

BOARD MEETING DATE: September 3, 2021

AGENDA NO. 34

**PROPOSAL:** Determine That Proposed Amendments to Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces, Are Exempt From CEQA; and Amend Rule 1111

**SYNOPSIS:** Rule 1111 establishes a NOx emission limit of 14 ng/J for residential and commercial gas furnaces. Proposed Amended Rule 1111 will extend the mitigation fee alternative compliance option end date from September 30, 2021 to September 30, 2023 for mobile home furnaces, extend the high-altitude ( $\geq 4,200$  feet above sea level) exemption end date from September 30, 2021 to December 31, 2021, and provide an exemption for downflow and large-sized ( $\geq 100,000$  btu/hr) condensing or non-condensing furnaces being replaced in the high-altitude areas. This action is to adopt the Resolution: 1) Determining that the proposed amendments to Rule 1111 - Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces, are exempt from the requirements of the California Environmental Quality Act; and 2) Amending Rule 1111 - Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces.

**COMMITTEE:** Stationary Source, May 21 and June 18, 2021, Reviewed

**RECOMMENDED ACTIONS:**

Adopt the attached Resolution:

1. Determining that the proposed amendments to Rule 1111 - Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces, are exempt from the requirements of the California Environmental Quality Act; and
2. Amending Rule 1111 - Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces.

Wayne Natri  
Executive Officer

## **Background**

Rule 1111 - Reduction of NO<sub>x</sub> Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces, was adopted in December 1978 and establishes a nitrogen oxide (NO<sub>x</sub>) emission limit for residential and commercial gas-fired fan-type space heating furnaces. In 2009, Rule 1111 was amended to lower the NO<sub>x</sub> emission limit from 40 to 14 nanograms per Joule (ng/J), and again amended in 2014 to include a mitigation fee alternative compliance option to allow additional time for manufacturers to commercialize 14 ng/J furnaces. The rule applies to manufacturers, distributors, sellers and installers of such furnaces.

Rule 1111 has a staggered implementation schedule, depending on the furnace type. Condensing and non-condensing furnaces installed at elevations less than 4,200 feet above sea level were the first group of furnaces which had to meet the 14 ng/J NO<sub>x</sub> emission limit on October 1, 2019. On October 1, 2021 weatherized, mobile home, and condensing and non-condensing furnaces installed at elevations greater than or equal to 4,200 feet above sea level (high-altitude) must meet the 14 ng/J NO<sub>x</sub> emission limit.

Weatherized furnaces are developed for both residential and commercial applications. All seven manufacturers expect to meet the October 1, 2021 final compliance date for residential applications, and only one manufacturer projects a potential two-month delay for commercial applications. Staff is working with this manufacturer to identify a potential compliance option.

Mobile home furnaces are designed specifically and solely for installation to heat mobile homes that are also subject to standards by U.S. Department of Housing and Urban Development and Department of Energy. Currently none of the manufacturers have made any progress on the development of mobile home furnaces. Manufacturers requested a 2023 compliance date to better align with other regulatory requirements.

With regards to high-altitude furnaces (condensing and non-condensing), four manufacturers expect to have compliant furnaces available by October 1, 2021, for elevations from 7,500 to 7,800 feet, three of which expect to have all of their certified compliant units capable for high-altitude use. However, there are no compliant downflow models for altitudes higher than 5,400 feet, or for large-sized models with a heat input capacity rated at greater than 100,000 btu/hr available for elevations from 7,500 to 7,800 feet. Only two manufacturers will provide models rated at 100,000 btu/hr.

## **Public Process**

Staff has been conducting ongoing individual meetings with the seven manufacturers to monitor the rule implementation status. Two working group meetings were held on April 14, 2021 and June 3, 2021. Focused discussions on high-altitude installations were conducted on April 29, 2021 and June 9, 2021 with interested stakeholders including

furnace installers in the high-altitude areas. A Public Workshop was held on July 7, 2021.

### **Proposed Amendments**

Proposed Amended Rule 1111 (PAR 1111) will extend the mitigation fee alternative compliance option end date from September 30, 2021 to September 30, 2023 for mobile home furnaces. This proposal does not change the requirements for the mitigation fee or the recordkeeping and reporting requirements.

PAR 1111 will also extend the high-altitude ( $\geq 4,200$  feet above sea level) exemption end date from September 30, 2021 to December 31, 2021 and provide a permanent exemption for downflow and large-sized ( $\geq 100,000$  btu/hr) condensing and non-condensing furnaces, replacing existing furnaces in the high-altitude areas. The proposal includes recordkeeping and labeling requirements for those exemptions.

### **Key Issues**

Staff has worked with stakeholders throughout the rulemaking process to resolve issues. Some furnace installers located in high-altitude areas have commented that there is not a sufficient selection of 14 ng/J furnaces, noting that one manufacturer only has two models for high-altitude areas and another manufacturer anticipates that their furnaces for high-altitude areas will be available by September 30, 2021. To address this concern, PAR 1111 extends the compliance date three months, and exempts furnaces  $\geq 100,000$  Btu/hour and furnaces in the downflow configuration. A fifth manufacturer communicated that they are initiating high-altitude testing for their 14 ng/J furnaces. Staff is concerned that if furnaces located in high-altitude areas were permanently exempt from the 14 ng/J NO<sub>x</sub> limit, that the forgone NO<sub>x</sub> reductions would be 0.03 tons per year. Although this is small, this is not insignificant as there are entire source-specific rules that achieve similar NO<sub>x</sub> reductions.

### **California Environmental Quality Act (CEQA)**

Pursuant to the California Environmental Quality Act (CEQA) Guidelines Sections 15002(k) and 15061, the proposed project is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3). A Notice of Exemption has been prepared pursuant to CEQA Guidelines Section 15062 and is included as Attachment H to this Board letter. If the proposed project is approved, the Notice of Exemption will be electronically filed with the State Clearinghouse of the Governor's Office of Planning and Research to be posted on their CEQAnet Web Portal, which may be accessed via the following weblink: <https://ceqanet.opr.ca.gov/search/recent>. In addition, the Notice of Exemption will be electronically posted on South Coast AQMD's webpage which can be accessed via the following weblink: <http://www.aqmd.gov/nav/about/public-notice/ceqa-notice/notice-of-exemption/noe---year-2021>. The electronic filing and posting of the Notice of Exemption is being implemented in accordance with Governor Newsom's Executive Orders N-54-20 and N-80-20 issued on April 22, 2020 and September 23,

2020, respectively, for the State of Emergency in California as a result of the threat of COVID-19.

**Socioeconomic Impact Assessment**

PAR 1111 does not impose any additional requirements and will have no socioeconomic impacts.

**Resource Impacts**

Existing staff resources are adequate to implement the proposed rule amendments. The companion rebate program will be implemented by a third-party contractor, Electric & Gas Industries Association, with minimal staff resources required.

**Attachments**

- A. Summary of Proposal
- B. Key Issues and Responses
- C. Rule Development Process
- D. Key Contacts List
- E. Resolution
- F. Proposed Amended Rule 1111
- G. Final Staff Report
- H. Notice of Exemption
- I. Board Meeting Presentation

**ATTACHMENT A  
SUMMARY OF PROPOSAL**

**Proposed Amended Rule 1111 – Reductions of NO<sub>x</sub> Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces**

Summary of Proposed Amendments

- Extend the mitigation fee alternative compliance option end date from September 30, 2021 to September 30, 2023 for mobile home furnaces
- Extend the high-altitude ( $\geq 4,200$  feet above sea level) exemption end date from September 30, 2021 to December 31, 2021
- Provide an exemption for downflow and large-sized ( $\geq 100,000$  btu/hr) condensing or non-condensing furnaces, replacing existing furnaces in the high-altitude area

**ATTACHMENT B**  
**KEY ISSUES AND RESPONSES**

**Proposed Amended Rule 1111 – Reduction of NO<sub>x</sub> Emissions from Natural-Gas-Fired,  
Fan-Type Central Furnaces**

