

**SACRAMENTO METROPOLITAN
AIR QUALITY MANAGEMENT DISTRICT**

STAFF REPORT

Rule 411 – NO_x FROM BOILERS, PROCESS HEATERS AND STEAM GENERATORS

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BACKGROUND

Ground level ozone is a secondary pollutant formed from photochemical reactions of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) in the presence of sunlight. Ozone is a strong irritant that adversely affects human health and damages crops and other environmental resources. As documented by the U.S. Environmental Protection Agency (EPA) in the most recent Criteria Document for ozone (U.S. EPA 2006), both short-term and long-term exposure to ozone can irritate and damage the human respiratory system, resulting in:

- decreased lung function;
- development and aggravation of asthma;
- increased risk of cardiovascular problems such as heart attacks and strokes;
- increased hospitalizations and emergency room visits; and
- premature deaths.

The District is currently designated as a “serious” nonattainment area for both the state and federal ozone standards. Because NO_x is a precursor to ozone, one of the strategies to control ozone pollution is to reduce NO_x emissions from existing stationary sources.

Rule 411 limits NO_x emissions from boilers, process heaters, and steam generators with rated heat input capacities of 1 million Btu per hour (mmBtu/hr) or greater. The rule was first adopted on February 2, 1995 and was last amended on October 27, 2005.

The October 27, 2005 amendments to Rule 411 expanded the applicability of the rule to include units with ratings between 1 and 5 mmBTU/hr and established NO_x emission standards for these units. In addition, more stringent NO_x emission standards were set for units rated at or above 5 mmBTU/hr. At the same time, existing units with low annual fuel usage (below thresholds established in the rule) were exempted from the new NO_x standards. The purpose of the exemption was to not require retrofits of existing low usage units for which the emission reductions would not be cost effective. Owners/operators were given a one-year period (until October 27, 2006) to submit an application for a low usage exemption.

Despite extensive outreach by Staff during and after the rule development process, many owners/operators of low usage units missed the deadline to apply for the exemption. Without any change to the current rule, these units will need to be in compliance with the new NO_x standards by deadlines that range from October 27, 2007 to October 27, 2009, depending on the number of units located at a particular facility. The District has received approximately 5 to 10 permit applications for units that meet the low fuel usage exemption requirements but were submitted after October 27, 2006.

The proposed amendments to Rule 411 will allow owner/operators who missed the October 2006 deadline to apply for a low fuel usage exemption, provided that the application includes records that clearly demonstrate that the unit has operated below the applicable fuel usage threshold at all times since October 27, 2006. The proposed amendments are consistent with the District’s original intent, that is, to provide an exemption for those existing units with low annual fuel usage.

LEGAL MANDATES

Federal Mandates:

The District was formerly designated as a severe nonattainment area for the federal 1-hour ozone standard. Pursuant to Section 182(c) of the federal Clean Air Act, the District adopted an attainment plan for the 1-hour ozone standard in 1994 that included State Implementation Plan (SIP) commitments. Rule 411 was originally adopted to satisfy a control measure commitment in the 1994 SIP, in accordance with Section 182(d) of the federal Clean Air Act, and to satisfy the requirements for Reasonably Available Control Technology in Sections 182(b)(2) and 182(f).

The District is currently designated as a serious nonattainment area for the federal 8-hour ozone standard (69 FR 23858, April 30, 2004). U.S. EPA's Phase 2 Rule (70 FR 71611, Nov. 29, 2005), to implement the 8-hour ozone standard, requires the District to submit a SIP that demonstrates attainment by 2013. The 8-hour SIP will rely, in part, on emission reductions provided by Rule 411.

State Mandates:

Serious Nonattainment Plan Requirements: The District is designated as a serious nonattainment area for the state ozone standard. The California Clean Air Act requires areas with this designation to adopt control measures required in sections 40913, 40914, and 40919 of the California Health and Safety Code (HSC):

- HSC Section 40913 requires districts to develop a plan to achieve California's ambient air quality standards by the earliest practicable date.
- HSC Section 40914(b)(2) requires every nonattainment district which cannot achieve a reduction of 5% or more per year in district wide emissions to adopt "every feasible measure" to reduce the emission of nonattainment pollutants and their precursors. The October 27, 2005 amendments to Rule 411 still satisfy the "feasible measure" requirement.
- HSC Section 40919(a)(3) requires districts with serious nonattainment for ozone to adopt BARCT for all existing permitted sources. Rule 411 satisfies the BARCT requirement for boilers, process heaters, and steam generators.

