

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Staff Report

Proposed Amended Rule 1111 – Reduction of NO_x Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces

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EXECUTIVE SUMMARY

Rule 1111 – Reduction of NO_x Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces (Rule 1111) reduces emissions of nitrogen oxides (NO_x) from residential and commercial gas-fired fan-type space heating furnaces with a rated heat input capacity of less than 175,000 British thermal units (Btu) per hour or, for combination heating and cooling units, with a cooling rate of less than 65,000 Btu per hour.

Rule 1111 was adopted by the South Coast Air Quality Management District (South Coast AQMD) Governing Board in December 1978. This rule was amended several times, most recently in 2023. The key changes over the years include lowering the NO_x emission limit from 40 to 14 nanograms per Joule (ng/J) in 2009 and providing more time to comply through a mitigation fee alternate compliance option in recent amendments. All furnaces subject to the rule, other than mobile home furnaces, already comply with the 14 ng/J NO_x emission limit. For mobile home furnaces, the mitigation fee alternate compliance option expired on September 30, 2025.

Currently none of the furnace manufacturers have developed natural gas-fueled mobile home furnaces that comply with the 14 ng/J NO_x emission limit. Manufacturers stated that technology transfer could assist with this development, but it would take several years to commercialize new models. Development has not begun due to the low volume of mobile home furnaces sold in the South Coast AQMD, and challenges of meeting additional regulations. Other options such as weatherized furnaces, electric furnaces, and heat pumps are commercially available; however, those options have very limited market adoption for mobile homes.

Staff is proposing to extend the mitigation fee alternate compliance option for mobile home furnaces by five years. Manufacturers would continue to be allowed to comply by paying the mitigation fee for units capable of achieving 40 ng/J NO_x with recordkeeping and reporting requirements until September 30, 2030. The fee amount is not being proposed to change.

Proposed Amended Rule 1111 (PAR 1111) will affect the manufacturers, distributors, retailers, resellers, and installers of mobile home furnaces. Based on the mitigation fee alternate compliance reports submitted by manufacturers, about 2,000 mobile home furnaces are sold in the South Coast AQMD each year. Staff estimates PAR 1111 will delay NO_x emissions reduction by 0.014 ton per day (tpd). The public process for PAR 1111 consisted of a public workshop on November 5, 2025.

CHAPTER 1: BACKGROUND

INTRODUCTION

REGULATORY HISTORY

EQUIPMENT AND PROCESS

REQUIREMENT AND TESTS FOR NEW TECHNOLOGY

AFFECTED INDUSTRIES

NEED FOR PROPOSED AMENDMENTS

PUBLIC PROCESS

INTRODUCTION

The purpose of Rule 1111 is to reduce NO_x 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, with a cooling rate of less than 65,000 Btu per hour. The rule applies to manufacturers, distributors, and installers of such furnaces and 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 includes an alternate compliance option that allows manufacturers to pay a per-unit mitigation fee for four or more 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 buildings in the South Coast AQMD use space heating equipment subject to Rule 1111.

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_x emission limit of 40 ng/J of heat output, which is equivalent to a concentration of 61 parts per million (ppm) at a reference level of 3 percent oxygen and 80 percent Annual Fuel Utilization Efficiency (AFUE), beginning January 1, 1984.

New Lower NO_x Emission Limit of 14 ng/J Established

Rule 1111 was amended in November 2009 to implement the 2007 AQMP Control Measure CMB-03. The 2009 amendment established a new lower NO_x emission limit of 14 ng/J (equivalent to 22 ppm at a reference level of 3 percent oxygen and 80 percent 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_x emission 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 (e.g., a sell-through period) for units manufactured and delivered into the South Coast AQMD prior to the compliance date.

Mitigation Fee to Delay Compliance Deadline for 14 ng/J Furnaces

Rule 1111 was amended in September 2014 to delay the compliance date for condensing furnaces and to provide an alternate compliance option. The alternate compliance option allowed original equipment manufacturers (OEM) 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_x emission limit. The mitigation fee end date was based on the furnace type, which phased in the NO_x emission limit of 14 ng/J over the period from April 1, 2018, to October 1, 2021.

