RULE 4320 ADVANCED EMISSION REDUCTION OPTIONS FOR BOILERS, STEAM GENERATORS, AND PROCESS HEATERS GREATER THAN 5.0 MMBTU/HR (Adopted October 16, 2008)

1.0 Purpose

The purpose of this rule is to limit emissions of oxides of nitrogen (NOx), carbon monoxide (CO), oxides of sulfur (SO_2), and particulate matter 10 microns or less (PM10) from boilers, steam generators, and process heaters.

2.0 Applicability

This rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with a total rated heat input greater than 5 million Btu per hour.

3.0 Definitions

3.1 Air Pollution Control Officer (APCO): as defined in Rule 1020 (Definitions).

3.2 Air Resources Board (ARB): as defined in Rule 1020 (Definitions).

3.3 Annual Capacity Factor: the ratio of the amount of fuel burned by the unit in a calendar year to the amount of fuel that the unit could have burned if it had operated at its maximum rated capacity for 8,760 hours during the calendar year.

3.4 Annual Heat Input: the actual, total heat input of fuels burned by a unit in a calendar year, as determined from the higher heating value and cumulative annual usage of each fuel.

3.5 Boiler or Steam Generator: any external combustion equipment, fired with any fuel used to produce hot water or steam.

3.6 British Thermal Unit (Btu): the amount of heat required to raise the temperature of one pound of water from 59°F to 60°F at one atmosphere.

3.7 California Public Utility Commission (PUC) Quality Natural Gas: any gaseous fuel, gas-containing fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet and no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet. PUC quality natural gas also means high methane gas of at least 80% methane by volume.

3.8 California PUC Quality Natural Gas Curtailment: means a shortage in the supply of California Public Utility Commission (PUC) quality natural gas, due solely to supply limitations or restrictions in distribution pipelines by the utility supplying the gas, and not due to the cost of natural gas.

3.9 Dryer: any unit in which material is dried in direct contact with the products of combustion.

3.10 EPA: United States Environmental Protection Agency.

3.11 Gaseous Fuel: any fuel which is a gas at standard conditions.

3.12 Gas Liquids Processing Facility: a facility that is engaged in the catalytic processing of gas liquids to produce finished products.

3.13 Heat Input: the heat (hhv basis) released due to fuel combustion in a unit, not including the sensible heat of incoming combustion air and fuel.

3.14 Higher Heating Value (hhv): the total heat liberated per mass of fuel burned (expressed as Btu per pound), when fuel and dry air at standard conditions undergo complete combustion and all resulting products are brought to their standard states at standard conditions.

3.15 Liquid Fuel: any fuel which is a liquid at standard conditions.

3.16 NOx Emissions: the sum of oxides of nitrogen expressed as NO_2 in the flue gas.

3.17 Oilfield Steam Generator: an external combustion equipment which converts water to dry steam or to a mixture of water vapor and steam, with an absolute pressure of more than 30 psia, and which is used exclusively in thermally enhanced crude oil production.

3.18 Parts Per Million by Volume (ppmv): the ratio of the number of gas molecules of a given species, or group of species, to the number of millions of total gas molecules.

3.19 Process Heater: any combustion equipment fired with liquid and/or gaseous fuel and which transfers heat from combustion gases to water or process streams. This definition excludes: kilns or ovens used for drying, baking, cooking, calcining, or vitrifying; and unfired waste heat recovery heaters used to recover sensible heat from the exhaust of combustion equipment.

3.20 Qualified Technician: a stationary source employee or any personnel contracted by a stationary source operator who has a documented training and a demonstrated experience performing tune-ups on a unit to the satisfaction of the APCO. The documentation of tune-up training and experience shall be made available to the APCO upon request.

3.21 Rated Heat Input (expressed as million Btu per hour): the heat input capacity specified on the nameplate of the unit.

3.22 Refinery Unit: a unit that is permanently installed and operated at a petroleum refinery or a gas liquids processing facility.

3.23 Re-ignition: the relighting of a unit after an unscheduled and unavoidable interruption or shut off of the fuel flow or electrical power, for a period of less than 30 minutes, due to reasons outside the control of the operator.

