

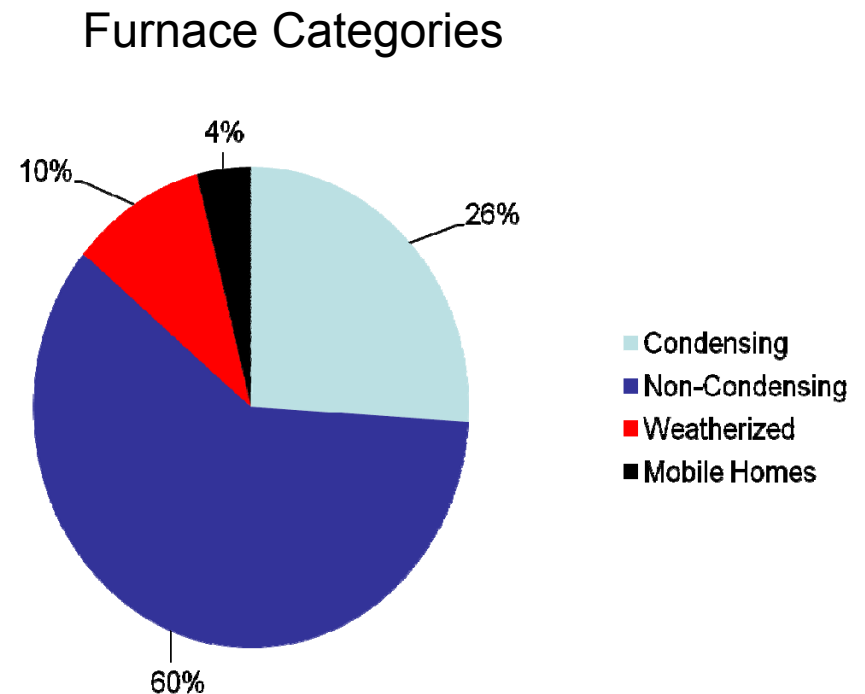
**Proposed Amended Rule 1111:
NOx Emissions From
Natural Gas-Fired, Fan-Type
Central Furnaces**

