(Adopted December 1, 1978)(Amended July 8, 1983)(Amended November 6, 2009)
(Amended September 5, 2014)(Amended March 2, 2018)(Amended July 6, 2018)

RULE 1111. REDUCTION OF NO_X EMISSIONS FROM NATURAL-GAS-FIRED, FAN-TYPE CENTRAL FURNACES

(a) Purpose and Applicability

The purpose of this rule is to reduce NOx emissions from fan-type central furnaces, as defined in this rule. This rule applies to manufacturers, distributors, sellers, and installers of residential and commercial fan-type central furnaces, requiring either single-phase or three-phase electric supply, used for comfort heating with a rated heat input capacity of less than 175,000 BTU per hour, or, for combination heating and cooling units, a cooling rate of less than 65,000 BTU per hour.

(b) Definitions

(1) ANNUAL FUEL UTILIZATION EFFICIENCY (AFUE) is defined in Section 10.1 of Code of Federal Regulations, Title 10, Part 430, Subpart B, Appendix N.

(2) BTU means British thermal unit or units.

(3) CONDENSING FURNACE means a high-efficiency furnace that uses a second heat exchanger to extract the latent heat in the flue gas by cooling the combustion gasses to near ambient temperature so that water vapor condenses in the heat exchanger, is collected and drained.

(4) FAN-TYPE CENTRAL FURNACE is a self-contained space heater using natural gas, or any fan-type central furnace that is in natural gas-firing mode, providing for circulation of heated air at pressures other than atmospheric through ducts more than 10 inches in length that have:

(A) a RATED HEAT INPUT CAPACITY of less than 175,000 BTU per hour; or

(B) for combination heating and cooling units, a cooling rate of less than 65,000 BTU per hour.

(5) HEAT INPUT means the higher heating value of the fuel to the furnace measured as BTU per hour.

(6) NOx EMISSIONS means the sum of nitrogen oxide and nitrogen dioxide (oxides of nitrogen) in the flue gas, collectively expressed as nitrogen dioxide.

(7) RATED HEAT INPUT CAPACITY means the gross HEAT INPUT of the combustion device.

(8) RESPONSIBLE OFFICIAL means:

(A) For a corporation: a president or vice-president of the corporation in charge of a principal business function or a duly authorized person who performs similar policy-making functions for the corporation, or

(B) For a partnership or sole proprietorship: general partner or proprietor, respectively.

(9) SINGLE FIRING RATE means the burners and control system are designed to operate at only one fuel input rate and the control system cycles burners between the maximum heat output and no heat output.

(10) USEFUL HEAT DELIVERED TO THE HEATED SPACE is the AFUE (expressed as a fraction) multiplied by the heat input.

(11) VARIABLE FIRING RATE means the burners and control system are designed to operate at more than one fuel input rate and the control system cycles burners between two or more heat output rates and no heat output.

(12) WEATHERIZED means designed for installation outside of a building, equipped with a protective jacket and integral venting, and labeled for outdoor installation.

(c) Requirements

(1) A manufacturer shall not, after January 1, 1984, manufacture or supply for sale or use in the South Coast Air Quality Management District fan-type central furnaces, unless such furnaces meet the requirements of paragraph (c)(3).

(2) A person shall not, after April 2, 1984, sell or offer for sale within the South Coast Air Quality Management District fan-type central furnaces unless such furnaces meet the requirements of paragraph (c)(3).

(3) Fan-type central furnaces shall:

(A) not emit more than 40 nanograms of oxides of nitrogen (calculated as NO_2) per joule of useful heat delivered to the heated space; and

(B) be certified in accordance with subdivision (d) of this rule.

(4) On or after October 1, 2012, a person shall not manufacture, supply, sell, offer for sale, or install, for use in the South Coast Air Quality Management District, fan-type central furnaces subject to this rule, unless such furnace

complies with the applicable emission limit and compliance date set forth in Table 1 and is certified in accordance with subdivision (d) of this rule.

