

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Staff Report Proposed Amended Rule 1111 – NO_x Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Rule 1111 reduces emissions of nitrogen oxides (NO_x) from residential and commercial gas-fired fan-type residential 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, sellers, and installers of such furnaces.

Rule 1111 was adopted by the SCAQMD Governing Board in December 1978 and amended in 1983, 2009, and 2014. The more significant changes included lowering the NO_x emissions from 40 to 14 nanograms per Joule (ng/J) and providing an alternate compliance option.

As required by the 2009 amendment, the SCAQMD worked with the original equipment manufacturers (OEMs) to develop prototype residential furnaces that meet the new 14 ng/J NO_x limit in Rule 1111. The technology assessment demonstrated the new lower Rule 1111 NO_x limit was achievable. However, additional time would be needed to commercialize compliant furnaces.

In the 2014 amendment, an alternative compliance option allows the OEMs to pay a per unit mitigation fee of \$200 for each condensing furnace and \$150 for each other type of furnace, in lieu of meeting the new lower NO_x emission limit, for up to 36 months past the applicable compliance date.

Currently, all of the OEMs are using the alternate compliance option by paying the mitigation fee. However, compliant furnaces have been developed by three OEMs and certified by the SCAQMD to meeting 14 ng/J NO_x limit. Furthermore, on December 4, 2017, one of the OEMs launched commercialization of their compliant products.

Based on considerations of technology development and implementation status, stakeholders' input, and the need to encourage development and sale of compliant products, SCAQMD staff recommends maintaining the 14 ng/J NO_x limit and has proposed the following amendments for Rule 1111: (1) increasing the mitigation fee in two phases to a range of \$300 to \$450, depending on the furnace type and heat input capacity; (2) extending the mitigation fee alternative compliance option by 1.5 years for condensing furnaces, and one year for non-condensing and weatherized furnaces; (3) providing exemption from the mitigation fee increase for units encumbered in a contractual agreement by OEMs for construction developments, if contracts were signed prior to January 1, 2018; and (4) preventing circumvention of the rule (i.e., propane furnaces).

As a companion of the rule amendment, staff has also proposed to establish a rebate program for consumers who purchase and install compliant furnaces in the SCAQMD to benefit consumers and incentivize the purchase of lower emitting compliant furnaces. The SCAQMD Governing Board authorized issuance of Request for Proposal (RFP) #P2018-05 on December 1, 2017, to solicit proposals to administer the rebate program and will approve the proposal selection on March 2, 2018.

CHAPTER 1: BACKGROUND

INTRODUCTION

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INTRODUCTION

The purpose of Rule 1111 – NO_x Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces 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, a cooling rate of less than 65,000 BTU per hour. The rule applies to manufacturers, distributors, sellers, and installers of such furnaces. It requires manufacturers to certify that each furnace model offered for sale in the SCAQMD complies with the emission limit using specific test methods approved by the SCAQMD and U.S. EPA. The current rule provides manufacturers an alternate compliance option of paying a per-unit mitigation fee for up to 36 months past the applicable compliance date. Most single family homes, many multi-unit residences, and some small commercial building in the SCAQMD use this type of space heating equipment.

REGULATORY HISTORY

Rule 1111 was adopted by the SCAQMD Governing Board in December 1978, addressing all sizes of space heating furnaces. The original rule required all residential and commercial space heating furnaces to meet a NO_x 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. At the December 1978 rule adoption Hearing, a rule requirement that all space heating furnaces meet a 12 ng/J NO_x emission limit by 1995 was considered by the Governing Board but not adopted.

Rule 1111 was later amended in July 1983 in order to limit applicability based on a unit's size and to exempt larger commercial space heaters. The rule amendment limited applicability to furnaces with a heat input 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 July 1983 amendment also exempted units manufactured for use in mobile homes (manufactured housing), revised the definition of efficiency, and clarified testing procedures.

In November 2009, Rule 1111 was amended to be consistent with the objectives of the 2007 Air Quality Management Plan (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% oxygen and 80% AFUE), and required the three major categories of residential furnace – condensing (high efficiency), non-condensing (standard), and weatherized – 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, had to meet a NO_x limit of 40 ng/J by October 1, 2012, with a future limit of 14 ng/J on October 1, 2018. The new lower NO_x emission limit of 14 ng/J reflects a 65% reduction from the then current limit of 40 ng/J. To facilitate the depletion of existing inventories and to ensure 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 SCAQMD prior to the compliance date.

To encourage and accelerate technology development, the 2009 Rule 1111 amendment provided an incentive for early compliance with the 14 ng/Joule NO_x emission limit, and a \$3 million fund was approved for this purpose. Manufacturers that delivered 14 ng/J furnaces into the SCAQMD prior to the applicable compliance date were given the opportunity to receive a payment of \$75 for each standard efficiency furnace and \$90 for each high-efficiency unit sold and delivered into the SCAQMD 90 days prior to the applicable compliance date. However, to date, no manufacturer has applied for this incentive.

The 2009 Rule 1111 amendment also required a technology assessment and status report to the Governing Board. This technology assessment evaluated both the feasibility of the new lower NO_x emission limit and the rule implementation schedule. The SCAQMD Technology Advancement Office (TAO) initiated a Request for Proposals (RFP) to develop prototype residential furnaces that meet the new 14 ng/J NO_x limit. The technology development projects were initiated in 2010 and completed in 2013. The total cost of the four projects was \$1,447,737 with \$447,737 provided by The Gas Company and \$50,000 provided by the San Joaquin Valley Unified Air Pollution Control District. The prototype furnaces developed through these four projects demonstrated that the new lower Rule 1111 NO_x limit is achievable in all of the types of forced air residential heating furnaces produced for the United States market. However, additional time may be needed to commercialize 14 ng/J furnaces. This technology assessment was presented to the Governing Board meeting on January 10, 2014.

Rule 1111 was last amended in September 2014 to delay the compliance date for condensing furnaces and provide an alternate compliance option. The alternate compliance option allows manufacturers subject to Rule 1111 to pay a per unit mitigation fee of \$200 for each condensing furnace and \$150 for each other type of furnace distributed or sold into the SCAQMD, in lieu of meeting the new lower NO_x emission limit. The mitigation fee alternative compliance option can be used for up to 36 months past the applicable compliance date. Depending on furnace type, the mitigation fee option will end, and the NO_x limit of 14 ng/J will phase in, over the period from April 1, 2018, to October 1, 2021. Industry endorsed the mitigation fee approach. The 2014 amendment was State Implementation Plan (SIP) approved in March 2016, and the mitigation fee will be used to offset foregone emissions reductions.

