Eastern Kern Air Pollution Control District

Rule 425
STATIONARY GAS TURBINES
(OXIDES OF NITROGEN)

STAFF REPORT

September 5, 2024

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I. INTRODUCTION

The Eastern Kern Air Pollution Control District (District) is proposing amendments to Rule 425, Stationary Gas Turbines (Oxides of Nitrogen), adopted August 16, 1993, amended January 11, 2018. Rule 425 sets emissions standards for nitrogen oxides (NOx) produced by the operation of stationary gas turbines. Rule 425 is being amended to address deficiencies the U.S Environmental Protection Agency (EPA) identified in the January 11, 2018, amendment.

Appendix A is the clean copy of proposed amended Rule 425, Stationary Gas Turbines (Oxides of Nitrogen).

Appendix B shows all proposed revisions to Rule 425, Stationary Gas Turbines (Oxides of Nitrogen) in strikeout underline.

II. BACKGROUND

Stationary gas turbines emit NOx from combustion of fuels. NOx is a precursor pollutant, that when emitted, can photochemically react with volatile organic compounds (VOCs) in the atmosphere and form ground-level ozone. Ozone can have significant negative impacts to human health and the environment. Areas within the U.S. are given classification levels based on the concentrations of regulated air pollutants. The Federal Clean Air Act (FCAA) require ozone nonattainment areas classified as “Moderate” or above to submit State Implementation Plan (SIP) provisions that implement RACT. RACT is required for VOC sources that are subject to Control Techniques Guidelines (CTGs) and for all major stationary sources of ozone precursors (NOx or VOC).

While there is no CTG for this source category, EPA has published an Alternative Control Techniques (ACT) document titled, “NOx Emissions from Stationary Gas Turbines” (EPA 453/R-93-007, January 1993), which describes available control techniques and their estimated costs. The California Air Resources Board (CARB) has published a guidance titled, “Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for the Control of NOx from Stationary Gas Turbines” (May 18, 1992). These guidance documents along with other state and local rules for this category were used to help evaluate the RACT requirements of CAA §182(b)(2) and §182(f).

On March 27, 2008 (73 FR 16435), the EPA revised the 8-hour ozone National Ambient Air Quality Standard (NAAQS) from 0.084 parts per million (ppm) to 0.075 ppm (2008 ozone NAAQS). May 11, 2017, the District adopted its RACT demonstration for the 2008 ozone NAAQS (2017 RACT SIP) and submitted it to the EPA on August 9, 2017. The District’s ozone nonattainment area was classified as “Moderate” at the time of submittal and, therefore, EPA evaluated the submittal based on that classification. Currently, the District’s ozone nonattainment area is classified as “Severe” for the 2008 ozone NAAQS.

The District identified Rule 425 as one of three rules with deficiencies in the 2017 RACT SIP submittal. Rule 425 needed to be revised to demonstrate RACT for non-CTG major sources of NOx. On January 11, 2018, the District adopted an extensive revision of Rule 425 to address the deficiencies and fulfill RACT requirements.

III. EPA RULE EVALUATION

February 2023, EPA released a Technical Support Document (TSD) evaluation of the 2018, Rule 425 amendment. The TSD evaluation indicates that amended Rule 425 largely fulfills the relevant CAA §110 and part D requirements and strengthens the SIP by tightening NOx limits for most units regulated by the rule. It is also noted that the amendments helps ensure enforceability, have clear and applicable requirements, and the monitoring, recordkeeping, reporting and other provisions sufficiently ensure that affected sources and regulators can evaluate and determine compliance consistently. However, EPA is recommending a simultaneous limited approval and limited disapproval of the 2018 amendment pursuant to CAA §110(k)(3) and §301(a) due to the following deficiencies:

The amendment revised the NOx limits for the Westinghouse W251B10 turbine to 25 ppmv for gaseous fuel and 65 ppmv for liquid fuel. The submission does not justify the limits for this unit as meeting current RACT requirements.