Table 1 – Furnace NOx Limits and Compliance Schedule

Compliance Date	Equipment Category	NOx Emission Limit (nanograms/Joule *)
October 1, 2012	Mobile Home Furnace	40
April 1, 2015	Condensing Furnace	14
October 1, 2015	Non-condensing Furnace	14
October 1, 2016	Weatherized Furnace	14
October 1, 2018	Mobile Home Furnace	14

* Nanograms of oxides of nitrogen (calculated as NO_2) per joule of useful heat delivered to the heated space

(5) Any manufacturer of fan-type central furnaces regulated by this rule may elect to pay a per unit mitigation fee in lieu of meeting the 14 nanogram/Joule NOx emission limit in Table 1 of paragraph (c)(4) of this rule, provided the manufacturer complies with the following requirements:

(A) Prior to the phase one mitigation fee start date specified in Table 2, pays a per unit mitigation fee of $200 for each condensing furnace and $150 for each other type of furnace distributed or sold into the SCAQMD, disregarding the furnace size.

(B) On and after the phase one mitigation fee start date but no later than the mitigation fee option end date specified in Table 2, pays a per unit phase one or phase two mitigation fee for each condensing, non-condensing, weatherized, or mobile home furnace according to Table 2.

Table 2 – Alternate Compliance Plan with the Phase One and Phase Two Mitigation Fee Schedules

Furnace		Phase One Mitigation Fee		Phase Two Mitigation Fee		
Size Range	**Furnace Category**	**Phase One Mitigation Fee Start Date**	**Phase One Mitigation Fee ($/Unit)**	**Phase Two Mitigation Fee Start Date**	**Phase Two Mitigation Fee ($/Unit)**	**Phase Two Mitigation Fee Option End Date**
≤ 60,000 BTU/hr	Condensing	May 1, 2018	$275	October 1, 2018	$350	September 30, 2019
	Non-condensing	October 1, 2018	$225	April 1, 2019	$300	September 30, 2019
	Weatherized	October 1, 2018	$225	April 1, 2019	$300	September 30, 2020
	Mobile Home	October 1, 2018	$150	April 1, 2019	$150	September 30, 2021
> 60,000 Btu/hr and ≤ 90,000 BTU/hr	Condensing	May 1, 2018	$300	October 1, 2018	$400	September 30, 2019
	Non-condensing	October 1, 2018	$250	April 1, 2019	$350	September 30, 2019
	Weatherized	October 1, 2018	$250	April 1, 2019	$350	September 30, 2020
	Mobile Home	October 1, 2018	$150	April 1, 2019	$150	September 30, 2021
> 90,000 BTU/hr	Condensing	May 1, 2018	$325	October 1, 2018	$450	September 30, 2019
	Non-condensing	October 1, 2018	$275	April 1, 2019	$400	September 30, 2019
	Weatherized	October 1, 2018	$275	April 1, 2019	$400	September 30, 2020
	Mobile Home	October 1, 2018	$150	April 1, 2019	$150	September 30, 2021

(C) Submits an alternate compliance plan for each 12 month time period after the applicable Table 1 compliance date during which the manufacturer elects to pay the mitigation fee in lieu of meeting the NOx emission limit.

(D) Submits to the SCAQMD an alternate compliance plan no later than 60 days prior to the applicable compliance date, or no later than March 16, 2018 for the condensing furnace compliance plan starting on April 1, 2018, which includes the following:

(i) a letter with the name of the manufacturer requesting the mitigation fee compliance option signed by a responsible official identifying the category of fan-type central furnaces

and the 12 month alternate compliance period that the mitigation fees cover;

(ii) an estimate of the quantity of applicable Rule 1111 fan-type central furnaces to be distributed or sold into the SCAQMD during the alternate compliance period, which estimate shall be based on total distribution and sales records or invoices of condensing, non-condensing, weatherized or mobile home fan-type central furnaces that were distributed or sold into the SCAQMD during the 12 month period of July 1 to June 30 prior to the applicable compliance date, along with supporting documentation;

(iii) a completed SCAQMD Form 400A with company name, identification that application is for an alternate compliance plan (section 7 of form), identification that the request is for the Rule 1111 mitigation fee compliance option (section 9 of form), and signature of the responsible official;

(iv) a check for payment of the alternate compliance plan filing fee (Rule 306, section (c)).

