**SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT**

# FINAL DRAFT STAFF REPORT

## Proposed Amendments to Rule 4905 (Natural Gas-fired, Fan-Type Residential Central Furnaces)

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Prepared by: Jesse Madsen, Air Quality Specialist

Reviewed by: Sharla Yang, Air Quality Specialist
Brian Clerico, Air Quality Engineer II
Patrick Houlihan, Senior Air Quality Specialist
Anna Myers, Senior Air Quality Specialist
Errol Villegas, Strategies and Incentives Manager
Sheraz Gill, Director of Strategies and Incentives


## I. SUMMARY

Through extensive efforts during the development of the *2008 PM2.5 Plan*, the San Joaquin Valley Air Pollution Control District (District) identified the opportunity to reduce the oxides of nitrogen (NOx) emissions from sources subject to Rule 4905. This would be accomplished by lowering the NOx emission limit for natural-gas-fired, fan-type residential central furnaces (residential units) with a rated heating capacity of less than 175,000 British thermal units per hour (Btu/hr) and, for combination heating and cooling units, a rated cooling capacity of less than 65,000 Btu/hr.[1] The District initially committed to amend Rule 4905 (Natural Gas-fired, Fan-type Residential Central Furnaces) in 2010; however, because advanced low-NOx technology was still in the early stages of development for residential furnaces, the District revised its commitment in the *2008 PM2.5 Plan* to amend Rule 4905 in 2014.[2] The District adopted *2012 PM2.5 Plan* included this commitment and added an additional commitment to explore the feasibility and cost effectiveness of adding a NOx emission limit for units installed in commercial buildings (commercial units).[3] These commitments are also included in the District adopted *2013 Plan for the Revoked 1-Hour Ozone Standard.*[4]

[1] SJVAPCD. (2008, April 30). *2008 PM2.5 Plan*. Retrieved 9/29/14 from http://www.valleyair.org/Air_Quality_Plans/AQ_Final_Adopted_PM25_2008.htm.
[2] SJVAPCD. (2010, June 17). *Proposed Amendment to the 2008 PM2.5 Plan to Extend the Rule Amendment Schedule for Rule 4905 (Natural Gas-Fired, Fan-Type Residential Central Furnaces*. Retrieved 9/29/14 from http://valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2010/June/Agenda_Item_9_June_17_2010.pdf.
[3] SJVAPCD. (2012, December 20). *2012 PM2.5 Plan*. Retrieved 5/22/13 from http://www.valleyair.org/Air_Quality_Plans/PM25Plans2012.htm.
[4] SJVAPCD. (2013, September 19). *2013 Plan for the Revoked 1-Hour Ozone Standard*. Retrieved 9/29/14 from http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/AdoptedPlan.pdf.

The purpose of this proposed rule amendment is to fulfill the commitments from the *2008 PM2.5 Plan, 2012 PM2.5 Plan, and 2013 Plan for the Revoked 1-Hour Ozone Standard* to further reduce NOx emissions from residential units and explore the possibility of extending rule requirements to include NOx emission limits for commercial units. The proposed amendments are framed after the requirements of South Coast Air Quality Management District (SCAQMD) Rule 1111 (NOx Emissions from Natural Gas-fired, Fan type Central Furnaces) and provide for regulatory consistency in California. Proposed amendments include the following:

- Lower the NOx emission limit for residential units from 0.093 pounds NOx per million Btu of heat output (lb/MMBtu) (or 55 parts per million by volume (ppmv)), to 0.0325 lb/MMBtu (or 20 ppmv),
- Expand the applicability to include commercial units with a NOx emission limit of 0.0325 lb/MMBtu (or 20 ppmv), and
- Expand the applicability to include units installed in manufactured homes with an initial NOx emission limit of 0.093 lb/MMBtu (or 55 ppmv) which would then be lowered to 0.0325 lb/MMBtu (or 20 ppmv) in 2018.