3.24 Seasonal Source: as defined in District Rule 2201 (New And Modified Stationary Source Review Rule)

3.25 Shutdown: the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off.

3.26 Solid Fuel: any fuel which is a solid at standard conditions.

3.27 Small Producer: as defined in District Rule 1020 (Definitions)

3.28 Standard Conditions: standard conditions as defined in Rule 1020 (Definitions).

3.29 Start-up: the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation.

3.30 Unit: any boiler, steam generator or process heater as defined in this rule.

4.0 Exemptions

4.1 This rule shall not apply to:

4.1.1 Solid fuel fired units.

4.1.2 Dryers and glass melting furnaces.

4.1.3 Kilns and smelters where the products of combustion come into direct contact with the material to be heated.

4.1.4 Unfired or fired waste heat recovery boilers that are used to recover or augment heat from the exhaust of combustion turbines or internal combustion engines.

4.2 The requirements of Sections 5.2 shall not apply to a unit when burning any fuel other than California PUC quality natural gas during California PUC quality natural gas curtailment provided all of the following conditions are met:

4.2.1 Fuels other than California PUC quality natural gas are burned no more than 168 cumulative hours in a calendar year plus 48 hours per calendar year for equipment testing, as limited by Permit to Operate.

4.2.2 NOx emission shall not exceed 150 ppmv or 0.215 lb/MMBtu. Demonstration of compliance with this limit shall be made by either source testing, continuous emission monitoring system (CEMS), an APCO approved Alternate Monitoring System, or an APCO approved portable NOx analyzer.

5.0 Requirements

5.1 An operator of a unit(s) subject to this rule shall comply with all applicable requirements of the rule and one of the following, on a unit-by-unit basis:

5.1.1 Operate the unit to comply with the emission limits specified in Sections 5.2 and 5.4; or

5.1.2 Pay an annual emissions fee to the District as specified in Section 5.3 and comply with the control requirements specified in Section 5.4; or

5.1.3 Comply with the applicable Low-use Unit requirements of Section 5.5.

5.2 NOx and CO Emission Limits

5.2.1 On and after the indicated Compliance Deadline, units shall not be operated in a manner which exceeds the applicable NOx emissions limit specified in Table 1. On and after October 1, 2008, units shall not be operated in a manner to which exceeds a carbon monoxide (CO) emissions limit of 400 ppmv.

5.2.2 No unit fired on liquid fuel shall be operated in a manner to exceed emissions of 40 ppmv NOx and 400 ppmv CO.

5.2.3 All ppmv emission limits specified in this section are referenced at dry stack gas conditions and 3.00 percent by volume stack gas oxygen. Emission concentrations shall be corrected to 3.00 percent oxygen in accordance with Section 8.1.

Table 1: NOx Emission Limits

Category	NOx Limit	Authority to Construct	Compliance Deadline
A. Units with a total rated heat input > 5.0 MMBtu/hr to ≤ 20.0 MMBtu/hr, except for Categories C through G units	a) Standard Schedule 9 ppmv or 0.011 lb/MMBtu; or	July 1, 2011	July 1, 2012
	b) Enhanced Schedule 6 ppmv or 0.007 lb/MMBtu	January 1, 2013	January 1, 2014
B. Units with a total rated heat input > 20.0 MMBtu/hr, except for Categories C through G units	a) Standard Schedule 7 ppmv or 0.008 lb/MMBtu; or	July 1, 2009	July 1, 2010
	b) Enhanced Schedule 5 ppmv or 0.0062 lb/MMBtu	January 1, 2013	January 1, 2014
C. Oilfield Steam Generators			
1. Units with a total rated heat input > 5.0 MMBtu/hr to ≤20.0 MMBtu/hr	a) Standard Schedule 9 ppmv or 0.011 lb/MMBtu; or	July 1, 2011	July 1, 2012
	b) Enhanced Schedule 6 ppmv or 0.007 lb/MMBtu	January 1, 2013	January 1, 2014
2. Units with a total rated heat input >20.0 MMBtu/hr	a) Standard Schedule 7 ppmv or 0.008 lb/MMBtu; or	July 1, 2009	July 1, 2010
	b) Staged Enhanced Schedule Initial Limit 9 ppmv or 0.011 lb/MMBtu; and	July 1, 2011	July 1, 2012
	Final Limit 5 ppmv or 0.0062 lb/MMBtu	January 1, 2013	January 1, 2014
3. Units firing on less than 50%, by volume, PUC quality gas.	Staged Enhanced Schedule Initial Limit 12 ppmv or 0.014 lb/MMBtu; and	July 1, 2010	July 1, 2011
	Final Limit 9 ppmv or 0.011 lb/MMBtu	January 1, 2013	January 1, 2014