The SIP Rule (August 16, 1993) calculated the Westinghouse W251B10 turbine NOx limits based on the EFF, LHV, HHV of the unit depending on fuel type. Calculating the NOx limit using an EFF of 25 (the lowest applicable value), the NOx limit for gas-fired fuel would be 20 ppm and oil-fired fuel 42 ppm. The District provided historical data showing EFF values and corresponding ppmv values below the new 25 ppmv limit for much of the year. The limits in SIP Rule are more stringent than the limits in the 2018 Rule, resulting in a relaxation of the rule. This relaxation has not been supported with an analysis of the revision's impact on attainment and RFP. As a result, the submission has not shown compliance with the requirement of CAA §110(l).

However, a limited approval would add the 2018 amendment of Rule 425 to the SIP, replacing the current SIP-approved version. EPA states this is advisable because the amendment strengthens the SIP by tightening NOx limits for most units regulated by the rule.

If finalized as proposed, the limited disapproval would start sanctions and a Federal Implementation Plan (FIP) clock. The FIP clock could be stopped by the submittal of an amended rule revision resolving the noted deficiencies.

The EPA also recommends Section VI.B, Monitoring and Recordkeeping of the rule be revised while it is open to clarify "what proper work practices" will be required during periods of startup and shutdown to limit NOx emissions.

This staff report discusses the proposed revisions to Rule 425 needed to address the deficiencies identified by the EPA in the TSD. Specifically, the revised NOx limits for the Westinghouse W251B10 turbine needed to achieve full EPA approval and stop the FIP clock.

IV. APPLICABILITY

Upon adoption, provisions of the proposed amendments to District Rule 425 will be applicable to all stationary gas turbines with a rating equal to or greater than 0.88 megawatts (MW) operating within the Eastern Kern Air Pollution Control District jurisdiction.

V. DEFINITIONS

Definitions for APCO, Parts Per Million (ppmv), and Standard Conditions have been added to Rule 425. Please see Appendix A and B for the complete definitions.

VI. REQUIREMENTS

The following NOx emission limits listed in Section V, Requirements of Rule 425 for the owner or operator of a Westinghouse W251B10 with Authority to Construct issued before January 1, 1983, using dry low-NOx combustors is being revised **from:**

1. 25 ppmv at 15% O2 when fired with gaseous fuel or,

2. 65 ppmv at 15% O2 when fired with liquid fuel.

To:

20 ppmv at 15% O2 when fired with gaseous fuel.

Liquid fuel is no longer approved for use with the Westinghouse W251B10. Please see Table 1 of Appendix A and B for complete NOx emissions limits

VII. ADMINISTRATIVE REQUIREMENTS

Section VI, Administrative Requirements contains revised language to aid in clarity. The following Federal Reporting requirement has also been added:

At least every six (6) calendar months, the owner or operator shall submit all required federal testing and reporting records to the APCO. This semiannual reporting requirement may be aligned with the due dates of other reporting requirements to avoid duplication (e.g., semiannual compliance reporting required by title V of the federal Clean Air Act).

VIII. ECONOMIC IMPACTS

Pursuant to California Health & Safety Code (CH&SC) §40920.6(a), the District is required to analyze the cost effectiveness of new rules or rule amendments that implement Best Available Retrofit Control Technology (BARCT) or all feasible measures. Amended Rule 425 employs federal RACT requirements, not BARCT on all feasible measures, and is therefore not subject to the cost effectiveness analysis mandate.

IX. ENVIRONMENTAL IMPACTS

Both the California Environmental Quality Act (CEQA) and CARB policy require an evaluation of the potential adverse environmental impacts of proposed projects. The intent of amended Rule 425 is to protect public health by reducing the public's exposure to potentially harmful NOx emissions. An additional consideration is the impact that the proposed rule may have on the environment. The District has determined that no significant adverse environmental impacts should occur as a result of adopting amendments to Rule 425.