SCAQMD Rule 1111 was amended in November 2009 to lower the NOx emission limit for applicable units from 40 nanograms per joule heat output (ng/J) (equivalent to 0.093 lb/MMBtu) to 14 ng/J (equivalent to 0.0325 lb/MMBtu),[5] and again in September 2014 to extend the first compliance deadline and add a mitigation fee option.[6] SCAQMD Rule 1111 already applied to both residential and commercial furnaces, and units installed in manufactured homes are required to comply with a 40 ng/J limit starting October 2012 and a 14 ng/J limit starting October 2018. Because no compliant units for the new lower NOx limit were commercially available at the time of the amendment, SCAQMD and the District co-funded a technology assessment to evaluate the performance of ultra-low NOx furnace technologies.[7] The technology assessment resulted in the successful demonstration of several low-NOx furnace designs, which are expected to be commercially available and cost effective by the SCAQMD Rule 1111 compliance dates.

The District expects technology required for compliance with proposed amendments to be commercially available by the SCAQMD Rule 1111 compliance dates and is therefore proposing to amend Rule 4905 as described above. This proposed rule amendment would contribute to the San Joaquin Valley's (Valley) progress towards attainment of federal air quality standards for PM2.5 and ozone by reducing NOx, which is a precursor for both PM2.5 and ozone. Proposed amendments to Rule 4905 would achieve an

[5] SCAQMD. (2009, November 6). *Final Staff Report with Socioeconomic Impact Assessment*. Retrieved 9/16/14 from http://www3.aqmd.gov/hb/2009/November/091130a.htm.
[6] SCAQMD. (2014, September 5). *Governing Board Agenda Item, September 5, 2014: Amend Rule 1111 – Reduction of NOx Emissions from Natural-gas-fired, Fan-type Central Furnaces.* Retrieved 9/9/14 from http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2014/2014-sep5-032.pdf?sfvrsn=2.
[7] SCAQMD. (2014, September 5). *Governing Board Agenda Item, September 5, 2014: Amend Rule 1111 – Reduction of NOx Emissions from Natural-gas-fired, Fan-type Central Furnaces.* Retrieved 9/9/14 from http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2014/2014-sep5-032.pdf?sfvrsn=2.

estimated 2.12 tons per day (tpd) of NOx emission reductions and ensure that Rule 4905 aligns with similar rules in other California air districts.

## II. PROJECT BACKGROUND

### A. Source Category

Rule 4905 is a point-of-sale rule that applies to any person who supplies, sells, offers for sale, installs, or solicits the installation of natural-gas-fired, fan-type residential central furnaces with a rated heat input capacity of less than 175,000 Btu/hr and a rated cooling capacity of less than 65,000 Btu/hr for combination heating and cooling units. Affected parties include furnace manufacturers, residential heating wholesalers, supply stores, contractors and end-users. The point-of-sale approach has allowed the District to achieve NOx reductions without placing an undue financial burden on the residents, operators and businesses that sell these units in the Valley.

The above units are used in approximately 71% of Valley residences[8] and are not labeled for retail as "residential" or "commercial" furnaces. Units used in commercial buildings, while currently not subject to the requirements of Rule 4905, are essentially the same as residential units with the exception of possible differences in usage patterns and indoor/outdoor location. An estimated 1,252,190 residential and commercial units will be operating in the Valley in 2017 (see Appendix C). Replacement occurs gradually as these units reach the end of the 20-year useful life.

The most common heat sources are boilers and furnaces; other options include heat pumps, active solar heating, electric heating, wood or pellet stoves, portable and direct vent wall heaters, and fireplaces.[9] Heat distribution systems are either central heating, meaning heat is generated in a central location and distributed throughout the house, or point-of-use or space heating, meaning supplemental heat is provided to a specific room. Types of central heating systems include forced air, steam radiant, radiant, hot water baseboards, and electric baseboards. Types of space heaters include wood or pellet stoves, portable and direct vent wall heaters, and fireplaces. Fuel types include natural gas, propane, heating oil, electricity, and solid fuels such as wood or pellets.