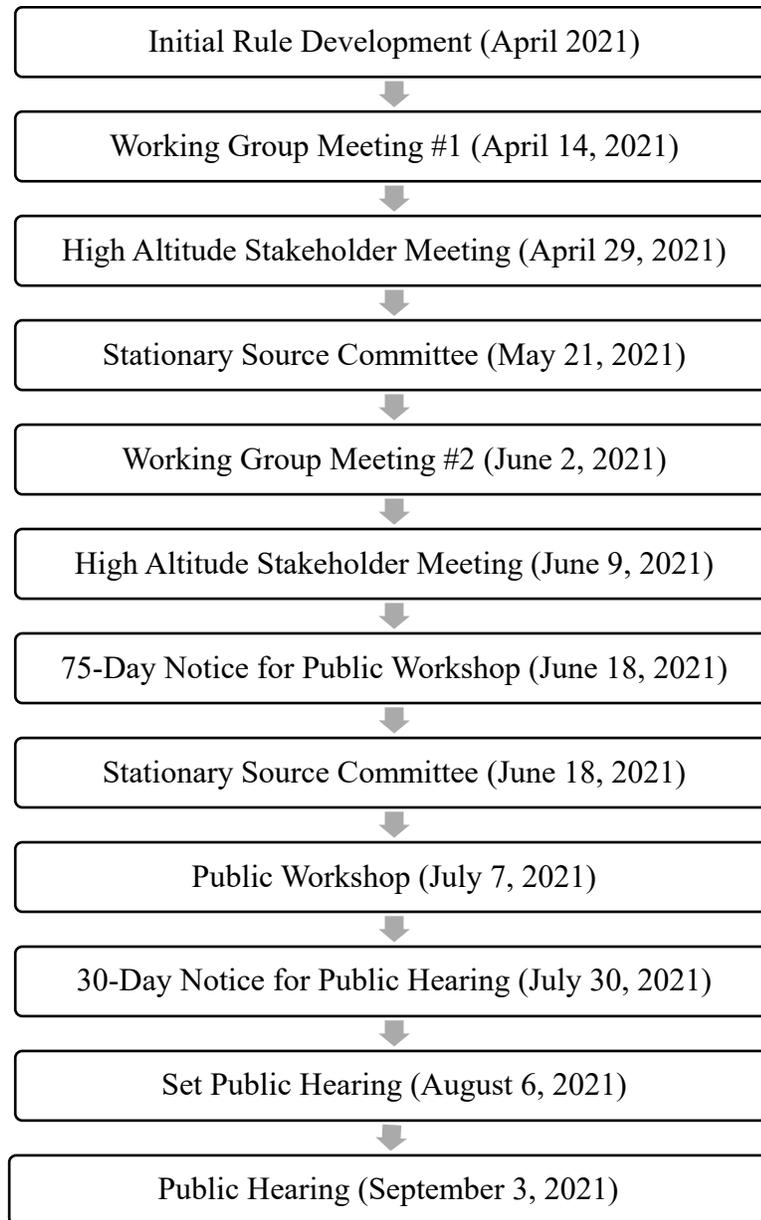
**Some furnace installers located in high altitude areas have commented that there is not a sufficient selection of 14 ng/J furnaces for the areas that they serve.**

- PAR 1111 extends the compliance date three months for condensing and non-condensing furnaces installed in high altitude areas to allow a fourth manufacturer to complete high altitude testing
- PAR 1111 exempts furnaces  $\geq 100,000$  Btu/hour since there are only two manufacturers with furnaces of this size for high altitude areas
- PAR 1111 exempts furnaces in the downflow configuration since there are no downflow furnaces that have conducted high altitude testing
- Staff is concerned that if furnaces located in high altitude areas were permanently exempt from the 14 ng/J NO<sub>x</sub> limit, that the forgone NO<sub>x</sub> reductions would be 0.03 tons per year. Although this is small, this is not insignificant as there are entire source-specific rules that achieve similar NO<sub>x</sub> reductions.

## ATTACHMENT C

### RULE DEVELOPMENT PROCESS

#### Proposed Amended Rule 1111 – Reduction of NO<sub>x</sub> Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces



**Five (5) months spent in rule development**

**One (1) Public Workshop**

**Two (2) Working Group Meetings**

**Two (2) High Altitude Stakeholder Meetings**

**Ongoing individual meetings with stakeholders**

**ATTACHMENT D**  
**KEY CONTACTS LIST**

Rheem Manufacturing

Goodman Manufacturing Company

Johnson Controls

Trane Technologies

Lennox International Inc. (+Allied)

Nortek Global HVAC

Carrier Corporation

Bard Manufacturing

The Air Conditioning, Heating, and Refrigeration Institute (AHRI)

Ferguson Enterprises

US Air Conditioning Distributors

Indoor Weather, Heating, Air, and Refrigeration

SoCal Airflow Pros

M&M Mechanical

Dan Seeley's Heating & Air Conditioning

AC Pro

Burgeson's Heating and Air Conditioning

Baker Distributing

Russel Sigler Inc.

United Refrigeration

Howard Industries

## ATTACHMENT E

### RESOLUTION NO.21-\_\_\_\_\_

**A Resolution of the South Coast Air Quality Management District (South Coast AQMD) Governing Board determining that Proposed Amended Rule 1111 - Reduction of NO<sub>x</sub> Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces, is exempt from the requirements of the California Environmental Quality Act (CEQA).**

**A Resolution of the South Coast AQMD Governing Board amending Rule 1111 - Reduction of NO<sub>x</sub> Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces.**

**WHEREAS**, the South Coast AQMD Governing Board finds and determines that Proposed Amended Rule 1111 is considered a “project” as defined by CEQA; and

**WHEREAS**, the South Coast AQMD has had its regulatory program certified pursuant to Public Resources Code Section 21080.5 and CEQA Guidelines Section 15251(l), and has conducted a CEQA review and analysis of the proposed project pursuant to such program (South Coast AQMD Rule 110); and

**WHEREAS**, the South Coast AQMD Governing Board finds and determines after conducting a review of the proposed project in accordance with CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA, and CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA, that the proposed project is exempt from CEQA; and

**WHEREAS**, the South Coast AQMD Governing Board finds and determines that implementation of the proposed project would result in delayed NO<sub>x</sub> emission reductions which are expected to be temporary and less than the South Coast AQMD air quality significance threshold for NO<sub>x</sub> and the amount of permanent NO<sub>x</sub> emission reductions forgone are negligible, whereby it can be seen with certainty that there is no possibility that proposed project may have any significant adverse effects on the environment, and is therefore, exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption; and

**WHEREAS**, the South Coast AQMD staff has prepared a Notice of Exemption for the proposed project that is completed in compliance with CEQA Guidelines Section 15062 – Notice of Exemption; and

**WHEREAS**, the South Coast AQMD staff conducted a public workshop on July 7, 2021 regarding Proposed Amended Rule 1111; and

**WHEREAS**, Proposed Amended Rule 1111, and supporting documentation, including but not limited to, the Notice of Exemption, the Final Staff Report, and the Board Letter were presented to the South Coast AQMD Governing Board and the South Coast AQMD Governing Board has reviewed and considered this information, and has taken and considered staff testimony and public comment prior to approving the project; and

**WHEREAS**, the South Coast AQMD Governing Board has determined that no socioeconomic assessment is required under Health and Safety Code Section 40440.8(a) because there are no adverse socioeconomic impacts; and further that the proposed amended rule does not “significantly affect air quality or emissions limitations;” and

**WHEREAS**, the South Coast AQMD Governing Board finds and determines, taking into consideration the factors in Section (d)(4)(D) of the Governing Board Procedures (Section 30.5(4)(D)(i) of the Administrative Code), that no modifications have been made to the proposed project since Notice of Public Hearing was published that are so substantial as to significantly affect the meaning of Proposed Amended Rule 1111 within the meaning of Health and Safety Code Section 40726 because: (a) the changes do not impact emission reductions, (b) the changes do not affect the number or type of sources regulated by the rules, (c) the changes are consistent with the information contained in the notice of public hearing, and (d) the consideration of the range of CEQA alternatives is not applicable because the proposed project is exempt from CEQA; and

**WHEREAS**, Proposed Amended Rule 1111 will be submitted for inclusion into the State Implementation Plan; and

**WHEREAS**, Health and Safety Code Section 40727 requires that prior to adopting, amending, or repealing a rule or regulation, the South Coast AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the Final Staff Report; and

**WHEREAS**, the South Coast AQMD Governing Board has determined that a need exists to amend Rule 1111 to: (1) extend the mitigation fee alternative compliance option end date for mobile home furnaces, (2) temporarily extend the high-altitude (greater than or equal to 4,200 feet above sea level) exemption, and (3) provide an exemption for downflow and large-sized (rated at greater than or equal to 100,000

British thermal units per hour) condensing and non-condensing furnaces, replacing existing furnaces in the high-altitude areas; and

**WHEREAS**, the South Coast AQMD Governing Board obtains its authority to adopt, amend, or repeal rules and regulations from Sections 40000, 40001, 40440, 40702, 40725 through 40728, and 41508 of the Health and Safety Code; and

**WHEREAS**, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 1111 is written or displayed so that its meaning can be easily understood by the persons directly affected by it; and

**WHEREAS**, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 1111 is in harmony with, and not in conflict with or contradictory to, existing federal or state statutes, court decisions, or regulations; and

**WHEREAS**, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 1111 does not impose the same requirements as any existing state or federal regulation and the proposed amended rule is necessary and proper to execute the powers and duties granted to, and imposed upon, the District; and