Pursuant to the Section 15061, Subsections (2) & (3) of the CEQA Guidelines, staff will prepared and file a Notice of Exemption for this project upon adoption.

X. SOCIOECONOMIC IMPACTS

CHSC Section 40728.5 exempts districts with a population of less than 500,000 persons from the requirement to assess the socioeconomic impacts of proposed rules. Eastern Kern County population is below 500,000 persons.

XI. RULE APPROVAL PROCESS

District will be accepting written comments and concerns from persons interested in the proposed amendments to Rule 425 for a period of 30 days following the workshop. District anticipates amended Rule 425 will be considered for adoption by the Board of Directors at the November 7, 2024, Board Hearing.

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APPENDIX A:

PROPOSED REVISION RULE 425

STATIONARY GAS TURBINES
(OXIDES OF NITROGEN)

RULE 425 **Stationary Gas Turbines (Oxides of Nitrogen)** - Adopted 8/16/93, Amended 1/11/18, X/X/XX

I. Purpose

The purpose of this Rule is to limit oxides of nitrogen (NOx) emissions from stationary gas turbines.

II. Applicability

The provisions of this Rule shall apply to any stationary gas turbine with a rating equal to or greater than 0.88 megawatts (MW) operating in the Eastern Kern Air Pollution Control District (District).

III. Definitions

A. APCO: Air Pollution Control Officer of the Eastern Kern Air Pollution Control District.

B. Combined Cycle: Any stationary gas turbine operated for both the production of electrical energy from shaft work and the useful energy produced from heat recovered from its exhaust gases.

C. Dry Low-NOx Combustor: Any gas turbine engine combustor using staging, air/fuel premixing or other design features to reduce NOx emissions.

D. Gaseous Fuel: Any fuel existing as gas at standard conditions.

E. Liquid Fuel: Any fuel, including distillate and residual oil, existing as liquid at standard conditions.

F. Oxides of Nitrogen (NOx): Total nitrogen oxides (expressed as NO_2).

G. Power Augmentation: An increase in the gas turbine shaft output and/or the decrease in gas turbine fuel consumption by the addition of energy recovered from exhaust heat.

H. Parts Per Million Volume (ppmv): Measure of the concentration of gaseous or liquid substances in the atmosphere or other media.

I. Rating: Manufacturer's continuous electrical output megawatt (MW) specification for a gas turbine system.

J. Simple Cycle: Any stationary gas turbine in which all electric generators are driven by shaft work from fuel combustion.

K. Selective Catalytic Reduction (SCR): A post-combustion control technology that utilizes a reducing agent, such as ammonia, injected into the exhaust gas stream where it converts NOx to molecular nitrogen in the presence of a catalyst.

L. Stationary Gas Turbine: Any gas turbine system, with or without power augmentation, which is permanently attached to a foundation, or is not a portable gas turbine. The gas turbine is not self-propelled nor intended to be propelled while performing its function, although it may be mounted onto a foundation. Two or more gas turbines powering a common shaft shall be treated as one gas turbine.

M. Standard Conditions: A gas temperature of 68° Fahrenheit (20° Celsius) and an absolute pressure of 14.7 pounds per square inch (760-millimeters of mercury). Results of all analyses and tests shall be calculated or reported at this gas temperature and pressure.

N. Shutdown Period: The time necessary to cease operation of a gas turbine from operating under load conditions. The time shall not exceed one (1) hour.

O. Startup Period: The time necessary to bring operation of a gas turbine up to the designed rating. The time shall not exceed six (6) hours for combined cycle gas turbine power plants or two (2) hours for simple cycle gas turbine power plants.

