

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

PUBLIC CONSULTATION

JULY 19, 2023

Zoom meeting: <https://scaqmd.zoom.us/j/95678446098>

Meeting ID: 956 7844 6098

Conference Call: +1 669 900 6833

AGENDA

Rule 1111
Background

Stakeholder
Meetings

Staff Proposal

Next Steps:
Zero-Emission
Assessment

RULE 1111 BACKGROUND

- ❑ Adopted in December 1978 and established a NOx limit of 40 ng/J
- ❑ Applies to manufacturers, distributors, sellers, and installers of residential and commercial natural gas furnaces
- ❑ NOx limit lowered to 14 ng/J in November 2009 with future compliance dates
 - Mitigation fee alternative compliance option allowed for a limited period
- ❑ Condensing, non-condensing, and weatherized furnaces have achieved compliance of 14 ng/J NOx
- ❑ Mobile home furnace mitigation fee alternate compliance option ends on September 30, 2023
 - ❑ Subject to 14 ng/J NOx limit after September 30, 2023

Category	Final Compliance Date (14 ng/J NOx)
Condensing/ Non- Condensing	September 30, 2019 ✓
Weatherized	September 30, 2021 ✓
Mobile Home	September 30, 2023

MOBILE HOME FURNACES – CURRENT STATUS

- ❑ Mobile home implementation of 14 ng/J NO_x limit is approaching
 - There is limited availability of compliant furnaces for mobile homes
- ❑ Staff is initiating rule-making process to address implementation concerns for mobile home furnaces



PUBLIC PROCESS

**Information
Gathering,
Meeting with
Manufacturers**

**Public
Consultation –
July 19, 2023**

**Stationary Source
Committee –
August 18, 2023**

**Public Hearing –
September 1, 2023**

Public Process Throughout Rule Development

Public
comments and
Board action

MEETING WITH STAKEHOLDERS



- ❑ Reached out to manufacturers for mobile home furnace development
- ❑ In process of scheduling more meetings with stakeholders

June 7, 2023

- ❑ Met with Carrier

July 11, 2023

- ❑ Met with Rocky Mountain Institute and Earthjustice

June 13, 2023

- ❑ Met with Nortek

In Process

- ❑ Schedule meeting with other stakeholders

MOBILE HOME FURNACE - IMPLEMENTATION STATUS

There are three manufacturers supplying mobile home furnaces in South Coast AQMD

No manufacturer offers a natural gas mobile home furnace compliant with 14 ng/J

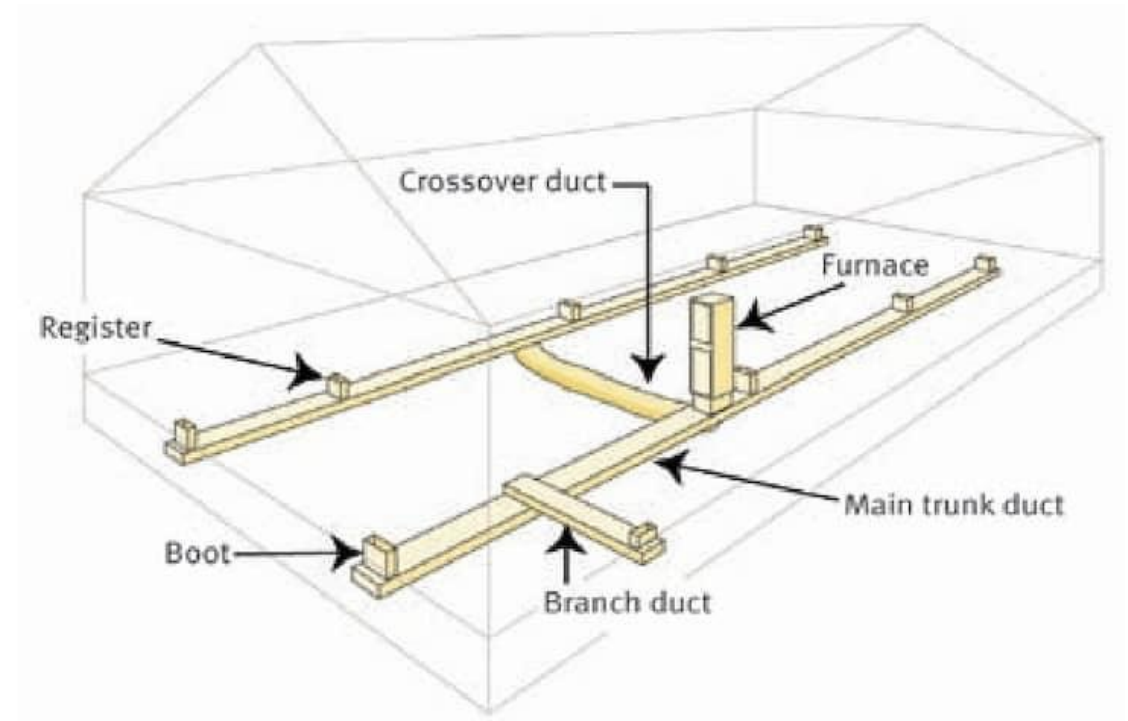
- Other options such as weatherized furnaces, electric furnaces, and heat pumps are commercially available
- However, those options have very limited market adoption in this area