Extension and Increase of the Mitigation Fee

Rule 1111 was again amended in March 2018 because of the lack of commercially available furnaces capable of meeting the NO_x emission limit of 14 ng/J in early 2018. The amendment increased the mitigation fee in two phases to a range of \$300 to \$450, depending on the furnace type and heat input capacity, and extended the mitigation fee compliance option by one and a half 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-fired only furnaces.

Clean Air Furnace Rebate Program

In March 2018, the South Coast AQMD developed a rebate program for consumers who purchased and installed future compliant 14 ng/J furnaces in the South Coast AQMD. The purpose of the rebate program was to help commercialize future compliant furnaces and incentivize consumers to purchase and install them. 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. The South Coast AQMD Governing Board initially approved funding of \$3 million 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 \$1,500 rebate for each all-electric heat pump for central ducted space heating. Rebates for weatherized and high-altitude condensing and non-condensing furnaces ended on September 30, 2021, when remaining funds for those categories were reallocated for all-electric heat pump systems. Rebates for all-electric heat pump systems concluded in April of 2023 when funds were exhausted. The Clean Air Furnace Rebate Program incentivized the installation of over 2,400 heat pump installations, with 25 percent of funds allocated to low income and disadvantaged communities.

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_x emission limit for condensing and non-condensing natural gas 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_x 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.

Further Extension of the Mitigation Fee Option for High Altitude and Mobile Home Furnaces

The October 2021 Rule 1111 amendment further extended the mobile home furnace mitigation fee alternate compliance option by two years, until September 30, 2023. High-altitude furnaces were allowed to be installed until September 30, 2022. An exemption for downflow furnaces rated less than 175,000 Btu and condensing and non-condensing furnaces greater than 100,000 Btu replacing existing furnaces was provided, effective April 1, 2022.

Further Extension of the Mitigation Fee Option for Mobile Home Furnaces

The most recent Rule 1111 amendment in September 2023 further extended the mobile home furnace mitigation fee compliance option by two years, until September 30, 2025. Staff then began work on an amendment which would require zero emissions where feasible, in accordance with the 2022 Air Quality Management Plan control measure R-CMB-02.

Failure to Establish Zero-NOx Emission Standards with Manufacturer Alternative Compliance Option

In the third quarter of 2023, staff initiated the development of PAR 1111, implementing 2022 AQMP Control Measure R-CMB-02. That version of PAR 1111 would have established zero-NOx emission limits and provide a manufacturer alternate compliance option with targets for the sale of both NOx-emitting and zero emission units. As part of that amendment, staff proposed an exemption from zero-NOx emission limits for units installed or used in existing mobile homes or any mobile homes located in master-metered mobile home parks. In addition, staff proposed to continue the mobile home mitigation fee alternate compliance option with no expiration date. At the Public Hearing on June 6, 2025, the Governing Board voted to reject the amendment, maintaining the current rule language with the mobile home furnace mitigation fee expiration date of September 30, 2025.

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, often referred to as a package unit, is packaged with an air conditioning condensing unit. A mobile

home furnace (also known as manufactured homes) means a furnace designed specifically and solely for installation to heat a mobile home. Most mobile homes are designed to accommodate a smaller furnace, usually in a downflow configuration.¹ A downflow furnace draws the air from the top of the unit down through the combustion unit, usually to ducting below. The U.S. Department of Housing and Urban Development (HUD) regulates manufactured homes, which they defined as a factory-built home built after June 15, 1976. They define a factory-built home built prior to June 15, 1976, as a mobile home. New manufactured home gas furnaces must be approved by HUD and must include propane kits for compliant split systems to meet HUD requirement for propane compatibility². These requirements generally mean non-mobile home furnaces cannot be used in a mobile home without retrofits.

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_x 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 Air-Conditioning, Heating, and Refrigeration Institute (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 (PAR 1111) affects manufacturers (NAICS 333), distributors and wholesalers (NAICS 423), and retailers and dealers (NAICS 444) of residential furnaces. PAR 1111 also affects construction and building contractors and installers (NAICS 238 and 811) because heating units regulated by the rule are used in most residential and many commercial settings for heating small buildings. AHRI, the major manufacturer's trade organization, indicates 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.

NEED FOR PROPOSED AMENDMENTS

Staff has been regularly reaching out to manufacturers for their progress on developing and commercializing compliant mobile home furnaces.