Transport Mitigation Emission Control Requirements: Districts within the areas of origin of transported air pollutants, as identified in HSC Section 70500(c), shall include sufficient emission control measures in their attainment plans for ozone adopted pursuant to Part 3, Chapter 10 (commencing with Section 40910) of Division 26 of the Health and Safety Code, to mitigate the impact of pollution sources within their jurisdictions on ozone concentrations in downwind areas commensurate with the level of contribution. An upwind district shall comply with the transport mitigation planning and implementation requirements set forth in this section regardless of its attainment status, unless the upwind district complies with the requirements of Section 70601.

The October 2005 amendment to Rule 411 met the transport mitigation emission control requirements. The proposed amendment is consistent with the intent of the October 2005 amendment in that existing units with low annual fuel usage are exempt from the rule, and therefore, the amendments comply with this section.

SUMMARY OF PROPOSED AMENDMENTS

The proposed amendments to Rule 411 extend the deadline for applying for a low usage exemption, and allow fuel heating value to be reported on a volumetric basis. The specific changes to the rule are discussed below.

Section 113.2

Section 113.2 allows units with low annual fuel usage to apply for an exemption from the emission limits that will become effective between October 27, 2007 and October 27, 2009. In the current version of the rule, an owner/operator had until October 27, 2006 to submit a complete application for an Authority to Construct to establish fuel usage limitations.

The proposed change will allow an owner/operator to apply for the exemption after October 27, 2006, provided that the application includes records that clearly demonstrate that the unit has operated below the applicable fuel usage threshold at all times since October 27, 2006.

Section 209

High Heating Value (HHV) is defined in Section 209. In the current version of the rule, HHV is defined on the basis of heat liberated per mass of fuel burned. However, HHV for gaseous and liquid fuels are typically reported on the basis of heat liberated per volume of fuel burned. The proposed change will define HHV on the basis of heat liberated per mass or volume of fuel burned. This will give owners/operators the flexibility to report HHV in units of Btu per pound, Btu per cubic foot, or Btu per gallon, as appropriate.

EMISSIONS IMPACT

By extending the application schedule, the District will allow these low usage units to obtain an exemption, as originally intended. Therefore, the changes proposed are administrative and there will be no creditable emissions impact.

COST AND COST EFFECTIVENESS

The proposed amendments to Rule 411 will not result in any additional costs to owners/operators or to the District.

SOCIOECONOMIC IMPACT ANALYSIS

California HSC Section 40728.5 requires a district to perform an assessment of the socioeconomic impacts before adopting, amending, or repealing a rule that will significantly affect air quality or emission limitations. Staff has determined that the proposed amendments to Rule 411 will not significantly affect air quality or emission limitations; therefore, a socioeconomic impact analysis is not required.

PUBLIC COMMENTS

Staff held a public workshop to discuss the proposed amendments to Rule 411 on July 9, 2007. Staff received several comments and questions at the workshop as well as written comments from the U.S. Environmental Protection Agency. All comments and responses are listed in Appendix B.

ENVIRONMENTAL REVIEW AND COMPLIANCE

Staff finds that the approval of the proposed action is exempt from CEQA under Section 15061(b)(3) of the State CEQA Guidelines because it can be seen with certainty that there is no possibility that the activity in question may have a significant adverse effect on the environment. All emissions arising from the exemption were previously considered during the 2005 rulemaking. Furthermore, the exemption extension, as of now, will only affect seven units with a total of 25.6 lb/day of NO_x emissions.

TABLE OF FINDINGS

Six required findings: According to Section 40727(a) of the California Health and Safety Code, prior to adopting or amending a rule or regulation, an air district's board must make findings of necessity, authority, clarity, consistency, non-duplication, and reference. The findings must be based on the following:

1. Information presented in the District's written analysis, prepared pursuant to Health and Safety Code Section 40727.2;
2. Information contained in the rulemaking records pursuant to Section 40728 of the California Health and Safety Code; and
3. Relevant information presented at the Board's hearing for the rule.

The table below sets the finding and the basis for making the finding.