All heating systems have three basic components: a heat source, a heat distribution system, and a control system. The control system is usually a programmable thermostat. The heat source, which generally determines the type of distribution system used, is selected based on many factors. The most important factor is geographical location, which determines the climate and types of available fuel. Most commercial

[8] KEMA, Inc. (Prepared for California Energy Commission). (2010, October). *2009 California Residential Appliance Saturation Study*. Retrieved 9/17/13 from http://www.energy.ca.gov/2010publications/CEC-200-2010-004/CEC-200-2010-004-ES.PDF.

[9] Department of Energy. (2013, December 16). *Energy Saver 101: Everything You Need to Know About Home Heating*. Retrieved 12/17/13 from http://energy.gov/articles/energy-saver-101-infographic-home-heating.

and residential buildings in the Valley have access to natural gas, which is typically the cheapest and most convenient fuel source in areas where it is available.

Rule 4905 applies to furnaces fueled by natural gas that use forced air distribution, the most common type of heating system for residential and commercial buildings. Central furnaces are controlled by a thermostat, which sends signals to turn the device on or off when the building temperature does not match a chosen set point. A valve then opens to send natural gas to the burners, which combust the gas directly into the heat exchangers. A blower pulls air from outside the building through a filter, across the heat exchanger, and through a series of ducts and vents to different areas of the building. Exhaust from the combustion exits the building through a separate duct. Condensing units use an additional heat exchanger to extract the latent heat in the flue (exhaust) gas by cooling the combustion gasses to near ambient temperature and thereby increase the heating efficiency by up to 10%. The water vapor in the flue gas is condensed, collected, and drained.

Units installed in manufactured homes utilize the same types of materials and operating principles as commercial and residential units; however, significant differences exist. Furnaces installed in manufactured homes use sealed combustion, meaning all of the combustion air is taken from outside the building. These units also pre-heat the air, typically to 50-60°F, using a concentric vent where the combustion air is drawn in through the outer ring, while exhaust gases are vented through the inside core of the vent pipe. The air is pre-heated because the cold outside air does not mix well with the fuel, while pre-heated air blends well and allows for quieter ignition and combustion. Furnaces installed in manufactured homes also have to comply with strict space restrictions.[10] Proposed amendments would allow until October 1, 2018 to comply for these units.

## B. Current Rule

The purpose of Rule 4905 is to limit NOx emissions from natural gas-fired, fan-type residential central furnaces with rated heat inputs less than 175,000 Btu/hr and for combination heating and cooling units rated at a cooling capacity less than 65,000 Btu/hr. The rule currently requires that no person supply, sell, offer for sale, install, or solicit the installation of any unit within the Valley that exceeds a NOx emission limit of 0.093 lb/MMBtu (or 55 ppmv). Units installed in manufactured homes are exempt, as are nonfan-type units and units using fuel other than natural gas.

Rule 4905 requires that manufacturers of units subject to the rule certify their units through either the District's certification program, the SCAQMD certification process for SCAQMD Rule 1111, or another emission certification program approved by the United

[10] U.S. Department of Energy. (2014, July 7). *Energy Conservation Program for Consumer Products: Energy Conservation Standards for Residential Furnace Fans.* Retrieved 9/23/14 from https://www.federalregister.gov/articles/2014/07/03/2014-15387/energy-conservation-program-for-consumer-products-energy-conservation-standards-for-residential.

States Environmental Protection Agency (EPA) and District's Air Pollution Control Officer. Manufacturers are also required to display the model number of the unit on the shipping container and rating plate. If requested by the APCO, each manufacturer must submit a statement confirming the unit is in compliance, including a source test report verifying compliance with the emission limit.

The District's Governing Board adopted Rule 4905 on October 20, 2005 to establish the NOx limits mentioned above. EPA finalized approval for Rule 4905 on May 30, 2007.