Manufacturers noted challenges and have no plans to develop mobile home furnaces that meet 14 ng/J

- May increase electric offerings, including heat pumps and electric furnaces
- One manufacturer suggested incentivizing electric solutions via increased mitigation fee

CHALLENGES - DESIGN CONSTRAINTS FOR MOBILE HOME FURNACE

- ❑ Mobile home furnaces are smaller than a typical furnace due to the size of mobile homes
- ❑ Compliant burners designed for residential furnaces need to be re-sized to fit this configuration
- ❑ Often use downflow configuration because ducting for a mobile home is in the floor
- ❑ Department of Housing and Urban Development requires mobile home furnaces be capable of using both natural gas and propane
- ❑ Department of Energy is proposing to require furnaces meet 95% annual fuel utilization efficiency by 2029



CHALLENGES FOR MOBILE HOME FURNACE MANUFACTURERS

- ❑ Total number of mobile home furnaces sold in South Coast AQMD is small
 - Only about 4 percent of total furnace sales
- ❑ California pushing for the implementation of zero-emission technologies
 - Manufacturers pursuing zero-emission technologies rather than investing in ultra-low NOx technology development
- ❑ Manufacturers consider payback time too long to be viable

COMPLIANT FURNACE OPTIONS FOR MOBILE HOME FURNACE

Weatherized furnaces

- Designed for installation outside the home
- Could be installed for some mobile homes, but the adoption is rare due to space constraints
- Manufacturers offer weatherized furnaces that meet 14 ng/J

Electric furnaces

- Zero emissions, use electric resistors to provide heat
- Already common in mobile homes
- Significantly higher operating expenses (e.g., electricity) than natural gas units

Heat pumps

- Zero emissions, uses energy efficient heat pump technology
- May require electrical and duct upgrades for existing mobile homes
- Operating costs similar to natural gas units due to high efficiency (3-4 times more energy efficient than electric furnaces)

PROPOSED AMENDED RULE 1111

□ Postpone mitigation end date for mobile homes by two years for all size ranges.

➤ Manufacturers will continue to pay mitigation fees per unit sold

➤ Mitigation fee option extended to September 30, 2025

Size Range	Furnace Category	Phase One Mitigation Fee		Phase Two Mitigation Fee		Phase Two Mitigation Fee Option End Date
		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, 2023 September 30, 2025
> 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, 2023 September 30, 2025
> 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, 2023 September 30, 2025



NEXT STEPS

ZERO-EMISSION ASSESSMENT

THE 2022 AIR QUALITY MANAGEMENT PLAN



On December 2, 2022, the South Coast AQMD Governing Board adopted the 2022 AQMP

- Lays a path for improving air quality and meeting federal air pollution standards by the year 2037

Highlights

- Reduces approximately 70% of smog-forming emissions beyond existing regulations by 2037
- Provides substantial health benefits, saving the region \$19 billion in health costs
- Provides higher benefits for environmental justice communities
- Lays out actions needed by the federal government to reduce emissions from sources that are under federal regulatory
- Requires zero-emission technologies across all sectors
- Establishes new cost-effectiveness threshold of \$325,000 per ton of NOx reduced

ZERO EMISSIONS - FUTURE AMENDMENTS

- ❑ The 2022 Air Quality Management Plan establishes a path for improving air quality and meeting federal air pollution standards by 2037
 - Zero-emission technologies proposed across all sectors wherever feasible to meet stringent standards
 - Staff considering conducting rule development for Rules 1111 and 1121 in parallel