(E) Submits to the Executive Officer a report signed by the responsible official for the manufacturer identifying by model number the quantity of Rule 1111 fan-type central furnaces actually distributed or sold into SCAQMD and a check for payment of mitigation fees for the applicable 12 month alternate compliance period for the quantity of applicable Rule 1111 fan-type central furnaces distributed or sold into the SCAQMD during the alternate compliance period. The report and the payment of mitigation fees must be submitted to the SCAQMD no later than thirty (30) days after the end of each 12-month mitigation fee alternate compliance period.

(F) Notwithstanding the requirements set forth in subparagraph (c)(5)(E), during the phase one period specified in Table 2, submits a report signed by the responsible official for the manufacturer identifying by model number the quantity of Rule 1111 fan-type central furnaces actually distributed or sold into SCAQMD and a check for payment of mitigation fees for the phase one period no later than thirty (30) days after the end of the phase one period. The

12-month compliance plan payment as specified in subparagraph (c)(5)(E) that includes this phase one period shall be reconciled so as not to include the phase one payment.

(G) For the last and remaining 6-month period of the condensing furnace final alternate compliance plan ending on September 30, 2019, specified in Table 2, submits a report signed by the responsible official for the manufacturer identifying by model number the quantity of Rule 1111 fan-type central furnaces - condensing furnaces actually distributed or sold into SCAQMD and a check for payment of mitigation fees to the SCAQMD no later than October 30, 2019.

(d) Certification

(1) The manufacturer shall have each appliance model tested in accordance with the following:

(A) Oxides of nitrogen measurements, test equipment, and other required test procedures shall be in accordance with SCAQMD Method 100.1.

(B) Operation of the furnace shall be in accordance with the procedures specified in Section 4.0 of Code of Federal Regulations, Title 10, Part 430, Subpart B, Appendix N.

(2) One of the two formulas shown below shall be used to determine the nanograms of oxides of nitrogen per joule of useful heat delivered to the heated space:

$$N = \frac{4.566 \times 10^4 \times P \times U}{H \times C \times E}, \qquad N = \frac{3.655 \times 10^{10} \times P}{(20.9-Y) \times Z \times E}$$

Where:

N = nanograms of emitted oxides of nitrogen per joule of useful heat.

P = concentration (ppm volume) of oxides of nitrogen in flue gas as tested.

U = volume percent CO_2 in water-free flue gas for stoichiometric combustion.

H = gross heating value of fuel, BTU/cu.ft. (60^oF, 30-in. Hg).

C = measured volume percent of CO_2 in water-free flue gas, assuming complete combustion and no CO present.

E = AFUE, percent (calculated using Table 2).

Y = volume percent of O_2 in flue gas.

Z = heating value of gas, joules/cu. meter (0.0°C, 1 ATM).

(3) Prior to the date a furnace model is first shipped to a location in the SCAQMD for use in the District, the manufacturer shall obtain Executive Officer's approval for the emission test protocol and emission test results verifying compliance with the applicable NOx limit specified in Table 1, submitting the following:

(A) A statement that the model is in compliance with subdivision (c). (The statement shall be signed by a responsible official and dated, and shall attest to the accuracy of all statements.)

(B) General Information

(i) Name and address of manufacturer.

(ii) Brand name.

(iii) Model number, as it appears on the furnace rating plate.

(C) A description of the furnace and specifications for each model being certified.

(e) Identification of Compliant Units

(1) The manufacturer of the furnace complying with subdivisions (c) and (d) shall display the following on the shipping container label and rating plate of the furnace:

(A) Model number;

(B) Heat input capacity;

(C) Applicable NOx emission limit in Table 1; and

(D) Date of manufacture or date code.

(2) Any non-certified furnace shipped to a location in the South Coast Air Quality Management District for distribution or sale outside of the District shall have a label on the shipping container identifying the furnace as not certified for use in the District.

(3) Consumer Notification Requirement

(A) For the purposes of subparagraph (e)(3)(B), "Informative Materials" shall mean the following:

(i) The consumer brochure for the furnace;

(ii) The technical specification sheet for the furnace; and

(iii) The manufacturer's website that promotes, discusses, or lists the furnace.