**WHEREAS**, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 1111 references the following statutes which the South Coast AQMD hereby implements, interprets or makes specific: Health and Safety Code Sections 40001(a) (rules to meet air quality standards); 40440(a) (rules to carry out the plan); and 40702 (adoption of rules and regulations); and

**WHEREAS**, the South Coast AQMD Governing Board has determined that Proposed Amended Rule 1111 does not make an existing emission limit or standard more stringent, and therefore the requirements of Health and Safety Code Section 40727.2 are satisfied; and

**WHEREAS**, a public hearing has been properly noticed in accordance with the provisions of Health and Safety Code Section 40725; and

**WHEREAS**, the South Coast AQMD Governing Board has held a public hearing in accordance with all provisions of law; and

**WHEREAS**, the South Coast AQMD Governing Board specifies the Manager of Proposed Amended Rule 1111, as the custodian of the documents or other materials which constitute the record of proceedings upon which the adoption of this proposed project is based, which are located at the South Coast Air Quality Management District, 21865 Copley Drive, Diamond Bar, California; and

**NOW, THEREFORE, BE IT RESOLVED**, that the South Coast AQMD Governing Board does hereby determine, pursuant to the authority granted by law, that the Proposed Amended Rule 1111 is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption. This information was presented to the South Coast AQMD Governing Board, whose members exercised their independent judgment and reviewed, considered and approved the information therein prior to acting on Proposed Amended Rule 1111; and

**BE IT FURTHER RESOLVED**, that the South Coast AQMD Governing Board does hereby adopt, pursuant to the authority granted by law, Proposed Amended Rule 1111, as set forth in the Attachment F and incorporated herein by reference; and

**BE IT FURTHER RESOLVED**, that the Executive Officer is hereby directed to forward a copy of this Resolution and Proposed Amended Rule 1111 to the California Air Resources Board for approval and subsequent submittal to the U.S. Environmental Protection Agency for inclusion into the State Implementation Plan.

DATE: \_\_\_\_\_

\_\_\_\_\_  
CLERK OF THE BOARDS

ATTACHMENT F

(Adopted December 1, 1978)(Amended July 8, 1983)(Amended November 6, 2009)  
(Amended September 5, 2014)(Amended March 2, 2018)(Amended July 6, 2018)  
(Amended December 6, 2019)(Amended September 4, 2020)(PAR 1111 August 2021)

**PROPOSED AMENDED RULE 1111. REDUCTION OF NO<sub>x</sub> EMISSIONS  
FROM NATURAL-GAS- FIRED, FAN-TYPE CENTRAL  
FURNACES**

(a) Purpose and Applicability

The purpose of this rule is to reduce NO<sub>x</sub> 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) DOWNFLOW FURNACE means a condensing or non-condensing furnace installed in a configuration in which the furnace takes in cool air from the top, warms it, then releases the warm air through the ductwork below.
- (45) DUAL FUEL SYSTEM is a heating, ventilation, and air conditioning system utilizing a HEAT PUMP as the primary source of heating and cooling with a FAN-TYPE CENTRAL FURNACE serving as auxiliary heating.
- (56) 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.
- (~~67~~) HEAT INPUT means the higher heating value of the fuel to the furnace measured as BTU per hour.
- (~~78~~) HEAT PUMP means an all-electric device that utilizes condensation and evaporation of refrigerant to absorb and release heat for heating, ventilation, and air conditioning applications.
- (~~89~~) MOBILE HOME means a prefabricated structure on a permanently attached chassis.
- (~~910~~) MOBILE HOME FURNACE means a furnace designed specifically and solely for installation to heat a mobile home.
- (~~1011~~) NO<sub>x</sub> EMISSIONS means the sum of nitrogen oxide and nitrogen dioxide (oxides of nitrogen) in the flue gas, collectively expressed as nitrogen dioxide.
- (~~1112~~) RATED HEAT INPUT CAPACITY means the gross HEAT INPUT of the combustion device.
- (~~1213~~) 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.
- (~~1314~~) 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.
- (~~1415~~) USEFUL HEAT DELIVERED TO THE HEATED SPACE is the AFUE (expressed as a fraction) multiplied by the heat input.
- (~~1516~~) 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.
- (~~1617~~) 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<sub>2</sub>) 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

<b>Compliance Date</b>	<b>Equipment Category</b>	<b>NOx Emission Limit (nanograms/Joule *)</b>
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<sub>2</sub>) 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 South Coast AQMD, 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		Phase Two Mitigation Fee Option End Date
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)	
≤ 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, 2021
	Mobile Home	October 1, 2018	\$150	April 1, 2019	\$150	September 30, <del>2021</del> 2023
> 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, 2021
	Mobile Home	October 1, 2018	\$150	April 1, 2019	\$150	September 30, <del>2021</del> 2023
> 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, 2021
	Mobile Home	October 1, 2018	\$150	April 1, 2019	\$150	September 30, <del>2021</del> 2023

- (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 South Coast AQMD 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 South Coast AQMD during the alternate compliance period, which estimate shall be based on total distribution and sales records or invoices of weatherized or mobile home fan-type central furnaces that were distributed or sold into the South Coast AQMD during the 12 month period of July 1 to June 30 prior to the applicable compliance date, along with supporting documentation;
  - (iii) a completed South Coast AQMD 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, subdivision (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 South Coast AQMD 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 South Coast AQMD during the alternate compliance period. The report and the payment of mitigation fees must be submitted to the South Coast AQMD 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 South Coast AQMD 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 South Coast AQMD and a check for payment of mitigation fees to the South Coast AQMD~~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 South Coast AQMD 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:

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

$$N = \frac{3.655 \times 10^{10} \times P}{(20.9 - Y) \times Z \times E}$$

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<sub>2</sub> in water-free flue gas for stoichiometric combustion.

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

C = measured volume percent of CO<sub>2</sub> in water-free flue gas, assuming complete combustion and no CO present.

E = AFUE, percent

Y = volume percent of O<sub>2</sub> 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 South Coast AQMD 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 NO<sub>x</sub> 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: “If installed in South Coast AQMD only: This furnace does not meet the South Coast AQMD Rule 1111 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](http://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 subdivisions (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 South Coast AQMD 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 NO<sub>x</sub> emission and is to be installed with a propane conversion kit for propane firing only in the South Coast AQMD, 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 South Coast AQMD 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 South Coast AQMD for the applicable compliance plan period;
    - (ii) The quantity of propane conversion kits for furnaces distributed or sold into the South Coast AQMD 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 subparagraph (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 South Coast AQMD without meeting above requirements shall be in violation of South Coast AQMD Rule 1111.
- (5) ~~Condensing and non-condensing natural gas furnaces installed at elevations greater than or equal to 4,200 feet above sea level are exempt from paragraph (c)(4) until September 30, 2021.~~ Condensing or non-condensing furnaces that are certified to meet the 40 ng/J NO<sub>x</sub> limit and are installed at

or above 4,200 feet above sea level are exempt from paragraph (c)(4), if that unit is installed on or before December 31, 2021.

(6) Effective January 1, 2022, downflow furnaces rated less than 175,000 BTU per hour in heat input capacity and condensing or non-condensing furnaces with rated heat input at or greater than 100,000 BTU per hour, either of which are installed at elevations at or above 4,200 feet above sea level as a replacement for an existing furnace are exempt from paragraph (c)(4), provided that:

(A) The downflow furnace is certified to meet the 40 ng/J NO<sub>x</sub> limit, is replacing an existing furnace, and the shipping carton or name plate of the furnace clearly displays: "This furnace must be installed only as a replacement in a downflow configuration at or above 4,200 feet above sea level in the South Coast AQMD. Installation of this furnace for new construction, in any other configuration, or at a lower elevation will be a violation of South Coast AQMD Rule 1111."; or

(B) The condensing or non-condensing furnace rated at or greater than 100,000 BTU per hour in heat input capacity is certified to meet 40 ng/J NO<sub>x</sub> limit, is replacing an existing furnace, and the shipping carton or name plate of the furnace clearly displays: "This furnace must be installed only as a replacement at or above 4,200 feet above sea level in the South Coast AQMD. Installation of this furnace for new construction or at a lower elevation will be a violation of South Coast AQMD Rule 1111."