### C. South Coast AQMD Rule 1111

SCAQMD adopted Rule 1111 (Reduction of NOx Emissions from Natural-Gas-Fired, Fan-type Central Furnaces) in December 1978 to limit NOx emissions from the same units as Rule 4905. The rule was amended in July 1983, November 2009, and September 2014.

The July 1983 amendment to SCAQMD Rule 1111 expanded applicability to include commercial units. November 2009 amendments lowered the NOx limit for residential and commercial units from 40 ng/J to 14 ng/J and added a requirement for units installed in manufactured homes to comply with a 40 ng/J limit starting in October 2012. Tiered compliance deadlines were set for condensing, non-condensing, and weatherized units on October 1 of 2014, 2015, and 2016, respectively. The 2009 amendments also established an incentive program for early compliance and committed to conducting a technology assessment to develop and test ultra-low-NOx burner technologies.[11]

The September 2014 amendments extended the October 1, 2014 compliance deadline for condensing units to April 1, 2015 to provide manufacturers additional time for testing new furnace designs and submitting and receiving approval of alternate compliance plans for selling non-compliant condensing units. A mitigation fee option was added to allow manufacturers to pay to sell non-compliant units for up to 36 months after the applicable compliance date. The mitigation fees are set at $150 for non-condensing units and $200 for condensing units. The fees were set based on upper-limit estimates of the expected cost increase for consumers to purchase new compliant units. Manufacturers of units complying with the 14 ng/J emission limit, 90 days prior to the applicable compliance date, may receive $75 for each non-condensing unit and $90 for each condensing unit.[12] EPA has not yet approved these rule amendments.

[11] SCAQMD. (2009, November 6). *Final Staff Report with Socioeconomic Impact Assessment*. Retrieved 9/16/14 from http://www3.aqmd.gov/hb/2009/November/091130a.htm.
[12] SCAQMD. (2014, September 5). *Governing Board Agenda Item, September 5, 2014: Amend Rule 1111 – Reduction of NOx Emissions from Natural-gas-fired, Fan-type Central Furnaces.* Retrieved 9/9/14 from http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2014/2014-sep5-032.pdf?sfvrsn=2.

### D. Control Technology

At the time of the November 2009 amendment to SCAQMD Rule 1111, no compliant units were available to meet the new 14 ng/J emission limit. The District partnered with SCAQMD to fund a technology assessment, with additional funding provided by Southern California Gas Company, to develop and test low-NOx furnace technologies. The manufacturer-specific details of the technologies developed during this assessment remain proprietary and confidential; however, the assessment was completed in the first quarter of 2014 and resulted in the successful development and testing of several prototypes that achieved the 14 ng/J NOx emission limit from SCAQMD Rule 1111.[13]

Four participants were selected to develop and test prototypes including two furnace manufacturers, a burner manufacturer, and a research institute experienced with combustion technologies. Successful prototypes included condensing and non-condensing furnaces with single and variable firing rates and a variety of heat input capacities that encompassed the sizes of most units found in residential and small commercial buildings. These prototypes demonstrated that the proposed NOx emission limit of 0.0325 lb/MMBtu is achievable in all unit types subject to Proposed Rule 4905, although development of units installed in manufactured homes will likely take significantly longer. The prototypes implemented enhanced pre-mixing and modified burners and passed safety and reliability testing.

At the time of completion for the technology assessment, manufacturers still faced several obstacles to commercialization including design, materials, controls, and manufacturing. Conversations with technology assessment participants indicated that manufacturers will have new compliant furnaces commercially available by the SCAQMD Rule 1111 compliance deadlines, and more than one manufacturer claimed to already have compliant units ready for commercialization.