In April 2016, the Air Conditioning Heating and Refrigeration Institute (AHRI) and OEMs met with SCAQMD staff asserting that safety and reliability concerns had prevented the development of a compliant unit for commercialization. In response, staff conducted a survey with manufacturers from May to July 2016 and have been closely monitoring the technology development status. Furthermore, staff has been meeting with individual stakeholders (eight OEMs, two burner manufacturers, and other interested parties) since March, 2017. Task Force meetings were held on April 27, 2017, and May 25, 2017 in which implementation status and rule recommendations were discussed. As a result of these investigations, it was found that all the OEMs are paying mitigation fee; however, three OEMs have developed products complying with the Rule 1111 NO_x 14 ng/J limit with field tests underway. Moreover, one manufacturer indicated that they would have a compliant product commercially available prior to the 2017 winter season. On December 4, 2017, this manufacturer (Lennox) launched production of compliant products (non-condensing units in the size of 60,000, 80,000, and 100,000 btu/hr), which are commercially available.

EQUIPMENT AND PROCESS

Fan-type gas-fired furnaces heat a building by circulating air from inside the building 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 building air 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.

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 SCAQMD jurisdiction, they must also be certified by the SCAQMD for Rule 1111 NOx emission limit compliance by specific test methods approved by the SCAQMD and U.S. EPA. OEMs also participate in AHRI certification program for verification test of output heating capacity and annual fuel utilization efficiency. As gas furnaces should be installed according to building Heating, ventilation, and air conditioning (HVAC) requirements, manufacturers have training programs for installers. New technology may trigger additional training; however, one OEM that is proposing early commercialization expressed that there is no new field technical training required for their compliant products. For gas furnaces with new technology, OEMs conduct extensive internal lab testing, as well as field testing, to ensure safety and reliability. Staff understands that OEMs generally apply for NOx certification after internal lab testing, but may do it before or during any phase of field testing.

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 SCAQMD. However, these companies do maintain regional sales offices and distribution centers in the SCAQMD and there are manufacturers of other types of heating furnaces in the SCAQMD.

IMPLEMENTATION STATUS

Except the mobile home unit, the compliance dates for all furnace types have expired. The compliance date for mobile home furnaces to meet the 14 ng/J NO_x limit is October 1, 2018.

All the OEMs are currently using the alternate compliance option and paying the mitigation fee for at least some, if not all, of the condensing, non-condensing, and weatherized units in their product line; this alternative compliance option ends on April 1, 2018, October 1, 2018, and October 1, 2019, respectively. For mobile home units, OEMs have until October 1, 2021, to utilize the alternative compliance option.

TECHNOLOGY DEVELOPMENT STATUS

On September 20, 2016, Rheem's natural gas fired furnace Model *801TA070317UUA was determined to meet the 14 ng/J emission limit and thus was issued a Rule 1111 NO_x certification by the SCAQMD. The evaluation was based on a source test conducted on June 1, 2016 (STE Source Test File Reference #R16314) with results indicating NO_x emission of 7.0 ng/J. This unit is a non-condensing furnace with a maximum input rate about 70,000 btu/hr.

Since August 2016, Multicalor, a Belgium furnace manufacturer, has commercialized a line of Rule 1111 emission compliant furnaces (Udara furnace) in Belgium and Netherlands with six different capacities, ranging from 34,000 btu/hr to 170,000 btu/hr. Udara furnaces are single heater exchanger condensing furnaces, but can be redesigned into non-condensing compliant furnaces. Multicalor is in the process of introducing Udara furnaces to the United Kingdom market.

On August 15, 2017, Goodman's natural gas fired furnace base Models GMES960403BU**, GMES960603BU**, and GMES960805CU** were issued Rule 1111 NO_x certifications by the SCAQMD. The emission test conducted on model GMES960805CU (STE Source Test File Reference #17216) indicates NO_x emissions of 3.8 ng/J. The certified furnace models cover condensing furnaces with maximum input rates of 40,000, 60,000, and 80,000 btu/hr.

On September 19, 2017, Lennox's four base Models SL280UH060NV36A-*, SL280UH080NV48B-*, SL280UH080NV60C-*, and SL280UH100NV60C-* were issued Rule 1111 NO_x certifications by the SCAQMD. The emission test conducted on model SL280UH100NV60C-01 (STE Source Test File Reference #17303) indicates NO_x emissions of 7.0 ng/J. The certified furnace models cover non-condensing furnaces with maximum input rates of 60,000, 80,000, and 100,000 btu/hr.

On December 4, 2017, Lennox launched their line of certified compliant products and made them commercially available for sale.

PUBLIC PROCESS

The rule development effort for PAR 1111 is part of an ongoing process to evaluate low NOx technologies for combustion equipment. SCAQMD staff has held two Task Force meetings (on April 27, 2017, and May 25, 2017), and four Working Group meetings* (on July 27, 2017, September 21, 2017, November 15, 2017, and January 9, 2017). The discussions at these meetings included technology development and rule implementation status, recommended changes to the rule, and incentive and public awareness programs. Ongoing individual meetings with stakeholders (eight OEMs, two burner manufacturers, and others) have also been held prior to and during the rulemaking process to maintain confidentiality regarding technology development status.

PAR 1111 has been discussed at the Stationary Source Committee (SSC) meetings on June 16, 2017, November 17, 2017, and January 19, 2018. The Public Workshop was held on October 19, 2017. The Public Hearing for PAR 1111 is scheduled for March 2, 2018.

* The District refers to a meeting with stakeholders prior to the rulemaking process as a Task Force meeting, and a meeting with stakeholders during the rulemaking process as a Working Group meeting.

CHAPTER 2: SUMMARY OF PROPOSED AMENDED RULE 1111

PROPOSED AMENDMENTS TO RULE REQUIREMENTS

PROPOSED AMENDMENTS TO RULE REQUIREMENTS AND A NEW REBATE PROGRAM

Staff has some primary considerations with regards to the proposed amendments. First of all, OEMs have their development targeted at 14 ng/J, and all the compliant condensing and non-condensing furnaces are certified below 10 ng/J for NO_x. It is also important to continue to maintain a competitive market among OEMs with adequate coverage, which will help ensure sufficient customer choices and more reasonably priced units. On the other hand, OEMs who have invested heavily and developed compliant products should be rewarded for the commercialization, not penalized if their compliant furnaces are unable to compete in a market of cheaper, noncompliant furnaces. Staff also considered the need to ensure that the compliant products adequately cover the size ranges. Additional considerations include ensuring safety and reliability with more testing, the fact that smaller furnaces may emit less, and the concern that many mobile home furnace consumers are low income. Lastly, in addition to the emission reductions needed for this area, there should be a clear path for the higher efficiency furnaces, as the application of high efficiency equipment is in line with the 2016 AQMP goal.

Based on these considerations and input from stakeholders, SCAQMD staff recommends maintaining the 14 ng/J NO_x limit and has proposed the following amendments for Rule 1111.