FINDING	FINDING DETERMINATION
Authority: The District must find that a provision of law or of a state or federal regulation permits or requires the District to adopt, amend, or repeal the rule.	The District is authorized to adopt rules and regulations by California Health and Safety Code, Sections 40001, 40702, 40716, and 41010. [Health and Safety Code Section 40727(b)(2)].
Necessity: The District must find that the rulemaking demonstrates a need exists for the rule, or for its amendment or repeal.	It is necessary for the District to amend Rule 411 to allow affected sources to apply for low fuel usage exemption. [HSC Section 40727(b)(1)].
Clarity: The District must find that the rule is written or displayed so that its meaning can be easily understood by the persons directly affected by it.	The District has reviewed the proposed rule and determined that it can be understood by the affected parties. In addition, the record contains no evidence that people directly affected by the rule cannot understand the rule. [HSC Section 40727(b)(3)].
Consistency: The rule is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations.	The District has found that the proposed rule does not conflict with, and is not contradictory to, existing statutes, court decisions, or state or federal regulations. [HSC Section 40727(b)(4)].

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FINDING	FINDING DETERMINATION
Non-Duplication: The District must find that either: 1) The rule does not impose the same requirements as an existing state or federal regulation; or (2) that the duplicative requirements are necessary or proper to execute the powers and duties granted to, and imposed upon the District.	The District has found this proposed rule does not duplicate any existing state or federal regulations [HSC Section 40727(b)(5)].
Reference: The District must refer to any statute, court decision, or other provision of law that the District implements, interprets, or makes specific by adopting, amending or repealing the rule.	California Clean Air Act of 1988 (California Health and Safety Code Section 40914); California Health and Safety Code Sections 40910, 40913, 40914, 40919(a)(3); Section 70500(c); Sections 70500, 70600, and 70601 of Title 17 of the California Code of Regulations; Sections 182(c), 182(d), and 182(f) of the Federal Clean Air Act Amendments of 1990.
Additional Informational Requirements: In complying with HSC Section 40727.2, the District must identify all federal requirements and District rules that apply to the same equipment or source type as the proposed rule or amendments.	The amendments to Rule 411 are administrative changes and do not affect emissions. Therefore, a written analysis of federal regulations and other District rules is not required. [Health and Safety Code Section 40727.2(g)].

APPENDIX A
SUMMARY OF PROPOSED AMENDMENTS

NEW SECTION NUMBER	EXISTING SECTION NUMBER	PROPOSED CHANGES
113.2	113.2	The section has been restructured to allow for changes to the low usage exemption deadline and requirements. The change will allow low usage applications to be submitted after October 27, 2006, provided that the applicant can demonstrate that the unit has been meeting low fuel usage thresholds since October 27, 2006. In order to qualify for low usage exemption, units shall be installed or have a permit application deemed complete by October 27, 2005. Additionally, these exempt units will also need to comply with sections 306.2 and 502 of this rule.
209	209	The definition of "High Heating Value" was changed to allow reporting on a per volume basis.

APPENDIX B PUBLIC COMMENTS

Public Workshop Comments (July 9, 2007)

Comment #1: How does a facility apply for the low fuel usage exemption?

Response: Owners/operators of units applying for the low fuel usage exemption need to fill out a general Authority to Construct application form and submit it to the District. This form can be accessed through the District's web site at <http://www.airquality.org/permits/forms/appforms.shtml>.

Comment #2: I have a pending application to modify for retrofit of an existing boiler but would like to use the low fuel usage exemption instead. Do I need to resubmit my application and pay fees?

Response: Yes, because you had previously proposed to meet emission standards and evaluation of the application had begun, you will need to resubmit your application with application fees to establish a low fuel usage limitation, demonstrate that the unit has not exceeded the fuel usage limitation since 10/27/06 and agree to install fuel consumption monitoring equipment.

Comment #3: When is the next deadline for the low fuel usage exemption application?

Response: There is no longer a deadline for applying for a low usage permit, as long as the applicant can show the unit has been meeting low fuel levels since October 27, 2006. However, the new NO_x standards become effective between October 27, 2007 and October 27, 2009, depending on the number of units you own or operate. After the applicable effective date, unless the operator of a unit has submitted a complete permit application for a low usage exemption, the unit will be in violation of the emissions standards of the rule. The operator may also be in violation of Sections 306 and 502.

Comment #4: I recently submitted an application for the low fuel exemption to the District and would like to know what the process for approval is, since the amendments have not yet been adopted.

Response: After an application has been submitted, the District has 30 days to determine whether it is complete. If the application was submitted after the October 27, 2006 deadline in the current rule and the unit does not meet the emission standards in Section 301, then the application will be incomplete and you will receive a notice. If the amendments are adopted, information demonstrating that the unit has not exceeded the fuel usage limitation since 10/27/06 must be submitted, and then the application will

be re-evaluated.

Comment #5: I have multiple boilers connected to one main fuel line that has a meter. How will I be able to show that these boilers have been meeting the low fuel limits?