IV. Exemptions

The provision of this Rule shall not apply to the operation of stationary gas turbines under the following conditions:

A. Emergency standby units demonstrated to operate less than 200 hours per year.

B. Units rated less than 4 MW that operate less than 877 hours per year.

C. Laboratory units used in research and testing for the advancement of gas turbine technology.

D. Units operated exclusively for firefighting and/or flood control.

E. Turbines used in test cells and test stands.

F. Portable equipment registered in accordance with California Air Resources Board (CARB) regulations under 13 CCR 2450-2465, Portable Equipment Registration Program (PERP) or 13 CCR 2420 Off-road Compression-ignition Engines and Equipment. Portable turbines used by the Department of Defense or National Guard exclusively used for military tactical support or other federal emergency purposes.

V. Requirements

A. Emission Limits

The owner or operator of any stationary gas turbine unit shall not operate such unit under load conditions, excluding the startup or shutdown period, which results in the measured NOx emissions concentration exceeding the compliance limits listed in Table 1, averaged over one (1) hour, based on four consecutive 15-minute averages.

TABLE 1

Stationary Gas Turbine Unit	Compliance Limit NOx, ppmv at 15% O_2	
	Gaseous Fuel	Liquid Fuel
Rated 0.88 MW to Less Than 2.9 MW OR Greater Than or Equal to 4 MW That Operate Less Than 877 Hour/Year	42	65
2.9 MW to Less Than 10 MW	25	65
10.0 MW and Greater	9	25
Owner or operator of a Westinghouse W251B10 with Authority to Construct issued before January 1, 1983, using dry low-NOx combustors	20	N/A

B. Startup/Shutdown Combined Cycle Units

NOx emissions shall comply with at least one of the following limits averaged over the duration of the startup or shutdown period:

1. 70 ppmv at 15% O_2 for turbines fired with gaseous fuel or,

2. 226 ppmv at 15% O_2 for turbines fired with liquid fuel.

C. Startup/Shutdown Simple Cycle Units

NOx emission shall be kept to a minimum by use of the following:

1. Manufacturer's recommendation for operation during startup and shutdown.

2. Injection of water as soon as reasonably possible.

3. Maintaining proper air to fuel ratios.

VI. Administrative Requirements

A. Emission Control Plan

The owner or operator of any existing stationary gas turbine subject to this Rule shall submit to the APCO for approval an emissions control plan, including a schedule of increments of progress to be taken to meet or exceed requirements of Section V to comply with the compliance schedule prescribed by Section VIII.
An emissions control plan shall be submitted for each stationary gas turbine subject to this Rule, including:

1. District permit number,
2. Gas turbine manufacturer's name and model number,
3. Rated electrical energy output (MW) and rated heat recovery (Btu/hr),
4. Type of fuel (gas and/or liquid),
5. Last year's fuel consumption (cubic feet of gas or gallons of liquid),
6. Last year's hours of operation,
7. Type of emissions control to be applied to engine, and
8. Documentation showing current NOx emissions concentration.

B. Monitoring and Recordkeeping

The owner or operator of any stationary gas turbine subject to the provisions of this rule shall perform the following actions:

1. Install, operate, and maintain in calibration equipment capable of continuously measuring and recording the following:

   a. Control system operating parameters:

      i. Periodic NOx emission concentrations,
      ii. Turbine exhaust oxygen concentration,
      iii. Air-to-fuel ratio,
      iv. Flow rate of reducing agents added to turbine exhaust,
      v. Catalyst inlet and exhaust temperature,
      vi. Catalyst inlet and exhaust oxygen concentration,
      vii. Other operational characteristics.

   b. Elapsed time of operation measured by an hourly meter.

2. For units 10 MW or greater, the owner or operator shall monitor the exhaust gas NOx concentrations. The NOx monitoring system shall meet EPA requirements as specified in 40 CFR Part 60, Appendix B, Specification 2, or other systems approved by EPA. The owner or operator shall submit information to the APCO demonstrating that the emission monitoring system has data gathering and retrieval capability.