Alternate Compliance Option Extension and Mitigation Fee Increase

In lieu of meeting the lower NO_x emission limit in Table 1 of subdivision (c), paragraph (c)(5) currently provides furnace manufacturers that are subject to Rule 1111 an option to pay a per unit mitigation fee for up to 36 months past the compliance date. As the compliance dates have expired for all but mobile home furnaces, all OEMs are utilizing the mitigation fee option for at least some, if not all, of condensing, non-condensing, and weatherized furnaces. This alternate compliance option will end on April 1, 2018, for condensing units; October 1, 2018, for non-condensing units; October 1, 2019, for weatherized units; and on October 1, 2021, for mobile home units.

OEMs have been most focused on the development of non-condensing units, followed by condensing units, weatherized units, and then mobile home units. To date, two OEMs have certified non-condensing units and one OEM has certified condensing units complying with the Rule 1111 NO_x 14 ng/J limit with field tests at different stages. Furthermore, on December 4, 2017, one of the OEMs launched a line of compliant products (non-condensing units in the size of 60,000, 80,000, and 100,000 btu/hr) and has made them commercially available for sale in their SCAQMD distribution center. Yet, considering customer choices and some other OEMs' request for additional heating seasons to conduct field testing to ensure safety and liability, staff proposes to extend the alternate compliance mitigation fee option.

The current mitigation fee is \$200 for each condensing furnace and \$150 for each non-condensing, weatherized, and mobile home furnace distributed or sold into the SCAQMD. Staff expected this fee not only to mitigate emission reduction delays but also to encourage commercialization of compliant products. All OEMs have been paying the mitigation fee and

passing the fee along the supply chain to consumers. When there were no compliant products available, the mitigation fee had not acted to motivate compliant product commercialization. With technology development maturing, one OEM has made compliant furnaces commercial available, while other OEMs are now able to project commercialization timelines for their compliant products. Consequently, the mitigation fee may serve a more effective purpose going forward, especially when the fee is increased for non-compliant products concurrent with a rebate program for compliant products.

On this basis, for the alternate compliance option, staff recommends a 1.5-year extension (ending on September 30, 2019) for condensing units, a 1-year extension (ending on September 30, 2019) for non-condensing units, a 1-year extension (ending on September 30, 2020) for weatherized units, and no extension (ending on September 30, 2021) for mobile home units. This extension provides assurance that there will be a variety of compliant products available to the consumer.

Staff also recommends increasing the mitigation fee in two phases for non-compliant condensing, non-condensing, and weatherized furnaces based on furnace heat input capacity (fee analysis included in the next section for rebate), according to the schedule set forth below in Table 2-1. There is no mitigation fee increase for mobile home furnaces. For condensing furnaces, manufacturers will continue to pay the current per unit mitigation fee of \$200 when the next compliance cycle starts on April 1, 2018, but will start the phase one fee on April 15, 2018.

Table 2-1 – 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	April 15, 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, 2020
	Mobile Home	October 1, 2018	\$150	April 1, 2019	\$150	September 30, 2021
> 60,000 Btu/hr and ≤ 90,000 BTU/hr	Condensing	April 15, 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, 2020
	Mobile Home	October 1, 2018	\$150	April 1, 2019	\$150	September 30, 2021
> 90,000 BTU/hr	Condensing	April 15, 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, 2020
	Mobile Home	October 1, 2018	\$150	April 1, 2019	\$150	September 30, 2021

❖ Please note that this table is referred to as Table 2 in PAR 1111

The alternate compliance plan cycle remains the same for each 12 month time period after the applicable compliance date in the rule. The OEMs continue to be required to submit an alternate compliance plan no later than 60 days prior to the applicable compliance date (beginning of each compliance plan period), and submit a report and payment for the actual sales of the compliance plan period within 30 days after the end of the compliance plan period. However, exception applies for sales of phase one period specified in above Table 2-1. The proposed amendment would require OEMs to pay mitigation fees for the phase one period no later than thirty (30) days after the end the phase one period, with the purpose of replenishing Rule 1111 rebate program

fund in a more timely manner. Moreover, the final compliance plan for condensing units end on September 30, 2019 by the proposal, covering only 6 months instead of the regular 12 months, therefore payment of the applicable mitigation fees would be due to the SCAQMD no later than October 30, 2019.

Rebate to End Users

The mitigation fee by itself has not been effective enough to motivate technology development. In addition, based on information provided by some OEMs, the compliant products will be more expensive than non-compliant products, even if the mitigation fee for non-compliant products is increased as shown above in Table 2-1. In order to alleviate the resulting cost differential for customers between compliant and non-compliant products, and continue to encourage cleaner technologies, a rebate program* has been supported in meetings by many of the OEMs. Some OEMs suggested that the District provides rebates to end users of up to \$400 or \$500.

Staff collected cost information from OEMs for analysis with regards to rebate and mitigation fee change. To manufacturing a compliance furnace, the medium cost increase for an OEM would be \$150 per unit regardless of furnace type. OEMs suggested the price markup through the supply chain to the consumer could be two or three times of manufacturing cost increase. Staff also referred to DOE's 2015 technical support document for their residential furnaces energy efficiency program for overall price mark up. As a result, a price increase of \$500 per compliance furnace for customers was considered representative for subsequent analysis.

To fund a rebate program, staff has identified two sources. The first funding source is the \$3,000,000 authorized by the Board on November 6, 2009 (Agenda #30) from the Fund 27 Rule 1121 mitigation fee program. Since there had not been any compliant furnaces introduced into the market until recently, the fund remains intact. The other is the incremental mitigation fee as a result of the proposed Rule 1111 amendment to be adopted on March 2, 2018.

When compliant product annual sales make up 40% of the total annual sales market of approximately 150,000 in the SCAQMD, a rebate of \$200 to \$300 per compliant unit would require a mitigation fee increase of \$133 to \$300, not taking into consideration any market behavior variables. To support this estimate, staff also developed an economic optimization model characterized by a partial equilibrium of the market for furnaces in the South Coast Air Basin. This type of model can consider a single market with producers, consumers, and policy requirements and estimate the "equilibrium" price and quantity/sales, where producer supply is equal to consumer demand. The model was also developed based on the aforementioned cost and sales market information. In the modeling exercise, a 40-percent market share of compliant furnaces would correspond to a rebate program that includes a rebate of \$300 per compliant unit and an increase in the mitigation fee by \$200 per non-complaint unit.

Staff proposes establishing a \$500 rebate for the first 6,000 compliance units utilizing the \$3,000,000 fund, and thereafter providing a \$300 rebate for the remaining condensing furnaces and a \$200 rebate for the remaining non-condensing, weatherized, and mobile home furnaces, which will be supported by the increased portion of the mitigation fee. Purchasers of compliant

* It should be noted that the rebate program is not part of the proposed rule requirements.

units will be eligible for rebates until the funds run out or six calendar months beyond the mitigation end date. Please note that the current mitigation fee (\$200 for condensing units and \$150 for others) is dedicated to mitigating forgone emission reductions that are delayed by using the alternate compliance plan. Therefore, only the incremental portion of the mitigation fee could be used to fund the rebate program.