In the South Coast AQMD residential space heating market, about 2,000 mobile home furnaces are currently supplied each year by three manufacturers, based on the mitigation fee alternate compliance reports submitted by manufacturers. Mobile home furnaces are specifically and solely for installation to heat mobile 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

¹ <https://mobilehomeliving.org/mobile-home-furnaces/>

² CFR Title 24 Part 3280, incorporating ANSI Z21.47-1990, <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>

a weatherized system, in which the furnace and air conditioner are packaged and installed as one outdoor system.

The mitigation fee period for mobile home furnaces ended on September 30, 2025, after which the 14 ng/J NO_x emission limit has become applicable. Currently, none of the three mobile home manufacturers have developed mobile home furnaces that meet the upcoming 14 ng/J NO_x emission limit as required by the rule. While some zero-emission technologies are currently available, the market adoption is very limited for existing mobile homes. Further, zero-emission technologies may not be feasible for mobile homes located in master metered parks where the electricity supply to each mobile home is limited. While there has been progress with new mobile homes being developed with zero-emission space- and water-heating capabilities, there are challenges for existing mobile homes. Time is needed for the manufacturers to develop, test, and implement units for mobile homes that are capable of achieving NO_x emissions of 14 ng/J; therefore, staff is proposing to amend the rule to provide manufacturers additional time to comply with the NO_x limits.

PUBLIC PROCESS

Staff discussed the alternate mitigation fee option for mobile homes with manufacturers, distributors, installers, and environmental groups and held a Public Workshop on November 5, 2025.

CHAPTER 2: SUMMARY OF PROPOSALS

INTRODUCTION

PROPOSED AMENDED RULE 1111

INTRODUCTION

Staff has been closely monitoring the progress of development and commercialization of future compliant mobile home furnaces; however, based on the implementation status, staff is proposing to extend the compliance date for mobile home furnaces by five years.

PROPOSED AMENDED RULE 1111

Rule 1111 Requirements

Extending the mitigation fee alternate compliance option for mobile home furnaces until September 30, 2030

PAR 1111 proposes to extend the mitigation fee period for mobile home furnaces from September 30, 2025 to September 30, 2030, which is included in Table 2 in PAR 1111 and shown below as Table 1. This proposal does not change the requirements for the mitigation fee or the recordkeeping and reporting requirements.

Table 1– 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, 2025 <u>2030</u> |

| 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, 2025 <u>2030</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, 2025 <u>2030</u> |

CHAPTER 3: IMPACT ASSESSMENT

INTRODUCTION

EMISSION IMPACTS

COST-EFFECTIVENESS

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

SOCIOECONOMIC IMPACT ASSESSMENT

DRAFT FINDINGS UNDER HEALTH AND SAFETY CODE SECTION 40727

INCREMENTAL COST-EFFECTIVENESS

COMPARATIVE ANALYSIS

INTRODUCTION

Rule 1111 reduces emissions of NO_x from residential and commercial gas-fired fan-type space heating furnaces, and is applicable to manufacturers, distributors, and installers of applicable furnaces. The proposed rule amendment does not seek further emission reductions; but proposes to extend the mitigation fee period for mobile home furnaces, which will delay some emission reductions.

EMISSION IMPACTS

Based on the 2022 AQMP emission inventory for fuel consumption, the annual average NO_x emissions from residential heating using natural gas were 11.67 tons per day (tpd) in 2018. 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 approximately one and a half to two pounds of NO_x per year. The rate of emission reductions from 40 ng/J to 14 ng/J results in more than one pound per year of NO_x emission reductions for each furnace.

Total mobile home furnace annual sales are estimated at 2,000 units in the South Coast AQMD. A five-year delay in compliance would result in an estimated 0.014 tpd of delayed emission reduction [calculated as: $(5 \times 2,000 \times 1.0)/(2,000 \times 365)$].

COST-EFFECTIVENESS

A cost effectiveness analysis is not required for PAR 1111 as the proposed amendment does not impose additional requirements on manufacturers, distributors, wholesalers, retailers, and dealers of residential furnaces.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Pursuant to the California Environmental Quality Act (CEQA) Guidelines Sections 15002(k) and 15061, the proposed project (PAR 1111) is exempt from CEQA pursuant to CEQA Guidelines Sections 15061(b)(3). A Notice of Exemption will be prepared pursuant to CEQA Guidelines Section 15062, and if the proposed project is approved, the Notice of Exemption will be filed with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties, and with the State Clearinghouse of the Governor's Office of Land Use and Climate Innovation. .