3. Prior to issuance of a Permit to Operate, information must be submitted to the APCO correlating the control system operating parameters to the associated NOx output. This information may be used by the APCO to determine compliance when there is no continuous emission monitoring system for NOx available, or when the continuous emission monitoring system is not operating properly.

4. Provide source test information regarding the exhaust gas NOx concentration at ISO conditions corrected to 15 percent oxygen on a dry basis.

5. Maintain a daily stationary gas turbine engine operating log that includes actual startup and shutdown times, total hours of operation, type and quantity of fuel used (liquid/gas), and actions taken to comply with Section V.C. for simple cycle turbines.

6. All records required by this Rule shall be maintained on-site for a period of five (5) years and made available to the APCO upon request.

C. Compliance Testing

The owner or operator of any stationary gas turbine subject to provisions of this rule shall conduct annual testing using the methods specified in Section VI.D.

D. Test Methods

1. NOx emissions shall be determined using EPA Method 7E or EPA Method 20 or ARB Method 100.

2. Exhaust gas Oxygen (O_2) concentration content shall be determined using EPA Method 3A or ARB Method 100.

E. Federal Reporting

At least every six (6) calendar months, the owner or operator shall submit all required federal testing and reporting records to the APCO. This semiannual reporting requirement may be aligned with the due dates of other reporting requirements to avoid duplication (e.g., semiannual compliance reporting required by Title V of the federal Clean Air Act).

F. Exempt Units

Exempt units shall comply with the following:

1. The owner or operator of any unit exempt under Section IV shall submit support documentation to the APCO within seven days if the hour-per-year limit is exceeded. If the hour-per-year limit is exceeded, the exemption shall be permanently withdrawn. Within 30 days after the exceedance, the owner or operator shall submit an application for Authority to Construct that details a plan to meet the applicable limits specified in Section V of this Rule. The application shall include a schedule of increments of progress for the installation of the required control equipment. This schedule shall not exceed four years from the date of the receipt of Authority to Construct application.

2. A public service unit operating during a state of emergency, when such emergency is declared by proclamation of the Governor of the State of California and when the unit is located in the specific geographical location identified in the proclamation, shall be excluded from the hour-per-year limit.

VII. Calculations

NOx emissions concentrations shall be calculated using the following equation:

$$NOx = (NOx_{obs})\ (P_{ref}/P_{obs})^{0.5}\ (288\ K/T_{amb})^{1.53}(e^{19(Hobs-0.00633)})$$

Where:

NOx	=	NOx emissions concentration (ppmv) corrected to 15 percent oxygen and ISO standard conditions on a dry basis.
NOx_{obs}	=	Measured stack gas NOx emissions concentration (ppmv) corrected to 15 percent oxygen on a dry basis.
P_{ref}	=	Standard atmospheric pressure (14.7 psia).
P_{obs}	=	Atmospheric pressure measured at site during testing, psia.
H_{obs}	=	Absolute ambient humidity measured at site during testing, pounds water per pound dry air.
e	=	transcendental constant (2.718).
T_{amb}	=	Ambient air temperature in K and measured at site during testing.

VIII. Compliance Schedule

An owner or operator of a stationary gas turbine subject to this Rule shall comply with all applicable requirements within 30-days of Board adoption. This includes submittal of a complete Authority to Construct application for all necessary equipment modifications, if applicable.

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APPENDIX B:

PROPOSED REVISION RULE 425

STATIONARY GAS TURBINES
(OXIDES OF NITROGEN)

STRIKEOUT UNDERLINE

RULE 425 **Stationary Gas Turbines (Oxides of Nitrogen)** - Adopted 8/16/93, Amended 1/11/18, X/X/XX

I. Purpose

The purpose of this Rule is to limit oxides of nitrogen (NOx) emissions from stationary gas turbines.

II. Applicability

The provisions of this Rule shall apply to any stationary gas turbine with a rating equal to or greater than 0.88 megawatts (MW) operating in the Eastern Kern Air Pollution Control District (District).

