PROPOSED AMENDED RULE 1111
PUBLIC WORKSHOP

SOUTH COAST AQMD
JULY 15, 2020

Zoom Meeting:  https://scaqmd.zoom.us/j/97727225602
Meeting ID:  977 2722 5602
Conference Call: 1 (669) 900-6833
RULE 1111 BACKGROUND

Rule applies to manufacturers, distributors, sellers, and installers of residential and commercial natural gas-fired fan-type central furnaces.

- **December 1978**: Rule first adopted. Established 40 ng/J NOx emission limit.
- **November 2009**: Delayed compliance date for furnaces installations at high altitude (≥4,200 ft).
- **September 2014**: Lowered limit to 14 ng/J NOx with 2014 compliance date.
- **October 2019**: Delayed compliance date for 14 ng/J NOx furnaces and added mitigation fee.
- **December 2019**: Final compliance date for 14 ng/J NOx condensing and non-condensing furnaces.
- **December 2019** (redacted): Final compliance date for 14 ng/J NOx weatherized furnaces and installations at high altitude (≥4,200 ft).
- **October 2020**: Final compliance date for 14 ng/J NOx condensing and non-condensing furnaces.

**Timeline**:
- December 1978
- November 2009
- September 2014
- October 2019
- December 2019
- October 2020
## RULE 1111 COMPLIANCE DEADLINES

<table>
<thead>
<tr>
<th>Description</th>
<th>Deadline</th>
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</thead>
<tbody>
<tr>
<td>Condensing and Non-Condensing Furnaces</td>
<td>October 1, 2019</td>
</tr>
<tr>
<td>Weatherized Furnaces</td>
<td>October 1, 2020</td>
</tr>
<tr>
<td>High Altitude Installations (≥4,200 feet)</td>
<td>October 1, 2020</td>
</tr>
<tr>
<td>Mobile Home Furnaces</td>
<td>October 1, 2021</td>
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*Upcoming Deadlines*
As part of the December 6, 2019 amendment for Rule 1111, Staff committed to monitor the progress of weatherized and high altitude furnace development

- Staff has been in frequent communication with all furnace manufacturers
- Multiple manufacturers reported delays in production and development due to impacts of COVID-19

During the June 19, 2020 Stationary Source Committee Meeting, Board Members requested staff to assess the potential of dual fuel heating systems equipped with non-compliant 40 ng/J NOx furnaces

Additional clarification needed to prevent 40 ng/J NOx condensing and non-condensing units to be sold and installed as mobile home units
IMPACTS OF COVID-19

- Multiple furnace manufacturers have reported manufacturing delays or interruptions in the supply chain as a result of COVID-19

- Other COVID-19 effects
  - Plant closures to incorporate social distancing in operations – generally 2 weeks
  - Lower production rates with social distancing
  - High rate of absenteeism
  - Need for plant-wide downtime when COVID-case for deep cleaning and quarantines
  - Company travel restrictions for worker safety
  - Changes in business decisions for commercializing compliant furnaces
To provide clarification on applicability of mobile home units by addition of definitions on MOBILE HOME and MOBILE HOME FURNACE

To develop proposed amendments to Rule 1111 - Reduction of NOx Emissions from Natural Gas-Fired Fan-Type Central Furnaces in order to:

▪ Allow additional time for furnace manufacturers to develop:
  ➢ Weatherized furnaces that comply with 14 ng/J NOx
  ➢ High altitude kits and guidance for compliant 14 ng/J NOx units
▪ Provide an alternative compliance option for communities in high altitude areas
STATUS OF COMPLIANT UNIT DEVELOPMENT
Mitigation fee period for weatherized furnaces ends September 30, 2020

For most manufacturers, development of commercial and residential weatherized furnaces are separate from one another

- Rule 1111 does not differentiate between residential and commercial weatherized furnaces

Staff has reached out to all furnace manufacturers and discussed potential options to bifurcate the weatherized furnace category

Staff discussed two categories based on single and three phase weatherized furnaces