SOCIOECONOMIC IMPACT ASSESSMENT

A socioeconomic impact assessment is not required by Health and Safety Code Sections 40440.8 and 40728.5 because the proposed amendments to Rule 1111 will not significantly affect air quality or emission limitations, and thus, will not result in socioeconomic impacts.

DRAFT FINDINGS UNDER HEALTH AND SAFETY CODE SECTION 40727

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. To determine compliance with Health and Safety Code Section 40727, Health and Safety Code Section 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 alternate compliance option for mobile home furnaces.

Authority: The South Coast AQMD obtains its authority to adopt, amend, or repeal rules and regulations from 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, carbon monoxide, sulfur oxides, NO_x, and their precursors. The proposed amendments to Rule 1111 do not include new BARCT requirements; therefore, an incremental cost-effectiveness analysis as set forth in this provision is not required.

COMPARATIVE ANALYSIS

Health and Safety Code Section 40727.2(g) which requires a comparative analysis is applicable when a proposed amended rule or regulations imposes, or has the potential to impose, a new emissions limit or standard, or increased monitoring, recordkeeping, or reporting requirements. In this case for PAR 1111, a comparative analysis is not required because the amendments do not impose such requirements

APPENDIX A: RESPONSES TO COMMENTS

PUBLIC COMMENTS

COMMENT LETTERS

PUBLIC COMMENTS

The following is summary of the verbal and written comments received and staff responses.

Verbal Comments Received at the Public Workshop

Staff held a Public Workshop on November 5, 2025 to provide a summary of the preliminary draft PAR 1111. The following is a summary of the verbal comments received and staff responses.

Comment PW-1: Leslie Gooch (CEO of Manufactured Housing Institute)

Expressed concerned regarding the mitigation fee option compliance gap between the end date of September 30, 2025, and the rule adoption date for the current rule amendment.

Response to Comment PW-1:

Stakeholders can seek a variance for installing furnaces capable of achieving a NO_x emission limit of 40 ng/J prior to the rule amendment being adopted to extend the mitigation fee option, though that process will also take time. The alternative option is zero-emission technologies, which are becoming more popular for new mobile homes. Some existing mobile homes are also considering those technologies and taking advantage of incentives. The South Coast AQMD GO ZERO Incentive Program has provided many incentives to heat pumps installed in existing mobile homes. Staff understands that zero-emission space heating appliances are not feasible in all mobile homes.

Comment PW-2: Todd Titus (HARDI)

The ultra-low NO_x (14 ng/J) emission limit and mitigation fee alternate compliance option for mobile home furnaces should be removed from the rule

Response to Comment PW-2:

The ultra-low NO_x limit was established in 2009. Technology development projects conducted in 2010-2013, co-sponsored by the South Coast AQMD and the Southern California Gas Company, demonstrated that ultra-low NO_x furnace burners are achievable in all types of forced air residential heating furnaces, including mobile home furnaces. In subsequent years, manufacturers successfully commercialized all other type of ultra-low NO_x furnaces. Manufacturers expressed that more time is needed for mobile home furnace development, and they support the regulatory relief provided by this rulemaking.

Comment PW-3: Steve Hewitt (HVAC Contractor)

Older mobile home parks do not have the electrical capacity to support the installation of zero-emission furnaces, and thus still need gas furnaces. Also expressed concerned on the ability to supply compliant mobile home furnaces during the compliance gap prior to the rule amendment.

Response to Comment PW-3:

The current rule proposal is extending the mitigation fee alternate compliance option, so mobile home manufacturers can sell gas furnaces while developing the technology to meet the 14 ng/J NO_x emission limit. Regarding the compliance gap, please refer to Response to Comment PW-1.

Comment PW-4: Jess Maxcy (California Manufactured Housing Institute)

Manufacturers have installed furnaces capable of achieving a NO_x emission limit of 40 ng/J in new mobile homes ready to be sold and utilized in the South Coast AQMD. Inquired what a manufacturer would have to do to sell their new mobile homes before the rule is amended to extend the mitigation fee option.

Response to Comment PW-4:

Please refer to Response to Comment PW-1.