The rebate program was suggested by the Working Group to be implemented via a third party contractor. On December 1, 2017, the Board authorized: (1) utilization of the \$3,000,000 fund previously allocated for Rule 1111 rebates, as well as any additional incremental mitigation fee funding from future Rule 1111 amendments (March 2, 2018); and (2) issuance of RFP #P2018-05 to solicit proposals for a third party contractor to administer the rebate program for consumers who purchase and install compliant furnaces in the SCAQMD. Subsequently, three proposals were received by the RFP close date of January 9, 2018. The proposal selection is to be presented to the Governing Board for approval on March 2, 2018. A contract is expected to be executed about one month later. Specifications of the rebate implementation may further be discussed with the Working Group prior to the contract execution.

In general, the OEMs are divided on staff's proposal on the mitigation fee and rebate amount.

Other Proposed Rule Changes

Rule 1111 does not regulate propane fired furnaces (about 4% of residential heating in California). Some manufacturers sell 40 ng/J natural gas furnaces with propane conversion kits. With the conversion kit, natural gas furnaces can be converted to propane firing, and also back to natural gas firing. Some stakeholders have commented that, as the mitigation fee increases, there is a great possibility for manufacturers to claim the sales of propane furnaces to avoid paying the mitigation fee, while the units are actually installed in the natural gas firing mode. Some other manufacturers have stated that establishing a separate production line for propane furnace would increase the manufacturing cost, eventually placing the burden on propane furnace consumers. On that basis, they have requested to be allowed to continue to sell 40 ng/J natural gas furnaces with propane conversion kits to convert to propane furnaces. To prevent rule circumvention, some stakeholders have suggested working with the supply chain to track and audit the installations with conversion kits, while others suggested labeling the unit for dedication of propane use only. In order to avoid significant cost increase for propane firing units while maintaining adequate rule enforceability, staff proposes to exempt Rule 1111 requirements for a natural gas furnace distributed with a propane conversion kit for the unit to be installed for propane firing, provided that the labeling on the shipping carton and the name plate of the furnace clearly display: "This furnace is to be installed for propane firing only. It is not certified to comply with SCAQMD Rule 1111 at natural gas firing mode."

For furnaces that are subject to a contractual agreement, signed prior to January 1, 2018, by an OEM for new construction development, the manufacturer may be exempted from the proposed fee increase and only needs to pay the current mitigation fee to satisfy the alternate compliance plan. To qualify for this fee increase exemption, the OEM should provide, along with the application: the contractual agreement for the units sold or to be sold in the District; quantity, model number, and serial number of the subject units; contract execution date; and names(s) of

the contractor(s). The OEM must also demonstrate that the total quantity of furnaces identified in its exemption application(s) does not exceed 15% of the total number of furnaces distributed and sold in the previous compliance plan period.

CHAPTER 3: IMPACT ASSESSMENT

IMPACT ANALYSIS

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CONCLUSION AND RECOMMENDATIONS

IMPACT ANALYSIS

Based on the District's 2016 AQMP emission inventory for fuel consumption, the annual average NOx emissions from residential heating using natural gas were 9.51 tons per day in 2012. Staff estimates that there are about four million residential type heating furnaces in the SCAQMD. Based on a furnace life of 25 years, a typical furnace emits 1.5 to 2.0 pounds of NOx per year. The emission rate reduction from 40 ng/J to 14 ng/J results in more than one pound per year of NOx emissions reductions for each furnace. Based on a furnace life of 20 to 25 years, the current rule is estimated to reduce annual average emissions of NOx by about 0.80 to 1.00 ton per day in 2018 and 2.03 to 2.54 tons per day in 2023 with emissions mitigation included. It is estimated that complete replacement with 14 ng/J furnaces will not occur until 2046. The complete emission reduction benefit of this rule is estimated to be about 6.18 tons per day (annual average) from the 9.51 tons per day baseline emissions.

PAR 1111 would delay the NOx emissions reductions from residential furnaces by 0.07 to 0.09 tons per day in 2018, 0.26 to 0.32 tons per day in 2023, and 0.26 to 0.32 tons per day in 2031. However, the proposed amendment does not cause any overall change for future year emissions. A mitigation fee is collected for the period the alternative compliance option is utilized, and will then be used to fund emission reductions through a variety of projects that has cost effectiveness in the range of \$10,000 to \$16,000 per ton.

According to the Air Conditioning Heating and Refrigeration Institute (AHRI), the manufacturer's trade organization, there are no facilities manufacturing fan-type gas-fired residential furnaces in the SCAQMD. However, the affected companies do maintain regional sales offices and distribution centers in the SCAQMD.

COST EFFECTIVENESS

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 NOx emission limit. While a mitigation fee increase is proposed, it is only for manufacturers selling noncompliant units through the alternate compliance option. On the other hand, manufacturers of compliant furnaces will have their customers incentivized by a rebate funded by the increased portion of mitigation fee.

The cost effectiveness analysis was performed in support of the 2009 amendment when the 14 ng/J NOx limit was introduced. Staff used three different approaches to estimate the cost effectiveness for that amendment. The results of that analysis estimated a cost effectiveness of between \$8,600 and \$19,000 per ton with an increased cost to the consumer of between \$108 and \$240 per furnace.

Table 3-1 – Cost Effectiveness Summary

Cost Effectiveness Approach	Cost Effectiveness
Previous Rule Amendments	\$10,000 to \$16,000 per ton
Water Heater Price Increases	\$19,000 per ton
Material Cost & Markups	\$8,600 per ton

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) ANALYSIS

The California Environmental Quality Act (CEQA) requires that all potential adverse environmental impacts of proposed projects be evaluated and that methods to reduce or avoid identified significant adverse environmental impacts of these projects be implemented, if feasible. The purpose of the CEQA process is to inform the SCAQMD Governing Board, public agencies, and interested parties of potential adverse environmental impacts that could result from implementing the proposed project and to identify feasible mitigation measures or alternatives, when an impact is significant.

Public Resources Code Section 21080.5 allows public agencies with regulatory programs to prepare a plan or other written documents in lieu of a negative declaration or environmental impact report once the secretary of the resources agency has certified the regulatory program. The SCAQMD's regulatory program was certified by the secretary of resources agency on March 1, 1989, and has been adopted as, and is implemented by, SCAQMD Rule 110 – Rule Adoption Procedures to Assure Protection and Enhancement of the Environment. Pursuant to Rule 110, the SCAQMD typically prepares an Environmental Assessment (EA) to evaluate the environmental impacts for rule projects proposed for adoption or amendment.