Rulemaking Phase	Rule	2022 AQMP Control Measure	Anticipated Date
Phase 1 (current focus)	1146.2	C-CMB-01 (Commercial water heating)	November 2023
	1111	R-CMB-02 (Residential space heating)	2024 (first/second quarter)
	1121	R-CMB-01 (Residential water heating)	2024 (first/second quarter)
	1111.1 (new)	C-CMB-02 (Commercial space heating)	2024 (first/second quarter)
Phase 2	TBD (new)	R-CMB-03 (Residential cooking)	TBD
	TBD	R-CMB-04 (Residential other combustion sources)	TBD
	TBD	C-CMB-03 (Commercial cooking)	TBD

RULE 1111 – ZERO EMISSION AMENDMENT

Concurrent with the mitigation fee amendment, staff is:

Conducting data analysis for feasibility of future zero emission amendment

- First Working Group Meeting in Fall of 2023

Incentivizing zero-emission appliances

- New incentive program under development

INCENTIVE PROGRAMS

❑ Clean Air Furnace Rebate (Completed)

- Phase I incentives: \$3.5M for Ultra-Low NOx furnaces, 2018-2019
- Phase II incentives: \$3M for heat pumps, 2020-2023
 - More than 2,400 heat pumps installed

❑ Clean Air Appliance Rebate Program (In Development)

- Proposing fund for heat pumps (both single and multi-family homes)
- Strong focus on disadvantaged communities
- Will consider incentivizing mobile home units



RESIDENTIAL SPACE HEATING – ZERO-EMISSION REQUIREMENTS IN CALIFORNIA



Bay Area AQMD (BAAQMD)

- Adopted a zero-emission standard effective 2029



California Air Resources Board (CARB)

- Commencing process to adopt a zero-emission standard for new space heaters sold in California beginning in 2030



California Energy Commission (CEC)

- Passed state building codes in 2021, effective in 2023, that encourage the proliferation of zero-emissions solutions



Los Angeles City Council

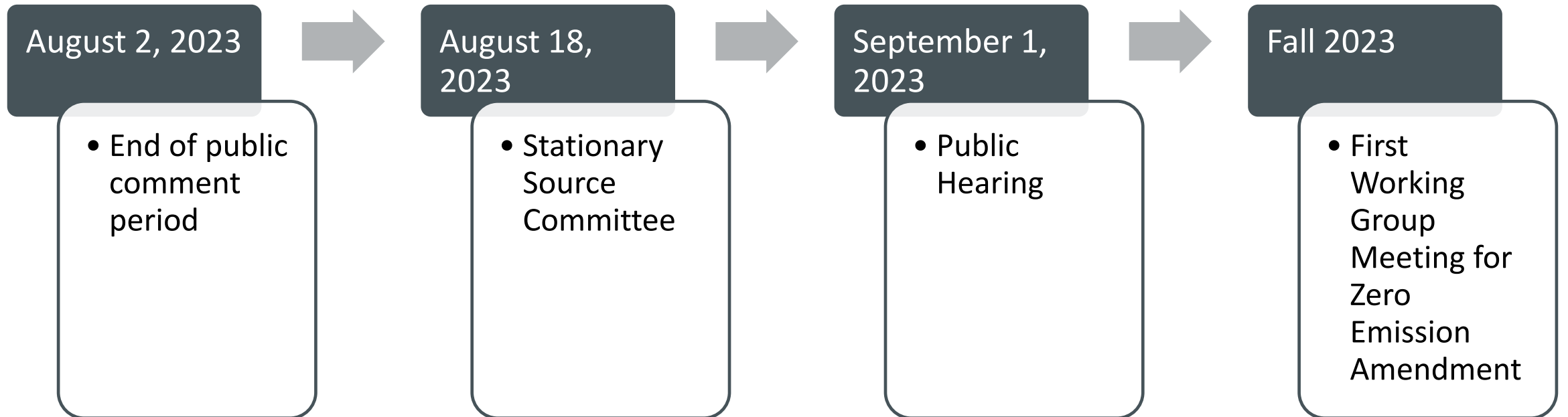
- Requires all new residential and commercial buildings to operate on a zero-emission basis effective 2023



Riverside City Council

- Requires all-electric appliances for new residential and commercial buildings under three stories effective 2023, and buildings over three stories effective 2026

NEXT STEPS



SIGN UP FOR NOTIFICATIONS

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<http://www.aqmd.gov/sign-up>

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