III. Definitions

A. APCO: Air Pollution Control Officer of the Eastern Kern Air Pollution Control District.

~~A.~~B. Combined Cycle: Any stationary gas turbine operated for both ~~for~~ the production of electrical energy from shaft work and the useful energy produced from heat recovered from its exhaust gases.

~~B.~~C. Dry Low-NOx Combustor: Any gas turbine engine combustor using staging, air/fuel premixing or other design features to reduce NOx emissions.

~~C.~~D. Gaseous Fuel: Any fuel existing as gas at standard conditions.

~~D.~~E. Liquid Fuel: Any fuel, including distillate and residual oil, existing as liquid at standard conditions.

~~E.~~F. Oxides of Nitrogen (NOx): Total nitrogen oxides (expressed as NO_2).

G. Power Augmentation: An increase in the gas turbine shaft output and/or the decrease in gas turbine fuel consumption by the addition of energy recovered from exhaust heat.

~~F.~~H. Parts Per Million Volume (ppmv): Measure of the concentration of gaseous or liquid substances in the atmosphere or other media.

~~G.~~I. Rating: Manufacturer's continuous electrical output megawatt (MW) specification for a gas turbine system.

~~H.~~J. Simple Cycle: Any stationary gas turbine in which all electric generators are driven by shaft work from fuel combustion.

~~I.~~K. Selective Catalytic Reduction (SCR): A post-combustion control technology that utilizes a reducing agent, such as ammonia, injected into the exhaust gas stream where it converts NOx to molecular nitrogen in the presence of a catalyst.

~~J.~~L. Stationary Gas Turbine: Any gas turbine system, with or without power augmentation, which is permanently attached to a foundation, or is not a portable gas turbine. The gas turbine is not self-propelled nor intended to be propelled while performing its function, although it may be mounted onto a foundation. Two or more gas turbines powering a common shaft shall be treated as one gas turbine.

~~K.~~M. Standard Conditions: A gas temperature of 68° Fahrenheit (20° Celsius) and an absolute pressure of 14.7 pounds per square inch (760-millimeters of mercury). Results of all analyses and tests shall be calculated or reported at this gas temperature and pressure.~~As defined in Rule 102, Subsection RR.~~

~~L.~~N. Shutdown ~~Down~~ Period: The time necessary to cease operation of a gas turbine from operating under load conditions. The time shall not exceed one (1) hour.

~~M.~~O. Startup ~~Up~~ Period: The time necessary to bring operation of a gas turbine up to the designed rating. The time shall not exceed six (6) hours for combined cycle gas turbine power plants or two (2) hours for simple cycle gas turbine power plants.

IV. Exemptions

The provision of this Rule shall not apply to the operation of stationary gas turbines under the following conditions:

A. Emergency standby units demonstrated to operate less than 200 hours per year.

B. Units rated less than 4 MW that operate less than 877 hours per year.

C. Laboratory units used in research and testing for the advancement of gas turbine technology.

D. Units operated exclusively for firefighting and/or flood control.

E. Turbines used in test cells and test stands.

F. Portable equipment registered in accordance with California Air Resources Board (CARB) regulations under 13 CCR 2450-2465, Portable Equipment Registration Program (PERP) or 13 CCR 2420 Off-road Compression-ignition Engines and Equipment. Portable turbines used by the Department of Defense or National Guard exclusively used for military tactical support or other federal emergency purposes.

V. Requirements

A. Emission Limits

The owner or operator of any stationary gas turbine unit shall not operate such unit under load conditions, excluding the startup ~~up~~ or shutdown ~~down~~ period, which results in the measured NOx emissions concentration exceeding the compliance limits listed ~~below~~in Table 1, averaged over one (1) hour, based on four consecutive 15-minute averages~~:~~.