Comment PW-5: Rob Loomis (Cavco - Riverside/Mobile Home Dealer)

Building electrification would make mobile homes more unaffordable. Suggested to provide incentives to mobile homes.

Response to Comment PW-5:

The current rule proposal is extending the mitigation fee alternate compliance option, so mobile home manufacturers can sell gas furnaces while developing the technology to meet the 14 ng/J NO_x emission limit. The rule does not require use of a zero-emission furnaces in mobile homes. Incentives are available for certain mobile home installations. For example, the South Coast AQMD GO ZERO Incentive Program includes incentives for installing zero-emission heat pumps furnaces and water heaters in mobile homes; however, staff understands that electric heat pump appliances are not feasible in all mobile homes.

Comment PW-6: Arnold (Stakeholder)

Asked if staff is proposing zero-emission standard for this amendment. Staff needs to be careful about the cost effectiveness of any proposal.

Response to Comment PW-6

Staff is not proposing a zero-emission standard. The current proposal is to provide more time for the manufacturers to use the current alternate compliance option that has been in effect since 2018; no additional cost expected.

Comment PW-7: Allison Skidd (Rheem)

Supported the regulatory relief for allowing the continued sale of mobile home furnaces capable of achieving a NO_x emission limit of 40 ng/J or less to provide more time for market adoption of heat pumps and other electric options. Encouraged staff to continue programs like GO ZERO to help offset the cost to consumers for zero-emission technologies. Recommended an evaluation on market adoption of those alternatives prior to the end of the proposed extension (i.e., September 30, 2028)

Response to Comment PW-7:

Staff will monitor the progress in developing mobile home furnaces capable of achieving a NO_x emission limit of 14 ng/J or less and the adoption of zero-emission mobile home furnaces during this alternate mitigation fee period. Staff is also proposing to include a longer timeframe, until September 30, 2030, to allow for the continued sale of mobile home furnaces capable of achieving a NO_x emission limit of 40 ng/J or less. This additional time will also allow time for market adoption of the zero-emission mobile home furnaces.

Comment PW-8: Phil Copeland (Champion Homes)

There are no mobile home furnace technologies that are compliant with the 14 ng/J NO_x emission limit. Appreciated the proposed extension.

Response to Comment PW-8

Staff understands that currently there are no natural gas-fired mobile home furnace technologies that meet the 14 ng/J NO_x emission limit; that is why staff is proposing to extend the alternate compliance option for mobile homes. This extension will allow manufacturers time to develop the technology. Additionally, other technologies, such as electric resistance furnaces and heat pumps exist that are compliant with the 14 ng/J NO_x emission limit.

Comment PW-9: Chris M. Forth (Bosch, formerly JCI)

Supported the extension of the mitigation fee option end date. Asked for clarification on applying for variance as a distributor.

Response to Comment PW-9

Staff appreciates the comments. For more information regarding applying for variance, please refer to Response to Comment PW-1 and visit the South Coast AQMD webpage: <https://www.aqmd.gov/nav/about/hearing-board/about-variances>.

Comment PW-10: Robert Glass (Daikin)

Concerned on the challenge for developing propane furnace capable of achieving the NO_x emission limit of 14 ng/J.

Response to Comment PW-10:

Rule 1111 applies to natural gas furnaces and provides an exemption from the 14 ng/J NO_x emission limit for furnaces using conversion kits so that propane can be used in lieu of natural gas.

COMMENT LETTERS

The following comment letters were received since the Public Workshop on November 5, 2025.

COMMENT LETTER #1: HEATING AIR CONDITIONING REFRIGERATION DISTRIBUTORS INTERNATIONAL (HARDI)



November 5, 2025

Peter Campbell
Planning, Rule Development, and Implementation
South Coast Air Quality Management District
21865 Copley Dr, Diamond Bar, California 91765

RE: HARDI Comment Letter – Proposed Amended Rule 1111

Dear Peter Campbell,

Heating, Air-conditioning, & Refrigeration Distributors International (HARDI) appreciates the opportunity to comment on the South Coast Air Quality Management District's (SCAQMD) Proposed Amended Rule (PAR) 1111. HARDI appreciates SCAQMD's action to provide the necessary extension under PAR 1111. However, HARDI **strongly urges SCAQMD to amend the PAR 1111 to remove the ultra-low NOx requirements for mobile home furnaces.** The mitigation fee is an unnecessary burden on a sector of housing that has no option but to pay it.

