

**SACRAMENTO METROPOLITAN
AIR QUALITY MANAGEMENT DISTRICT**

For Agenda of **March 24, 2005**

To: Board of Directors
Sacramento Metropolitan Air Quality Management District

From: Larry Greene, Air Pollution Control Officer
Sacramento Metropolitan Air Quality Management District

Subject: Amendments to Rule 413 – STATIONARY GAS TURBINES

Recommendations

1. Conduct a public hearing;
 2. Approve the exemption from the California Environmental Quality Act (CEQA) for the revision of Rule 413; and
 3. Approve the attached resolution adopting the amendments to Rule 413.
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Executive Summary

Rule 413 establishes Reasonably Available Control Technology (RACT) and Best Available Retrofit Control Technology (BARCT) limits for nitrogen oxides (NOx) emissions from stationary gas turbines. At the time Rule 413 was adopted, the largest gas turbine operating within the District was a simple cycle turbine with a capacity of approximately 50 megawatts (MW), and a startup period of 1 hour was sufficient for all gas turbines within the District to achieve the NOx limits of Rule 413. More recently, larger, combined cycle power plants with gas turbines having capacities greater than 100 MW have been constructed or are under construction within the District. These larger, combined cycle units, equipped with dry, low-NOx combustors and selective catalytic reduction (SCR) systems, require significantly longer startup periods to achieve the NOx limits.

In addition, larger, combined cycle systems require longer periods of time to stabilize NOx emission rates following periods of rapid load changes or other disturbances to steady state operation. These so-called “short-term excursions” were not considered at the time Rule 413 was adopted.

In response to a request from an affected source, the District is proposing to amend Rule 413 to allow longer startup periods for large gas turbines at combined cycle plants and to extend the averaging time to six hours for NOx emissions during short-term excursions. These amendments are necessary

because it is technology infeasible for these larger units to meet the current rule requirements.

Attachments

The table below identifies the attachments to this memo:

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Background

Rule 413 was adopted by the District on April 6, 1995 and amended on May 1, 1997. The rule establishes RACT and BARCT limits for NO_x emissions from stationary gas turbines. The requirements apply to all stationary gas turbines with rated outputs greater than or equal to 0.3 MW or rated inputs greater than or equal to 3 million BTU per hour.

Gas turbines are exempt from the NO_x emission limits of the rule during periods of startup and shutdown, and these periods are limited to one hour each. The current rule has no provisions regarding short-term excursions.

At the time Rule 413 was adopted, the largest gas turbine operating within the District was a simple cycle turbine with a capacity of approximately 50 MW. At that time, a startup period of one hour was sufficient for all gas turbines within the District to achieve the NO_x limits of Rule 413. More recently, larger, combined cycle power plants with gas turbines having capacities greater than 100 MW have been constructed or are under construction within the District. These units, equipped with dry, low-NO_x combustors and selective catalytic reduction (SCR) systems, require significantly longer startup periods to achieve the NO_x limits.

In addition, larger, combined cycle systems require longer periods of time to stabilize NO_x emission rates following periods of rapid load changes or other disturbances to steady state operation. These so-called "short-term excursions" were not considered at the time Rule 413 was adopted.

The Sacramento Municipal Utility District (SMUD) has requested that the District amend Rule 413 because it imposes requirements that are not technologically feasible for two of SMUD's power plants to meet. The affected facilities are the Cosumnes Power Plant, which is currently under construction, and the

Sacramento Power Authority, which is currently in operation. Staff has performed a technical evaluation of the rule requirements that pertain to startup periods and short-term excursions, and has concluded that, due to limitations in technology, amendments to the rule are necessary.