TABLE 1

Stationary Gas Turbine Unit ~~Size Megawatt (MW) Rating~~	Compliance Limit NOx, ppmv at 15% O_2	
	Gaseous Fuel	Liquid Fuel
~~Units~~ Rated 0.88 MW to Less Than 2.9 MW OR ~~Units~~ Greater Than or Equal to 4 MW That Operate Less Than 877 Hour/Year	42	65
2.9 MW to Less Than 10 MW	25	65
10.0 MW and Greater	9	25
Owner or operator of a Westinghouse W251B10 with Authority to Construct issued before January 1, 1983, using dry low-NOx combustors	20	N/A

~~B. The owner or operator of Westinghouse W251B10 with Authority to Construct issued before January 1, 1983 using dry low-NOx combustors shall have the following NOx emission limits:~~

~~1. 25 ppmv at 15% O_2 when fired with gaseous fuel or,~~

~~2. 65 ppmv at 15% O_2 when fired with liquid fuel.~~

~~C.~~B. Startup~~-up~~/Shutdown~~-down~~ Combined Cycle Units

~~The~~ NOx emissions shall ~~meet~~ comply with at least one of the following limits averaged over the duration of the startup~~-up~~ or shutdown~~-down~~ period:

1. 70 ppmv at 15% O_2 for turbines fired with gaseous fuel or,

2. 226 ppmv at 15% O_2 for turbines fired with liquid fuel.

~~D.~~C. Startup~~-up~~/Shutdown~~-down~~ Simple Cycle Units

~~The~~ NOx emission shall be kept to a minimum by use of the following:

1. Manufacturer's recommendation for operation during startup~~-up~~ and shutdown~~-down~~.

2. Injection of water as soon as reasonably possible.

3. Maintaining proper air to fuel ratios.

VI. Administrative Requirements

A. Emission Control Plan

The owner or operator of any existing stationary gas turbine subject to this Rule shall submit to the APCO for approval an emissions control plan, including a schedule of increments of progress to be taken to meet or exceed requirements of Section V to comply with the compliance schedule prescribed by Section VIII.
An emissions control plan shall be submitted for each stationary gas turbine subject to this Rule, including:

1. District permit number,
2. Gas turbine manufacturer's name and model number,
3. Rated electrical energy output (MW) and rated heat recovery (Btu/hr),
4. Type of fuel (gas and/or liquid),
5. Last year's fuel consumption (cubic feet of gas or gallons of liquid),
6. Last year's hours of operation,
7. Type of emissions control to be applied to engine, and
8. Documentation showing current NOx emissions concentration.

B. Monitoring and Recordkeeping

The owner or operator of any stationary gas turbine subject to the provisions of this rule shall perform the following actions:

1. Install, operate, and maintain in calibration equipment capable of continuously measuring and recording the following:

   a. Control system operating parameters:

      i. Periodic NOx emission concentrations,
      ii. Turbine exhaust oxygen concentration,
      iii. Air-to-fuel ratio,
      iv. Flow rate of reducing agents added to turbine exhaust,
      v. Catalyst inlet and exhaust temperature,
      vi. Catalyst inlet and exhaust oxygen concentration,
      vii. Other operational characteristics.

   b. Elapsed time of operation measured by an hourly meter.

2. For units ~~with~~ 10 MW or greater, the owner or operator shall monitor the exhaust gas NOx concentrations. The NOx monitoring system shall meet EPA requirements as specified in 40 CFR Part 60, Appendix B, Specification 2, or other systems approved by EPA. The owner or operator shall submit information to the ~~Air Pollution Control Officer~~APCO ~~the information~~ demonstrating that the emission monitoring system has data gathering and retrieval capability.

3. ~~Submit to the Air Pollution Control Officer, p~~Prior to issuance of a Permit to Operate, information must be submitted to the APCO correlating the control system operating parameters to the associated NOx output. This information may be used by the ~~Air Pollution Control Officer~~APCO to determine compliance when there is no continuous emission monitoring system for NOx available, or when the continuous emission monitoring system is not operating properly.