## III. PROPOSED AMENDMENTS TO RULE 4905

### A. Overview

The District is proposing the following amendments to Rule 4905:

- Lower the NOx emission limit for residential units from 0.093 lb/MMBtu (or 55 ppmv) to 0.0325 lb/MMBtu (or 20 ppmv)
- Expand the applicability of Rule 4905 to include commercial units and units installed in manufactured homes
- Add a NOx emission limit of 0.0325 lb/MMBtu (or 20 ppmv) for commercial units

[13] SCAQMD. (2014, September 5). *Governing Board Agenda Item, September 5, 2014: Amend Rule 1111 – Reduction of NOx Emissions from Natural-gas-fired, Fan-type Central Furnaces.* Retrieved 9/9/14 from http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2014/2014-sep5-032.pdf?sfvrsn=2.

- Add a NOx emission limit of 0.093 lb/MMBtu (or 55 ppmv) for units installed in manufactured homes
- Lower the NOx emission limit for units installed in manufactured homes from 0.093 lb/MMBtu (or 55 ppmv) to 0.0325 lb/MMBtu (or 20 ppmv) in 2018
- Add labeling requirements to new units shipped to or sold in the Valley
- Remove redundant and expired language, including Section 7.0 (Compliance Schedule)

## B. Proposed Amendments to Rule 4905

The following discussion details the proposed amendments to Rule 4905. See Proposed Rule 4905 for exact language.

### Section 1.0—Purpose

Proposed amendments would remove the word “residential” to expand the purpose of Rule 4905 to include commercial units.

### Section 2.0—Applicability

Proposed amendments would remove the word “residential” to expand rule applicability to include commercial units of the same type and in the same size range. Commercial units in this size range are essentially the same as residential units. According to industry representatives, natural gas-fired, fan-type central furnaces are not labeled as “residential” or “commercial” when sold. The word “District” would be replaced with “San Joaquin Valley” to improve clarity.

### Section 3.0—Definitions

To improve clarity, proposed amendments would replace the term and definition for “Fan-type Residential Central Furnace” (3.4) with “Natural Gas-fired, Fan-type Central Furnace” (3.8). The previous definition would be used with the added words “that uses natural gas as a fuel.” Proposed amendments would add the same definition for “Condensing Unit” as used in SCAQMD Rule 1111, for use with the tiered compliance deadlines. Proposed amendments would also remove redundant language from definitions 3.5 (Heat Output (Central Furnace)) and 3.6 (Manufactured Home). The term “Annual Fuel Utilization Efficiency” is already defined in 3.2; hence, the definition does not need to be repeated. Similarly, the United States Code and California Health and Safety Code references are included in the definition for Manufactured Home, making the language from those references redundant and unnecessary. Subsection numbers would be changed to reflect the proposed amendments. Proposed amendments would add definition 3.12, which would define “weatherized unit” as “for the purposes of this rule, designed for installation outside of a building, equipped with a

protective jacket and integral venting, and labeled for outdoor installation." This definition is consistent with SCAQMD Rule 1111.

**Section 4.0—Exemptions**

Proposed amendments would remove exemptions and reserve the section for potential future exemptions. Applicable compliance dates are described in the following section.

**Section 5.0—Requirements**

Proposed amendments would amend the NOx emission limit for residential units with a rated heat input of less than 175,000 Btu/hr, and for combination heating and cooling units a rated cooling capacity of less than 65,000 Btu/hr, from 0.093 lb/MMBtu (or 55 ppmv) to 0.0325 lb/MMBtu (or 20 ppmv). Proposed amendments would also require new commercial units to meet the 0.0325 lb/MMBtu (or 20 ppmv) NOx emission limit and require new units installed in manufactured homes to meet a NOx emission limit of 0.093 lb/MMBtu (or 55 ppmv). The proposed NOx emission limits in Table 1 would take effect pursuant to the compliance dates in the same table.

Table 1 NOx Emission Limits (Effective on and after January 1, 2015)

| Unit Type | NOx Emission Limit (ppmv limits are referenced at 3.00% $O_2$ stack gas by volume on a dry basis) | Compliance Date |
|---|---|---|
| Units installed in manufactured homes | 0.093 lb/MMBtu heat output or 55 ppmv | January 1, 2015 |
| All non-weatherized condensing units except those installed in manufactured homes | 0.0325 lb/MMBtu heat output or 20 ppmv | April 1, 2015 |
| All non-weatherized, non-condensing units except those installed in manufactured homes | 0.0325 lb/MMBtu heat output or 20 ppmv | October 1, 2015 |
| Weatherized units | 0.0325 lb/MMBtu heat output or 20 ppmv | October 1, 2016 |
| Units installed in manufactured homes | 0.0325 lb/MMBtu heat output or 20 ppmv | October 1, 2018 |

Proposed amendments would allow units manufactured prior to the applicable compliance date in Table 1 to be sold until the applicable sell-through period end-date in Table 2, provided the unit is compliant with labeling requirements and the standards in effect on the date of manufacture.

| Table 2 Sell-through Period End-Dates for Units Manufactured Prior to the Applicable Compliance Dates in Table 1 | |
|---|---|
| Unit Type | Sell-through Period End-date |
| Units installed in manufactured homes | N/A |
| All non-weatherized condensing units except those installed in manufactured homes | January 26, 2016 |
| All non-weatherized, non-condensing units except those installed in manufactured homes | July 27, 2016 |
| Weatherized units | July 27, 2017 |
| Units installed in manufactured homes | N/A |

SCAQMD included the same tiered compliance deadline based on unit type to accommodate difficulties associated with commercializing different unit types. This accommodation was granted because the SCAQMD NOx emission limits were scheduled to take effect October 2014 for condensing units, but some manufacturers needed additional time to commercialize the newly developed compliant units. Based on the results of the low-NOx furnace technology assessment and discussions with manufacturers and industry representatives, the technology for compliant units will be available by the SCAQMD Rule 1111 compliance dates, and some units are even expected to be available at the time of this amendment.

A 300-day sell-through period for condensing and non-condensing units is consistent with amendments to other District point-of-sale rule amendments and would give affected parties ample time to sell units manufactured before the effective compliance date and procure new compliant units. This additional time would ensure a smooth transition and eliminate the potential need for additional amendments in the event that manufacturers take longer than expected to commercialize new units. The additional time would also be helpful for manufacturers that are not ready for commercialization, which is important because proposed Rule 4905 does not allow for a mitigation fee option. SCAQMD needed the mitigation fee option to meet specific emission reduction commitments, while the District did not commit to a specific amount of emission reductions. In addition, the mitigation fee option included in SCAQMD Rule 1111 is pending EPA review and is not yet approved.

The District examined whether other air districts regulate units installed in manufactured homes and found that until 2009 these units were not regulated in any of the air districts, including SCAQMD, Bay Area Air Quality Management District (BAAQMD), Sacramento Metropolitan Air Quality Management District (SMAQMD) and Ventura County Air Pollution Control District (VCAPCD). SCAQMD added requirements during the 2009 amendment of Rule 1111 for units installed in manufactured homes to meet a NOx emission limit of 40 ng/J, effective October 1, 2012, and an emission limit of 14 ng/J, effective October 2018. Most of the basic technology is the same for residential units

and units installed in manufactured homes, but there are significant differences in configuration, sizing, and air supply between the two unit types. Even so, SCAQMD added the new requirements because units installed in manufactured homes are capable of complying with the 40 ng/J NOx emission limit without additional modifications.[14] Proposed amendments would not allow for a sell-through period for these units because they have already been required in SCAQMD since 2012. Proposed amendments would allow until October 2018 for manufacturers to develop and commercialize units installed in manufactured homes that comply with the proposed 0.0325 lb/MMBtu (or 20 ppmv) NOx emission limit.