PAR 1111 is considered a “project” as defined by CEQA. CEQA requires that all potential adverse environmental impacts of proposed projects be evaluated and that methods to reduce or avoid identified significant adverse environmental impacts of these projects be implemented if feasible. The purpose of the CEQA process is to inform the SCAQMD Governing Board, public agencies, and interested parties of potential adverse environmental impacts that could result from implementing the proposed project and to identify feasible mitigation measures or alternatives, when an impact is significant.

PAR 1111 contains amendments that revise existing requirements included in Rule 1111, as amended in September 2014, in order to resolve compliance issues raised by stakeholders. In the version of PAR 1111 released in October 2017, PAR 1111 would increase the mitigation fee from \$200 for each non-compliant condensing furnace and \$150 each for all other non-compliant furnaces regulated under this Rule to \$400 for all non-compliant units and extend the dates for complying with the NO_x limit for the following equipment categories: 1) condensing furnaces from April 1, 2018, to October 1, 2019; 2) non-condensing furnaces from October 1, 2018, to October 1, 2019; 3) weatherized furnaces from October 1, 2019, to October 1, 2020; and 4) mobile home furnaces from October 1, 2021, to October 1, 2022. If the compliance dates are extended, PAR 1111 was shown to result in foregone NO_x emissions reductions of 0.07 to 0.09 tons per day in 2018, 0.26 to 0.33 tons per day in 2023, and 0.26 to 0.33 tons per day in 2031, all of which exceed the SCAQMD's regional air quality CEQA significance threshold for NO_x during operation. Analysis of PAR 1111 indicates that the estimated amount of NO_x emission reductions foregone will substantially revise the existing requirements included in Rule 1111 as last amended in September 2014. As such, SCAQMD staff has determined that PAR 1111 contains new information of substantial importance which was not known and could not have been known at the time the Final Environmental Assessment (EA) was certified for the September 2014 amendments to Rule 1111 (referred to herein as the September 2014 Final EA).

However, aside from the topic of air quality, PAR 1111 is not expected to create new significant effects for any other environmental topic areas. Thus, analysis of the proposed project indicates that the type of CEQA document appropriate for the proposed project is a Subsequent Environmental Assessment (SEA), in lieu of an EA. The SEA is a substitute CEQA document, prepared in lieu of a Subsequent Environmental Impact Report (EIR) with significant impacts (CEQA Guidelines Section 15162(b)), pursuant to the SCAQMD's Certified Regulatory Program (CEQA Guidelines Section 15251(l); codified in SCAQMD Rule 110). The SEA is also a public disclosure document intended to: 1) provide the lead agency, responsible agencies, decision-makers and the general public with information on the environmental impacts of the proposed project; and 2) be used as a tool by decision-makers to facilitate decision making on the proposed project.

Because the new potentially significant adverse effects to operational air quality that may result from implementing PAR 1111 were not analyzed in the September 2014 Final EA, the SCAQMD, as lead agency for the proposed project has prepared a Subsequent EA (SEA) with significant impacts pursuant to its Certified Regulatory Program. The September 2014 Final EA identified the topic of operational air quality in the environmental checklist as the only topic that would be affected by the proposed rule amendments at that time. However, the analysis in the September 2014 Final EA concluded that the operational air quality impacts were at less than significant levels. Since PAR 1111 is now shown to have potentially significant adverse air quality impacts during operation as a result of projected NOx emission reductions foregone, the focus of the analysis in the SEA is limited to the operational air quality as the only environmental topic area to be analyzed. In addition, since PAR 1111 may have statewide, regional, or area wide significance, a CEQA scoping meeting is required pursuant to Public Resources Code Section 21083.9(a)(2) and was held at the SCAQMD's Headquarters in conjunction with the Public Workshop on October 19, 2017. No CEQA comments were made at the Public Workshop/CEQA scoping meeting relative to PAR 1111. Further, pursuant to CEQA Guidelines Section 15252, since significant adverse impacts were identified, an alternatives analysis and mitigation measures are required. The Draft SEA has been released for a 45-day public review and comment period from Tuesday, December 26, 2017 to Friday, February 9, 2018 at 5:00 p.m. For any comments received relative to CEQA analysis in the Draft SEA, SCAQMD staff will include the comment letters along with responses to comments in an appendix to the Final SEA. In addition, since release of the preliminary draft for PAR 1111, PAR 1111 contains revisions that will be reflected in the Final SEA.

The September 2017 Final EA, upon which the SEA relies, is available from the SCAQMD's website at: http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2014/par_1111_fea_wapps.pdf; by visiting the Public Information Center at SCAQMD Headquarters located at 21865 Copley Drive, Diamond Bar, CA 91765; or by contacting Fabian Wesson, Public Advisor by phone at (909) 396-2039 or by email at PICrequests@aqmd.gov.

Prior to making a decision on the adoption of PAR 1111, the SCAQMD Governing Board must review and certify the Final SEA, including responses to comments, as providing adequate information on the potential adverse environmental impacts that may occur as a result of adopting PAR 1111.

SOCIOECONOMIC IMPACT ASSESSMENT

Proposed Amended Rule 1111 will extend the compliance deadline for OEMs to attain the 14 ng/J NOx emission standard for furnaces. It also amends the alternate compliance plan, which allows for mitigation fees to be paid in lieu of compliance with the standard. The proposed amendments to the alternate compliance plan will result in mitigation fees being set at a tiered rate based on the size and type of the furnace. These fees will range from \$150-\$325 for the Phase One period and range from \$150-\$450 for the Phase Two period as specified in Table 2 of PAR 1111. In conjunction with these proposed amendments to the rule, a rebate program for compliant furnaces sold in the region will be instituted and funded by the mitigation fees as described in earlier sections of this report.

As described in the affected industries section, PAR 1111 would potentially affect manufacturers (NAICS 333), distributors and wholesalers of furnaces (NAICS 423), retailers and dealers of furnaces (NAICS 444), and construction and building contractors and installers (NAICS 238 and 811). No manufacturers of the gas fired fan-type furnaces regulated under this rule are located within SCAQMD's four-county region. There are, however, many downstream businesses located within this region, including wholesalers and retailers of these furnaces and contractors that install or repair them. Based on these industry classifications and recent data, the number of establishments in these industries within the four-county region are included below, however only a portion of these establishments will have business with furnaces covered under Rule 1111. There are approximately 18,800 establishments in the merchant wholesalers of durable goods industry (NAICS 423), 2,450 establishments in the building material and garden equipment and supplies dealers industry (NAICS 444), 17,600 establishments in the specialty trade contractors industry (NAICS 238), and 16,500 in repair and maintenance industry (NAICS 811).¹ Of these establishments a majority would be classified as a small business² according to SCAQMD's Rule 102 definition.³