Summary of Changes

As a result of staff's technical evaluation, Rule 413 is being amended in order to:

1. Extend the startup period for a gas turbine, during which time the gas turbine is exempt from the emission limits specified in the rule. A gas turbine with a rated output of 160 megawatts or more, which is part of a combined cycle process, will be allowed a startup period of up to 4 hours, depending on the length of time that the associated steam turbine has been shut down. The allowable startup period will be:
 - 4 hours when the steam turbine has been shut down for 72 hours or more;
 - 3 hours when the steam turbine has been shut down for 8-72 hours; and
 - 1 hour when the steam turbine has been shut down for less than 8 hours.
 2. Provide a limited exemption for "short-term excursions," which are brief increases in the emissions of NO_x that are associated with certain transient operating conditions. A gas turbine with a rated output greater than 100 megawatts, which is part of a combined cycle process, will be allowed an emissions averaging time of 6 hours to comply with NO_x limits during periods that include short-term excursions.
 3. Add recordkeeping requirements to aid in the assessment of compliance with the exemptions for startup periods and short-term excursions.
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Business Cost Impacts

The amendments to Rule 413 will affect only SMUD. SMUD is a municipal utility and is not a small business. No other businesses or industries will be affected.

No costs will be incurred by SMUD as a result of the amendments. The amendments provide the Cosumnes Power Plant and the Sacramento Power Authority needed relief from requirements that impede safe operation of the turbines, prevent the turbines from meeting electrical system demand requirements, or penalize SMUD for infrequent, normal operational glitches such as fuel pressure pulses. No impacts to employment and the regional economy are expected.

District Impacts

The amendments are not expected to result in an additional need for staff resources.

Emission Impacts

The proposed amendment to the startup exemption will not result in any increase in emissions from existing stationary gas turbines within the District. The extension of the startup period will affect only the gas turbines yet to be installed at the Cosumnes Power Plant, and will not affect any turbines currently operating within the District.

The proposed exemption for short-term excursions will affect only the gas turbines to be installed at the Cosumnes Power Plant and the existing turbine at the Sacramento Power Authority. Based on review of the operating history at the Sacramento Power Authority over the past 30 months, staff estimates that there would be an increase of approximately 160 lb/year of NO_x emissions allowed from the Sacramento Power Authority due to the proposed exemption for short-term excursions. Theoretically, the worst-case increase in emissions from the Sacramento Power Authority that would be allowed to occur under the proposed exemption would be 180 pounds of NO_x per excursion or 1,800 lb/year. These emissions are included in the amount that has been fully offset as required by Rule 202, New Source Review.

Environmental Review and Compliance

The District's Environmental Coordinator 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.

Public Comments

A public notice for the Board hearing to consider the amendments to Rule 413 was published in the Daily Recorder, a newspaper of general circulation within the District, on February 22, 2005. The staff report and text of the rule were made available on that day. The public notice was also mailed to 237 interested parties. In addition, the amended rule was submitted to the U.S. EPA and the ARB for review.

A public workshop on the proposed rule was held on February 14, 2005. A public notice was mailed to interested parties and was posted on the District web

site. The draft rule and staff report were made available for public review at that time.

No comments on the proposed amendments were received from the general public. A comment letter dated February 11, 2005, was received from Mr. Alex Krichevsky of the ARB. Mr. Krichevsky stated that it would improve clarity and ensure enforceability of the rule if the terms “ramp rate,” “automatic generation control,” and “area system operator” were defined. Staff has addressed this comment by adding these definitions to the rule and staff report.

Mr. Krichevsky also stated that the District should include justification for the operation of a combustion turbine above the manufacturer’s recommended ramp rate or for the shutting down of a duct burner. Staff has addressed this comment by adding a discussion of these conditions to the staff report.

Conclusion

The proposed amendments to Rule 413 are necessary because the current version of the rule imposes requirements that are technologically infeasible for large gas turbines at combined cycle plants to meet. Therefore, staff recommends that the Board approve these amendments.