Proposed amendments address weatherized units as a separate technology, consistent with SCAQMD Rule 1111. Conversations with manufacturers and comments from stakeholders indicated that some of the manufacturers produce weatherized units using the same components and technology as non-weatherized units, while others produce them as a separate unit type, utilizing different components than non-weatherized units. Because some manufacturers produce weatherized units using different components and technology as non-weatherized units, some of the manufacturers have requested additional time to commercialize weatherized units that comply with the proposed 0.0325 lb/MMBtu (or 20 ppmv) NOx emission limit. Proposed amendments would allow until October 1, 2016 for manufacturers to comply with the new 0.0325 lb/MMBtu (or 20 ppmv) NOx emission limit, with a sell-through period until July 27, 2017. These compliance deadlines are consistent with SCAQMD Rule 1111.

### Section 6.0—Administrative Requirements

Proposed amendments would revise the labeling requirements for clarity and add a new requirement to accompany the proposed emission limits. The new proposed labeling requirements would take effect on and after the applicable compliance dates in Table 1, and would require manufacturers to display the heat input capacity or cooling capacity, the applicable NOx emission limit, and the date of manufacture or date code on the shipping container and rating plate of the unit. The proposed labeling requirements would ensure compliance with the multiple proposed emission limits and the sell-through period requirements and align the requirements of Rule 4905 with those of SCAQMD Rule 1111.

Proposed amendments would remove the option to demonstrate certification by having the unit placed on the SCAQMD Certification List for Rule 1111. The list has been removed from the SCAQMD website, and SCAQMD has indicated that there are currently no plans for replacing it.

[14] SCAQMD. (2009, November 6). *Final Staff Report with Socioeconomic Impact Assessment*. Retrieved 9/16/14 from http://www3.aqmd.gov/hb/2009/November/091130a.htm.

Proposed amendments would clarify the testing requirements of Section 6.2.1 by specifying that each natural gas-fired, fan-type central furnace model must be tested according to the requirements, rather than each unit.

**Section 7.0—Compliance Schedule**

Section 7.0 (Compliance Schedule) would be removed to eliminate redundancy. The compliance schedule is already specified in Sections 5.0 (Requirements) and 6.0 (Administrative Requirements).

## IV. SUPPORTING ANALYSES

### A. Global Climate Change and Greenhouse Gases

The California Global Warming Solutions Act of 2006 (AB 32) created a comprehensive, multi-year program to reduce greenhouse gas (GHG) emissions in California, with the overall goal of restoring emissions to 1990 levels by the year 2020. ARB and the Legislature are developing policies and programs to implement AB 32. The District believes that the evidence and the rationale that climate change is occurring is compelling and convincing. In addition to the long-term consequences of climate change, the District is concerned with the potential ramifications of more moderate but imminent changes in weather patterns. The Valley depends heavily on agriculture for its economy and has developed agricultural practices based on the last several decades of weather patterns. Unanticipated and large fluctuations in these patterns could have a devastating effect on the Valley's economy.

While there are many win-win strategies that can reduce both GHG and criteria/toxic pollutant emissions, when faced with situations that involve tradeoffs between the two, District staff believes that the more immediate public health concerns that may arise from an increase in criteria or toxic pollutant emissions should take precedence. The District's Governing Board adopted the Climate Change Action Plan (CCAP) in August 2008. For California Environmental Quality Act (CEQA) requirements, one of the goals of the CCAP is to establish District processes for assessing the significance of greenhouse gas impacts. The District has developed a policy and guidance for addressing greenhouse gases under CEQA.

### B. Health Benefits

The District is a public health agency whose mission is to improve the health and quality of life for all Valley residents through efficient, effective and entrepreneurial air quality management strategies. The District periodically compiles attainment plans to identify individual regulations and other strategies that will achieve the emissions reductions needed for the Valley to meet federal health-based air quality standards (National Ambient Air Quality Standards, or NAAQS). Guided by its Health-Risk Reduction

Strategy, the District develops and implements both attainment plans and regulations to attain the NAAQS in the quickest, most health-protective, and most cost-effective manner. This proposed amendment to Rule 4905 is one component of this overall control strategy. Since this rule amendment reduces NOx, it benefits public health by contributing to improved ozone and PM2.5 air quality.