HARDI is a trade association comprised of more than 1,150 member companies, more than 550 of which are U.S.-based wholesale distribution companies. These include 26 wholesaler-distributor members in California, which serve HVACR contractors and technicians in the state. Over 80 percent of HARDI's distributor members are classified as small businesses that collectively employ more than 60,000 U.S. workers, representing an estimated 75 percent of the U.S. wholesale distribution market for HVACR equipment, supplies, and controls.

The SCAQMD is considering extending the deadline for mobile home furnaces to install noncompliant furnaces with a fee, rather than following the ultra-low NOx emissions requirement. Meaning, if adopted as is, until October 1, 2028, a household may install a 40 nanograms per Joule (ng/J) emission furnace and pay a mitigation fee instead of installing an ultra-low NOx emission (14ng/J) furnace. This compliance option is needed because no ultra-low NOx furnace is available for mobile homes. Forcing every mobile home household to have no choice but to pay the mitigation fee every time they purchase a furnace. This is not an alternative compliance "option"; it is a forced mitigation fee due to the lack of ultra-low NOx alternatives for mobile homes, and none are likely to ever be available.

Additionally, the typical mobile home household qualifies as low-income. The mitigation fee funds an electrification incentive program, which means that low-income families are financing the incentive program for other households within the SCAQMD jurisdiction. Furthermore, the funding for the incentive program does not benefit mobile home households, since electrifying their homes increases their cost of living more than installing a gas furnace would, even if that furnace isn't ultra-low NOx.

1-1

1-1

To demonstrate the utility cost difference beyond installation, we can look at the great tools that energy offices across the United States have developed. Using [Efficiency Maine's](#) virtual residential heating system cost calculator, along with the approximate average rates for electricity (kWh) and natural gas (therm) in Los Angeles County, California (SCAQMD's largest county), we learn that if electric heat pump installations are performed, the cost of living for a household will increase. Specifically, the average annual cost for an electric ducted heat pump in Los Angeles County would be approximately \$3,745, compared to around \$1,880 for a natural gas furnace. That is an average monthly increase of approximately \$156 per month for the low-income household. However, this does not account for the inevitable rise in electricity prices that would result from the increased demand under the proposal. So we can assume the heat pump's annual consumption will grow even higher as more electrification is required before demand can be met for affordable electricity.

HARDI appreciates SCAQMD's recognition of the need to extend the mitigation fee deadline for mobile home furnaces. However, HARDI believes that, with the recognition that the mitigation fees are to be extended, comes the realization of the financial harm they place on low-income households living in mobile homes. Thus, HARDI believes the ultra-low NOx requirements for mobile home furnaces should be entirely removed. SCAQMD should not merely extend the mitigation fee for noncompliant ultra-low NOx furnaces. Extending the mitigation fee would continue to require low-income households to pay for others' electrification.

Sincerely,



Todd Titus
Director of State and Public Affairs
Heating, Air-conditioning, & Refrigeration Distributors International

445 Hutchinson Avenue, Suite 550, Columbus, OH 43235

614.345.4328 HARDInet.org [/in/HARDI](https://www.linkedin.com/company/HARDI) [@HARDInews](https://twitter.com/HARDInews) [HARDIhvacr](https://www.facebook.com/HARDIhvacr)

Response to Comment Letter #1

Response to Comment 1-1:

Staff is not proposing a zero-emission standard at this time so the cost examples provided are not applicable. The current proposal is to provide more time for the manufacturers to use the current alternate compliance option that has been in effect since 2018; no additional cost expected. The majority of the GO ZERO Incentive Program funding is mitigation fees collected from manufacturers of other type of furnaces, not mobile home furnaces. Regarding the comment on removing the requirement entirely, please refer to Response to Comment PW-2.

COMMENT LETTER #2: MANUFACTURED HOUSING INSTITUTE (MHI)

November 19, 2025

Peter Campbell
 Planning, Rule Development, and Implementation
 South Coast Air Quality Management District
 21865 Copley Dr
 Diamond Bar, CA 91765

RE: Manufactured Housing Institute (MHI) Comments on Proposed Amended Rule 1111 – Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnace

2-1

Dear Mr. Campbell,

The Manufactured Housing Institute (MHI) writes to provide comments in response to the Proposed Amended Rule 1111 “Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnace” (PAR 1111).