Rule 1111 currently requires that OEMs begin selling furnaces that comply with the 14 ng/J NOx emission limit as early as April 2018, without an option to pay a mitigation fee. While the mitigation fees would increase for the OEMs selling non-compliant furnaces, it is expected to be economically more advantageous than the current rule requirement where there will be no alternate compliance option for non-condensing and condensing furnaces by April 2018 and October 2018, respectively. At the same time, those OEMs selling compliant furnaces are

¹ U.S. Census Bureau, 2015 County Business Patterns. Los Angeles, Orange, Riverside, and San Bernardino counties. <https://www.census.gov/programs-surveys/cbp.html>

² The SCAQMD defines a "small business" in Rule 102 for purposes of fees as one which employs 10 or fewer persons and which earns less than \$500,000 in gross annual receipts. The SCAQMD also defines "small business" for the purpose of qualifying for access to services from the SCAQMD's Small Business Assistance Office (SBAO) as a business with an annual receipt of \$5 million or less, or with 100 or fewer employees. In addition to the SCAQMD's definition of a small business, the federal Clean Air Act Amendments (CAAA) of 1990 and the federal Small Business Administration (SBA) also provide definitions of a small business. The CAAA classifies a business as a "small business stationary source" if it: (1) employs 100 or fewer employees, (2) does not emit more than 10 tons per year of either VOC or NOx, and (3) is a small business as defined by SBA. The SBA definitions of small businesses vary by six-digit North American Industrial Classification System (NAICS) codes. In general terms, a small businesses must have no more than 500 employees for most manufacturing and mining industries, and no more than \$7 million in average annual receipts for most nonmanufacturing industries.

³ Based on County Business Patterns for California. U.S. Census Bureau, 2015 County Business Patterns. <https://www.census.gov/programs-surveys/cbp.html>

expected to benefit from the rebate program through the increased demand for their products, which is associated with the lower effective prices that would be paid by the end-users receiving the rebate. Ultimately, the effect of the increased mitigation fees and rebates will be to induce a mixture of compliant and non-compliant furnaces being sold in the region during the extended alternate compliance period. This outcome will be less costly to the regional economy than requiring OEMs, which pass through the higher cost of compliant furnaces to end-users through higher prices, to only sell compliant furnaces into SCAQMD's jurisdiction as early as April 2018 as required by the current rule. Therefore, PAR 1111 will not have adverse socioeconomic impacts additional to those that have been analyzed for the current rule.

For CEQA analysis purposes, four alternatives to PAR 1111 were developed and described in the Draft Subsequent Environmental Assessment (SEA), released on December 26, 2017. As illustrated in Table 1-2 of the Draft SEA, these alternatives are: No Project (Alternative A), More Stringent NOx Limit (Alternative B), Less Stringent Timing (Alternative C), and More Mitigation (Alternative D). The No Project alternative would not amend the current rule; there are no adverse socioeconomic impacts additional to those that have been analyzed for the current rule.

The More Stringent NOx Limit alternative differs from PAR 1111 in that it will require OEMs to comply with a 10 ng/J emission standard starting in April 2018 while maintaining the proposed extension of the alternate compliance option, therefore potentially resulting in lower emission reductions foregone than the current rule or proposed amendments. However, it would present a challenge to OEMs to make furnaces commercially available that achieve this lower standard than what is required in the current rule and could require increased expenditures on research, development, and deployment for some OEMs. Therefore, this alternative may result in adverse socioeconomic impacts additional to those that have been analyzed for the current rule.

The Less Stringent Timing alternative differs from PAR 1111 in that it would allow more time for OEMs to achieve the 14 ng/J standard and use the alternate compliance option in the meantime. This option is less stringent and potentially less costly than both the proposed amendments and the current rule. Therefore, it would not have adverse socioeconomic impacts additional to those that have been analyzed for the current rule.

The More Mitigation alternative differs from PAR 1111 in that it would increase the mitigation fee further above the proposed fee increases, but maintain the proposed extension of compliance deadline for the 14 ng/J emission standard. This alternative is expected to be economically more advantageous than the current rule requirement where there will be no alternate compliance option. Additionally, the proposed mitigation fee incurred by OEMs selling non-compliant furnaces under this alternative is not expected to exceed the average incremental cost of compliant furnaces. Therefore, this alternative is not expected to have adverse socioeconomic impacts additional to those that have been analyzed for the current rule.

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 SCAQMD 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 Sections 40727, 40727.2 require a written analysis comparing the proposed amended rule with existing regulations.

The following provides the draft findings.

Necessity: A need exists to amend Rule 1111 to provide residential furnace manufacturers additional time to develop the technology to meet the NO_x emission limit.

Authority: The SCAQMD obtains its authority to adopt, amend, or repeal rules and regulations from California Health and Safety Code Sections 39002, 40000, 40001, 40440, 40440.1, 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 SCAQMD.

Reference: In amending this rule, the SCAQMD 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_x, NO_x, and their precursors.

The only option for reducing NO_x emission from equipment affected by PAR 1111 is replacement of current burners in newly manufactured equipment with low NO_x burners. Some furnaces do use electricity to provide heat and other kinds of units use heated water from a small boiler or water heater. However, these equipment are either not regulated by the SCAQMD (electric furnaces or heat pumps) or are regulated by other SCAQMD rules (Rules 1121 or 1146.2). Because this rule amendment provides furnace manufacturers with an alternate compliance option and there is only one control option, a typical incremental cost-effectiveness analysis cannot be prepared.

However, for the 2009 rule amendment, staff did evaluate the incremental cost effectiveness as compared to a less stringent option. The same technology used to achieve a NO_x limit of 14 ng/J can also be used to achieve less stringent limits of 17 ng/J (25 ppm) or the upper bound limit of

20 ng/J (30 ppm) included in Control Measure CMB-03. For these less stringent limits the cost of the technology is the same but because emission reductions are less, the cost effectiveness deteriorates rapidly. In other words, the less stringent option is less cost-effective.

COMPARATIVE ANALYSIS

Under Health and Safety Code Section 40727.2, the SCAQMD is required to perform a comparative written analysis when adopting, amending, or repealing a rule or regulation. The comparative analysis is relative to existing federal or state requirements, existing or proposed SCAQMD rules, and air pollution control requirements and guidelines that are applicable to industrial, institutional, and commercial combustion equipment.

The SCAQMD is not aware of any state or federal requirements regulating air pollution that are applicable to new or in-use PAR 1111 units. Rule 1111 is also the only SCAQMD rule regulating this type of equipment. Because there are no state or federal requirements for PAR 1111 units, the proposed amendments are not in conflict with and do not duplicate any SCAQMD, state, or federal requirement.

CONCLUSION AND RECOMMENDATIONS

Although compliant condensing and non-condensing furnace products have been demonstrated seven years ago, only one manufacturer currently has a non-condensing compliant product commercially available for sale. Recent product certifications have shown that additional commercialized compliant products are forthcoming within the next few months. However, based on stakeholder input, meeting customer demands and developing broader product availability would require additional time beyond the current mitigation fee period. In addition, the application of economic modeling shows that compliant product availability will be enhanced with an increase in the mitigation fee in conjunction with the application of a rebate. All of these recommendations introduced into Rule 1111 will lead to the much needed SIP-approved NOx emissions reductions.

REFERENCES

REFERENCES

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

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

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

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

DOE, 2015. *Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: Residential Furnaces*. U.S. Department of Energy, February 2015.

RESPONSE TO COMMENTS

RESPONSE TO COMMENTS

SCAQMD staff held a public workshop and CEQA scoping meeting on October 19, 2017 in the SCAQMD Diamond Bar headquarters. Twelve public comment letters or emails were received by the comment end date of November 9, 2017. The comments and staff's responses are summarized below:

Mitigation Fee Increase

1. Comment: The mitigation fee increase will negatively impact companies located within the District versus business outside of the District.

Response: Because the South Coast Basin experiences some of the worse air pollution in the nation, air emission regulations within the District will be stricter than areas outside of the District. However, great care is taken to implement the most cost effective means to reduce air emissions from all regulated sources of emissions including home furnaces subject to Rule 1111. Based on the current mitigation fee, it is the SCAQMD staff's understanding that manufacturers and distributors have been passing this fee to consumers. The goal is to commercialize compliant products that consumers will purchase. The mitigation fee is a compliance option that is to encourage manufacturers to commercialize compliant products. The rebate will encourage consumers to purchase compliant products.

2. Comment: The mitigation fee increase will make homeowners opt to repair older furnaces versus replacing with new and technologically advanced equipment.

Response: The Rule 1111 40 ng/J NOx limit has been in place since 1984; Repairing a malfunctioning 40 ng/J unit does not reset the life span of the unit, and doing so would result in much shorter useful life until replacement is necessary versus initial replacement with a new 40 ng/J non-compliant unit. In addition, the proposed consumer rebate will help motivate installation of compliant units.

3. Comment: The mitigation fee increase will encourage non-compliance.

Response: The SCAQMD enforcement staff will continue to maintain a high level of enforcement for illegal sales. Stakeholders are encouraged to report any non-compliance and also provide recommendations in identifying potential paths to rule circumvention.

4. Comment: The mitigation fee increase will restrict consumer choice.

Response: To date, there are three OEMs and various models being certified for condensing and non-condensing units. On December 4, 2017, Lennox launched a line of compliant products (non-condensing units in the size of

60,000, 80,000, and 100,000 btu/hr), which are now commercially available for sale. Moreover, Lennox representative also stated that they will provide a full portfolio of compliant products to meet the market demand by the current compliance dates for all types of furnaces. On this basis, it is not anticipated the consumer choice will be restricted.

- 5. Comment:** The current mitigation fee already can buy more offsets than the forgone emission reductions by using the NOx credit price in the RECLAIM program.

Response: The Rule 1111 mitigation fee is based on the cost effectiveness of other NOx reduction projects for the forgone emission reductions as set forth in the staff report for the previous Rule 1111 amendment. There is no justification to compare the cost effectiveness of NOx emission reductions needed under Rule 1111 to the NOx credit price in the RECLAIM program. That is, the RECLAIM NOx credit exchange is only allowed among facilities in this program, subject to a price that is controlled by an open market.

- 6. Comment:** An increase in the mitigation fee will not accelerate the compliance with Rule 1111.

Response: The purpose of the mitigation fee has been to provide the OEMs an alternative option when units could not be made available. The increase in the fee is intended to level the cost difference between compliant and non-compliant products. The mitigation fee increase, along with the proposed rebate, are intended to encourage commercialization of compliance products and encourage the purchase of compliant units.

- 7. Comment:** The proposed fee increase is not only punitive, it might also be an unconstitutional tax.

Response: Paying the mitigation fee is an alternative option for OEMs that will not have furnaces available for sale that comply with the 14 ng/J NOx emission limit by the compliance date. While some OEMs have already certified compliant units, others are planning to certify and sell furnaces that meet the emission limit by the compliance date, and still others are choosing to pay the mitigation fee. Because it is optional, the mitigation fee is not considered a tax.

- 8. Comment:** The mitigation fee increase would drive lower income mobile home customers to repair vs. replace the appliance or opt for a less costly and less efficient product substitute.

Response: There is no mitigation fee increase by the current proposal for mobile home furnaces.

9. Comment: Recommend not to change the current mitigation fee.

Response: Under staff's proposal the mitigation fee increase would be used to fund the proposed rebate program while slightly favoring the purchase of compliant units. To that end staff believes that the current proposal fulfills that objective. However, staff recognizes that the fee increase must also take into consideration such things as the economic impact on low income residents.

10. Comment: As an OEM, our company supports the SCAQMD to increase the mitigation fee for non-compliant furnaces to \$400.

Response: Staff continues to agree with the commenter on a mitigation fee increase. By the current proposal, there is no fee increase for mobile home units, while for the other type of units, the mitigation fee will be increased to \$300 to \$450 depending on furnace type and size.

Fee Increase Effective Date

11. Comments:

- (1) The current proposal to increase the mitigation fee and introduce a rebate for compliant furnaces prior to the end of the original 3 year schedule, and with short notice, does not allow sufficient time to adjust our product development and production schedules. Any change in the fee should be implemented after the 3-year period for the mitigation fee option currently specified in the rule has expired.
- (2) Provide OEMs with a reasonable period of adjustment by having the new fees in effect not less than 8 months from the date of the proposed amendment.
- (3) Mitigation fee increase should only be applied when any type of product becomes available in the market.
- (4) Delaying approval and implementation of the proposed amendment will severely and negatively impact manufacturers who invested, while rewarding those manufacturers who did not and may lead to additional delays in the introduction and commercialization of compliant products. Recommends SCAQMD proceed with the proposed amendment schedule and immediately implement.

Response: Comments on the mitigation fee are considerably diverse. Compliant non-condensing units have been commercially available since December 4, 2017 and compliant condensing units are expected to be commercially available by April 1, 2018. Staff has updated the proposal to have the fee increase effective at the beginning of the next compliance plan cycle for all but condensing units. For condensing units, the fee increase shall be effective 14 days after the beginning of the next compliance plan cycle.

Cost and Fee Analysis

12. Comments:

- (1) The manufacturer does not have complete control over the process by which the final installed cost of the furnace is established, and thus does not agree with the cost analysis used to justify the mitigation increase.
- (2) The District has not yet produced the economic model details it uses as the basis for its proposed fee increase and rebate program or its environmental analysis.
- (3) One OEM finds the economic analysis conducted by SCAQMD to be valid and strongly supports the Amendment proposal.

Response: Staff's cost analysis is based on market share, cost information and other input provided by OEMs. The proposed rebate program is self-sustaining due to the mitigation fee increase. As described in the staff report the Partial Equilibrium economic model only provided staff with a sense of direction in the cost analysis as explained in the staff report. Because of its very limited use there is no need to provide a detailed description of the economic model in the staff report.