- Some manufacturers supported this split based on single and three phase
- Other manufacturers felt it was not representative of their manufacturing and distribution for residential versus commercial

Staff is recommending to not separate implementation of weatherized furnaces
COMMERCIALIZATION STATUS OF WEATHERIZED FURNACES AND RECOMMENDATIONS

- Commercialization of weatherized furnaces as of June 2020:

<table>
<thead>
<tr>
<th>Weatherized Furnaces</th>
<th>Expected to have market coverage by October deadline</th>
<th>Expected to have market coverage after October deadline</th>
<th>Development Suspended or Pending Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 out of 7 Manufacturers</td>
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<td></td>
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<tr>
<td>2 out of 7 Manufacturers</td>
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<tr>
<td>2 out of 7 Manufacturers</td>
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**Recommendation:**

- Extend mitigation fee period for weatherized furnaces to September 30, 2021
  - Staff extended the mitigation fee from April to September 30, 2021 to allow manufactures to sell existing product for an additional six months – serves as a sell through provision
- Add consumer rebate of $500 per unit for 14 ng/J NOx weatherized units that will expire on September 30, 2021 to incentivize commercialization of 14 ng/J furnaces
  - Staff is seeking input on rebate amount
## Proposed Amendments for Weatherized Furnaces

<table>
<thead>
<tr>
<th>Furnace Category</th>
<th>Phase 2 Mitigation Fee</th>
<th>PAR 1111</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size Range</strong> &lt;br&gt; (BTU/hr)</td>
<td><strong>Furnace Category</strong></td>
<td><strong>Start Date</strong></td>
</tr>
<tr>
<td>≤60,000</td>
<td>Weatherized</td>
<td>April 1, 2019</td>
</tr>
<tr>
<td>&gt;60,000 and ≤90,000</td>
<td>Weatherized</td>
<td>April 1, 2019</td>
</tr>
<tr>
<td>&gt;90,000</td>
<td>Weatherized</td>
<td>April 1, 2019</td>
</tr>
</tbody>
</table>

- Extend Phase 2 Mitigation Fee end date one year
- No change to the mitigation fee amount
Recommendations:

- Extend end date of high altitude exemption from October 1, 2020 to until September 30, 2021 for condensing and non-condensing furnaces
- Compliance date for weatherized furnaces is being extended to September 30, 2021
- Add consumer rebate of $500 per unit for any compliant 14 ng/J NOx units installed in high altitude areas (above 4,200 feet) that will expire on September 30, 2021

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HIGH ALTITUDE FURNACES
DEVELOPMENT STATUS AND RECOMMENDATION

- High altitude condensing and non-condensing furnaces
  - Two manufacturers currently have units certified for installation above 7,000 feet
  - One manufacturer is on track to certifying units for installation of at least 7,000 feet by October 1, 2020

- High altitude weatherized furnaces
  - One manufacturer expected to have weatherized furnaces for installations above 7,000 feet by October 1, 2020
PROPOSED AMENDMENTS FOR EXEMPTIONS FOR FURNACES INSTALLED ABOVE 4,200 FEET

(g)(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.

- Extend exemption for high altitude installations of condensing and non-condensing furnaces from October 1, 2020 to September 30, 2021
- Weatherized furnaces are included in mitigation fee end date extension
DUAL FUEL HEATING SYSTEMS OVERVIEW

- Dual fuel heating system is a natural gas furnace paired with an electric heat pump
- Electric heat pump replaces air conditioning unit

Primary heating is provided by the electric heat pump

- Gas-fired furnace is used as auxiliary heating when temperatures are very low
- Furnace operation is determined by an adjustable switchover temperature

Higher the switchover set temperature, more often furnace operates and more emissions

Gas Furnace (Back-up)

