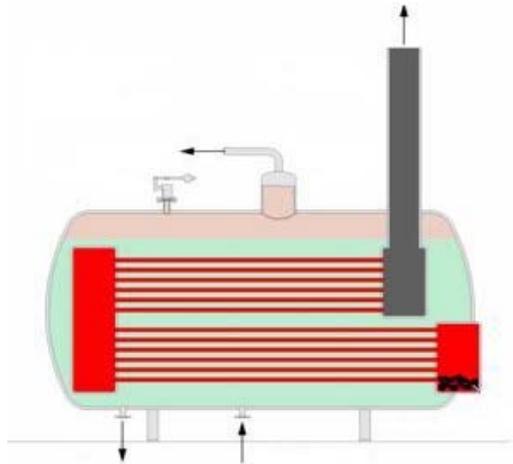


**Bay Area Air Quality Management District**

939 Ellis Street  
San Francisco, CA 94109

**BAAQMD Regulation 9, Rule 7:  
Nitrogen Oxides and Carbon Monoxide from Industrial,  
Institutional and Commercial Boilers, Steam Generators and  
Process Heaters and**

**Regulation 1: General Provisions and Definitions**



**Addendum to Staff Report  
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## I. EXECUTIVE SUMMARY

On July 30, 2008, the Board of Directors of the Bay Area Air Quality Management District (the “Air District” or “District”) adopted amendments to District *Regulation 9: Inorganic Gaseous Pollutants, Rule 7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters* (“the 2008 amendments”) and an Initial Study / Negative Declaration concerning the Amendments (“the Negative Declaration”) pursuant to the California Environmental Quality Act (CEQA). The intent of these amendments was to reduce the emissions of nitrogen oxides (NO<sub>x</sub>) in the District by requiring use of existing and generally available low-NO<sub>x</sub> technology in new, replacement and existing boilers, steam generators and process heaters (“heaters”). This addendum to the staff report for the 2008 amendments (*Reference 1*) describes proposed changes to the 2008 amendments necessary to give full effect to the Air District’s intent in adopting these amendments.

The 2008 amendments:

1. Reduced the NO<sub>x</sub> emission limits for gas-fired devices rated 10 million BTU/hr (MM BTU/hr) and higher that were already subject to this rule; as well as for devices using other fuels rated 1 to 10 MM BTU/hr and higher that were already subject to this rule, but not subject to any NO<sub>x</sub> or CO emission limits;
2. Expanded the rule applicability for natural gas and LPG-fired devices so that it applies to devices rated >2 to <10 MM BTU/hr, and established NO<sub>x</sub> and CO emission limits for these devices;
3. Established insulation requirements, stack gas temperature limits and tune-up requirements for devices subject to the rule;
4. Established a new, low-fuel exemption criteria for most of the new rule requirements;
5. Established an emissions certification requirement for manufacturers of new, natural gas and LPG-fired devices rated >2 to <10 MM BTU/hr, and also established operator registration requirements (including fees in Regulation 3) for new and existing, natural gas-fired devices in this size range; and
6. Required compliance dates of January 1, 2011 and January 1, 2012 for heaters in the >2 to 5 MM BTU/hr and >5 to <10 MM BTU/hr size range, respectively, and allowed up to 10 years of useful life for heaters that were less than 10 years old.

Some heaters that are subject to Regulation 9, Rule 7 (“Regulation 9-7”), namely heaters that are fired with natural gas or liquefied petroleum gas (LPG) and that are rated >2 to <10 MM BTU/hr, are exempt from District permit requirements. When the 2008 amendments expanded Regulation 9-7 applicability to these devices, the District could have required that these devices be subject to permit requirements in order to provide a mechanism for enforcing Regulation 9-7 requirements. A permit requirement provides the District an opportunity to review a proposed heater prior to installation to ensure that it complies with all applicable requirements. However, a permit process would require that the applicant generally understand District permitting regulations and also have an understanding of Regulation 9-7 requirements. Most operators of small,

natural gas-fired heaters do not operate any other devices subject to District regulation and therefore have a very limited understanding of District regulations. On the other hand, manufacturers and distributors of small boilers tend to be technically sophisticated and also are familiar with air quality regulations. These manufacturers and distributors sell throughout California, including areas where lower NOx standards are already in effect. Therefore, instead of making these small heaters subject to permit requirements, the 2008 amendments required that operators of such devices identify themselves to the District through an on-line registration process (to allow future inspection) and also required that manufacturers of these devices pre-certify them for compliance with the new requirements before offering them for sale. This registration approach partially shifted the burden of understanding and complying with Regulation 9-7 requirements from the operators to the manufacturers.