Fee Increase to Fund Rebate

13. Comments:

- (1) It is understandable to have mitigation fees cover the cost of a rebate, but the proposed \$400 fee allows \$150 per unit for an unspecified 'administrative cost' which is an exorbitant amount. A fee at or around \$300 is more reasonable.
- (2) It is anticipated that the already collected funds and the projected collection for next year using the current fee structure would provide sufficient funds for a consumer rebate program.

Response: The current mitigation fee, \$200 for each condensing unit and \$150 for each other types, can and will only be used for projects to offset the forgone emission reductions from selling Rule 1111 non-compliant products. Only the increased portion of the proposed mitigation fee can be used for rebate program.

14. Comment: The increased mitigation fee has no rational relationship to the actual cost of offsetting excess emissions but rather attempts to influence customer behavior through market price.

Response: The proposed mitigation fee will maintain the original portion of the fee for emission mitigation projects, and the increased portion of the fee will be used to fund the Rule 1111 rebate program. The increase in the fee is intended to level out the cost difference between compliant and non-compliant products while sustaining the rebate program. Without such a program, OEMs would

be penalized for timely developing compliant, but more expensive, products that meet the compliance deadlines established in the current version of Rule 1111, because less expensive, non-compliant products would dominate the market. This approach should also encourage commercialization of compliant products while continuing to provide an option for the sales of non-compliant products.

15. Comment: Support the increase of the mitigation fees to a minimum of \$400 for all furnaces and the use of the \$250 increase in the mitigation fees to incentivize consumers to purchase compliant units.

Response: Thank you for the support. Staff is considering all the comments with regards to the mitigation fee. This comment is also under consideration.

16. Comment: Recommends the rebate program to be retro-active 120 days prior to its final approval.

Response: Staff is considering retro-actively implementing the rebate program. Details will be worked out in the contract with the third party contractor for implementation.

Consideration of Condensing Furnace

17. Comment: Compared to non-condensing furnaces, condensing furnaces should have a higher incentive for compliant products and higher penalty for non-compliant products.

Response: Staff is proposing a higher incentive and higher mitigation fee for condensing furnaces.

18. Comment: For OEMs focused on condensing furnace development, it is unfair to start the mitigation fee increase at the same time for condensing and non-condensing units.

Response: Staff has updated the proposal to have the fee increase to be on April 15, 2018, instead of April 1, 2018 for condensing units, and at the beginning of the next compliance plan cycle for non-condensing units (i.e. October 1, 2018). Nevertheless, even with this proposed change, the fee increase for condensing units will start before the fee increase for non-condensing units.

CEQA

19. Comment: Are the materials/information used for the proposed Rule 1111 compliance with CEQA available?

Response: The CEQA document was released on December 26, 2017 for a 45-day comment period. The comment period will close on February 9, 2018.

Emission Limit

20. Comment: There are currently no furnaces being sold which can meet the 14 ng/J low-NOx specification.

Response: Lennox International Inc. has manufactured compliant non-condensing products (in the size of 60,000, 80,000, and 100,000 btu/hr) that have been commercially available since December 4, 2017.

21. Comment: The mitigation fee is not the underlying driver in providing compliant units to the district; ensuring consumer safety, product reliability, and fully developing the technology to meet the emission standards are time consuming activities. In addition, all of the OEMs have been designing their furnaces to achieve the 14 ng/J NOx limit.

Response: The OEMs with compliant products that are ready for the market now or in the near future are confident that their product will operate safely and reliably.

22. Comment: SCAQMD must maintain the 14 ng/J emission limit.

Response: Staff agrees that the 14 ng/J NOx emission limit should not change. It is also worth noting that for the condensing and non-condensing models certified for three OEMs, the tested emissions were all at or below 7 ng/J.

Others

23. Comment: Provide projected emissions reductions including the operating hours, the number of furnaces, emissions reduction of each replacement, and expected replacement.

Response: Emissions reduction for Rule 1111 was estimated by a top-down approach, versus the bottom-up approach alluded to the commenter. As an area source with no SCAQMD permit requirement, staff estimated baseline emission for the whole population of this source based on their natural gas consumption, and an equipment life time of 20 to 25 years.

24. Comment: Distributors should not be responsible to pay mitigation fees for units coming into their warehouses in SCAQMD but are subsequently distributed outside of SCQAMD.

Response: The same comment was raised during the 2014 rulemaking process. Staff holds the same response as in Staff Report dated on September 5, 2014 as below.

“The proposed rule would allow units intended for sale outside the SCAQMD to be exempt from the mitigation fee. However, to avoid paying a mitigation fee for all units shipped to the SCAQMD, the manufacturer and distributor must have in place and implement a plan to clearly identify all units. The manufacturer and distributor must place labels on each unit and the outside of each unit’s shipping container identifying those units that may be sold into the SCAQMD pursuant to the 10 month sell through period in the rule, those units stored for sale outside the SCAQMD, and those units sold pursuant to a mitigation fee alternate compliance plan. In addition, the manufacturer and distributor must have in place a system to identify the date each unit was shipped to the distribution center in the SCAQMD, the date each unit arrived at the distribution center, the dates each unit was sold and shipped out of the distribution center, the address where each unit was shipped to (for units sold into and out of the SCAQMD) and the person or business who purchased each unit.”

25. Comment: The rebate program should be well-communicated to stakeholders with appropriate lead time prior to the start of the rebate availability.

Response: Staff has been engaged in discussion regarding the rebate program and its implementation with stakeholders since the September 21, 2017, Working Group meeting. As a result of the discussion, District staff determined that contracting with a third party for implementation was the optimal solution. The Request for Proposal (RFP) was approved by the Governing Board approval on December 1, 2017. The RFP was posted on the SCAQMD website with a lead time of over 30 days prior to its approval, and any selected proposal and resulting contract with details of the rebate implementation are open to public record request. Approval for the selection is scheduled for the March 2, 2018, Governing Board meeting. In addition, the rebate program continues to be a discussion topic in any individual meeting or Working Group meeting with the stakeholders.

26. Comment: With respect to the October 19, 2017 Public Workshop, we request an extension until December 4, 2017 to file comments.

Response: The public comment was extended for one week, with the ending date changed from November 2, 2017 to November 9, 2017.

27. Comment: Staff should analyze the impact of an increased mitigation fee not only on homeowners of single family homes, but also on residents of multi-family homes.

Response: The applicability is based on rated heat input capacity. This analysis considered multi-family units if they fall into the heat input range.

28. Comment: Any extension of the mitigation must be balanced not to punish manufacturers that already invested significantly in the development of compliant products.

Response: Staff agrees with the commenter and has worked with the OEMs that have developed compliant products to ensure that such investments are not compromised with the proposed rule amendments.