4. Provide source test information regarding the exhaust gas NOx concentration at ISO conditions corrected to 15 percent oxygen on a dry basis.

5. Maintain a daily stationary gas turbine engine operating log~~, including, on a daily basis,~~ that includes actual startup ~~up~~ and ~~stop~~ shutdown times, total hours of operation, ~~and~~ type and quantity of fuel used (liquid/gas), and actions taken to comply with Section V.C. for simple cycle turbines.

6. All records required by this Rule shall be maintained on-site for a period of five (5) years and made available to the APCO upon request.~~Maintain and make all records available for District inspection at any time for a period of five (5) years.~~

C. Compliance Testing

The owner or operator of any stationary gas turbine subject to provisions of this rule shall conduct annual testing using the methods specified in Section VI.D ~~below~~.

D. Test Methods

1. ~~Oxides of nitrogen (~~NOx~~)~~ emissions shall be determined using EPA Method 7E or EPA Method 20 or ARB Method 100.

2. Exhaust gas Oxygen (O_2) concentration content shall be determined using EPA Method 3A or ARB Method 100.

E. ~~Exempt Units~~Federal Reporting

At least every six (6) calendar months, the owner or operator shall submit all required federal testing and reporting records to the APCO. This semiannual reporting requirement may be aligned with the due dates of other reporting requirements to avoid duplication (e.g., semiannual compliance reporting required by Title V of the federal Clean Air Act).

~~E.~~F. Exempt Units

Exempt units shall comply with the following:

1. The owner or operator of any unit exempt under Section IV shall submit support documentation to the ~~Air Pollution Control Officer~~APCO within seven days if the hour-per-year limit is exceeded. If the hour-per-year limit is exceeded, the exemption shall be permanently withdrawn. Within 30 days after the exceedance, the owner or operator shall submit an application for Authority to Construct that details a plan to meet the applicable limits specified in Section V of this Rule. ~~Included in the application, the~~ The ~~owner or operator~~application shall ~~submit~~ include a schedule of increments of progress for the installation of the required control equipment. This schedule shall not exceed four years from the date of the receipt of Authority to Construct application.

2. A public service unit operating during a state of emergency, when such emergency is declared by proclamation of the Governor of the State of California and when the unit is located in the specific geographical location identified in the proclamation, shall be excluded from the hour-per-year limit.

VII. Calculations

NOx emissions concentrations shall be calculated using the following equation:

$$NOx = (NOx_{obs}) (P_{ref}/P_{obs})^{0.5} (288\ K/T_{amb})^{1.53}(e^{19(Hobs-0.00633)})$$

Where:

NOx	=	NOx emissions concentration (ppmv) corrected to 15 percent oxygen and ISO standard conditions on a dry basis.
NOx_{obs}	=	Measured stack gas NOx emissions concentration (ppmv) corrected to 15 percent oxygen on a dry basis.
P_{ref}	=	Standard atmospheric pressure (14.7 psia).
P_{obs}	=	Atmospheric pressure measured at site during testing, psia.
H_{obs}	=	Absolute ambient humidity measured at site during testing, pounds water per pound dry air.
e	=	transcendental constant (2.718).
T_{amb}	=	Ambient air temperature in K and measured at site during testing.

VIII. Compliance Schedule

An owner or operator of a stationary gas turbine subject to ~~Section V~~this Rule ~~and not currently achieving such limits~~ shall comply with all applicable requirements within 30-days of Board adoption. This includes submittal of a complete Authority to Construct application for all necessary equipment modifications, if applicable. ~~of Section V in accordance with the following schedule:~~

~~A. By (18 months after rule adoption date), submit to the Control Officer a compliance plan, and a complete application for Authority to Construct for all necessary equipment modifications subject to Rule 201.~~

~~B. By January 1, 2021, demonstrate full compliance.~~

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