Table 1 NOx Emission Limits (continued)			
Category	NOx Limit	Authority to Construct	Compliance Deadline
D. Refinery units			
1. Units with a total rated heat input > 5.0 MMBtu/hr to ≤ 20.0 MMBtu/hr	a) Standard Schedule 9 ppmv or 0.011 lb/MMBtu; or	July 1, 2011	July 1, 2012
	b) Enhanced Schedule 6 ppmv or 0.007 lb/MMBtu	January 1, 2013	January 1, 2014
2. Units with a total rated heat input >20.0 MMBtu/hr to ≤ 110.0 MMBtu/hr	a) Standard Schedule 6 ppmv or 0.007 lb/MMBtu; or	July 1, 2010	July 1, 2011
	b) Staged Enhanced Schedule Initial Limit 9 ppmv or 0.011 lb/MMBtu; and	July 1, 2011	July 1, 2012
	Final Limit 5 ppmv or 0.0062 lb/MMBtu	January 1, 2013	January 1, 2014
3. Units with a total rated heat input > 110.0 MMBtu/hr	Standard Schedule 5 ppmv or 0.0062 lb/MMBtu	N/A	June 1, 2007
4. Units firing on less than 50%, by volume, PUC quality gas.	Staged Enhanced Schedule Initial Limit 12 ppmv or 0.014 lb/MMBtu; and	July 1, 2010	July 1, 2011
	Final Limit 9 ppmv or 0.011 lb/MMBtu	January 1, 2013	January 1, 2014
E. Units, from any Category, that were installed prior to January 1, 2009 and limited by a Permit to Operate to an annual heat input >1.8 billion Btu/year but ≤ 30 billion Btu/year.	Standard Schedule 9 ppmv or 0.011 lb/MMBtu	Twelve months before the next unit replacement but no later than January 1, 2013.	At the next unit replacement but no later than January 1, 2014

Table 1 NOx Emission Limits (continued)			
Category	NOx Limit	Authority to Construct	Compliance Deadline
F. Units at a wastewater treatment facility firing on less than 50%, by volume, PUC quality gas.	Staged Enhanced Schedule Initial Limit 12 ppmv or 0.014 lb/MMBtu; and	July 1, 2010	July 1, 2011
	Final Limit 9 ppmv or 0.011 lb/MMBtu	January 1, 2013	January 1, 2014
G. Units operated by a small producer in which the rated heat input of each burner is less than or equal to 5 MMBtu/hr but the total rated heat input of all the burners in a unit is rated between 5 MMBtu/hr and 20 MMBtu/hr, as specified in the Permit to Operate, and in which the products of combustion do not come in contact with the products of combustion of any other burner.	Standard Schedule 9 ppmv or 0.011 lb/MMBtu	Twelve months before the next unit replacement but no later than January 1, 2013.	At the next unit replacement but no later than January 1, 2014

5.2.4 When a unit is operated on combinations of gaseous fuel and liquid fuel, the NOx limit shall be the heat input weighted average of the applicable limits specified in Sections 5.1.1, as calculated by the following equation:

$$\text{Weighted Average Limit} = \frac{(\text{NOx limit for gaseous fuel x G}) + (\text{NOx limit for liquid fuel x L})}{\text{G} + \text{L}}$$

Where: G = annual heat input from gaseous fuel
L = annual heat input from liquid fuel

5.2.5 Prior to January 1, 2014, if a unit was designated to comply with a Staged Enhanced Schedule, an operator may redesignate the unit for compliance under Section 5.1.2, provided the unit meets the Initial NOx Limit; emission fees are paid, at time of the application for redesignation, for all past emissions from the unit since January 1, 2009 through the calendar year prior to the calculation date; and the total annual fee is paid from that date forward. The past emissions fee shall be calculated using the equations in Section 5.3 and the Fee Rate in place at the time of that calculation. The future total annual fees shall be calculated and paid according to Section 5.3.

5.3 Annual Fee Calculation

5.3.1 On and after January 1, 2010, an operator, with units that will comply under Section 5.1.2, shall pay a total annual fee to the District based on the total NOx emissions from those units. That fee shall be calculated in the following manner.

5.3.1.1 The operator shall calculate the total emissions for all units operating at a stationary source that will comply with Section 5.1.2. The total NOx emissions shall be calculated in accordance with Section 5.3.1.3.