(76) Effective ~~October~~ January 1, 2022<sup>4</sup> and until September 30, 2022, a manufacturer, distributor, or installer that manufactures, supplies, sells, offers for sale, or installs a natural gas furnace certified to meet 40 ng/J of NO<sub>x</sub> that is installed and operated as part of a dual fuel system at or above 4,200 feet above sea level in the South Coast AQMD, shall only install such a unit that:

(A) Is designed by the manufacturer with a system switchover point between heat pump and furnace at the external temperature of 32°F with a nonadjustable system that would prevent any person from changing the external ambient switchover temperature of 32°F;

(B) Includes installation of an external temperature sensor which acts as the sole method to determine switchover point;

- (C) For systems equipped with condensing, noncondensing, or mobile home furnaces, includes communicating technology between the heat pump and furnace installed at the point of manufacture to prevent system operation without a heat pump and requires operations of only the heat pump at and above the switchover temperature outlined in (g)(76)(A); and
  - (D) The shipping carton or the name plate of the furnace clearly displays: "This furnace must be installed only in a dual fuel configuration with an electric heat pump. Installation of this furnace without a heat pump in a dual fuel configuration will be a violation of South Coast AQMD Rule 1111."
- (87) The manufacturer of any furnace that elects to use the exemption in paragraph (g)(4), (g)(5), ~~(g)(6)~~, -or (g)(76) shall record the following information and shall make this information available upon request to the Executive Officer:
- (A) Sales date to distributor;
  - (B) Distributor's name and full contact information (address and phone number);
  - (C) Model number of the furnace and heat pump (if applicable); and
  - (D) Serial number of the furnace and heat pump (if applicable).
- (89) The distributor that elects to use the exemption in paragraph (g)(4), (g)(5), ~~(g)(6)~~, -or (g)(76) shall record the following information and shall make this information available upon request to the Executive Officer:
- (A) Sales date to installer;
  - (B) Installer's name and full contact information (address and phone number);
  - (C) Model number of the furnace and heat pump (if applicable); and
  - (D) Serial number of the furnace and heat pump (if applicable).
- (109) The installer that elects to use the exemption in paragraph (g)(4), (g)(5), ~~(g)(6)~~, -or (g)(76) shall record the following information and shall make this information available upon request to the Executive Officer:
- (A) Installation date;
  - (B) Address of furnace installation;
  - (C) Model number of the furnace and heat pump (if applicable); and
  - (D) Serial number of the furnace and heat pump (if applicable).

**ATTACHMENT G**

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**Final Draft Staff Report**

**Proposed Amended Rule 1111 – Reduction of NO<sub>x</sub> Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces**

**August 2021**

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WAYNE NASTRI

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## **EXECUTIVE SUMMARY**

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## EXECUTIVE SUMMARY

Rule 1111 reduces emissions of nitrogen oxides (NO<sub>x</sub>) from residential and commercial gas-fired fan-type space heating furnaces 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. The rule applies to manufacturers, distributors, and installers of such furnaces.

The furnaces are categorized into four types by Rule 1111: 1) Non-condensing (standard); 2) Condensing (high efficiency); 3) Weatherized (e.g., outdoor); and 4) Mobile home furnaces. The compliance dates to meet the emission limit are different depending on the furnace type. The furnaces for installation at the high elevation regions can be any type but are most commonly non-condensing and condensing furnaces.

Rule 1111 was adopted by the South Coast AQMD Governing Board in December 1978 and amended in 1983, 2009, 2014, 2018, 2019, and 2020. The significant changes included:

- The 2009 amendment lowering the NO<sub>x</sub> emissions from 40 to 14 nanograms per Joule (ng/J);
- The 2014 amendment providing an alternate compliance option that allows the manufacturer to pay a per-unit mitigation fee, in lieu of meeting the new lower NO<sub>x</sub> emission limit, for up to 36 months past the applicable compliance date;
- The March 2018 amendment extending the mitigation fee alternate compliance option and increasing the mitigation fee;
- The December 2019 amendment providing a temporary exemption from the 14 ng/J emission limit for condensing and non-condensing furnace installations at elevations greater than or equal to 4,200 feet above sea level (high-altitude installation); and
- The September 2020 amendment extending both the high-altitude installation exemption and weatherized furnace mitigation fee option to September 30, 2021

The mitigation fee alternate compliance option for condensing and non-condensing furnaces for installation at elevations below 4,200 feet ended on September 30, 2019; thus, all condensing and non-condensing furnaces installed below 4,200 feet have been required to comply with the 14 ng/J NO<sub>x</sub> limit after that date. Similarly, the mitigation fee alternate compliance option for all other furnaces regulated under this rule will end on September 30, 2021; therefore, all weatherized furnaces, mobile home furnaces, and high-altitude installations will be required to comply with the 14 ng/J NO<sub>x</sub> emission limit after that date.

Weatherized furnaces are developed for both residential and commercial applications. All seven manufacturers expect to meet the October 1, 2021 final compliance date for residential applications, and only one manufacturer projects a potential two-month delay for commercial applications. Staff is working with this manufacturer to identify a potential compliance option.

Mobile home furnaces are designed specifically and solely for installation to heat mobile homes (also known as manufactured homes). New manufactured home gas furnaces must be approved by the U.S. Department of Housing and Urban Development (HUD). Manufacturers are required to develop propane kits for compliant split systems to meet HUD requirement for propane compatibility. The manufacturers are also required to meet the Department of Energy standards energy efficiency standards by January 1, 2023. Currently none of the manufacturers have made any progress on the development of mobile home furnaces. Manufacturers suggested that more

time is needed for the development. Consequently, Proposed Amended Rule 1111 would extend mitigation fee alternate compliance option, and therefore the final compliance date, for mobile home furnaces to October 1, 2023. Manufacturers would continue to be subject to the mitigation fee, recordkeeping, and reporting requirements.

With regards to high-altitude furnace installations, all manufacturers have made progress in testing and providing condensing and non-condensing furnaces for high-altitude installations. Four manufacturers expect to have compliant furnaces available by October 1, 2021, for elevations up to 7,500-7,800 feet, three of which expect to have all their certified compliant units capable for high-altitude use with or without modification kits.

A concern was raised regarding niche products such as downflow configurations and large-sized ( $\geq 100,000$  btu/hr) models. There are no compliant downflow models for altitudes higher than 5,400 feet. While two manufacturers expect to provide models with 100,000 btu/hr heat input capacity, there will be no models with higher heat input capacity for elevations up to 7,500-7,800 feet. A suggestion was made that staff should consider exempting all furnaces in high-altitude areas if the emission reductions are minor. The emission reductions forgone would be permanent and accumulate over time if providing a broad high-altitude installation exemption. With 0.001 tons per day emission reductions forgone adding up each year, staff estimates up to 0.03 tons per day in 30 years. On the other hand, manufacturers with compliant products for high-altitude installations oppose a broad exemption. Manufacturers have invested time, money, and resources in high-altitude testing. All manufacturers have made progress and have developed a variety of products at different elevations; and as with new technology, more models and product lines become available over time. A broad exemption for the high-altitude community would raise concerns of equity among manufacturers and would disadvantage those manufacturers who have worked to develop compliant products for the high-altitude areas. On this basis, Proposed Amended Rule 1111 expects to address the concern by providing a niche exemption for high-altitude downflow and large-sized models. This exemption is for replacement units only, as alternative options (e.g., heat pump and twinning furnaces<sup>1</sup>) are feasible for new constructions. Proposed Amended Rule 1111 will also allow furnaces certified at 40 ng/J to be installed in high-altitude areas beyond the October 1, 2021 compliance date for a limited time to ensure that adequate compliant products would be commercially available for installers. Staff does not recommend permanently exempting all furnaces for high-altitude areas.

In summary, Proposed Amended Rule 1111 (PAR 1111) would: (1) extend the mobile home furnace mitigation fee end date by two years until September 30, 2023; (2) extend the high-altitude exemption by three months, allowing furnaces certified at 40 ng/J to be installed in high-altitude areas until December 31, 2021; and (3) provide an exemption for replacement downflow and large-sized ( $\geq 100,000$  btu/hr) condensing or non-condensing furnaces in high-altitude areas. Staff will continue to meet with manufacturers, distributors, and installers to resolve any remaining issues.

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<sup>1</sup> Twinning means using a twinning kit to pair two furnaces to achieve larger space heating capacity

## **CHAPTER 1: BACKGROUND**

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INTRODUCTION  
REGULATORY HISTORY  
EQUIPMENT AND PROCESS  
REQUIREMENT AND TESTS FOR NEW TECHNOLOGY  
AFFECTED INDUSTRIES  
PRODUCT AVAILABILITY  
PUBLIC PROCESS

**INTRODUCTION**

The purpose of Rule 1111 – Reduction of NO<sub>x</sub> Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces is to reduce NO<sub>x</sub> emissions from residential and commercial gas-fired fan-type space heating furnaces 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. The rule applies to manufacturers, distributors, and installers of such furnaces. It requires manufacturers to certify that each furnace model offered for sale in the South Coast AQMD complies with the emission limit using the test methods approved by the South Coast AQMD and U.S. EPA. In lieu of meeting the lower emission limit, Rule 1111 has provided manufacturers an alternate compliance option of paying a per-unit mitigation fee for up to 4 to 5 years past the applicable compliance date, depending on the furnace type, which includes non-condensing, condensing, weatherized, and mobile home furnaces. Most single-family homes, many multi-unit residences, and some light commercial building in the South Coast AQMD use this type of space heating equipment.