MHI is the only national trade association that represents every segment of the factory-built housing industry. Our members include builders, suppliers, retail sellers, lenders, installers, community owners, community managers, and others who serve our industry, as well as 48 affiliated state organizations. Our industry is on track to build more than 100,000 homes this year, accounting for approximately 9 percent of new single-family home starts. These homes are produced by 37 U.S. corporations in 150 homebuilding facilities located across the country. Today, MHI members represent over 90 percent of all manufactured homes constructed and we are pleased to submit the following comments on behalf of this important industry.

Manufactured housing is the most affordable homeownership option for American families. Last year, the price for an average manufactured home was \$123,300, while the average site-built home was around \$406,000 (excluding land). The average income for a manufactured home buyer was about \$63,000 while the average income for a site-built home buyer was about \$143,000.

MHI appreciates the work California’s 35 air quality management districts (AQMDs) do. However, despite federal preemption under the Department of Housing and Urban Development’s (HUD) National Manufactured Housing Construction and Safety Standards Act (the HUD Code), the South Coast AQMD and the San Joaquin AQMDs have continued to apply Rule 1111 “Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnace” to manufactured housing. While MHI has challenges with Rule 1111 itself and its relation to HUD preemption, the larger issue is that the rule now establishes September 30, 2025, as the final date for the option to pay a mitigation fee for alternative compliance. Since that date, non-compliant furnaces have not been permitted, and manufactured homes equipped with them have not been allowed to be installed in California. With the enforcement of this rule and elimination of the mitigation fee entirely, AQMDs are enforcing a rule that is technically impossible to comply with for manufactured housing, creating a de facto ban on new installations after September 30, 2025.

Given the major impact this ban has on the California manufactured housing industry and the outstanding HUD-level engagement with the AQMDs, MHI supports the Proposed Amended Rule 1111 that creates an extension to the final date of the mitigation fee alternate compliance option until October 1, 2028.

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 (703) 558-0400 | info@mfghome.org
www.manufacturedhousing.org

Page 2
Comments by the Manufactured Housing Institute
November 19, 2025

Massive Impact on Manufactured Housing Supply in California

2-1

In 2024, 41.4% of all manufactured homes in California were installed in the two affected AQMDs. 2,871 homes were licensed statewide, with 1,188 in the South Coast and San Joaquin districts. The SCAQMD staff report notes that about 2,000 furnaces impacted by the mitigation fee are sold in the South Coast AQMD yearly, underscoring their importance for existing communities and owners. While ultra-low NO_x furnaces exist for site-built homes, they do not exist for manufactured homes. Manufactured home furnaces are smaller, more compact, and often installed in tighter spaces, making it harder to integrate the necessary emission-reduction technologies. If the rule is enforced without a compliant furnace, thousands of homes will be stranded, not only homes already in production but also homes sold and in line for production as well as future orders. Additionally, California's disaster recovery readiness would take a heavy hit. Manufactured homes are a critical part of FEMA's disaster response and post-disaster housing recovery. The inability to install homes in these districts will cripple emergency housing efforts in California.

Alternatives are Costly and Impractical

The lack of alternative furnaces stems not from a lack of effort by industry, but rather from logistical impracticalities due to the inherent nature of the homes and their placements. As mentioned previously, manufactured home furnaces are smaller and more compact than site-built versions, limiting the ability to incorporate the necessary technology. Manufacturers are unable to install electric furnaces because many manufactured home communities in California are limited to 50-amp electrical service. Even 100-amp service can be tricky, requiring specific limitations to house size and all other appliances be gas or otherwise eliminated. A fully electric home would exceed the available capacity, making it impractical. Propane conversion kits are also a poor solution. Heat pumps are not viable for most manufactured homes due to their high cost at an estimated at \$4,000-\$6,000 per unit, engineering complexity, and space constraints. Just like with electric furnaces, heat pumps are also incompatible with 50-amp service common in manufactured communities and the outdoor components are often impractical in dense communities.

The lack of viable alternatives is not just an issue for new homes, but for current homeowners needing replacements too. Since the mitigation fee deadline lapsed, if a current homeowner experienced difficulty with their furnace and needed a replacement, they would not have been able to get one as it would have been out of compliance. Homeowners are then left in a difficult spot where they either must suffer without a replacement or brainstorm their own alternatives which could create dangerous situations. By extending the mitigation fee date, homeowners can get the appliances they need to live safely and comfortably.