5.3.1.2 The total annual emissions fee shall be calculated in accordance with Section 5.3.1.4. These calculations include only the units that have been identified to comply under Section 5.1.2.

5.3.1.3 Total Emissions (TE) Calculation

$$\text{Total TE} = \sum \text{E(unit)}$$

Where: $\sum$ E(unit) = Sum of all NOx emissions from each unit, in tons per year.

$$\text{E(unit)} = \frac{EF(Unit)\ x\ \ AFU(Unit)}{2{,}000\ \ lb\ \ per\ \ ton}$$

Where: E(unit) = Annual NOx emissions for each unit, in tons/year.

EF(Unit) = NOx Emission Limit for the Permit to Operate, in lb/MMBtu

AFU(Unit) = actual amount of fuel, in MMBTU, used by each unit during the previous calendar year.

5.3.1.4 Total Annual Fee Calculation

Total Annual Fee = (Total TE x FR) + Administrative Fee

Where: FR (Fee Rate) = The cost of NOx reductions, in dollars per ton, as established pursuant to Sections 7.2 and 7.6 of District Rule 9510, as adopted on December 15, 2005. Under no circumstances shall the cost of NOx reductions exceed the cost effectiveness threshold for the Carl Moyer Cost Effectiveness as established by the applicable state law.

Administrative Fee = 4% x (Total TE x FR)

5.3.1.5 The operator shall pay the total annual fee to the District, no later than July 1 of each year, for the emissions of the previous calendar year. The first payment is due to the District no later than July 1, 2010. Should July 1 fall on a day when the District is closed, the payment shall be made by the next District working day after July 1.

5.3.2 Payments shall continue annually until the unit either is permanently removed from use in the San Joaquin Valley Air Basin and the Permit to Operate is surrendered or the operator demonstrates compliance with applicable NOx emissions limits shown in Table 2:

Table 2 Applicable NOx Emission Limits for Section 5.3.2

Category	Date of Compliance Demonstration	Applicable NOx Emissions Limit from Table 1
A. Units with only a Standard Schedule in Table 1.	Either prior to or after the Standard Compliance Deadline	Standard NOx Limit
B. Units with both Standard and Enhanced Schedules in Table 1.	Prior to the Enhanced Compliance Deadline	Standard NOx Limit
	After the Enhanced Compliance Deadline	Enhanced NOx Limit
C. Units with both Standard and Staged Enhanced Schedules in Table 1.	Prior to the Initial Limit Compliance Deadline	Standard NOx Limit
	After the Initial Limit Deadline but before the Final Limit Deadline	Initial NOx Limit then the Final NOx Limit by the applicable Compliance Deadline
	After the Final Limit Deadline	Final NOx Limit

5.3.2.1 The emissions fee for units that operate for less than the full calendar year before demonstrating compliance under Section

5.3.2, shall be based on the actual fuel used during the portion of the calendar year prior to demonstrating that compliance or removing the unit from operation within the San Joaquin Valley Air Basin.

5.3.3 Operators of units for which an annual emissions fee is provided must also certify that the units meet federal RACT control requirements at the time the annual fee is provided.

5.4 Particulate Matter Control Requirements

5.4.1 To limit particulate matter emissions, an operator shall comply with one of the following requirements:

5.4.1.1 On and after the applicable NOx Compliance Deadline specified in Section 5.2 Table 1, operators shall fire units exclusively on PUC-quality natural gas, commercial propane, butane, or liquefied petroleum gas, or a combination of such gases;

5.4.1.2 On and after the applicable NOx Compliance Deadline specified in Section 5.2 Table 1, operators shall limit fuel sulfur content to no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet; or

5.4.1.3 On and after the applicable NOx Compliance Deadline specified in Section 5.2 Table 1, operators shall install and properly operate an emission control system that reduces SO_2 emissions by at least 95% by weight; or limit exhaust SO_2 to less than or equal to 9 ppmv corrected to 3.0% O2.

5.4.1.4 Notwithstanding the compliance deadlines indicated in Sections 5.4.1.1 through 5.4.1.3, refinery units, which require modification of refinery equipment to reduce sulfur emissions, shall be in compliance with the applicable requirement in Section 5.4.1 no later than July 1, 2013.

5.4.2 Liquid fuel shall be used only during PUC quality natural gas curtailment periods, provided the requirements of Sections 4.2 and 6.1.5 are met and the fuel contains no more than 15 ppm sulfur, as determined by the test method specified in Section 6.2.

5.5 Low-use Unit

For each unit that was installed prior to January 1, 2009 and is limited to less than or equal to 1.8 billion Btu per calendar year heat input pursuant to a District Permit to Operate, the operator shall comply with the requirement of Sections 5.7 and 7.3 and one of the following:

5.5.1 Tune the unit at least twice per calendar year, (from four to eight months apart) by a qualified technician in accordance with the procedure described in Rule 4304 (Equipment Tuning Procedure for Boilers, Steam Generators, and Process Heaters). If the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year. No tune-up is required for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown; or

5.5.2 Operate the unit in a manner that maintains exhaust oxygen concentrations at less than or equal to 3.00 percent by volume on a dry basis.

5.6 Start-up and Shutdown Provision

On and after the Compliance Deadline specified in Section 5.0, the applicable emission limits of Sections 5.2 Table 1 and 5.5.2 shall not apply during start-up or shutdown, provided an operator complies with the requirements specified below.

5.6.1 The duration of each start-up or each shutdown shall not exceed two hours, except as provided in Section 5.6.3.

5.6.2 The emission control system shall be in operation and emissions shall be minimized insofar as technologically feasible during start-up or shutdown.

5.6.3 Notwithstanding the requirement of Section 5.6.1, an operator may submit an application for a Permit to Operate condition to allow more than two hours for each start-up or each shutdown provided the operator meets all of the conditions specified in Sections 5.6.3.1 through 5.6.3.3.

5.6.3.1 The maximum allowable duration of start-up or shutdown will be determined by the APCO. The allowable duration of start-up shall not exceed twelve hours and the allowable duration of shutdown shall not exceed nine hours.

5.6.3.2 The APCO will only approve start-up or shutdown duration longer than two hours when the application meets the following conditions:

5.6.3.2.1 Clearly identifies the control technologies or strategies to be utilized; and

5.6.3.2.2 Describes what physical conditions prevail during start-up or shutdown periods that prevent the controls from being effective; and

5.6.3.2.3 Provides a reasonably precise estimate as to when the physical conditions will have reached a state that allows for the effective control of emissions.

5.6.3.3 The operator shall submit to the APCO any information deemed necessary by the APCO to determine the appropriate length of start-up or shutdown. The information shall include, but is not limited to the following:

5.6.3.3.1 A detailed list of activities to be performed during start-up or shutdown and a reasonable explanation for the length of time needed to complete each activity; and

5.6.3.3.2 A description of the material process flow rates and system operating parameters, etc., the operator plans to evaluate during the process optimization; and an explanation of how the activities and process flow affect the operation of the emissions control equipment; and

5.6.3.3.3 The basis for the requested additional duration of start-up or shutdown.

5.6.4 Permit to Operate (PTO) modifications solely to conditions to comply with the provisions of this rule may be exempt from Best Available Control Technology (BACT) and emission offset requirements if the PTO modifications meet the requirements of Rule 2201 (New and Modified Stationary Source Review Rule) Section 4.2 (BACT Exemptions) and Rule 2201 Section 4.6 (Emission Offset Exemptions).

5.6.5 For existing facilities, a replacement unit installed for the sole purpose of complying with the requirements of this rule shall be considered to be an emission control technique and may be exempt from the Best Available Control Technology (BACT) and Offsets requirements of

District Rule 2201 (New and Modified Stationary Source Review Rule) provided that all other requirements of Rule 2201 are met.

5.7 Monitoring Provisions

5.7.1 The operator of any unit subject to the applicable emission limits in Sections 5.2 shall install and maintain an operational APCO approved Continuous Emissions Monitoring System (CEMS) for NOx, CO, and oxygen, or implement an APCO-approved Alternate Monitoring System. An APCO approved CEMS shall comply with the requirements of 40 Code of Federal Regulations (CFR) Part 51, 40 CFR Parts 60.7 and 60.13 (except subsection h), 40 CFR Part 60 Appendix B (Performance Specifications) and 40 CFR Part 60 Appendix F (Quality Assurance Procedures), and applicable provisions of Rule 1080 (Stack Monitoring). An APCO-approved Alternate Monitoring System shall monitor one or more of the following:

5.7.1.1 Periodic NOx and CO exhaust emission concentrations,
5.7.1.2 Periodic exhaust oxygen concentration,
5.7.1.3 Flow rate of reducing agent added to exhaust,
5.7.1.4 Catalyst inlet and exhaust temperature,
5.7.1.5 Catalyst inlet and exhaust oxygen concentration,
5.7.1.6 Periodic flue gas recirculation rate, or
5.7.1.7 Other operational characteristics.

5.7.2 For units subject to the requirements of Sections 5.5.1 or 5.5.2, the operator shall monitor, at least on a monthly basis, the operational characteristic(s) recommended by the manufacturer and approved by the APCO.

5.7.3 The operator of any unit subject to Section 5.5 shall install and maintain an operational non-resettable, totalizing mass or volumetric flow meter in each fuel line to each unit. Volumetric flow measurements shall be periodically compensated for temperature and pressure. A master meter, which measures fuel to all units in a group of similar units, may satisfy these requirements if approved by the APCO in writing. The cumulative annual fuel usage may be verified from utility service meters, purchase or tank fill records, or other acceptable methods, as approved by the APCO.

5.7.4 Units operated at seasonal sources that are subject to the requirements of 40 CFR 60, Subpart Db (Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units) may implement an APCO approved parametric monitoring system (PMS) in lieu of a CEMS for compliance with federal emission limits provided all of the following apply:

5.7.4.1 The boiler is fired solely on California PUC quality natural gas, and

5.7.4.2 The applicable District emission limit for NOx is more stringent than the limit specified in 40 CFR Part 60, Subpart Db.

5.7.5 The APCO shall not approve an alternative monitoring system or parametric monitoring system unless it is documented that continued operation within ranges of specified emissions-related performance indicators or operational characteristics provides a reasonable assurance of compliance with applicable emission limits. The operator shall source test over the proposed range of surrogate operating parameters to demonstrate compliance with the applicable emission standards.

5.7.5.1 The predictive or parametric monitoring system shall continuously monitor the key parameters which affect the emissions and demonstrate the compliance within the established key parameters operating envelope.

5.7.5.2 Initial and annual real time modeling shall be performed to verify the key parameters operational range.

5.7.6 Monitoring SOx Emissions

5.7.6.1 Operators complying with Sections 5.4.1.1 or 5.4.1.2 shall provide an annual fuel analysis to the District unless a more frequent sampling and reporting period is included in the Permit To Operate. Sulfur analysis shall be performed in accordance with the test methods in Section 6.2.

5.7.6.2 Operators complying with Section 5.4.1.3 by installing and operating a control device with 95% SOx reduction shall propose the key system operating parameters and frequency of the monitoring and recording. The monitoring option proposed shall be submitted for approval by the APCO.

5.7.6.3 Operators complying with Section 5.4.1.3 shall perform an annual source test unless a more frequent sampling and reporting period is included in the Permit To Operate. Source tests shall be performed in accordance with the test methods in Section 6.2.

5.8 Compliance Determination

5.8.1 The operator of any unit shall have the option of complying with either the applicable heat input, in lb/MMBtu, emission limits or the concentration, in ppmv, emission limits specified in Section 5.2. The emission limits selected to demonstrate compliance shall be specified in the source test proposal pursuant to Rule 1081 (Source Sampling).

5.8.2 All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0.

5.8.3 Continuous Emissions Monitoring System (CEMS) emissions measurements shall be averaged over a period of 15 consecutive minutes to demonstrate compliance with the applicable emission limits. Any 15-consecutive-minute block average CEMS measurement exceeding the applicable emission limits shall constitute a violation.

5.8.4 For emissions monitoring pursuant to Sections 5.7.1, and 6.3.1 using a portable NOx analyzer as part of an APCO approved Alternate Emissions Monitoring System, emission readings shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15-consecutive-minute sample reading or by taking at least five readings evenly spaced out over the 15-consecutive-minute period.

5.8.5 For emissions source testing performed pursuant to Section 6.3.1 for the purpose of determining compliance with an applicable standard or numerical limitation of this rule, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit.

6.0 Administrative Requirements

6.1 Recordkeeping

The records required by Sections 6.1.1 through 6.1.5 shall be maintained for five calendar years and shall be made available to the APCO and EPA upon request. Failure to maintain records or information contained in the records that demonstrate noncompliance with the applicable requirements of this rule shall constitute a violation of this rule.

6.1.1 The operator of any unit operated under the exemption of Section 4.2 shall monitor and record, for each unit, the cumulative annual hours of operation on each fuel other than natural gas during periods of natural gas curtailment and equipment testing. The NOx emission concentration, expressed in ppmv or lb/MMBtu, for each unit that is operated during periods of natural gas curtailment shall be recorded. Failure to maintain records required by Section 6.1.1 or information contained in the records that demonstrates noncompliance with the conditions for exemption under Section 4.2 will result in loss of exemption status. On and after the applicable compliance schedule specified in Section 5.2 Table 1, any unit losing an exemption status shall be brought into full compliance with this rule as specified in Section 7.2.

6.1.2 The operator of any unit that is subject to the requirements of Section 5.5 shall record the amount of fuel use at least on a monthly basis for each unit. On and after the applicable compliance schedule specified in Section 7.0, in the event that such unit exceeds the applicable annual heat input limit specified in Section 5.5, the unit shall be brought into full compliance with this rule as specified in Section 5.2 Table 1.

6.1.3 The operator of any unit subject to Section 5.5.1 or Section 6.3.1 shall maintain records to verify that the required tune-up and the required monitoring of the operational characteristics of the unit have been performed.

6.1.4 The operator performing start-up or shutdown of a unit shall keep records of the duration of start-up or shutdown.

6.1.5 The operator of any unit firing on liquid fuel during a PUC-quality natural gas curtailment period pursuant to Section 5.4.2 shall record the sulfur content of the fuel, amount of fuel used, and duration of the natural gas curtailment period.

6.2 Test Methods

The following test methods shall be used unless otherwise approved by the APCO and EPA.

6.2.1 Fuel hhv shall be certified by third party fuel supplier or determined by:

6.2.1.1 ASTM D 240-87 or D 2382-88 for liquid hydrocarbon fuels;

6.2.1.2 ASTM D 1826-88 or D 1945-81 in conjunction with ASTM D 3588-89 for gaseous fuels.

6.2.2 Oxides of nitrogen (ppmv) - EPA Method 7E, or ARB Method 100.
6.2.3 Carbon monoxide (ppmv) - EPA Method 10, or ARB Method 100.
6.2.4 Stack gas oxygen - EPA Method 3 or 3A, or ARB Method 100.

6.2.5 NOx Emission Rate (Heat Input Basis) - EPA Method 19.
6.2.6 Stack gas velocities - EPA Method 2.
6.2.7 Stack gas moisture content - EPA Method 4.

6.2.8 SOx Test Methods

6.2.8.1 Oxides of sulfur – EPA Method 6C, EPA Method 8, or ARB Method 100

6.2.8.2 The SOx emission control system efficiency shall be determined using the following:

$$\% \text{ Control Efficiency} = [(C_{SO2,\ inlet} - C_{SO2,\ outlet}) / C_{SO2,\ inlet}] \times 100$$

Where:

$C_{SO2,\ inlet}$ = concentration of SOx (expressed as SO_2) at the inlet side of the SOx emission control system, in lb/dscf

$C_{SO2,\ outlet}$ = concentration of SOx (expressed as SO_2) at the outlet side of the SOx emission control system, in lb/dscf

6.2.9 Determination of total sulfur as hydrogen sulfide (H_2S) content – EPA Method 11 or EPA Method 15, as appropriate.

6.2.10 Sulfur content of liquid fuel – American Society for Testing and Materials (ASTM) D 6920-03 or ASTM D 5453-99

6.3 Compliance Testing

6.3.1 Each unit subject to the requirements in Section 5.2 shall be source tested to determine compliance with the applicable emission limits at least once every 12 months, (no more than 30 days before or after the required annual source test date).

6.3.1.1 Units that demonstrate compliance on two consecutive 12-month source tests may defer the following 12-month source test for up to 36 months (no more than 30 days before or after the required 36-month source test date). During the 36-month source testing interval, the operator shall tune the unit in accordance with the provisions of Section 5.5.1, and shall monitor, on a monthly basis, the unit's operational characteristics recommended by the manufacturer to ensure compliance with the applicable emission limits specified in Section 5.2.

6.3.1.2 Tune-ups required by Sections 5.5.1 and 6.3.1 do not need to be performed for units that operate and maintain an APCO approved CEMS or an APCO approved Alternate Monitoring System where the applicable emission limits are periodically monitored.

6.3.1.3 If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits specified in Section 5.2, the source testing frequency shall revert to at least once every 12 months.

6.3.1.4 Failure to comply with the requirements of Section 6.3.1 or any source test results that exceed the applicable emission limits in Section 5.2 shall constitute a violation of this rule.