Electric Heat Pump

Switchover Temperature

NOx Emissions

To Central Ventilation
SUMMARY OF DISCUSSION ON DUAL FUEL SYSTEMS

- Staff recognizes that dual fuel systems have potential to generate lower NOx than a standalone 14 ng/J NOx furnace, if designed properly
  - Staff continues to work with stakeholders to explore potential options to eliminate enforcement concerns
  - Manufacturers have worked over the past decade to commercialize 14 ng/J NOx furnaces
  - Staff acknowledges that weatherized furnaces may not have the same enforcement challenges as split systems

- Staff has reached out to furnace OEMs for equipment costs relating to dual fuel split systems, standalone furnaces, and heat pump heating systems that are utilizing a compliant 14 ng/J NOx furnace and noncompliant 40 ng/J NOx furnace

Recommendations:

- To allow dual fuel systems with noncompliant 40 ng/J NOx furnaces for installation at elevations above 4,200 feet when sold in District approved configuration with recordkeeping from manufacturers, distributors and installers until September 30, 2022

- Add consumer rebate of $500 per system for any dual fuel systems with compliant 14 ng/J NOx units
  - Staff is seeking input on rebate amount
PROPOSED AMENDMENTS FOR DUAL FUEL FURNACES INSTALLED ABOVE 4,200 FEET

- Installations of dual fuel systems equipped with 40 ng/J NOx furnaces located at elevations above 4,200 feet provided that system is installed with:
  - Communicating technology preventing operation without heat pump installed
  - Nonadjustable switchover temperature with external temperature sensor
    - Switchover temperature setting to be locked at the point of manufacture without the need for initial setup during installation
- Manufacturers, distributors, and installers maintain records of units sold
- Systems intended for sale under provision must follow applicable labeling requirements:
  - "This furnace must be installed only in dual fuel configuration with an electric heat pump. Installation of this furnace without a heat pump in dual fuel configuration is a violation of South Coast AQMD Rule 1111."
- Staff is seeking input on any further conditions for dual fuel systems with noncompliant 40 ng/J NOx furnaces
<table>
<thead>
<tr>
<th>Equipment Category</th>
<th>Implementation Date</th>
<th>Dual Fuel with 40 ng/J NOx Furnace</th>
<th>Consumer Rebate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condensing and Non-condensing Furnaces</td>
<td>October 1, 2019</td>
<td>• No</td>
<td>Rebate for dual fuel with condensing or non-condensing 14 ng/J furnace Amount: $500/unit*</td>
</tr>
<tr>
<td>Weatherized Furnaces</td>
<td>Extend mitigation fee period from</td>
<td>• Yes, up to September 30, 2021</td>
<td>Rebate for weatherized 14 ng/J furnaces until September 30, 2021 Amount: $500/unit*</td>
</tr>
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<td></td>
<td>September 30, 2020 to September 30, 2021</td>
<td>• Staff will reassess use after September 30, 2021</td>
<td></td>
</tr>
<tr>
<td>High Altitude Furnaces</td>
<td>Extend compliance date from October 1, 2020 to September 30, 2021</td>
<td>• Yes**, up to September 30, 2022</td>
<td>Rebate for installation of 14 ng/J furnaces above 4,200 feet until September 30, 2021 Amount: $500/unit</td>
</tr>
</tbody>
</table>

* Staff is considering a higher rebate
** Provided that furnace manufacturers implement measures to ensure proper operation.
OTHER PROPOSED AMENDMENTS

- Added definitions for MOBILE HOME and MOBILE HOME FURNACE to provide clarity on applicability of existing rule limit and mitigation fee schedule.

- Emission limit and mitigation fee schedule for MOBILE HOME FURNACE applies to furnaces specifically designed for MOBILE HOME applications.

- **MOBILE HOME** means a prefabricated structure on a permanently attached chassis.

- **MOBILE HOME FURNACE** means a furnace designed specifically and solely for installation to heat a mobile home.
NEXT STEPS

- End of Public Comment Period: July 24, 2020
- Stationary Source Committee Meeting: August 21, 2020
- Public Hearing: September 4, 2020
# CONTACTS

## Rule 1111 Staff

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