Precedent for Extension Does Exist

Over the years, the AQMDs have extended the compliance deadline six to eight times, acknowledging the impracticality of the requirement. Moreover, an extension of the date to January 1, 2027 was presented as previous proposal that was eventually voted down in June of this year. Confirming the extension to October 1, 2028 would not be an unusual or novel action and would allow for the necessary time to resolve outstanding higher-level conversations.

Page 3
Comments by the Manufactured Housing Institute
November 19, 2025

Conclusion

The manufactured housing industry provides crucial attainable homeownership opportunities for Californians. If the ability to pay the mitigation fee related to Rule 1111 was extended to October 1, 2028, the current burden on the affordable housing supply caused by the ban on manufactured homes would be relieved and more homeownership opportunities would be brought within reach for Californians.

In closing, we thank South Coast AQMD for proposing this Amended Rule and for considering these comments.

Sincerely,



Lesli Gooch, Ph.D.
Chief Executive Officer

2-1

Response To Comment Letter #2

Response to Comment 2-1:

PAR 1111 is not in conflict with HUD preemption. The HUD code for mobile homes establishes construction and safety standards, while PAR 1111 regulates NOx emissions from mobile home furnaces.

Staff appreciates the support on the mitigation fee alternate compliance option extension for mobile home furnaces. Staff is proposing to extend the initial proposed mitigation fee sunset date from September 30, 2028, to September 30, 2030, to allow additional time for manufacturers to develop ultra-low NOx mobile home furnaces.

COMMENT LETTER #3: COOL AIR SOLUTIONS**Yanrong Zhu**

From: Tyler Holmquist <tyler@coolairsolutions.com>
Sent: Friday, November 21, 2025 10:35 AM
To: Yanrong Zhu
Subject: [EXTERNAL] Mobile Home / Manufactured Home Ultra Low NOx Extension

Hello Yanrong,

I received your contact information from one of your colleagues. I'm reaching out regarding Mobile Home Furnaces (typically 100,000 BTU and below) and the recent September rule that prohibits the installation of non-Ultra-Low NOx Mobile Home Furnaces.

The challenge we are facing is that no manufacturer currently produces a mobile home furnace that meets the Ultra-Low NOx requirement of 14 ng/J or lower. Because of this, homeowners in mobile homes are effectively being forced into all-electric solutions, which are significantly more expensive than a standard furnace replacement. Additionally, the existing Ultra-Low NOx furnaces on the market are too large to fit into mobile home equipment closets and are not mobile home rated by manufacturers, making them non-compliant for installation.

Many of these homeowners live in retirement communities on fixed incomes or in low-income areas. They simply cannot afford the cost of a full all-electric conversion, especially as we head into the colder months.

Given these constraints, we are requesting approval to continue installing standard mobile home furnaces until manufacturers are able to produce an Ultra-Low NOx mobile home rated alternative. Without this allowance, many vulnerable residents will be left without safe and adequate heating.

Thank you for your time and consideration. I'm more than happy to discuss this further by phone if needed.

I look forward to your response.

Best Regards,

**TYLER H***Sales Manager*

✉ tyler@coola

📍 41638 East

3-1

Response to Comment Letter #3

Response to Comment 3-1

Staff is proposing to amend the rule to allow the continued sale of the market available low-NOx mobile home furnaces, until September 30, 2030. The Public Hearing for this amendment is scheduled for January 9, 2026.

Until the amendment is finalized, stakeholders may apply for a variance to install low-NOx furnaces in mobile homes. However, the variance process can take time, and it is likely the rule amendment will be completed before a variance process is complete. For more information on the variance procedure, please our website at <https://www.aqmd.gov/nav/about/hearing-board/about-variances>.

As an alternative, stakeholders may consider zero-emission technologies, which are increasingly used in new mobile homes. Some existing mobile homes are also successfully transitioning to zero-emission space-heating technologies and are taking advantage of available incentives. The South Coast AQMD GO ZERO Incentive Program has provided many incentives for the installation of heat pumps in existing mobile homes. Staff acknowledges, however, that zero-emission space heating appliances may not be feasible in all mobile homes.