any incentive programs available to reduce these costs; and infrastructure readiness associated with rule compliance.

(Adopted March 15, 2023)

9-6-405 **Exemption Certificate Requirements for Non-Compliant NOx-Emitting Equipment:** A person seeking an Exemption Certificate to authorize the installation, sale, and purchase of a water heater that does not meet the requirements specified in Sections 9-6-301.5 or 9-6-303.5 shall apply to the APCO, provide the following information, and certify that the information is true and accurate:

405.1 Address where the NOx-emitting water heater will be installed

405.2 Applicant name and contact information

405.3 Information required by the APCO to demonstrate applicability of an exemption under Sections 9-6-111 through 114.

Upon receipt of a complete application with information demonstrating eligibility for an exemption under Sections 9-6-111 through 9-6-114, the APCO shall issue an Exemption Certificate allowing the installation, sale, and purchase of one non-compliant NOx-emitting water heater.

9-6-406 **Reporting Requirements for Temporary Replacement Loaners:** Any Licensed Contractor that has purchased a NOx emitting water heater under the exemption in Section 9-6-113.2 shall report the serial number of each water heater purchased pursuant to the exemption, its Exemption Certificate number, and any address that the unit was installed at during the prior year to the APCO by January 31st of each year. If any water heater purchased pursuant to Section 9-6-113.2 is sold or disposed of, the annual report must state who the equipment was sold to or how it was disposed of.

9-6-407 **Noticing Requirements for NOx Emitting Equipment Offered for Sale:** Any person selling or offering for sale any water heater that does not meet the requirements of Sections 9-6-301.5 or 9-6-303.5 must display prominent notice within the vicinity of the following information:

407.1 Notice that any water heater that does not meet the requirements of Sections 9-6-301.5 and 9-6-303.5 can be purchased and installed only with a valid Exemption Certificate issued pursuant to Section 9-6-405.

407.2 Web address to access Air District information on compliance and registration form to obtain an Exemption Certificate.

9-6-500 MONITORING AND RECORDS

9-6-501 Recordkeeping Requirements for Water Heater Sellers: Beginning January 1, 2028, any person who sells or offers for sale any NOx emitting water heater or boiler subject to this rule shall maintain records of each purchase or sale of a NOx emitting water heater or boiler subject to this rule for a period of at least five years from the date of the purchase or sale, and make these records available to the APCO upon request. The records must include the following information:

501.1 The date and location of the purchase or sale;

501.2 The sale price and amount of sales tax charged, if any;

501.3 The identity of the seller and purchaser, and whether the purchaser is a reseller or an installer/end user of the water heater or boiler;

501.4 If the sale/purchase of the water heater is covered by an Exemption Certificate under Sections 9-6-111 through 9-6-114, the associated Exemption Certificate number.

9-6-502 Recordkeeping Requirements for Licensed Contractors: Beginning January 1, 2028, any Licensed Contractor who purchases and/or installs a NOx emitting water heater shall maintain records of the date and location of the purchase and/or installation; and if the water heater was purchased and/or installed pursuant to an exemption under Sections 9-6-111 through 9-6-114, the associated Exemption Certificate number. The Licensed Contractor must maintain the records for a period of a least five years from the date of purchase or installation, and make the records available to the APCO upon request. If the License Contractor purchases and installs a water heater subject to this provision, it must maintain records for both the purchase and the installation.

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 following provisions:

601.1 Each water heater model shall receive certification based on emission tests of a randomly selected unit of that water heater model.

601.2 The measurement of nitrogen oxides emissions shall be conducted in accordance with EPA Reference Method 7, including 7A-7E.

601.3 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.

601.4 The following procedure shall be used to calculate the NO_x emission rate in nanograms of NO_x per joule of heat output:

$$N = \frac{4.566x10^{4}xPxU}{HxCxE}$$

Where:

N = NO_x Emission Rate in nanograms of NO_x emitted per joule of heat output

P = Concentration of NO_x in the flue gas in parts per million (volume)

U = Dry volume percent of CO_2 in flue gas necessary for stoichiometric combustion

H = Gross heating value of the gas, BTU/ft^3 (at 60°F and 30"Hg)

C = Dry volume percent of CO_2 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.

(Amended 12/7/07 and 3/15/23)