By the January 1, 2011 deadline, no heater manufacturer had certified any heater model for compliance with Regulation 9-7, so no heaters fired with natural gas or LPG that are rated >2 to <10 MM BTU/hr are lawfully available for sale in the District. To address this problem, the District is now proposing to extend the emissions requirement compliance dates and the certification dates until January 1, 2013. Also, in order to facilitate certification, the District is proposing to expand the methods available for certification. Finally, the District is taking this opportunity to make a number of minor corrections and clarifications to the rule. These proposed changes do not alter the conclusions drawn in the staff report to the 2008 amendments.

## **II. BACKGROUND**

### **The Intent of the 2008 Amendments**

In adopting the 2008 amendments to Regulation 9, Rule 7 (“Regulation 9-7”), the Air District intended to reduce emissions of nitrogen oxides (NOx) from boilers, steam generators and process heaters (“heaters”), while taking due consideration of the cost effectiveness of the required controls and the existence of technology to implement the reductions. The 2008 amendments updated the NOx emissions requirements for heaters rated 10 million BTU/hr (MM BTU/hr) and higher. The 2008 amendments also included new NOx emissions requirements for natural gas and LPG-fired heaters rated greater than 2 to less than 10 MM BTU/hr, and for heaters using any other fuels and rated 1 MM BTU/hr to less than 10 MM BTU/hr. The 2008 amendments also included new energy efficiency requirements (expanded inspection and tune-up requirements, insulation requirements and limits on stack-gas temperature) applicable to all heaters. The intent of these energy efficiency measures was to reduce greenhouse gas (GHG) emissions by limiting heat losses and requiring efficient operation, and to mitigate the possibility of increased GHG emissions caused by reduced overall efficiency as a result of implementing NOx controls.

Regulation 9-7 is a “retrofit” rule that applies emissions requirements to both new and existing devices that are subject to the regulation. Regulation 9-7 is also a “point of sale” rule with regard to heaters that are subject to the rule, but not subject to permit requirements, namely natural gas and LPG-fired heaters rated >2 to <10 MM BTU/hr. For this latter category of heaters, the rule prohibits commerce in devices that have not been certified by their manufacturer to meet the applicable NOx and CO emissions requirements in the regulation.

Prior to the 2008 amendments, Regulation 9-7 generally applied to natural gas and LPG-fired heaters rated 10 MM BTU/hr and higher, and also to heaters rated 1 MM BTU/hr and higher if they used a fuel other than natural gas or LPG. The 2008 amendments extended Regulation 9-7 to generally apply to heaters rated >2 MM BTU/hr, although heaters rated 1 MM BTU/hr and higher that use a fuel other than natural gas or LPG were already subject to the rule. Regulation 9-7 complements Regulation 9-6, which applies to natural gas-fired heaters rated up to and including 2 MM BTU/hr.

### **Developments Subsequent to Adoption of the 2008 Amendments**

Although the requirement that only heaters fired with natural gas or LPG and rated >2 to 5 MM BTU/hr that were pre-certified to meet the emissions requirements may be sold in the District went into effect on January 1, 2011, no manufacturer has applied to certify a heater model in this size range. For devices rated >5 to <10 MM BTU/hr, the certification requirement will go into effect on January 1, 2012. The District has engaged in an extensive outreach program to ensure that manufacturers and their distributors are aware of the pre-certification requirement. Specifically, the District has prepared and widely distributed a Compliance Advisory for manufacturers that explains

the certification requirement. Also, every boiler distributor and manufacturer operating in the Bay Area has individually received a copy of the proposed rule amendments and has been encouraged to provide comments.

### **III. PROPOSED RULE AMENDMENTS**

#### **Extend Emission Compliance Dates for Small Devices to January 1, 2013**

The effective dates for the 2008 NO<sub>x</sub> and CO standards are included in a table in Section 9-7-308. The effective dates for heaters rated >2 to 5 MM BTU/hr (subject to Section 9-7-307.1) and rated >5 to <10 MM BTU/hr (subject to Section 9-7-307.2) are proposed to change from January 1, 2011 and January 1, 2012, respectively, to January 1, 2013 for both categories. The effective dates for devices rated 1 to <10 MM BTU/hr that use a non-gaseous fuel, exclusively or in combination with another fuel (subject to Section 9-7-307.8 and 307.9), are also proposed to change from January 1, 2011 to January 1, 2013.

Also, Section 9-7-307.7 had a typographical error in the 2008 amendments. Heaters using landfill and digester gases subject to this section should have been described as having a size range of 1 MM BTU/hr or more, rather than 10 MM BTU/hr or more. This error is corrected and the subcategory of these landfill and digester gas-fired devices rated 1 to <10 MM BTU/hr is also proposed to have an effective date of January 1, 2013.