**REGULATORY HISTORY**

Rule 1111 was adopted by the South Coast AQMD Governing Board in December 1978. The original rule required residential and commercial space heating furnaces to meet a NO<sub>x</sub> emission limit of 40 nanograms per Joule (ng/J) of heat output (equivalent to 61 ppm at a reference level of 3% oxygen and 80% Annual Fuel Utilization Efficiency (AFUE)) beginning January 1, 1984.

**New Lower NO<sub>x</sub> Emission Limit of 14 ng/J Established**

In November 2009, Rule 1111 was amended to implement the 2007 Air Quality Management Plan (AQMP) Control Measure CMB-03. The 2009 amendment established a new lower NO<sub>x</sub> emission limit of 14 ng/J (equivalent to 22 ppm at a reference level of 3% oxygen and 80% AFUE), and required the three major categories of residential furnaces – condensing (high efficiency), non-condensing (standard), and weatherized furnaces to meet the new limit by October 1, 2014, October 1, 2015, and October 1, 2016, respectively. Furthermore, new mobile home heating units, which were unregulated prior to the 2009 amendment, were required to meet a NO<sub>x</sub> limit of 40 ng/J by October 1, 2012 and 14 ng/J by October 1, 2018. To facilitate the depletion of existing inventories and to ensure a smooth transition to the new limits, Rule 1111 also provided a temporary 10-month exemption (a sell-through period) for units manufactured and delivered into the South Coast Air Basin prior to the compliance date.

**Mitigation Fee to Delay Compliance of 14 ng/J Furnaces**

Rule 1111 was later amended in September 2014 to delay the compliance date for condensing furnaces and to provide an alternate compliance option. The alternate compliance option allowed OEMs to pay a per unit mitigation fee of \$200 for each condensing furnace and \$150 for each other type of furnace distributed or sold in South Coast AQMD, in lieu of meeting the 14 ng/J NO<sub>x</sub> emission limit. The mitigation fee end date was based on the furnace type which phased in the NO<sub>x</sub> limit of 14 ng/J over the period from April 1, 2018, to October 1, 2021.

**Extension and Increase of the Mitigation Fee**

Based on the lack of 14 ng/J furnaces that were commercialized in early 2018, Rule 1111 was amended in March 2018 to increase the mitigation fee in two phases to a range of \$300 to \$450, depending on the furnace type and heat input capacity, and extend the mitigation fee compliance option by 1.5 years for condensing furnaces, and one year for non-condensing and weatherized

furnaces. Rule 1111 was also amended to provide an exemption from the mitigation fee increase for units encumbered in a contractual agreement by OEMs and distributors for new construction, if contracts were signed prior to January 1, 2018, and included provisions to address propane conversion kits for propane firing only furnaces.

### **Clean Air Furnace Rebate Program**

In March 2018, a rebate program for consumers who purchase and install compliant 14 ng/J furnaces in the South Coast AQMD was initiated. The purpose of the rebate program was to help commercialize and incentivize consumers to purchase 14 ng/J furnaces. On May 4, 2018, the South Coast AQMD executed the contract with Electric & Gas Industries Association (EGIA) to administer the Clean Air Furnace Rebate Program. On June 28, 2018, the rebate website was launched ([www.cleanairfurnacerebate.com](http://www.cleanairfurnacerebate.com)). The South Coast AQMD Governing Board initially approved funding of \$3,000,000 for the furnace rebate program, specifying a \$500 rebate for each compliant furnace. In September 2020, the Board approved additional funding of \$3.5 million, modifying the program to specify a \$500 rebate for up to 600 compliant weatherized furnaces, a \$500 rebate for up to 200 high-altitude compliant condensing or non-condensing furnace installations, and a \$1500 rebate for each all-electric heat pump for central ducted space heating. Rebates for weatherized and high-altitude condensing non-condensing furnaces will end on September 30, 2021, when any remaining funds for those categories will be reallocated for all-electric heat pump systems. Rebates for all-electric heat pump systems will conclude once rebate funds are exhausted. The 25% set aside for disadvantaged communities can only be redeemed for units installed in those geographic locations.

### **High-altitude Furnaces Temporary Exemption and Extension**

Rule 1111 was amended in December 2019 to include a temporary exemption from the 14 ng/J NO<sub>x</sub> emission limit that applies to manufacturers, distributors, and installers of condensing and non-condensing natural gas furnaces, for furnaces installed at elevations greater than or equal to 4,200 feet above sea level until September 30, 2020. During this interim exemption period, condensing and non-condensing furnaces installed in high-altitude areas were still required to meet the 40 ng/J NO<sub>x</sub> emission limit. Rule 1111 was again amended in September 2020 to extend this exemption for one year, until September 30, 2021.

### **Further Extension of the Mitigation Fee Option for Weatherized Furnaces**

The September 2020 Rule 1111 amendment also extended the mitigation fee compliance option by one year for weatherized furnaces, until September 30, 2021. As for high-altitude furnaces, the extension was to address the adverse impact of the COVID-19 pandemic on their development and commercialization.

## **EQUIPMENT AND PROCESS**

Fan-type gas-fired furnaces heat a building by circulating air from inside the building (office, home, apartment, etc.) through the furnace. In a fan-type furnace, air is heated when it passes through a heat exchanger. Combustion gases heat up the inside of the heat exchanger, and air from the building that is moving past the outside of the heat exchanger removes heat from the outside surface. A blower (fan) pulls air through one or more intake ducts and pushes the air past the heat exchanger and through another set of ducts, which direct the heated air to different parts of the building. The heated air circulates through the building before it is again pulled into the intake ducts and re-heated. This process continues until a specific temperature is detected by a thermostat in the building, which then shuts off the furnace. When the temperature at the thermostat goes below a set point, the thermostat sends a signal for the furnace to turn on.

Rule 1111 categorizes furnaces into four types: non-condensing, condensing, weatherized, and mobile home furnaces. Condensing furnaces, also called high-efficiency furnaces, utilize a second heat exchanger to recover the latent heat in the flue gas, achieving 90 to 98 percent fuel efficiency. Non-condensing furnaces only use one heat exchanger, with a typical fuel efficiency of about 80 percent. Weatherized furnaces are designed for installation outside of a building, equipped with a protective jacket and integral venting, and labeled for outdoor installation. A weatherized furnace is often referenced as package units by the heating, ventilation, and air conditioning (HVAC) industry as the furnace is packaged with an air conditioning condensing unit. A mobile home furnace means a furnace designed specifically and solely for installation to heat a mobile home.

### **REQUIREMENTS AND TESTS FOR NEW TECHNOLOGY**

Gas furnaces in the United States must meet the ANSI Z21.47/CSA 2.3 standard referred as CSA certification, mainly to ensure safety. To be sold and installed in the South Coast AQMD's jurisdiction, they must also be certified by the South Coast AQMD for Rule 1111 NO<sub>x</sub> emission limit compliance by specific test methods approved by the South Coast AQMD and U.S. EPA. OEMs could also be subject to other regulations, such as ANSI/ASHRAE/IES 90.1-2013, Energy Standard for Buildings Except Low-Rise Residential building required by the U.S. Department of Energy (DOE), and AHRI certification program for verification test of output heating capacity and annual fuel utilization efficiency. For furnace installation, manufacturers provide extensive training programs and instruction material for the contractors and installers.

### **AFFECTED INDUSTRIES**

Proposed Amended Rule 1111 affects manufacturers (NAICS 333), distributors and wholesalers (NAICS 423), and retailers and dealers (NAICS 444) of residential furnaces. Because heating units regulated by the rule are used in most residential and many commercial settings for heating small buildings, construction and building contractors and installers (NAICS 238 and 811) related to residential furnaces are also affected by PAR 1111. The Air Conditioning Heating and Refrigeration Institute (AHRI), the major manufacturer's trade organization, indicates that there are no manufacturers of fan-type gas-fired residential furnaces in the South Coast AQMD. However, these companies do maintain regional sales offices and distribution centers in the South Coast AQMD and there are manufacturers of other types of heating furnaces in the South Coast AQMD.

### **PRODUCT AVAILABILITY**

As part of the implementation status monitoring, staff has been regularly reaching out to manufacturers for their progress on developing and commercializing compliant weatherized furnaces, mobile home furnaces, and furnaces for installation at high-altitude areas.

#### **Availability of Weatherized Furnaces**

For weatherized furnaces, all seven manufacturers expect to meet the October 1, 2021 compliance date for residential applications, and only one manufacturer projects a potential two-month delay for commercial applications. Staff is working with this manufacturer to identify potential compliance options. It is not recommended to extend the weatherized furnace compliance date for one manufacturer when all other manufacturers have compliant furnaces.