Response: Additional information specific to each operation, such as production or operation records, heat load calculations, or hour meter information, is needed to determine whether and how to apportion the total fuel usage to individual units for determining whether the unit has remained below the low usage exemption levels since October 27, 2006. It is advised that you call the District before you submit your application for assistance with your particular situation.

Comment #6: Does each boiler need an individual fuel meter?

Response: Yes, if the boilers comply with the low usage exemption requirements of Section 113, then Section 306.2 requires each unit to have a fuel meter, a non-resetting hour meter, or a computerized tracking system that records daily hours of operation and/or fuel consumption. Section 401.2 requires that this equipment be installed by October 27, 2007.

Comment #7: Will you be changing the October 27, 2007 deadline in section 401.2 which requires units to install equipment to monitor fuel consumption?

Response: No.

Written Comments:

R.F. MacDonald (May 15, 2007)

Comment: Regarding the requirements in Section 305 of the rule, small boilers generally speaking do not have the sophisticated controls which would be required to achieve a tune at 3% O₂. Asking for a customer to tune an atmospheric burner or small boiler burner to 3% O₂ should be reviewed as it isn't an option for these customers. I don't believe we would be able to find one customer that could meet these criteria.

Response: Section 305 requires any unit which utilizes the low fuel usage exemption to either maintain a stack-gas oxygen concentration less than or equal to 3% by volume on a dry basis or have the unit tuned once a year by a qualified technician in accordance with Attachment A of the rule. This section applies to all units that take the low fuel exemption, not just small boilers. Units that can't maintain stack-gas oxygen concentration at 3% can comply by having the unit tuned annually.

California Air Resources Board (July 9, 2007)

Comment: The Air Resources Board staff has reviewed the rule and, based on the information available to us at this time, we have no comments.

U.S. Environmental Protection Agency (July 10, 2007)

Comment: Section 113.2.a.5.B. - The requirement that sources submit "records that clearly demonstrate" continuous compliance with the low fuel usage requirement since October 27, 2006 could be clarified to specify which records are needed to clearly demonstrate compliance. For example, the District could require the submitted records to fulfill the requirements in Sections 306.2 and 502 of the draft rule.

Response: The compliance date for installing fuel meters under Section 306.2 is October 27, 2007, and sources applying for the low fuel usage exemption may not have individual fuel meter data. By extending/removing the deadline for applying for a low usage exemption we are effectively extending the deadline for low usage units to comply with Section 502, therefore sources may not have records that meet these requirements. Therefore, District staff will rely on other information from applicants. Other methods to demonstrate compliance with the low fuel levels include: fuel bills, production records, heat load calculations, and, of course, fuel or hour meter readings where they exist.

Blue Diamond Growers (July 17, 2007)

Comment: Blue Diamond operates two natural gas-fired continuous cookers, each rated at 2.1 mmBtu/hr, at our Sacramento facility. During recent discussions with District staff, Blue Diamond was advised that the provisions of Rule 411 do not apply to the continuous cookers because they are "open vessels" and do not meet the definition of boiler or process heater. The Rule, however, does not specifically address these types of devices. Therefore, we request that the definition of process heater be revised as follows (newly proposed text has been underlined):

Process Heater: Any unit fired with any fuel which transfers heat from combustion gases to water or process streams, including reformers as defined in Section 218. Process heater does not include any dryer in which the material being dried is in direct contact with the products of combustion, cement or lime kilns, glass melting furnaces, smelters, or units used to bake or fry foods for human consumption.

The definition proposed above is similar to exemptions included in San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) Rule 4309 – Dryers, Dehydrators, and Ovens. The equipment regulated by SJVUAPCD

Rule 4309 is similar to the continuous cookers operated by Blue Diamond. Therefore, we feel that the proposed changes to Rule 411 would not be inconsistent with rules and regulations in other air districts.

Response:

Staff contacted the commenter for more detail on the design and operation of the continuous cookers. The units fry food with hot oil that is circulated through gas-fired heaters that transfer heat from the combustion gases to a process stream (the oil). Staff has determined that these heaters meet the definition of "Process Heater" in Section 216 and are therefore subject to Rule 411.

While SJVUAPCD provides an exemption for this type of unit from the requirements of Rule 4309 –Dryers, Dehydrators and Ovens, these units would not be exempt from the requirements of SJVUAPCD Rule 4307 – Boilers, Steam Generators, and Process Heaters - 2.0 mmBtu/hr to 5.0 mmBtu/hr.