The special provisions extending compliance dates for devices manufactured less than 10 years before the 2008 effective dates will remain unchanged, although they are moved to new sections 9-7-308.1, 308.2 and 308.3. Also, the special provisions extending compliance dates for facilities with more than one device subject to the 2008 NO<sub>x</sub> standards will remain unchanged.

#### **Simplify Certification Process and Allow Additional Certification Methods**

Section 9-7-406 includes a detailed description of the required certification application for manufacturers of heaters that are fired with natural gas or LPG and that are rated >2 to <10 MM BTU/hr. Staff proposes to simplify this process by amending it to state that the primary requirement for certification is a demonstration of compliance with the applicable NO<sub>x</sub> and CO limits for these devices, and replacing the detailed application description with a requirement that applicants use a form to be provided by the District. This proposed amendment will simplify the application process by replacing individual applications with a standardized application. Also, a new test method section for certification is proposed in Section 9-7-606. Whereas the 2008 amendments only allowed certification to be demonstrated with BAAQMD source test methods, thus requiring that a new test be conducted for each heater model, the proposed section also allows the use of CARB and US EPA test methods. This change may allow applicants to submit existing test data to satisfy the certification demonstration.

## **Other Amendments**

In 2009, the Air-Conditioning, Heating and Refrigeration Institute (AHRI) introduced a new efficiency certification program that will replace a number of existing third-party certification programs by January 1, 2012. This consolidated AHRI certification provides a convenient energy efficiency verification tool as an alternative to the stack-gas temperature limits in Section 9-7-312. The stack gas temperature limits are a means of verifying the thermal efficiency of a heater, minimizing GHG emissions. Staff proposes to allow AHRI certification of a thermal efficiency of 80% or higher as an equivalent alternative to these temperature limits.

The 2008 amendments included an exemption for devices that were only used for 10% or less of their maximum utility. Exempt devices are not subject to the 2008 NO<sub>x</sub> or CO limits or efficiency requirements. Section 9-7-309 included three compliance options for these exempt devices. One of these options - operation of the device at a stack gas oxygen concentration of no more than 3% by volume – has proven to be difficult to enforce. Therefore, staff proposes to eliminate this option. The remaining options are: 1) complying with the 2008 NO<sub>x</sub> and CO limits and efficiency requirements, and 2) performing an annual inspection and tune-up. The tune-up balances fuel and air (oxygen) to ensure efficient combustion, accomplishing the same thing as the stack gas oxygen concentration.

Staff proposes to amend Regulation 1, Section 410 (“Regulation 1-410”) to reflect current District practice with regard to equipment registration programs. Regulation 1-410 requires that persons responsible for air emissions register with the District. This section exempts “plants or facilities requiring annual operating permits” from this registration requirement. In practice, the District permits individual sources rather than plants or facilities. Therefore, staff proposes to amend this section to clarify that equipment subject to permit requirements are exempt from registration.

Regulation 1-412 includes administrative requirements regarding the owner and address of record for a permit or registration. Staff proposes to amend this section to require advance notice for changes to the owner or address of record to ensure that the District has current information for addressing official correspondence.

## **IV. EMISSIONS AND EMISSION REDUCTIONS**

### **Emissions Subject to Control**

The staff report for the 2008 amendments estimated NO<sub>x</sub> emissions of 4.28 ton/day for devices >2 to <10 MM BTU/hr that would be regulated by Regulation 9-7 as a result of the 2008 amendments. Staff has not found any data or information to suggest that this estimate should be revised.

### **Emission Reductions Expected**

The staff report for the 2008 amendments estimated NO<sub>x</sub> emission reductions of 2.87 ton/day for devices >2 to <10 MM BTU/hr that would be regulated by Regulation 9-7 as

a result of the 2008 amendments. Staff has not found any data or information to suggest that this estimate should be revised.

## **V. ECONOMIC IMPACTS**

### **Compliance Costs**

The estimated cost-effectiveness in the staff report for the 2008 amendments was \$17,200/ton of NO<sub>x</sub> reductions for devices rated >2 to 5 MM BTU/hr and \$17,400/ton for devices rated 5 to <10 MM BTU/hr. A compliance audit has verified that the estimated costs to comply with the 2008 amendments used worst-case assumptions (replacement of all small boilers). The audit has found that, in many cases, retrofit technology is available for many small boilers, reducing the cost of compliance. Therefore, the actual compliance costs do not exceed the estimates in the 2008 staff report.

### **Socioeconomic Impacts**

Section 40728.5 of the California Health and Safety Code requires an air district to assess the socioeconomic impacts of the adoption, amendment or repeal of a rule if the rule is one that “will significantly affect air quality or emissions limitations.” Applied Development Economics of Walnut Creek, California prepared a socioeconomic analysis of the 2008 amendments to Regulation 9, Rule 7. The analysis concluded that the affected facilities and individuals should be able to absorb the costs of compliance with the proposed rule when water heaters or small boilers require replacement without significant economic dislocation or loss of jobs. Applied Development Economics has analyzed potential impacts from the proposed compliance date extension and concluded that there would be no new cost above and beyond the costs associated with the 2008 amendments. A copy of the 2008 socioeconomic analysis and the 2011 addendum to the analysis is attached as Appendix B.