#### **Availability of Mobile Home Furnaces**

In the South Coast AQMD residential space heating market, about four percent are mobile home furnaces, currently supplied by four manufacturers. Mobile home furnaces are specifically and solely for installation to heat mobile homes (also known as manufactured homes). A mobile home furnace may be a split system in which the furnace and air conditioner are separated as indoor and outdoor units, respectively. It can also be a weatherized system in which the furnace and air conditioner are packaged and installed as one outdoor system.

New manufactured home gas furnaces must be approved by the U.S. Department of Housing and Urban Development (HUD). The manufacturers will need to develop propane kits for compliant split systems to meet HUD requirement for propane compatibility. The manufacturers will also need to meet the Department of Energy standards upcoming energy efficiency standards by January 1, 2023.

The mitigation fee period for mobile home furnaces ends on September 30, 2021, after which the 14 ng/J NO<sub>x</sub> limit will be applicable. Currently none of the four mobile home manufacturers have made progress on the development of mobile home furnaces. Manufacturers may consider electric heating such as heat pumps, but also suggested that more time is needed for natural gas furnace development.

#### **Furnace Availability for High-altitude Installations**

The furnaces installed at high-altitudes (equal to or above 4,200 feet above sea level) are mostly non-condensing and condensing furnaces. For installations at high-altitude, minor modifications to the furnaces are needed to accommodate different air density and oxygen levels to ensure an optimal air/fuel ratio for burner combustion. The modification involves a high-altitude kit or a built-in manifold adjustment on the 14 ng/J furnace. The compliance date for high-altitude condensing and condensing furnaces has been delayed for two years through two rule amendments in 2019 and 2020. The end date for the mitigation fee alternate compliance option, and therefore the final compliance date for condensing and non-condensing furnaces installed at high-altitudes to meet the 14 ng/J NO<sub>x</sub> limit, will be October 1, 2021.

All manufacturers have made progress in testing to provide condensing and non-condensing furnaces for high-altitude installations. By the October 1, 2021 final compliance date, four manufacturers expect to have compliant furnaces available for elevations up to 7,500-7,800 feet, three of which expect to have all their certified compliant units capable for high-altitude use with or without the need for high-altitude kits. Installers for high-altitude areas expressed the need of assurance that the aforementioned products would be available to installers by the compliance date.

#### **Coverage of Niche Markets in High-altitudes**

Stakeholders raised an issue as to niche market products, including downflow and large-size models ( $\geq 100,000$  btu/hr). By the October 1, 2021 compliance date, there will be no downflow furnaces available for altitudes higher than 5,400 feet, and no manufacturers expect to have models with heat input capacity greater than 100,000 btu/hr available for elevations up to 7,500-7,800 feet. Only two manufacturers will provide models rated at 100,000 btu/hr. Both the markets for downflow and large-size models are very small in the South Coast AQMD. Therefore, their developments did not have as much priority by the manufacturers. Manufacturers have stated that they are not expecting to develop these models in the near future. Consequently, a special consideration is needed for downflow and large-sized furnaces. This consideration would be solely for replacement units for existing buildings. For new buildings, technologies such as heat pumps,

hybrid systems pairing a heat pump and furnace together, twinning kits to pair two furnaces for combined heating, and zoning design can be used as viable alternatives.

**PUBLIC PROCESS**

Staff has been holding ongoing individual meetings with the seven manufacturers to monitor the rule implementation status. The discussions at these meetings included rule implementation status for compliant 14 ng/J weatherized and mobile home furnaces, as well as compliance furnaces for high-altitude installations.

The implementation status and staff recommendation for the proposed amendment were discussed with the working groups on April 14, 2021 and June 3, 2021. Focused discussions on high-altitude installations were conducted on April 29, 2021 and June 9, 2021 with interested stakeholders. A Public Workshop was held on July 7, 2021.

**CHAPTER 2: SUMMARY OF PROPOSED AMENDED RULE 1111**

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**PROPOSED AMENDED RULE REQUIREMENTS**

**INTRODUCTION**

Staff has been closely monitoring the progress of development and commercialization of compliant weatherized furnaces, mobile home furnaces, and furnaces for installation in high-altitude areas. Based on discussions with manufacturers, distributors, and installers, PAR 1111 will extend the compliance date for mobile home furnaces by two years, extend the temporary high-altitude exemption by three months, and provide an exemption for downflow and large-sized furnaces installed as replacement units in high-altitude areas.

**PROPOSED AMENDED RULE REQUIREMENTS****Rule 1111 Definitions**

A new definition for “DOWNFLOW FURNACE” was added to Rule 1111 to provide an exemption for a specified category.

*DOWNFLOW FURNACE means a condensing or non-condensing furnace installed in a configuration in which the furnace takes in cool air from the top, warms it, then releases the warm air through the ductwork below.*

**Rule 1111 Requirements****Extending the mitigation fee alternative compliance option for mobile home furnaces until September 30, 2023**

PAR 1111 proposes to extend the mitigation fee period for mobile home furnaces from September 30, 2021 to September 30, 2023 (see Table 2). This proposal does not change the requirements for the mitigation fee or the recordkeeping and reporting requirements.

**Table 2 – Rule 1111 Table 2 – Alternate Compliance Plan with the Phase One and Phase Two Mitigation Fee Schedules**

Furnace		Phase One Mitigation Fee		Phase Two Mitigation Fee		Phase Two Mitigation Fee Option End Date
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)	
≤ 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, 2021
	Mobile Home	October 1, 2018	\$150	April 1, 2019	\$150	September 30, <del>2021</del> 2023

Furnace		Phase One Mitigation Fee		Phase Two Mitigation Fee		Phase Two Mitigation Fee Option End Date
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)	
> 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, 2021
	Mobile Home	October 1, 2018	\$150	April 1, 2019	\$150	September 30, <del>2021</del> <u>2023</u>
> 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, 2021
	Mobile Home	October 1, 2018	\$150	April 1, 2019	\$150	September 30, <del>2021</del> <u>2023</u>

### Rule 1111 Exemptions

#### **Extend the temporary high-altitude exemption by three months until December 31, 2021**

PAR 1111 proposes to extend the temporary high-altitude exemption by three months as below. This is to allow furnaces certified at 40 ng/J to be installed in high-altitude areas on or before December 31, 2021. This additional three months would provide more certainty for compliant production distribution.

*Condensing or non-condensing furnaces that are certified to meet the 40 ng/J NO<sub>x</sub> limit and are installed at or above 4,200 feet above sea level are exempt from paragraph (c)(4), if that unit is installed on or before December 31, 2021.*

**Providing an exemption for downflow and large-sized replacement furnaces in high-altitude areas**

PAR 1111 proposes to incorporate an exemption at elevations greater than or equal to 4,200 feet, as listed below, for installing condensing and non-condensing furnaces replacing existing units either in a downflow configuration or with heat input capacity at or greater than 100,000 btu/hr. The recordkeeping requirements would be applicable for the exemption of both types of furnaces.

*Effective January 1, 2022, downflow furnaces rated less than 175,000 BTU per hour in heat input capacity and condensing or non-condensing furnaces with rated heat input at or greater than 100,000 BTU per hour, either of which are installed at elevations at or above 4,200 feet above sea level as a replacement for an existing furnace are exempt from paragraph (c)(4), provided that:*

- (A) *The downflow furnace is certified to meet the 40 ng/J NO<sub>x</sub> limit, is replacing an existing furnace, and the shipping carton or name plate of the furnace clearly displays: "This furnace must be installed only as a replacement in a downflow configuration at or above 4,200 feet above sea level in the South Coast AQMD. Installation of this furnace for new construction, in any other configuration, or at a lower elevation will be a violation of South Coast AQMD Rule 1111."; or*
- (B) *The condensing or non-condensing furnace rated at or greater than 100,000 BTU per hour in heat input capacity is certified to meet 40 ng/J NO<sub>x</sub> limit, is replacing an existing furnace, and the shipping carton or name plate of the furnace clearly displays: "This furnace must be installed only as a replacement at or above 4,200 feet above sea level in the South Coast AQMD. Installation of this furnace for new construction or at a lower elevation will be a violation of South Coast AQMD Rule 1111."*

## **CHAPTER 3: IMPACT ASSESSMENT**

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**INTRODUCTION**

**EMISSION REDUCTIONS**

**COST EFFECTIVENESS**

**CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) ANALYSIS**

**SOCIOECONOMIC IMPACT ASSESSMENT**

**DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE  
SECTION 40727**

**INCREMENTAL COST-EFFECTIVENESS**

**COMPARATIVE ANALYSIS**

**INTRODUCTION**

Rule 1111 reduces emissions of nitrogen oxides (NO<sub>x</sub>) from residential and commercial gas-fired fan-type space heating furnaces. This rule is applicable to manufacturers, distributors, and installers of those type of furnaces.