**South Coast Air Quality Management Board
Public Hearing
Item # 30**

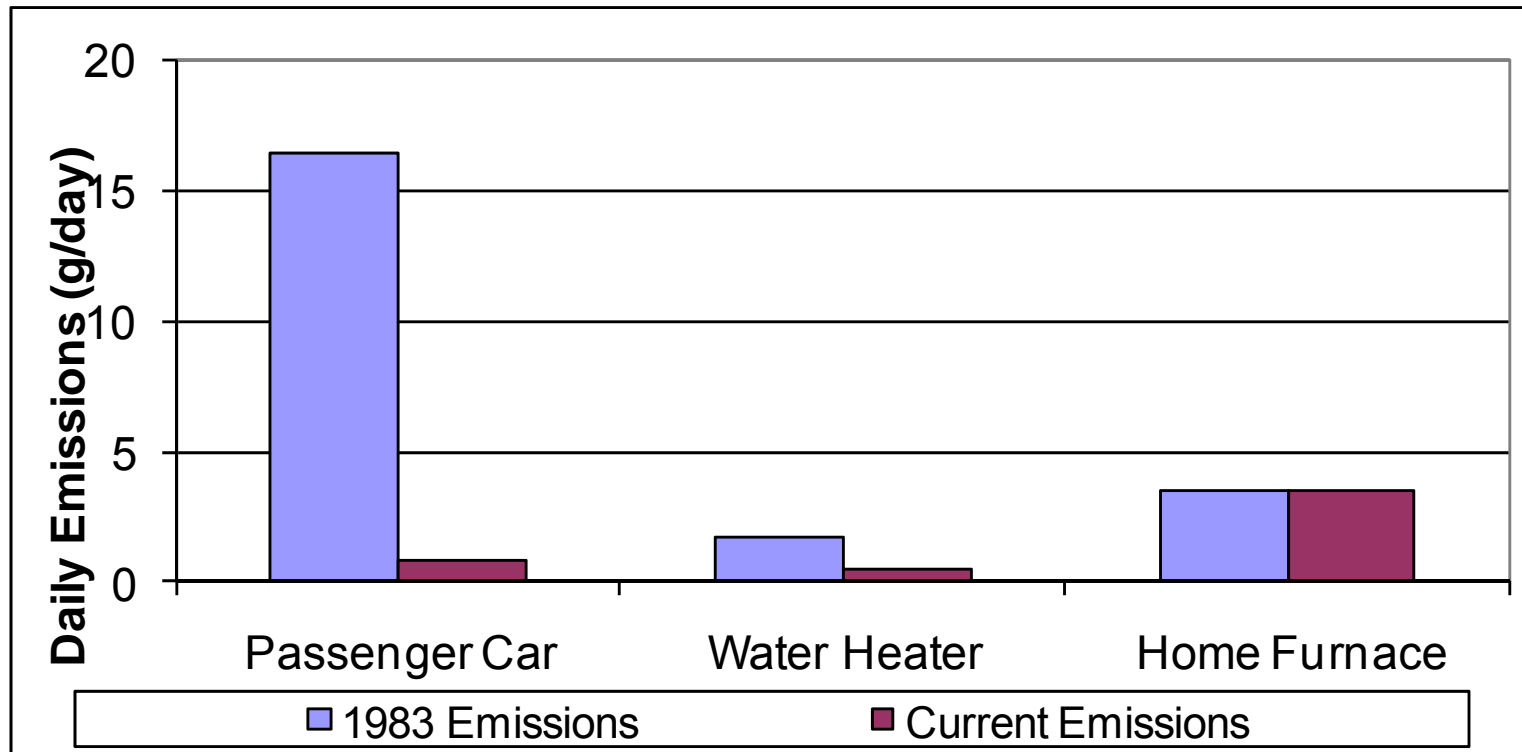
Diamond Bar, November 6, 2009

Background

- Rule 1111 applies to natural-gas-fired, fan-type central furnaces
- Almost exclusively home applications
- Approximately 200,000 units installed per year
- Last amended in 1983
- Current emission limit
 - 40 nanograms/Joule (ng/J)
- CMB-03: Emission reductions of 50 to 75%