## **VI. ENVIRONMENTAL IMPACTS**

### **The Negative Declaration for the 2008 amendments**

Pursuant to the California Environmental Quality Act, the Air District contracted with Environmental Audit, Inc., to prepare an initial study for the 2008 amendments. The initial study concluded that there are no potential significant adverse environmental impacts associated with the 2008 amendments. The initial study and negative declaration was circulated for public comments. No comments were received. The Board of Directors of the Air District approved the Negative Declaration for the 2008 amendments on July 30, 2008. The Negative Declaration concluded that the 2008 amendments would result in no significant adverse impacts and that the amendments would benefit the Bay Area by causing a reduction in emissions of NO<sub>x</sub> and particulate matter.

Air District staff has developed an addendum to the Negative Declaration (the “Addendum”). The Addendum discusses the changes to the 2008 amendments

proposed in the current rulemaking and their effect on the analysis in the Negative Declaration. The Addendum concludes that none of the proposed changes significantly affects any of the analyses or conclusions of the Negative Declaration adopted by the BAAQMD Board of Directors for the 2008 amendments. A copy of the 2008 Negative Declaration and 2011 Addendum is attached as Appendix C.

## **VII. REGULATORY IMPACTS**

Section 40727.2 of the Health and Safety Code requires an air district, in adopting, amending, or repealing an air district regulation, to identify existing federal and district air pollution control requirements for the equipment or source type affected by the proposed change in air district rules. The air district must then note any difference between these existing requirements and the requirements imposed by the proposed change. The proposed amendments do not impose a new emission limit or standard, make an existing emission limit or standard more stringent, or impose new or more stringent monitoring, reporting, or recordkeeping requirements.

## **VIII. RULE DEVELOPMENT PROCESS**

Since the adoption of the 2008 amendments, District staff has participated in a number of workshops, training sessions and other forums to explain new requirements of Regulation 9-7. District staff has participated in several multi-day workshops sponsored by a heater distributor (R F MacDonald), attended by hundreds of boiler operators. Staff has also participated in two web conferences sponsored by PG&E contractor Enovity with dozens of participants, and has made presentations to facility managers with the City of San Francisco and the City of Palo Alto. District staff has also made a presentation to a local chapter of the American Society of Heating, Refrigerating and Air-Conditioning Engineers.

More recently, staff has undertaken an extensive inspection and outreach program to evaluate compliance with rule requirements and to ensure that these requirements are understood by operators and manufacturers. In conjunction with these inspections, staff has mailed compliance advisories to over 3000 heater operators, manufacturers, industry groups and other stakeholders. District staff has mailed the proposed amendments and a notice requesting comments on the draft rule to this same group of over 3000 stakeholders and has also made these documents available on the District website.

## **IX. CONCLUSIONS**

Pursuant to the California Health and Safety Code Section 40727, before adopting, amending, or repealing a rule the Board of Directors must make findings of necessity, authority, clarity, consistency, non-duplication and reference. The proposal is:

- Necessary to correct the problems identified with the 2008 amendments, while continuing to support the District's ability to attain the State one-hour and eight-hour ozone standards;
- Authorized by California Health and Safety Code Section 40702;
- Clear, in that the new regulation specifically delineates the affected industries, compliance options and administrative and monitoring requirements for industry subject to this rule;
- Consistent with other District rules, and not in conflict with state or federal law;
- Non-duplicative of other statutes, rules or regulations; and
- The proposed regulation properly references the applicable District rules and test methods and does not reference other existing law.

The proposed changes to the 2008 amendments do not require any revision to the findings made in the 2008 Negative Declaration and will not cause or contribute to any significant adverse environmental impact. As a result, the Addendum to the Negative Declaration is appropriate to satisfy the CEQA requirements for environmental review of the proposed changes to the 2008 amendments. The Addendum will be available to the public prior to any public hearing in which the Board of Directors of the Air District considers the Addendum for approval.

Staff recommends the adoption of the proposed amendments to Regulation 9, Rule 7: *Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters*, and Regulation 1: *General provisions and Definitions*, and approval of the CEQA Addendum to the July, 2008 Negative Declaration.

## X. REFERENCES

1. Bay Area Air Quality Management District: *“Staff Report: Proposed Amendments to BAAQMD Regulation 9, Rule 7: Nitrogen Oxides and Carbon Monoxide From Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters”*; June 2008.