**EMISSION REDUCTIONS**

Based on the 2016 AQMP emission inventory for fuel consumption, the annual average NO<sub>x</sub> emissions from residential heating using natural gas was 9.51 tons per day in 2012. Staff estimates that there are about four million residential type heating furnaces in the South Coast AQMD. Based on a furnace life of 25 years, a typical furnace emits 1.5 to 2.0 pounds of NO<sub>x</sub> per year. The emission rate reduction from 40 ng/J to 14 ng/J results in more than one pound per year of NO<sub>x</sub> emissions reductions for each furnace.

Total mobile home furnace annual sales are estimated at 6,000 units in the South Coast AQMD. A two-year delay in compliance would result in about 0.016 tons per day emission reduction delay for the next 25 years [calculated as:  $(2 \times 6,000 \times 1.0)/(2,000 \times 365)$ ].

Staff tracked furnace sales to be approximately 50 units for high-altitude installations during the two-month period of October and November 2019. Based on this information, total annual high-altitude installation are estimated at 400 units. Downflow and large-sized ( $\geq 100,000$  btu/hr) furnaces comprise a small portion of the total installation. Extending the exemption for all installations in high-altitude areas by three months, and permanently exempting high altitude replacement installations of downflow furnaces and large-sized furnaces would result in a negligible amount (less than one lb~~near zero tons~~ per day) of emission reductions forgone.

Consequently, the NO<sub>x</sub> emissions reduction delay of 0.016 tons per day by this proposal is not significant. The proposed amendments do not result in any significant effect on air quality or significant changes to emissions reductions.

The overall NO<sub>x</sub> emissions reductions remain unchanged. However, the final year (which was 2046 initially, based on a 25-year useful life expectancy) to achieve the overall emission reductions for this rule will now be 2048, as the proposed compliance date for mobile home furnace is delayed for two years.

**COST-EFFECTIVENESS**

A cost effectiveness analysis is not required for PAR 1111. The proposed amendment does not impose additional requirements on manufacturers of compliant residential furnaces meeting the 14 ng/J NO<sub>x</sub> emission limit.

**CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) ANALYSIS**

~~Pursuant to the California Environmental Quality Act (CEQA) and South Coast AQMD's certified regulatory program (Public Resources Code Section 21080.5, CEQA Guidelines Section 15251(l) and South Coast AQMD Rule 110), the South Coast AQMD, as lead agency, is reviewing the proposed project to determine if it will result in any potential adverse environmental impacts. Appropriate CEQA documentation will be prepared based on the analysis.~~

Pursuant to the California Environmental Quality Act (CEQA) Guidelines Sections 15002(k) and 15061, the proposed project is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3). A Notice of Exemption has been prepared pursuant to CEQA Guidelines Section 15062 and if the proposed project is approved, the Notice of Exemption will be electronically filed

with the State Clearinghouse of the Governor's Office of Planning and Research to be posted on their CEQAnet Web Portal, which may be accessed via the following weblink: <https://ceqanet.opr.ca.gov/search/recent>. In addition, the Notice of Exemption will be electronically posted on South Coast AQMD's webpage which can be accessed via the following weblink: <http://www.aqmd.gov/nav/about/public-notices/ceqa-notices/notices-of-exemption/noe--year-2021>. The electronic filing and posting of the Notice of Exemption is being implemented in accordance with Governor Newsom's Executive Orders N-54-20 and N-80-20 issued on April 22, 2020 and September 23, 2020, respectively, for the State of Emergency in California as a result of the threat of COVID-19.

### **SOCIOECONOMIC IMPACT ASSESSMENT**

The proposed amendments to Rule 1111 do not impose any additional requirements and will have no adverse socioeconomic impacts.

### **DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727**

California Health and Safety Code Section 40727 requires that prior to adopting, amending, or repealing a rule or regulation, the South Coast AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report. In order to determine compliance with section 40727, 40727.2 requires a written analysis comparing the proposed amended rule with existing regulations, if the rule meets certain requirements.

The following provides the draft findings.

**Necessity:** A need exists to amend Rule 1111 to extend the mitigation fee alternative compliance option for mobile home furnaces, temporarily extend the high-altitude (greater than or equal to 4,200 feet above sea level) exemption, and provide an exemption for downflow and large-sized (rated at greater than or equal to 100,000 British thermal units per hour) condensing and non-condensing furnaces, replacing existing furnaces in the high-altitude areasecondensing and non-condensing furnaces installed in a downflow configuration in high-altitude areas to ensure there are sufficient units available to consumers.

**Authority:** The South Coast AQMD obtains its authority to adopt, amend, or repeal rules and regulations from California Health and Safety Code Sections 39002, 40000, 40001, 40440, 40702, 40725 through 40728, 41508, and 41700.

**Clarity:** PAR 1111 has been written or displayed so that its meaning can be easily understood by the persons affected by the rule.

**Consistency:** PAR 1111 is in harmony with, and not in conflict with or contradictory to, existing federal or state statutes, court decisions, or federal regulations.

**Non-Duplication:** PAR 1111 does not impose the same requirement as any existing state or federal regulation and is necessary and proper to execute the powers and duties granted to, and imposed upon, the South Coast AQMD.

**Reference:** In amending this rule, the South Coast AQMD hereby implements, interprets, or makes specific reference to the following statutes: Health and Safety Code sections 39002, 40001, 40702, 40440(a), and 40725 through 40728.5.

**INCREMENTAL COST-EFFECTIVENESS**

Health and Safety Code section 40920.6 requires an incremental cost-effectiveness analysis for Best Available Retrofit Control Technology (BARCT) rules or emission reduction strategies when there is more than one control option that would achieve the emission reduction objective of the proposed amendments, relative to ozone, CO, SO<sub>x</sub>, NO<sub>x</sub>, and their precursors. The proposed amendment does not include new BARCT requirements; therefore, this provision does not apply to the proposed amendment.

**COMPARATIVE ANALYSIS**

Health & Safety Code section 40727.2(g) for comparative analysis is applicable when the proposed amended rules or regulations impose, or have the potential to impose, a new emissions limit or standard, or increased monitoring, recordkeeping, or reporting requirements. In this case, a comparative analysis is not required because the amendments do not impose such requirements.

## **CHAPTER 4: APPENDICES**

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**APPENDIX A: REFERENCES**

**APPENDIX B: RESPONSE TO PUBLIC COMMENTS**

**APPENDIX A: REFERENCES**

South Coast AQMD, 2009. *Staff Report: Proposed Amended Rule 1111 – NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces*. South Coast Air Quality Management District, November 2009.

South Coast AQMD, 2014. *Rule 1111 Technology Assessment for Residential Furnaces*. South Coast Air Quality Management District, January 2014.

South Coast AQMD, 2014. *Staff Report: Proposed Amended Rule 1111 – NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces*. South Coast Air Quality Management District, September 2014.

South Coast AQMD, 2017. *Final 2016 Air Quality Management Plan*. South Coast Air Quality Management District, March 2017.

South Coast AQMD, March 2018. *Staff Report: Proposed Amended Rule 1111 – NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces*. South Coast Air Quality Management District, March 2018.

South Coast AQMD, December 2019. *Board letter: Determine That Proposed Amendments to Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces, Are Exempt from CEQA and Amend Rule 1111*

South Coast AQMD, 2020. *Staff Report: Proposed Amended Rule 1111 – NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces*. South Coast Air Quality Management District, September 2020.

**APPENDIX B: RESPONSE TO PUBLIC COMMENTS**

South Coast AQMD staff held a public workshop on July 7, 2021, via Zoom video conference. Comments were received during the public workshop, and no comment letter was received during the comment period.

The following responses summarize the key comments received during the public workshop:

**Comment WS-1:** The stakeholders need certainty that the four manufacturers that will be providing compliant furnaces for high-altitude areas will have those furnaces commercially available by October 1, 2021.

**Response WS-1:** Staff verified three manufacturers already have commercially available compliant units for the high altitude areas and a fourth manufacturer confirmed their compliant units should be commercialized by October 1, 2021. To provide further certainty, PAR 1111 has been changed to extend the high-altitude ( $\geq 4,200$  feet above sea level) exemption end date from September 30, 2021 to December 31, 2021.

**Comment WS-2:** The stakeholders requested to modify the exemption for large-sized furnaces for high-altitude areas to include furnaces “at and above” instead of “above” 100,000 btu/hr.

**Response WS-2:** PAR 1111 has been changed to exempt large-sized furnaces at and above 100,000 btu/hr for high-altitude areas.

**Comment WS-3:** Staff should consider exempting all furnaces in high-altitude areas if the emission reductions are minor.