## C. Emission Reduction Analysis

As presented in the *2012 PM2.5 Plan*, the annual NOx emissions from the source category currently subject to Rule 4905 are expected to be 2.54 tons per day (tpd) in 2017. The District did not specify an emission reduction commitment for this rule amendment in that plan in lieu of conducting a more thorough emission reduction analysis in this rule amendment.

The baseline NOx emissions from all natural gas-fired fan-type central furnaces that would be subject to proposed amendments to Rule 4905 are 3.30 tpd. Proposed rule amendments would result in approximately 2.12 tpd NOx emission reductions upon full implementation in 2036 after old units are replaced with new units over the next 20 years, reflecting a 51.0% reduction from the baseline. The complete Emission Reduction Analysis is presented in Appendix B of this Final Draft Staff Report.

## D. Cost Effectiveness Analysis

Pursuant to California Health & Safety Code (CH&SC) Section 40920.6(a), the District has prepared a Cost Effectiveness Analysis to analyze the economic feasibility of the proposed rule amendments. The estimated cost effectiveness for implementing the proposed amendments for natural gas-fired, fan type central furnaces is estimated to range from $30,309.53 to $40,423.51 per ton of NOx emission reductions. The differential cost to purchase a 0.0325 lb/MMBtu (or 20 ppmv) compliant unit is estimated to range from $160.12 to $213.49, making these proposed amendments cost effective. The complete analysis is presented in Appendix C of this Final Draft Staff Report.

## E. Socioeconomic Analysis

Pursuant to CH&SC 40728.5(a), “Whenever a district intends to propose the adoption, amendment, or repeal of a rule or regulation that will significantly affect air quality or emissions limitations, that agency shall, to the extent data are available, perform an assessment of the socioeconomic impacts of the adoption, amendment, or repeal of the rule or regulation.” No significant socioeconomic impacts are expected from these proposed rule amendments. The complete Socioeconomic Analysis is presented in Appendix D of this Final Draft Staff Report.

### F. Rule Consistency Analysis

Pursuant to CH&SC Section 40727.2, the District prepared a Rule Consistency Analysis, comparing the elements of the amendments with the corresponding elements of other District rules and federal regulations. The District found that none of the proposed amendments would conflict with other District rules, or federal rules, regulations, or policies covering similar stationary sources. The complete Rule Consistency Analysis is presented in Appendix E of this *Final Draft Staff Report*.

### G. CEQA

According to the CEQA statues and pursuant to Section 15061 of the CEQA Guidelines, the District investigated the possible environmental impacts of the amendments to Rule 4905. Based on the lack of evidence to the contrary, the District has concluded that the rule amendments would not have any significant adverse effects on the environment. As such, the District finds that the rule amendment project is exempt per the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061 (b)(3)). Therefore pursuant to Section 15062 of the CEQA Guidelines, Staff will file a Notice of Exemption upon Governing Board approval of amendments to Rule 4905.

## V. RULE DEVELOPMENT PROCESS

### A. Public Workshop for Rule 4905

The District hosted a public workshop to present draft amendments and receive public comments on October 16, 2014. The draft rule and staff report were made available for the public workshop. The public workshop was followed by a two-week public comment period ending at 5:00 PM on October 30, 2014. All significant comments received before the comment period deadline were reviewed and incorporated into the proposed rule, staff report, and appendices as appropriate.

### B. Public Hearing for Rule 4905

In accordance with CH&SC Section 40725, the proposed amendments to Rule 4905 and the final draft staff report will be publicly noticed and made available no later than November 18, 2014, 30 days prior to the Governing Board public hearing, to consider adoption of the proposed amendments. The 30-day publication of the proposed amendments and final draft Staff Report will be followed by a two-week public comment period ending at 5:00 P.M. on December 2, 2014. All significant comments received before the comment deadline will be ensured consideration prior to the public hearing. These proposed rule amendments are scheduled to be presented to the District's Governing Board during a public hearing on December 18, 2014. The public is invited to provide comments to District Governing Board during the public hearing.

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