6.3.2 In lieu of compliance with Section 6.3.1, compliance with the applicable emission limits in Section 5.2 shall be demonstrated by submittal of annual emissions test results to the District from a unit or units that represents a group of units, provided:

6.3.2.1 All units in the group are initially source tested. The emissions from all test runs from units within the group are less than 90% of the permitted value, and the emissions do not vary greater than 25% from the average of all test runs; and

6.3.2.2 All units in a group are similar in terms of rated heat input, make and series, operational conditions, fuel used, and control method. No unit with a rated heat input greater than 100 MMBtu shall be considered as part of the group; and

6.3.2.3 The group is owned by a single owner and is located at a single stationary source; and

6.3.2.4 Selection of the representative unit(s) is approved by the APCO prior to testing; and

6.3.2.5 The number of representative units source tested shall be at least 30% of the total number of units in the group. The representative tests shall rotate each year so that within three years all units in the group have been tested at least once.

6.3.2.6 All units in the group shall have received the similar maintenance and tune-up procedures as the representative unit(s) as listed in the Permit to Operate. The operator shall submit to the APCO the specific maintenance procedures to be performed on each unit that will be included in the group for representative testing. Such maintenance procedures shall be specified in the

Permit to Operate for units that are included in the group for representative testing. Any maintenance work on a unit which has no effect on emissions standards and which is not specified in the maintenance procedures shall be submitted to the APCO for approval before such unit can be included as part of the group for representative testing. Any unit that necessitates any maintenance work which has an effect on emission standards and is beyond the maintenance procedures identified in the Permit to Operate, shall not be included as part of the group for representative testing. The unit shall be source tested in accordance with the provisions of Section 6.3.1; and

6.3.2.7 Should any of the representative units exceed the required emission limits, each of the units in the group shall demonstrate compliance by emissions testing. Failure to complete emissions testing within 90 days of the failed test shall result in the untested units being in violation of this rule. After compliance with the requirements of Section 6.3.2.7 has been demonstrated, subsequent source testing shall be performed pursuant to Sections 6.3.1 or 6.3.2.

6.4 Emission Control Plan (ECP)

6.4.1 No later than January 1, 2010, the operator of any unit shall submit to the APCO for approval an Emissions Control Plan according to the compliance schedule in Section 7.0. For each unit, the plan shall contain the following:

6.4.1.1 Permit to Operate number,
6.4.1.2 Fuel type and hhv,
6.4.1.3 Annual fuel consumption (expressed as Btu/yr),
6.4.1.4 Current emission level, including method used to determine emission level,
6.4.1.5 NOx limit to be satisfied pursuant to Section 5.2 Table 1 or emission fee payment to be made pursuant to Section 5.3, and
6.4.1.6 Plan of actions, including a schedule of increments of progress, which will be taken to satisfy the requirements of Section 5.0 and the compliance schedule in Section 7.0.

7.0 Compliance Schedule

7.1 As shown in Section 5.2 Table 1, the column labeled:

7.1.1 "Authority to Construct" identifies the date by with the operator shall submit an Application for Authority to Construct for each unit subject to the rule.

7.1.2 "Compliance Deadline" identifies the date by which the owner shall demonstrate that each unit is in compliance with the applicable requirements of this rule.

7.2 Any unit that is exempted under Section 4.2 that becomes subject to the emission limits of this rule through the loss of exemption status shall be in full compliance with this rule on and after the date the exemption status is lost.

7.3 Any unit that becomes subject to the emission limits of this rule as a result of exceeding the applicable annual heat input limit specified in Section 5.5 shall be in compliance with the applicable emission limits in Section 5.2 Table 1 and Section 5.4 on and after the date the annual heat input limit is exceeded.

8.0 Calculations

8.1 All ppmv emission limits specified in Section 5.2 are referenced at dry stack gas conditions and 3.00 percent by volume stack gas oxygen. Emission concentrations shall be corrected to 3.00 percent oxygen as follows:

$$[\text{ppm NOx}]_{\text{corrected}} = \frac{17.95\%}{20.95\% - [\%\text{O2}]_{\text{measured}}} \times [\text{ppm NOx}]_{\text{measured}}$$

$$[\text{ppm CO}]_{\text{corrected}} = \frac{17.95\%}{20.95\% - [\%\text{O2}]_{\text{measured}}} \times [\text{ppm CO}]_{\text{measured}}$$

8.2 All pounds per million Btu NOx emission rates shall be calculated as pounds of nitrogen dioxide per million Btu of heat input (expressed as hhv).