**Response WS-3:** The emission reductions forgone would be permanent and accumulate over time if the amended rule provided a broad, permanent high-altitude furnace exemption. With 0.001 ton per day emission reductions forgone adding up each year, staff estimates up to 0.03 ton per day in 30 years. On the other hand, manufacturers with compliant products for high-altitude installations oppose a broad exemption. Manufacturers have invested time, money, and resources in high-altitude testing. All manufacturers have made progress and have developed a variety of products suitable for use at varying elevations; and as with new technology, more models and product lines become available over time. A broad exemption for the high-altitude community would raise concerns of equity among manufacturers and would disadvantage those manufacturers who have worked to develop compliant products for the high-altitude areas. On this basis, PAR 1111 extends the high-altitude exemption for three months and provides a niche exemption for high-altitude downflow and large-sized furnaces but does not propose a permanent and broad high-altitude furnace exemption.

## ATTACHMENT H



# South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178  
(909) 396-2000 • [www.aqmd.gov](http://www.aqmd.gov)

**SUBJECT: NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT**

**PROJECT TITLE: PROPOSED AMENDED RULE 1111 – REDUCTION OF NOX EMISSIONS FROM NATURAL-GAS- FIRED, FAN-TYPE CENTRAL FURNACES**

Pursuant to the California Environmental Quality Act (CEQA) Guidelines, the South Coast Air Quality Management District (South Coast AQMD), as Lead Agency, has prepared a Notice of Exemption pursuant to CEQA Guidelines Section 15062 – Notice of Exemption for the project identified above.

If the proposed project is approved, the Notice of Exemption will be electronically filed with the State Clearinghouse of the Governor’s Office of Planning and Research to be posted on their CEQAnet Web Portal which, upon posting, may be accessed via the following weblink: <https://ceqanet.opr.ca.gov/search/recent>. In addition, the Notice of Exemption will be electronically posted on the South Coast AQMD’s webpage which can be accessed via the following weblink: <http://www.aqmd.gov/nav/about/public-notice/ceqa-notice/notices-of-exemption/noe---year-2021>. The electronic filing and posting of the Notice of Exemption is being implemented in accordance with Governor Newsom’s Executive Orders N-54-20 and N-80-20 issued on April 22,2020 and September 23, 2020, respectively, for the State of Emergency in California as a result of the threat of COVID-19.

**NOTICE OF EXEMPTION FROM THE  
CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)**

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**To:** Governor's Office of Planning and Research - State Clearinghouse  
1400 Tenth St, Suite 222  
Sacramento, CA 95814-5502

**From:** South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765

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**Project Title:** Proposed Amended Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces

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**Project Location:** The proposed project is located within the South Coast Air Quality Management District's (South Coast AQMD) jurisdiction, which includes the four-county South Coast Air Basin (all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties), and the Riverside County portion of the Salton Sea Air Basin and the non-Palo Verde, Riverside County portion of the Mojave Desert Air Basin.

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**Description of Nature, Purpose, and Beneficiaries of Project:** Amendments to Rule 1111 are proposed that would: 1) extend the mitigation fee alternative compliance option end date from September 30, 2021 to September 30, 2023 for mobile home furnaces; 2) extend the exemption for condensing and non-condensing furnaces certified at 40 nanograms per Joule (ng/J) for installations in high-altitude areas (e.g., elevations greater than or equal to 4,200 feet) from September 30, 2021 to December 31, 2021; 3) permanently exempt downflow and large-sized (e.g., rated at or greater than 100,000 British thermal units per hour) condensing and non-condensing furnaces that replace existing furnaces in high-altitude areas; and 4) add requirements for recordkeeping and labeling. A delay in achieving approximately 0.016 ton per day (equivalent to 32 pounds per day) of nitrogen oxide (NOx) emission reductions will be expected to occur as a result of the delayed compliance date for mobile home furnaces. A negligible amount of NOx emission reductions forgone (e.g., less than one pound per day) will be expected to occur as a result of the proposed exemptions for furnaces installed in high-altitude areas.

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<b>Public Agency Approving Project:</b> South Coast Air Quality Management District	<b>Agency Carrying Out Project:</b> South Coast Air Quality Management District
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**Exempt Status:** CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption

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**Reasons why project is exempt:** South Coast AQMD, as Lead Agency, has reviewed the proposed project pursuant to: 1) CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA; and 2) CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA. Since the quantity of delayed NOx emission reductions are expected to be temporary and less than the South Coast AQMD air quality significance threshold for NOx, and the amount of permanent NOx emission reductions forgone are negligible, it can be seen with certainty there that there is no possibility that the proposed project may have a significant adverse effect on the environment. Therefore, the project is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption.

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**Date When Project Will Be Considered for Approval (subject to change):**  
South Coast AQMD Governing Board Hearing: September 3, 2021

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<b>CEQA Contact Person:</b> Kendra Reif	<b>Phone Number:</b> (909) 396-3479	<b>Email:</b> <a href="mailto:kreif@aqmd.gov">kreif@aqmd.gov</a>	<b>Fax:</b> (909) 396-3982
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<b>Rule Contact Person:</b> Yanrong Zhu	<b>Phone Number:</b> (909) 396-3289	<b>Email:</b> <a href="mailto:yzhu@aqmd.gov">yzhu@aqmd.gov</a>	<b>Fax:</b> (909) 396-3982
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**Date Received for Filing:** \_\_\_\_\_ **Signature:** \_\_\_\_\_ *(Signed Upon Board Approval)*  
Barbara Radlein  
Program Supervisor, CEQA  
Planning, Rule Development, and Area Sources

# PROPOSED AMENDED RULE 1111

REDUCTION OF NO<sub>x</sub> EMISSIONS FROM NATURAL-GAS-FIRED, FAN-TYPE CENTRAL FURNACES

BOARD MEETING

SEPTEMBER 3, 2021

# Rule 1111 Background

- Rule 1111 establishes NOx limits for natural gas furnaces and applies to manufacturers, distributors, sellers, and installers
- In November 2009, the NOx limit was lowered from 40 to 14 ng/J with a staggered implementation schedule
- Since October 1, 2019, condensing and non-condensing furnaces have been meeting the 14 ng/J NOx limit, except for high-altitude<sup>1</sup> installations
- There are three furnace categories with an October 1, 2021 compliance date (mitigation fee option expires September 30, 2021):
  - Condensing and non-condensing furnaces in high-altitude areas
  - Weatherized furnaces
  - Mobile home furnaces

<sup>1</sup> For elevations  $\geq 4,200$  feet above sea level

# Implementation Status

## High-Altitude Furnaces

- Two manufacturers currently have a full line of products available
- One manufacturer have some models available
- Another manufacturer expects to have products available by October 1, 2021
  - Installers need certainty about this product deployment
- Lack of downflow and large-sized ( $\geq 100,000$  btu/hr) models

## Weatherized Furnaces

- All manufacturers except one are expected to meet the October 1, 2021 final compliance date
- One manufacturer anticipates a delay for their commercial weatherized furnaces
  - Staff is working with this manufacturer on potential compliance pathway

## Mobile Home Furnaces

- None of the manufacturers have developed a compliant 14 ng/J furnace for mobile homes
- Manufacturers requested a 2023 compliance date to better align with other regulatory requirements

# Proposed Amendments

## High-Altitude Furnaces

- Extend the final compliance date to January 1, 2022; and
  - Allow furnaces certified at 40 ng/J to be installed in high-altitude areas until December 31, 2021
- Provide an exemption for downflow and large-sized ( $\geq 100,000$  btu/hr) condensing or non-condensing furnaces which are replacing existing furnaces in high-altitude areas

## Weatherized Furnaces

- No amendment for weatherized furnaces

## Mobile Home Furnaces

- Extend the final compliance date to October 1, 2023 for mobile home furnaces
  - Continue the mitigation fee alternative compliance option to September 30, 2023

# Remaining Key Issue

## High-altitude Furnaces

- Some furnace installers located in high-altitude areas have commented that there is not a sufficient selection of 14 ng/J furnaces for the areas that they serve



## Staff Response

- PAR 1111 extends the compliance date for condensing and non-condensing furnaces installed in high altitude areas to allow a fourth manufacturer to complete testing
- PAR 1111 exempts furnaces  $\geq 100,000$  Btu/hour since there are only two manufacturers with furnaces of this size
- PAR 1111 exempts furnaces in the downflow configuration since there are no downflow furnaces for high altitude areas
- Concerned that if permanently exempt from the 14 ng/J NO<sub>x</sub> limit, forgone NO<sub>x</sub> reductions would be 0.03 tons per year. Although small, this is not insignificant as there are source-specific rules that achieve similar NO<sub>x</sub> reductions

# Staff Recommendations

- Adopt Resolution
  - Determining that Proposed Amendments to Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces, are exempt from CEQA; and
  - Amending Rule 1111