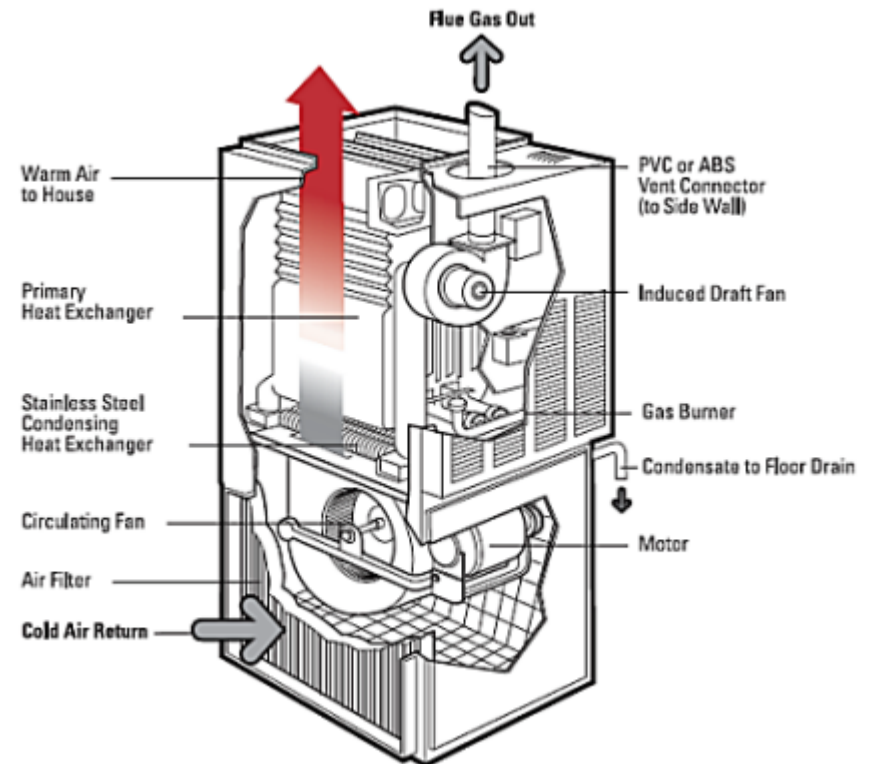


NOx Emissions Trends



Manufacturer's Considerations

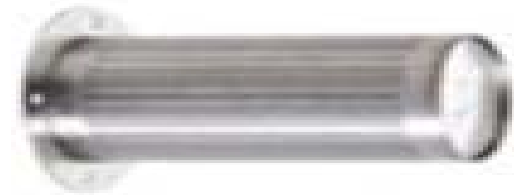
- Certification
- Furnace design
 - Safety
 - Durability
 - Efficiency
 - Installation
 - Chassis design
 - Heat exchanger compatibility



Emissions Reduction Techniques

- Optimize the combustion profile
 - Excess air
 - Air fuel mix
 - Design of burner surface
- Compatible applications of low NO_x burner technology
 - Rule 1121: Water heaters
 - Rule 1146.2: Small boilers

Slotted burner surface



Fiber, sintered, screen or ceramic burner surface



Low Swirl



Proposed Emissions Limits & Compliance Schedule

Compliance Date	Equipment Category	NOx Emission Limit (ng/J)
October 1, 2012	Mobile Home Furnace	40
October 1, 2014	Condensing Furnace	14
October 1, 2015	Non-condensing Furnace	14
October 1, 2016	Weatherized Furnace	14
October 1, 2018	Mobile Home Furnace	14

Compliance

- Sell-through of 10 months (300 days)
- Labeling requirements
- Early compliance incentive
 - AQMD to provide refunds for compliant units sold at least 90 days prior to compliance dates
 - \$90/ high efficiency unit
 - \$75/ standard efficiency unit
 - \$3,000,000 cap

Technology Evaluation

- AQMD Commitment to Sponsor Development of Technology
 - Fund up to 4 research & development furnace technology assessment projects
 - \$1,000,000 total (estimated \$250,000 per contract)
 - Two-year studies commencing no later than July 2010
- Report to the Governing Board on Industry's Progress no later than April 1, 2013

Impacts

- Anticipated NOx Emissions Reductions:
 - Annual Average
 - 2.5 TPD (2023)
 - 7.7 TPD (2043)
 - Fall/Winter Months
 - 5.0 TPD (2023)
 - 15.4 TPD (2043)
- Cost Effectiveness: \$8,600 to \$19,000 per ton NOx reduced

Public Outreach

- 7-Task Force Meetings
- Discussions with other Air Districts and individual manufacturers
- A&WMA Controlling NO_x at Stationary Sources Conference (January, 2009)
- Public Workshop/CEQA Scoping Secession
- Stationary Source Committee (September and October 2009)
- Small Business and Local Government Committee (September 2009)

Key Comments

Comment

- 14 ng/J not yet achieved in practice for furnace applications
 - Additional time needed
 - Rule amendment should be delayed pending further research and development
 - Co-sponsor AHRI's research project
 - Provide an alternative compliance option that delays implementation

Response

- ✓ 10 ng/J achieved for water heaters
14 ng/J achieved for small boilers
- ✓ Fund multiple manufacturer R&D efforts
 - \$1,000,000
- ✓ Early compliance incentives
 - \$3,000,000
- ✓ Technology report to Governing Board 18 months prior to implementation
- ✓ Consider alternative compliance option as part of the technology evaluation report to the Governing Board

Recommendations

- Certify the Final Environmental Analysis for Proposed Amended Rule 1111
- Amend Rule 1111
- Allocate:
 - \$3,000,000 for early compliance program
 - \$1,000,000 for technology compliance studies