(B) Effective October 1, 2018, for any furnace that is for distribution or sale inside of the South Coast Air Quality Management District that is using an alternate compliance plan in lieu of meeting the 14 ng/J certification limit, a manufacturer shall only distribute or publish Informative Materials that clearly display the following language: "~~For installation~~If installed in SCAQMD only: This furnace does not meet the SCAQMD Rule 1111 ~~14 ng/J~~ NOx emission limit (14 ng/J), and thus is subject to a mitigation fee of up to $450. This furnace is not eligible for the Clean Air Furnace Rebate Program: www.CleanAirFurnaceRebate.com."

(C) A manufacturer may use alternative language in lieu of subparagraph (e)(3)(B), provided the alternative language is:

(i) Similar to the language in subparagraph (e)(3)(B);

(ii) Submitted to the Executive Officer by August 1, 2018; and

(iii) Approved by the Executive Officer no later than August 31, 2018.

The manufacturer shall use the language in subparagraph (e)(3)(B) if the alternative language is not approved.

(f) Enforcement

The Executive Officer may periodically conduct such tests as are deemed necessary to ensure compliance with subdivision (c), (d), and (e).

(g) Exemptions

(1) The provisions of this rule shall not apply to furnaces installed in mobile homes before October 1, 2012.

(2) For furnaces manufactured, purchased, and delivered to the South Coast Air Quality Management District prior to the applicable compliance date in Table 1, any person may, until 300 days after the applicable compliance date, sell, offer for sale, or install such a furnace in the District, so long as the furnace meets the requirements of paragraph (c)(3) and subdivisions (d) and (e).

(3) For furnaces that have been encumbered in a contractual agreement, signed prior to January 1, 2018, by a furnace manufacturer or distributor for future or planned construction, the manufacturer shall be allowed to sell the units within the SCAQMD at the mitigation fee specified in subparagraph (c)(5)(A), provided:

(A) An application for exemption is submitted to the Executive Officer prior to April 2, 2018;

(B) The total quantity of furnaces in application(s) by any one manufacturer does not exceed 15% of furnaces distributed and sold in the previous compliance plan period;

(C) Those furnaces are sold no later than their mitigation fee option end dates specified in Table 2; and

(D) The following documents and information are provided to the Executive Officer, including but not limited to:

(i) contractual agreement for the units sold or to be sold in the District;

(ii) quantity, model number, and serial number of the subject units;

(iii) contract execution date; and

(iv) name(s) of the contractor (s).

(E) Failure to comply with the requirements specified in subparagraphs (g)(3)(A) through (g)(3)(D) shall result in the requirement to paying or retroactively paying the corresponding mitigation fee specified in paragraph (c)(5) within 30 days upon notification from the Executive Officer.

(4) The manufacturer of any natural gas furnace that is not certified to meet 14 ng/J of NOx emission and is to be installed with a propane conversion kit for propane firing only in the SCAQMD, is exempt from subdivisions (c) and (d), provided:

(A) Effective June 1, 2018, the shipping carton or the name plate of the furnace clearly displays: "This furnace is to be installed for propane firing only. Operating in natural gas mode is in violation of the SCAQMD Rule 1111."

(B) The following documents and information shall be provided to the Executive Officer, accompanying the compliance plan report

specified in subparagraphs (c)(5)(E), (c)(5)(F), and (c)(5)(G), including but not limited to:

(i) The quantity of propane conversion kits for furnaces actually distributed or sold into SCAQMD for the applicable compliance plan period;

(ii) The quantity of propane conversion kits for furnaces distributed or sold into the SCAQMD during the 12 month period of July 1 to June 30 prior to the applicable compliance date; and

(iii) Photographic evidence of the required language set forth in section (g)(4)(a) as it appears on the carton or unit, including all versions utilized by the manufacturer, for approval by the Executive Officer. The photographs must be sufficient to verify the wording is correct and that it is "clearly visible," taking into account the font type, size, color, and location on the carton or unit.

(C) The manufacturer of this type of unit which has been installed in the SCAQMD without meeting above requirements shall be in violation of SCAQMD Rule 1111.