Respectfully Submitted

Larry Greene; Air Pollution Control Officer
Sacramento Metropolitan
Air Quality Management District

Attachments

RESOLUTION NO. AQM_____

RULE 413 – STATIONARY GAS TURBINES

BOARD OF DIRECTORS
OF THE SACRAMENTO METROPOLITAN AIR QUALITY
MANAGEMENT DISTRICT

WHEREAS, the Board of Directors of the Sacramento Metropolitan Air Quality Management District is authorized to adopt, amend or repeal rules and regulations by Sections 40001, 40702, and 41010 of the California Health and Safety Code (Health and Safety Code Section 40727(b)(2)); and

WHEREAS, the Board of Directors of the Sacramento Metropolitan Air Quality Management District has determined that the adoption of amendments to Rule 413 – STATIONARY GAS TURBINES of the District Rules and Regulations is necessary because the current rule contains provisions that are technologically infeasible for turbines at large, combined cycle plants (Health and Safety Code Section 40727(b)(1)); and

WHEREAS, the Board of Directors of the Sacramento Metropolitan Air Quality Management District has determined that the meaning of amended Rule 413 can be easily understood by the persons directly affected by it (Health and Safety Code Section 40727(b)(3)); and

WHEREAS, the Board of Directors of the Sacramento Metropolitan Air Quality Management District has determined that the rule amendments are in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations (Health and Safety Code Section 40727(b)(4)); and

WHEREAS, the Board of Directors of the Sacramento Metropolitan Air Quality Management District has determined that Rule 413 contains requirements that are more stringent than the federal requirements that apply to stationary gas turbines and does not duplicate the federal requirements (Health and Safety Code Section 40727(b)(5)); and

WHEREAS, the Board of Directors of the Sacramento Metropolitan Air Quality Management District has determined that amended Rule 413 implements Sections 182(c) and (d) of the federal Clean Air Act Amendments of 1990, which requires the District to submit a State Implementation Plan (SIP) to achieve the National Ambient Air Quality Standard for ozone and to adopt control measures proposed in the SIP, and Section 40919(a)(3) of the California Health and Safety Code, which requires the District to adopt Best Available Retrofit Control Technology for all existing sources (Health and Safety Code Section 40727(b)(6)); and

WHEREAS, the Board of Directors of the Sacramento Metropolitan Air Quality Management District has determined that amendments to Rule 413 do not impose a new emission standard or limit, make an existing limit of standard more stringent, or impose new or more stringent monitoring, reporting, or recordkeeping requirements, and are exempted by Section 40727.2(g) of the California Health and Safety Code from the written analysis requirements imposed by Section 40727.2(a)-(f); and

WHEREAS, the Board of Directors of the Sacramento Metropolitan Air Quality Management District has maintained records of the rulemaking proceedings (Health and Safety Code Section 40728); and

WHEREAS, the Board of Directors of the Sacramento Metropolitan Air Quality Management District held a duly noticed public hearing on March 24, 2005 and considered public comments on the proposed amendments to Rule 413 (Health and Safety Code Sections 40725 and 40726); and

WHEREAS, the Board of Directors of the Sacramento Metropolitan Air Quality Management District has considered the socioeconomic impacts of the rule amendments (Health and Safety Code Section 40728.5); and

WHEREAS, the District's Environmental Coordinator has found the amendments to Rule 413 to be exempt from the California Environmental Quality Act (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 may have a significant adverse effect on the environment.

NOW, THEREFORE, BE IT RESOLVED THAT this rule project is exempt from the provisions of the California Environmental Quality Act (CEQA); and

BE IT FURTHER RESOLVED THAT THIS BOARD approves and adopts the proposed amendments to Rule 413 – STATIONARY GAS TURBINES.

BE IT ORDERED that the amendments to Rule 413 – STATIONARY GAS TURBINES be effective as of March 24, 2005.

ON A MOTION by Director _____, seconded by Director _____, the foregoing resolution was passed and adopted by the Board of Directors of the Sacramento Metropolitan Air Quality Management District, State of California, this 24th day of March 2005, by the following vote, to wit:

AYES: Directors

NOES: Directors

Board Resolution
Rule 413 – STATIONARY GAS TURBINES
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ABSENT: Directors

Chairperson of the Board
Sacramento Metropolitan Air
Quality Management District
State of California

(SEAL)

ATTEST: _____
CLERK OF THE BOARD
SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT