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(Amended December 9, 1994)(Amended November 14, 1997)(Amended June 3, 2005)  
(Amended February 1, 2008)(Amended July 9, 2010)(Amended September 7, 2012)  
(Amended December 4, 2015)(Amended June 3, 2016)(Amended November 1, 2019)  
(Amended TBD)

**PROPOSED EMISSIONS FROM GASEOUS- AND LIQUID-FUELED ENGINES**  
**AMENDED**  
**RULE 1110.2**

(a) Purpose

The purpose of Rule 1110.2 is to reduce Oxides of Nitrogen (NO<sub>x</sub>), Volatile Organic Compounds (VOCs), and Carbon Monoxide (CO) from engines.

(b) Applicability

All stationary and portable engines over 50 rated brake horsepower (bhp) are subject to this rule.

(c) Definitions

For the purpose of this rule, the following definitions shall apply:

- (1) AGRICULTURAL STATIONARY ENGINE is a non-portable engine used for the growing and harvesting of crops or the raising of fowl or animals for the primary purpose of making a profit, providing a livelihood, or conducting agricultural research or instruction by an educational institution. An engine used for the processing or distribution of crops or fowl or animals is not an agricultural engine.
- (2) APPROVED EMISSION CONTROL PLAN is a control plan, submitted on or before December 31, 1992, and approved by the Executive Officer prior to November 14, 1997, that was required by subdivision (d) of this rule as amended September 7, 1990.
- (3) BREAKDOWN is a physical or mechanical failure or malfunction of an engine, air pollution control equipment, or related operating equipment that is not the result of operator error, neglect, improper operation or improper maintenance procedures, which leads to excess emissions beyond rule related emission limits or equipment permit conditions.
- (4) CERTIFIED SPARK-IGNITION ENGINE means engines certified by California Air Resources Board (CARB) to meet emission standards in accordance with Title 13, Chapter 9, Article 4.5 of the California Code of Regulations (CCR).
- (5) COMPRESSOR GAS LEAN-BURN ENGINE is a stationary gaseous-fueled two-stroke or four-stroke lean-burn engine used to compress natural

gas or pipeline quality natural gas for delivery through a pipeline or into storage.

- (c) (6) EMERGENCY STANDBY ENGINE is an engine which operates as a temporary replacement for primary mechanical or electrical power during periods of fuel or energy shortage or while the primary power supply is under repair.
- (7) ENGINE is any spark- or compression-ignited internal combustion engine, including engines used for control of VOC's, but not including Linear Generators or engines used for self-propulsion.
- (8) ESSENTIAL PUBLIC SERVICE includes any facility or operator as defined in Rule 1302.
- (9) EXEMPT COMPOUNDS are defined in South Coast AQMD Rule 102 – Definition of Terms.
- (10) FACILITY means any source or group of sources or other air contaminant emitting activities which are located on one or more contiguous properties within the South Coast AQMD, in actual physical contact or separated solely by a public roadway or other public right-of-way, and are owned or operated by the same person (or by persons under common control), or an outer continental shelf (OCS) source as determined in Section 55.2 of Title 40, Part 55 of the Code of Federal Regulations (40 CFR Part 55). Such above-described groups, if noncontiguous, but connected only by land carrying a pipeline, shall not be considered one facility. Sources or installations involved in crude oil and gas production in Southern California Coastal or OCS Waters and transport of such crude oil and gas in Southern California Coastal or OCS Waters shall be included in the same facility which is under the same ownership or use entitlement as the crude oil and gas production facility on-shore.
- (11) FORMER RECLAIM FACILITY means a facility, or any of its successors, that was in the Regional Clean Air Incentives Market as of January 5, 2018, as established in Regulation XX, that has received a final determination notification, and is no longer in the RECLAIM program.
- (12) LEAN-BURN ENGINE means an engine that operates with high levels of excess air and an exhaust oxygen concentration of greater than 4 percent.
- (13) LINEAR GENERATOR means any power generation technology that uses a thermochemical reaction to create linear motion that is directly converted into electricity.

- (143 ) LOCATION means any single site at a building, structure, facility, or installation. For the purpose of this definition, a site is a space occupied or to be occupied by an engine. For engines which are brought to a facility to perform maintenance on equipment at its permanent or ordinary location, each maintenance site shall be a separate location.
- (c) (154 ) NET ELECTRICAL ENERGY means the electrical energy produced by a generator, less the electrical energy consumed by any auxiliary equipment necessary to operate the engine generator and, if applicable, any heat recovery equipment, such as heat exchangers.
- (165 ) NON-RECLAIM FACILITY means a facility, or any of its successors, that was not in the Regional Clean Air Incentives Market as of January 5, 2018, as established in Regulation XX.
- (176 ) NON-ROAD ENGINE is any engine, defined under 40 CFR Part 89, that does not remain or will not remain at a location for more than 12 consecutive months, or a shorter period of time where such period is representative of normal annual source operation at a stationary source that resides at a fixed location for more than 12 months (e.g., seasonal operations such as canning facilities), and meets one of the following:
- (A) Is used in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as a mobile crane); or
  - (B) Is used in or on a piece of equipment that is intended to be propelled while performing its function (such as lawn mowers and string trimmers); or
  - (C) By itself, or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Transportability includes, but is not limited to, wheels, skids, carrying handles, dolly, trailer, platform or mounting.
- (187 ) OPERATING CYCLE means a period of time within which a round of regularly recurring events is completed, and cannot be stopped without the risk of endangering public safety or health, causing material damage to the equipment or product, or cannot be stopped due to technical constraints. Economic reasons alone will not be sufficient to extend this time period. The operating cycle includes batch processes that may start and finish

several times within a twenty-four hour period, in which case each start to finish interval is considered a complete cycle.

(198 ) OXIDES OF NITROGEN (NO<sub>x</sub>) means nitric oxide and nitrogen dioxide.

(204 9) PORTABLE ENGINE is an engine that, by itself or in or on a piece of equipment, is designed to be and capable of being carried or moved from

(c) one location to another. Indications of portability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, platform or mounting. The operator must demonstrate the necessity of the engine being periodically moved from one location to another because of the nature of the operation. An engine is not portable if:

- (A) The engine or its replacement remains or will reside at the same location for more than 12 consecutive months. Any engine, such as a back-up or stand-by engine, that replaces an engine at a location and is intended to perform the same function as the engine being replaced, will be included in calculating the consecutive time period. In that case, the cumulative time of both engines, including the time between the removal of the original engine and installation of the replacement engine, will be counted toward the consecutive time period; or
- (B) The engine remains or will reside at a location for less than 12 consecutive months where such a period represents the full length of normal annual source operations such as a seasonal source; or
- (C) The engine is removed from one location for a period and then it or its equivalent is returned to the same location thereby circumventing the portable engine residence time requirements.

The period during which the engine is maintained at a designated storage facility shall be excluded from the residency time determination.

(210 ) RATED BRAKE HORSEPOWER (bhp) is the rating specified by the manufacturer, without regard to any derating, and listed on the engine nameplate.

(224 ) RECLAIM FACILITY means a facility, or any of its successors, that was in the Regional Clean Air Incentives Market as of January 5, 2018, as established in Regulation XX.

- (c) (232 RICH-BURN ENGINE WITH A THREE-WAY CATALYST means an  
) engine designed to operate near stoichiometric conditions with a catalytic control device that simultaneously reduces emissions of NO<sub>x</sub>, CO and VOC.
- (243 STATIONARY ENGINE is an engine which is either attached to a  
) foundation or if not so attached, does not meet the definition of a portable or non-road engine and is not a motor vehicle as defined in Section 415 of the California Vehicle Code.
- (254 TIER 2 AND TIER 3 DIESEL ENGINES mean engines certified by CARB  
) to meet Tier 2 or Tier 3 emission standards in accordance with Title 13, Chapter 9, Article 4 of the CCR.
- (265 USEFUL HEAT RECOVERED means the waste heat recovered from the  
) engine exhaust and/or cooling system that is put to productive use. The waste heat recovered may be assumed to be 100% useful unless the hot water, steam or other medium is vented to the atmosphere, or sent directly to a cooling tower or other unproductive use.
- (276 VOLATILE ORGANIC COMPOUND (VOC) is as defined in Rule 102.  
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(d) Requirements

(1) Stationary Engines:

- (A) Operators of stationary engines with an amended Rule 1110.1 Emission Control Plan submitted by July 1, 1991, or an Approved Emission Control Plan, designating the permanent removal of engines or the replacement of engines with electric motors, in accordance with subparagraph (d)(1)(B), shall do so by December 31, 1999, or not operate the engines on or after December 31, 1999 in a manner that exceeds the emission concentration limits listed in Table I:

<b>TABLE I ALTERNATIVE TO ELECTRIFICATION CONCENTRATION LIMITS</b>		
NO <sub>x</sub> (ppmvd) <sup>1</sup>	VOC (ppmvd) <sup>2</sup>	CO (ppmvd) <sup>1</sup>
11	30	70

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- <sup>1</sup> Parts per million by volume, corrected to 15% oxygen on a dry basis and averaged over 15 minutes.
  - <sup>2</sup> Parts per million by volume, measured as carbon, corrected to 15% oxygen on a dry basis and averaged over the sampling time required by the test method.

- (B) The operator of any other stationary engine not covered by subparagraph (d)(1)(A) shall:
- (d)
- (i) Remove such engine permanently from service or replace the engine with an electric motor, or alternatively comply with the following, if applicable:
  - (ii) Comply with the applicable emission concentration limits listed in either Table II or Table III-A or B, or technologically achievable case-by-case VOC or CO emission concentration limits approved by the Executive Officer pursuant to clause (d)(1)(B)(vii), averaged over 15 minutes or other averaging time period allowed by clauses (d)(1)(B)(iii) through (d)(1)(B)(v);
  - (iii) Use an averaging time approved by the Executive Officer for an engine that uses non-pipeline quality natural gas that has demonstrated that due to the varying heating value of the gas a longer averaging time was necessary. The fixed-interval averaging time shall not exceed six hours for any of the concentration limits of Table II, unless an engine is subject to an existing permit condition allowing for an averaging time greater than six hours. Non-pipeline quality natural gas is a gas that does not meet the gas specifications of the local gas utility and is not supplied to the local gas utility;
  - (iv) Use a fixed-interval averaging time of one hour for engines equipped with a Continuous Emissions Monitoring System (CEMS), to demonstrate compliance with the emission concentration limits of Table II or Table III-B;
  - (v) Use a fixed-interval averaging time of three hours for compressor gas lean-burn engines equipped with selective catalytic reduction pollution control equipment and a CEMS,

to demonstrate compliance with the NO<sub>x</sub> emission concentration limit of Table II;

- (vi) Comply with the emission concentration limits listed in Table II for Low-Use Engines. A Low-Use engine is an engine that operates less than 500 hours per year or uses less than  $1 \times 10^9$  British Thermal Units (Btus) per year (higher heating value) of fuel;
  - (vii) Comply with any technologically achievable case-by-case CO and VOC limits that were approved by the Executive Officer in lieu of the concentration limits in Table II effective on and after July 1, 2011 for a two-stroke engine equipped with an oxidation catalyst and insulated exhaust ducts and catalyst housing that has demonstrated that the CO and VOC limits effective on and after July 1, 2011 were not achievable. The case-by-case limits shall not exceed 250 ppmvd VOC and 2000 ppmvd CO, but must comply with the applicable NO<sub>x</sub> concentration limit in Table II.
- (d)

<b>TABLE II</b>		
<b>CONCENTRATION LIMITS FOR LOW-USE ENGINES</b>		
NO <sub>x</sub> (ppmvd) <sup>1</sup>	VOC (ppmvd) <sup>2</sup>	CO (ppmvd) <sup>1</sup>
bhp ≥ 500: 36 bhp < 500: 45	250	2000
<b>CONCENTRATION LIMITS EFFECTIVE JULY 1, 2011</b>		
NO <sub>x</sub> (ppmvd) <sup>1</sup>	VOC (ppmvd) <sup>2</sup>	CO (ppmvd) <sup>1</sup>
11	30	250

<sup>1</sup> Parts per million by volume, corrected to 15% oxygen on a dry basis.

<sup>2</sup> Parts per million by volume, measured as carbon, corrected to 15% oxygen on a dry basis and averaged over the sampling time required by the test method.

- (C) The operator of any stationary engine fired by landfill or digester gas (biogas) shall not operate the engine in a manner that exceeds the

(d)

emission concentration limits of Table III-A, provided that the facility monthly average biogas usage by the biogas engine is 90% or more, based on the higher heating value of the fuels used. The calculation of the monthly facility biogas use percentage may exclude natural gas fired during: any electrical outage at the facility; a Stage 2 or higher electrical emergencies called by the California Independent System Operator Corporation; and when a sewage treatment plant activates an Emergency Operations Center or Incident Command System, as part of an emergency response plan, because of either high influent flows caused by precipitation or a disaster.

<b>TABLE III-A CONCENTRATION LIMITS FOR LANDFILL AND DIGESTER GAS (BIOGAS)-FIRED LOW-USE ENGINES</b>		
NO <sub>x</sub> (ppmvd) <sup>1</sup>	VOC (ppmvd) <sup>2</sup>	CO (ppmvd) <sup>1</sup>
bhp ≥ 500: 36 x ECF <sup>3</sup> bhp < 500: 45 x ECF <sup>3</sup>	Landfill Gas: 40  Digester Gas: 250 x ECF <sup>3</sup>	2000
<b>TABLE III-B CONCENTRATION LIMITS FOR LANDFILL AND DIGESTER GAS (BIOGAS)-FIRED ENGINES EFFECTIVE JANUARY 1, 2017</b>		
NO <sub>x</sub> (ppmvd) <sup>1</sup>	VOC (ppmvd) <sup>2</sup>	CO (ppmvd) <sup>1</sup>
11	30	250

<sup>1</sup> Parts per million by volume, corrected to 15% oxygen on a dry basis.

<sup>2</sup> Parts per million by volume, measured as carbon, corrected to 15% oxygen on a dry basis and averaged over the sampling time required by the test method.

<sup>3</sup> ECF is the efficiency correction factor.

The ECF shall be 1.0 unless:

- (i) The engine operator has measured the engine's net specific energy consumption ( $q_a$ ), in compliance with ASME



Performance Test Code PTC 17 -1973, at the average load of the engine; and

- (ii) The ECF-corrected emission limit is made a condition of the engine's permit to operate.

The ECF is as follows:

$$\text{ECF} = \frac{9250 \text{ Btus/hp-hr}}{\text{Measured } q_a \text{ in Btus/hp-hr}}$$

Measured  $q_a$  shall be based on the lower heating value of the fuel. ECF shall not be less than 1.0.

- (d) The Executive Officer may approve the burning of more than 10% natural gas in a landfill or digester gas-fired engine, when it is necessary, if: the only alternative to limiting natural gas to 10% would be shutting down the engine and flaring more landfill or digester gas; or the engine requires more natural gas in order for a waste heat recovery boiler to provide enough thermal energy to operate a sewage treatment plant, and other boilers at the facility are unable to provide the necessary thermal energy.
- (D) Notwithstanding the provisions of subparagraph (d)(1)(B), the operator of any stationary engine fired by landfill or digester gas (biogas) shall not operate the engine in a manner that exceeds the emission concentration limits of Table III.
- (E) Biogas engine operators that establish to the satisfaction of the Executive Officer that they have complied with the emissions limits of Table III-B by January 1, 2015 will have their respective engine permit application fees refunded.
- (F) For the City of San Bernardino, Orange County Sanitation District, and Eastern Municipal Water District that commenced and implemented technology demonstration projects prior to January 1, 2015, all their biogas engines shall have until January 1, 2018 to comply with the requirements of Table III-B.
- (G) Once an engine complies with the concentration limits as specified in Table III-B, there shall be no limit on the percentage of natural gas burned.

- (H) The concentration limits effective as specified in Table III-A shall apply to engines that are biogas-fired Low-Use engines. A biogas-fired Low-Use engine is an engine that operates fewer than 500 hours per year or uses less than  $1 \times 10^9$  Btus per year (higher heating value) of fuel.
- (I) An operator of a biogas engine with a CEMS shall meet either:
  - (i) The NO<sub>x</sub> and CO limits of Table III-B, averaged pursuant to the specified averaging provisions in subparagraph (d)(1)(B);
  - (ii) The emission limits at or below 11 ppmvd for NO<sub>x</sub> and 250 ppmvd for CO (if CO is selected for averaging), each corrected to 15% O<sub>2</sub> and averaged over a 24-hour fixed interval, with the emission limits and averaging time specified as a condition in the engine's permit to operate on or before November 1, 2019; or
  - (iii) The emission limits at or below 9.9 ppmvd for NO<sub>x</sub> and 225 ppmvd for CO (if CO is selected for averaging), each corrected to 15% O<sub>2</sub> and averaged over a 48-hour fixed interval, with emission limits and averaging time specified as a condition in the engine's permit to operate.
- (d)
  - (J) The operator of any new engine subject to subparagraph (e)(1)(B) shall:
    - (i) Comply with the requirements of Best Available Control Technology in accordance with Regulation XIII if the engine requires a South Coast AQMD permit; or
    - (ii) Not operate the engine in a manner that exceeds the emission concentration limits in Table I if the engine does not require a South Coast AQMD permit.
  - (K) By February 1, 2009, the operator of a spark-ignited engine without a Rule 218-approved continuous emission monitoring system (CEMS) or a Regulation XX (RECLAIM)-approved CEMS shall equip and maintain the engine with an air-to-fuel ratio controller with an oxygen sensor and feedback control, or other equivalent technology approved by the Executive Officer, CARB and EPA.
  - (L) New Non-Emergency Electrical Generators

- (i) All new non-emergency engines driving electrical-generators shall comply with the following emission standards in lbs/MW-hr:

(d)

<b>TABLE IV EMISSION STANDARDS FOR NEW ELECTRICAL GENERATION DEVICES</b>		
<b>Pollutant</b>	<b>Emission Standard (lbs/MW-hr)<sup>1</sup></b>	<b><del>Concentration</del> Limit<sup>3</sup> (ppmvd)<sup>4</sup></b>
NOx	0.070	<del>2.5</del>
CO	0.20	12
VOC	0.10 <sup>2</sup>	10

- <sup>1</sup> The averaging time of the emission standard for VOC is the sampling time required by the test method.
- <sup>2</sup> Mass emissions of VOC shall be calculated using a ratio of 16.04 pounds of VOC per lb-mole of carbon.
- <sup>3</sup> ~~Concentration limit is calculated using a 40% engine efficiency and no applied thermal credit.~~
- <sup>4</sup> ~~Parts per million by volume, corrected to 15% oxygen on a dry basis.~~

- (ii) Engines subject to this subparagraph that produce combined heat and electrical power may include one megawatt-hour (MW-hr) for each 3.4 million Btus of useful heat recovered (MW<sub>th</sub>-hr), in addition to each MW-hr of net electricity produced (MW<sub>e</sub>-hr). The compliance of such engines shall be based on the following equation:

$$\frac{\text{Lbs}}{\text{MW-hr}} = \frac{\text{Lbs}}{\text{MW}_e\text{-hr}} \times \text{Electrical Energy Factor (EEF)}$$

Where:

Lbs/MW-hr = The calculated emissions standard.

Lbs/MW<sub>e</sub>-hr = The short-term engine emission limit in pounds per MWe-hr of net electrical energy produced.

EEF = The annual  $MW_e$ -hrs of net electrical energy produced divided by the sum of annual  $MW_e$ -hrs plus annual  $MW_{th}$ -hrs of useful heat recovered.

- (d)
- (iii) For combined heat and power engines, the short-term emission limits in lbs/ $MW_e$ -hr and the maximum allowed annual EEF must be selected by operator and stated on the operating permit.
  - (iv) The requirements of this subparagraph shall apply to NO<sub>x</sub> emissions from new non-emergency engines driving electrical-generators subject to Regulation XX (RECLAIM).
  - (v) This subparagraph does not apply to: engines installed prior to February 1, 2008; engines issued a permit to construct prior to February 1, 2008 and installed within 12 months of the date of the permit to construct; engines for which an application is deemed complete by October 1, 2007; engines installed by an electric utility on Santa Catalina Island; engines installed at remote locations without access to natural gas and electric power; engines used to supply electrical power to ocean-going vessels while at berth, prior to January 1, 2014; or landfill or digester gas-fired engines that meet the requirements of subparagraph (d)(1)(C).
  - (vi) For engines driving electrical generators and operating with a CEMS, a fixed-interval averaging time of one hour shall be used to demonstrate compliance with the NO<sub>x</sub> and CO emission standard requirements of Table IV in lbs/MW-hr. For engines driving electrical generators and operating without a CEMS, the NO<sub>x</sub> and CO emission standard requirements of Table IV in lbs/MW-hr shall be averaged over 15 minutes.
  - ~~(vii) Owners and operators of new engines installed prior to January 1, 2024 with no ammonia emissions from add-on control equipment and where NO<sub>x</sub> emissions meet the concentration limit of Table IV at all times may elect to apply for and comply with the concentration limits of Table IV, expressed in ppmvd, except an alternative VOC~~

(d) ~~concentration limit that is equal to or less than 25 ppmvd may be complied with. The Executive Officer shall accumulate daily VOC emissions in excess of the concentration limit of Table IV based on the permitted VOC limits from each such engine and shall not approve any additional permit for such engine that will cause the total accumulated daily VOC emissions to exceed 45 lbs per day. Any new installation on or after January 1, 2024 shall comply with the VOC concentration limit in Table IV in ppmvd.~~

(2) Portable Engines:

(A) The operator of any portable engine generator subject to this rule shall not use the portable generator for:

- (i) Power production into the electric grid, except to maintain grid stability during an emergency event or other unforeseen event that affects grid stability; or
- (ii) Primary or supplemental power to a building, facility, stationary source, or stationary equipment, except during unforeseen interruptions of electrical power from the serving utility, maintenance and repair operations, and remote operations where grid power is unavailable. For interruptions of electrical power, the operation of a portable generator shall not exceed the time of the actual interruption of power.

This subparagraph shall not apply to a portable generator that complies with emission concentration limits of Table I and the other requirements in this rule applicable to stationary engines.

(B) The operator of any portable diesel engine shall comply with the applicable requirements of the Subchapter 7.5 Airborne Toxic Control Measures for diesel particulate matter in Chapter 1, Division 3, Title 17 of the California Code of Regulations.

(C) The operator of any portable spark-ignited engine shall comply with the applicable requirements of the Large Spark Ignition Engine Fleet Requirements, Article 2, Chapter 15, Division 3, Title 13 of the California Code of Regulations.

(e) Compliance

(1) Agricultural Stationary Engines:

- (A) The operator of any agricultural stationary engine subject to this rule and installed or issued a permit to construct prior to June 3, 2005 shall comply with subparagraph (d)(1)(B) and the other applicable provisions of this rule in accordance with the compliance schedules in Table V:

<b>TABLE V COMPLIANCE SCHEDULES FOR STATIONARY AGRICULTURAL ENGINES</b>		
<b>Action Required</b>	<b>Tier 2 and Tier 3 Diesel Engines, Certified Spark-Ignition Engines, and All Engines at Facilities with Actual Emissions Less Than the Amounts in the Table of Rule 219(q)</b>	<b>Other Engines</b>
Submit notification of applicability to the Executive Officer	January 1, 2006	January 1, 2006
Submit to the Executive Officer applications for permits to construct engine modifications, control equipment, or replacement engines	March 1, 2009	September 1, 2007
Initiate construction of engine modifications, control equipment, or replacement engines	September 30, 2009, or 30 days after the permit to construct is issued, whichever is later	March 30, 2008, or 30 days after the permit to construct is issued, whichever is later
Complete construction and comply with applicable requirements	January 1, 2010, or 60 days after the permit to construct is issued, whichever is later	July 1, 2008, or 60 days after the permit to construct is issued, whichever is later
Complete initial source testing	March 1, 2010, or 120 days after the permit to	September 1, 2008, or 120 days after the permit

	construct is issued, whichever is later	to construct is issued, whichever is later
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- (e) The notification of applicability shall include the following for each engine:
- (i) Name and mailing address of the operator
  - (ii) Address of the engine location
  - (iii) Manufacturer, model, serial number, and date of manufacture of the engine
  - (iv) Application number
  - (v) Engine type (diesel, rich-burn spark-ignition or lean-burn spark-ignition)
  - (vi) Engine fuel type
  - (vii) Engine use (pump, compressor, generator, or other)
  - (viii) Expected means of compliance (engine replacement, control equipment installation, or electrification)
- (B) The operator of any new agricultural stationary engine that is not subject to the compliance schedule of subparagraph (e)(1)(A) for existing engines shall comply with the requirements of subparagraph (d)(1)(J) immediately upon installation.
- (2) Non-Agricultural Stationary Engines:
- (A) The operator of any stationary engine not meeting the requirements of subparagraph (d)(1)(B) or (d)(1)(C) that go into effect in 2010 or later, shall comply with the compliance schedule in Table VI.
  - (B) The operator of any stationary engine that elects to amend a permit to operate to incorporate ECF-adjusted emission limits shall submit to the Executive Officer an application for a change of permit conditions by August 1, 2008, and comply with emission limits of the previous version of this rule until February 1, 2009 when the engine shall be in compliance with the emission limits of this rule.
  - (C) The operator of any stationary engine that is required to add operating restrictions to a permit to operate to meet the requirements of this rule shall submit to the Executive Officer an application for a change of permit conditions by August 1, 2008.

(e)

<b>TABLE VI COMPLIANCE SCHEDULE FOR NON -AGRICULTURAL STATIONARY ENGINES</b>	
<b>Action Required</b>	<b>Applicable Compliance Date</b>
Submit to the Executive Officer applications for permits to construct engine modifications, control equipment, or replacement engines	Twelve months before the final compliance date
Initiate construction of engine modifications, control equipment, or replacement engines	Three months before the final compliance date, or 60 days after the permit to construct is issued, whichever is later
Complete construction and comply with applicable requirements	The final compliance date, or 120 days after the permit to construct is issued, whichever is later
Complete initial source testing	60 days after the final compliance date in subparagraph (d)(1)(B) or (d)(1)(C), or 180 days after the permit to construct is issued, whichever is later

(3) Stationary Engine CEMS

- (A) The operator of any stationary engine with an existing CEMS shall commence the reporting required by Rule 218 Subdivision (f) on January 1, 2008. The first summary report for the six months ending June 30, 2008 shall be due on July 30, 2008.
- (B) The operator of any stationary engine that is required to modify an existing CEMS or install a CEMS on an existing engine shall comply with the compliance schedule in Table VII. Public agencies shall be allowed one year more than the dates in Table VII, except for biogas engines.
- (C) The operator of any stationary engine that is located at a RECLAIM or former RECLAIM facility that is required to modify an existing CEMS or install a CEMS on an existing engine that is subject to paragraph (f)(1) shall comply with the compliance schedule in Table



- (e) VII except that the operator shall submit to the Executive Officer applications for a new or modified CEMS within 90 days of becoming a former RECLAIM facility.
- (i) For engines at a RECLAIM or former RECLAIM facility, installation of a CEMS is required concurrently with the installation of retrofit control technologies or new engine replacements to meet the requirements of paragraph (d)(1).

<b>TABLE VII</b> <b>COMPLIANCE SCHEDULE FOR NEW OR MODIFIED CEMS ON EXISTING ENGINES</b>			
Action Required	Applicable Compliance Dates For:		
	Non-Biogas Engines Rated at 750 bhp or More	Non-Biogas Engines Rated at Less than 750 bhp	Biogas Engines*
Submit to the Executive Officer applications for new or modified CEMS	August 1, 2008	August 1, 2009	January 1, 2011
Complete installation and commence CEMS operation, calibration, and reporting requirements	Within 180 days of initial approval	Within 180 days of initial approval	Within 180 days of initial approval
Complete certification tests	Within 90 days of installation	Within 90 days of installation	Within 90 days of installation
Submit certification reports to Executive Officer	Within 45 days after tests are completed	Within 45 days after tests are completed	Within 45 days after tests are completed
Obtain final approval of CEMS	Within 1 year of initial approval	Within 1 year of initial approval	Within 1 year of initial approval

\* A biogas engine is one that is subject to the emission limits of Table III.

- (e) (4) Stationary Engine Inspection and Monitoring (I&M) Plans:  
The operator of stationary engines subject to the I&M plan provisions of subparagraph (f)(1)(D) shall:
- (A) By August 1, 2008, submit an initial I&M plan application to the Executive Officer for approval;
  - (B) By December 1, 2008, implement an approved I&M plan or the I&M plan as submitted if the plan is not yet approved.
- Any operator of 15 or more stationary engines subject to the I&M plan provisions shall comply with the above schedule for at least 50% of engines, and for the remaining engines shall:
- (C) By February 1, 2009, submit an initial I&M plan application to the Executive Officer for approval;
  - (D) By June 1, 2009, implement an approved I&M plan or the I&M plan as submitted if the plan is not yet approved.
- (5) Stationary Engine Air-to-Fuel Ratio Controllers
- (A) The operator of any stationary engine that does not have an air-to-fuel ratio controller, as required by subparagraph (d)(1)(K), shall comply with those requirements in accordance with the compliance schedule in Table V, except that the application due date is no later than May 1, 2008 and the initial source testing may be conducted at the time of the testing required by subparagraph (f)(1)(C).
  - (B) The operator of any stationary engine that has the air-to-fuel ratio controller required by subparagraph (d)(1)(K), but it is not listed on the permit to operate, shall submit to the Executive Officer an application to amend the permit by April 1, 2008.
  - (C) The operator of more than five engines that do not have air-to-fuel ratio controllers may take an additional three months, to May 1, 2009, to install the equipment on up to 50% of the affected engines.
- (6) New Stationary Engines
- The operator of any new stationary engine issued a permit to construct after February 1, 2008 shall comply with the applicable I&M or CEMS requirements of this rule when operation commences. If applicable, the operator shall provide the required information in subparagraph (f)(1)(D) to the Executive Officer prior to the issuance of the permit to construct so that the I&M procedures can be included in the permit. A separate I&M plan application is not required.

(e) (7) Biogas Engines

For any biogas engine for which the operator applies to the Executive Officer by April 1, 2008 for a change of permit conditions for ECF-corrected emission limits, or the approval to burn more than 10 percent natural gas in accordance with subparagraph (d)(1)(C), the biogas engine shall not be subject to the initial concentration limits of Tables II or III until August 1, 2008, provided the operator continues to comply with all emission limits in effect prior to February 1, 2008.

(8) Compliance Schedule Exception

If an engine operator submits to the Executive Officer an application for an administrative change of permit conditions to add a permit condition that causes the engine permit to expire by the effective date of any requirement of this rule, then the operator is not required to comply with the earlier steps required by this subdivision for that requirement. The effective date for the CEMS requirements shall be one year after the date that a CEMS application is due.

(9) Exceedance of Usage Limits

(A) If an engine was initially exempt from the new concentration limits in subparagraph (d)(1)(B) or subparagraph (d)(1)(C) that take effect on or after July 1, 2011 because of low engine use but later exceeds the low-use criteria, the operator shall bring the engine into compliance with the rule in accordance with the schedule in Table VI with the final compliance date in Table VI being twelve months after the conclusion of the first twelve-month period for which the engine exceeds the low-use criteria.

(B) If engines that were initially exempt from new CEMS by the low-use criterion in subclause (f)(1)(A)(ii)(I) later exceed that criterion, the operator shall install CEMS on those engines in accordance with the schedule in Table VII, except that the date for submitting the CEMS application in Table VII shall be six months after the conclusion of the first twelve-month period for which the engines exceed the criterion.

(10) RECLAIM or Former RECLAIM Facilities

The owner or operator of a RECLAIM or former RECLAIM facility with any unit(s) subject to subdivision (d) shall meet the applicable NOx emission

limit in Table II or III-B in accordance with the schedule specified in Rule 1100 – Implementation Schedule for NO<sub>x</sub> Facilities.

(f) Monitoring, Testing, Recordkeeping and Reporting

(1) Stationary engines:

The operator of any engine subject to the provisions of paragraph (d)(1) of this rule shall meet the following requirements:

(A) Continuous Emission Monitoring

(i) For engines of 1000 bhp and greater and operating more than two million bhp-hr per calendar year, a NO<sub>x</sub> and CO CEMS shall be installed, operated and maintained in calibration to demonstrate compliance with the emission limits of this rule.

(ii) (I) For facilities with engines subject to paragraph (d)(1), having a combined rating of 1500 bhp or greater at the same location, and having a combined fuel usage of more than  $16 \times 10^9$  Btus per year (higher heating value), CEMS shall be installed, operated and maintained in calibration to demonstrate compliance of those engines with the applicable NO<sub>x</sub> and CO emission limits of this rule.

(II) Any engine that as of October 1, 2007 is located within 75 feet of another engine (measured from engine block to engine block) is considered to be at the same location. Operators of new engines shall not install engines farther than 75 feet from another engine unless the operator demonstrates to the Executive Officer that operational needs or space limitations require it.

(III) The following engines shall not be counted toward the combined rating or required to have a CEMS by this clause: engines rated at less than 500 bhp; standby engines that are limited by permit conditions to only operate when other primary engines are not operable; engines that are limited by permit conditions to operate less than 1000 hours per year or a fuel usage of less than  $8 \times 10^9$  Btus per year

(higher heating value of all fuels used); engines that are used primarily to fuel public natural gas transit vehicles and that are required by a permit condition to be irreversibly removed from service by December 31, 2014; and engines required to have a CEMS by the previous clause. A CEMS shall not be required if permit conditions limit the simultaneous use of the engines at the same location in a manner to limit the combined rating of all engines in simultaneous operation to less than 1500 bhp.

- (f)
  - (IV) For engines rated below 1000 bhp, the CEMS may be time shared by multiple engines.
  - (V) Operation of engines by the electric utility in the Big Bear Lake area during the failure of a transmission line to the utility may be excluded from an hours-per-year or fuel usage limit that is elected by the operator pursuant to subclause (f)(1)(A)(ii)(III).
  - (VI) In lieu of complying with subclause (f)(1)(A)(ii)(I), an operator that is a public agency, or is contracted to operate engines solely for a public agency, may comply with the Inspection and Monitoring Plan requirements of subparagraph (f)(1)(D), except that the operator shall conduct diagnostic emission checks at least weekly or every 150 operating hours, whichever occurs later. If any such engine is found to exceed an applicable NO<sub>x</sub> or CO limit by a source test required by subparagraph (f)(1)(C) or South Coast AQMD test using a portable analyzer on three or more occasions in any 12-month period, the operator shall comply with the CEMS requirements of this subparagraph for such engine in accordance with the compliance schedule of Table VII, except that the operator shall submit a CEMS application to the Executive Officer within six months of the third exceedance.

- (iii) All CEMS required by this rule shall:

- (f)
  - (I) Comply with the applicable requirements of Rules 218 and 218.1, including equipment specifications and certification, operating, recordkeeping, quality assurance and reporting requirements, except as otherwise authorized by this rule;
  - (II) Include equipment that measures and records exhaust gas concentrations, both uncorrected and corrected to 15 percent oxygen on a dry basis; and
  - (III) Have data gathering and retrieval capability approved by the Executive Officer
- (iv) The operator of an engine that is required to install CEMS may request the Executive Officer to approve an alternative monitoring device (or system components) to demonstrate compliance with the emission limits of this rule. The applicant shall demonstrate to the Executive Officer that the proposed alternative monitoring device is at a minimum equivalent in relative accuracy, precision, reliability, and timeliness to a CEMS for that engine, according to the criteria specified in 40 CFR Part 75 Subpart E. In lieu of the criteria specified in 40 CFR Part 75 Subpart E, substitute criteria is acceptable if the applicant demonstrates to the Executive Officer that the proposed alternative monitoring device is at minimum equivalent in relative accuracy, precision, reliability, and timeliness to a CEMS for that engine. Upon approval by the Executive Officer, the substitute criteria shall be submitted to EPA as an amendment to the State Implementation Plan (SIP).

If the alternative monitoring device is denied or fails to be recertified, a CEMS shall be required.
- (v) Notwithstanding the requirements of Rules 218 and 218.1, operators of engines that are required to install a CEMS by clause (f)(1)(A)(ii) may:
  - (I) Store data electronically without a strip chart recorder, but there shall be redundant data storage capability for at least 15 days of data. The operator

must demonstrate that both sets of data are equivalent.

- (II) Conduct relative accuracy testing on the same schedule for source testing in clause (f)(1)(C)(i), instead of annually. The minimum sampling time for each test is 15 minutes.
- (f) (vi) Notwithstanding the requirements of Rules 218 and 218.1, operators of engines that are required to install a CEMS by clause (f)(1)(A)(ii), and that are to be monitored by a timeshared CEMS, may:
- (I) Monitor an engine with the CEMS for 15 consecutive minutes, purge for the minimum required purge time, then monitor the next engine for 15 consecutive minutes. The CEMS shall operate continuously in this manner, except for required calibrations.
  - (II) Record the corrected and uncorrected NO<sub>x</sub>, CO and diluent data at least once per minute and calculate and record the 15-minute average corrected concentrations for each sampling period.
  - (III) Have sample lines to each engine that are not the same length. The purge time will be based on the sample line with the longest response time. Response times shall be checked during cylinder gas audits. Sample lines shall not exceed 100 feet in length.
  - (IV) Conduct a minimum of five tests for each engine during relative accuracy tests.
  - (V) Perform a cylinder gas audit every calendar quarter on each engine, except for engines for which relative accuracy testing was conducted that quarter.
  - (VI) Exclude monitoring of nitrogen dioxide (NO<sub>2</sub>) for rich-burn engines, unless source testing demonstrates that NO<sub>2</sub> is more than 10 percent of total NO<sub>x</sub>.
  - (VII) Conduct daily calibration error (CE) tests by injecting calibration gases at the analyzers, except that at least once per week the CE test shall be conducted by

injecting calibration gases as close to the probe tip as practical.

- (VIII) Stop operating and calibrating the CEMs during any period that the operator has a continuous record that the engine was not in operation.
  - (vii) A CO CEMS shall not be required for lean-burn engines or an engine that is subject to Regulation XX (RECLAIM), and not required to have a NOx CEMS by that regulation.
  - (viii) Notwithstanding the requirements of this paragraph and paragraph (c)(2) of Rule 2012, an operator may take an existing NOx CEMS out of service for up to two weeks (cumulative) in order to modify the CEMS to add CO monitoring.
  - (ix) In lieu of clause (f)(1)(A)(i), an Essential Public Service or a contractor for an Essential Public Service that is operating a biogas engine of 1000 bhp and greater and less than 1200 bhp, may alternatively comply with the Inspection and Monitoring Plan requirements of subparagraph (f)(1)(D), provided the operator conducts diagnostic emission checks at least weekly or every 150 operating hours, whichever occurs later.
  - (x) If an Essential Public Service or a contractor for an Essential Public Service has elected to comply with the Inspection and Monitoring Plan provisions pursuant to clause (f)(1)(A)(ix) for biogas engines is found to exceed an applicable NOx or CO limit by a source test required by subparagraph (f)(1)(C) or South Coast AQMD test using a portable analyzer on three or more occasions in any 12-month period, the operator shall comply with the CEMS requirements of clause (f)(1)(A)(i) for such biogas engine in accordance with the compliance schedule of Table VII except that the operator shall submit a CEMS application to the Executive Officer within six months of the third exceedance.
- (f) (B) Elapsed Time Meter
- Maintain an operational non-resettable totalizing time meter to determine the engine elapsed operating time.



**(C) Source Testing**

- (i) Effective August 1, 2008, conduct source testing for NO<sub>x</sub>, VOC reported as carbon, and CO concentrations (concentrations in ppm by volume, corrected to 15 percent oxygen on dry basis) at least once every two years from the date of the previous source test, no later than the last day of the calendar month that the test is due, or every 8,760 operating hours, whichever occurs first. Relative accuracy tests required by Rule 218.1 or 40 CFR Part 75 Subpart E shall satisfy this requirement for those pollutants monitored by a CEMS. The above source test frequency may be reduced to once every three years if the engine has operated less than 2,000 hours since the last source test. If the engine has not been operated before the date a source test is due, the source test shall be conducted by the end of seven consecutive days or 15 cumulative days of resumed operation. The operator of the engine shall keep sufficient operating records to demonstrate that it meets the requirements for extension of the source testing deadlines.
- (ii) Conduct source testing for at least 30 minutes during normal operation (actual duty cycle). This test shall not be conducted under a steady-state condition unless it is the normal operation. In addition, conduct source testing for NO<sub>x</sub> and CO emissions for at least 15 minutes at: an engine's actual peak load, or the maximum load that can be practically achieved during the test, and; at actual minimum load, excluding idle, or the minimum load that can be practically achieved during the test. These additional two tests are not required if the permit limits the engine to operating at one defined load,  $\pm 10\%$ . No pre-tests for compliance are permitted. The emission test shall be conducted at least 40 operating hours, or at least 1 week, after any engine servicing or tuning. If an emission exceedance is found during any of the three phases of the test, that phase shall be completed and reported. The operator shall correct the exceedance, and the source test may be immediately resumed. Relative accuracy

(f)

tests required by Rule 218.1 or 40 CFR Part 75 Subpart E shall satisfy this requirement for those pollutants monitored by a CEMS for all applicable operating loads specified in this clause (f)(1)(C)(ii).

- (iii) Use a contractor to conduct the source testing that is approved by the Executive Officer under the Laboratory Approval Program for the necessary test methods.
- (iv) Submit a source test protocol to the Executive Officer for written approval at least 60 days before the scheduled date of the test. The source test protocol shall include the name, address and phone number of the engine operator and a South Coast AQMD-approved source testing contractor that will conduct the test, the application and permit number(s), emission limits, a description of the engine(s) to be tested, the test methods and procedures to be used, the number of tests to be conducted and under what loads, the required minimum sampling time for the VOC test, based on the analytical detection limit and expected VOC levels, and a description of the parameters to be measured in accordance with the I&M plan required by subparagraph (f)(1)(D). The source test protocol shall be approved by the Executive Officer prior to any testing. The operator is not required to submit a protocol for approval if: there is a previously approved protocol that meets these requirements; the engine has not been altered in a manner that requires a permit alteration; and emission limits have not changed since the previous test. If the operator submits the protocol by the required date, and the Executive Officer takes longer than 60 days to approve the protocol, the operator shall be allowed the additional time needed to conduct the test.
- (f)
  - (v) Provide the Executive Officer at least 30 days prior notice of any source test to afford the Executive Officer the opportunity to have an observer present. If after 30 days notice for an initially scheduled performance test, there is a delay (due to operational problems, etc.) in conducting the scheduled performance test, the engine operator shall notify

the Executive Officer as soon as possible of any delay in the original test date, either by providing at least seven days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the Executive Officer by mutual agreement.

(vi) Submit all source test reports, including a description of the equipment tested, to the Executive Officer within 60 days of completion of the test.

(vii) By February 1, 2009, provide, or cause to be provided, source testing facilities as follows:

(I) Sampling ports adequate for the applicable test methods. This includes constructing the air pollution control system and stack or duct such that pollutant concentrations can be accurately determined by applicable test methods;

(II) Safe sampling platform(s), scaffolding or mechanical lifts, including safe access, that comply with California General Safety Orders. Agricultural stationary engines are excused from this subclause if they are in remote locations without electrical power;

(III) Utilities for sampling and testing equipment. Agricultural stationary engines are exempt from this subclause if they are on wheels and moved to storage during the off season.

(D) Inspection and Monitoring (I&M) Requirements

(i) I&M Plan. The operator shall:

(f) (I) Submit to the Executive Officer for written approval an I&M plan. One plan application is required for each facility that does not have a NO<sub>x</sub> and CO CEMS for each engine. The I&M plan shall include all items listed in Attachment 1. ~~The owner or operator may request an alternative item(s) in Attachment 1 that is determined by the Executive Officer to be equivalent in meeting the same objectives.~~

- (II) Upon written approval by the Executive Officer, implement the I&M plan as approved.
    - (III) Submit an I&M plan for approval to the Executive Officer for a plan revision before any change in I&M plan operations can be implemented. The operator shall apply for a plan revision prior to any change in emission limits or control equipment.
  - (ii) Diagnostic emission checks by a portable NO<sub>x</sub>, CO, and oxygen analyzer shall be conducted at least weekly or every 150 engine operating hours, whichever occurs later.
    - (I) If an engine is in compliance for three consecutive diagnostic emission checks, without any adjustments to the oxygen sensor set points, then the engine may be checked monthly or every 750 engine operating hours, whichever occurs later, until there is a noncompliant diagnostic emission check or, for rich-burn engines with three-way catalysts, until the oxygen sensor is replaced. When making adjustments to the oxygen sensor set points that are not within 72 hours prior to the diagnostic emission check, returning to a more frequent diagnostic emission check schedule is not required if the engine is in compliance with the applicable emission limits prior to and after the set point adjustments.
    - (II) For diesel engines and other lean-burn engines that operate at a RECLAIM or former RECLAIM facility or have a NO<sub>x</sub> CEMS, and that are subject to a CO limit more stringent than the 2000 ppmvd limit of Tables II or III, a CO diagnostic emission check shall be performed at least quarterly, or every 2,000 engine operating hours, whichever occurs later.
    - (III) For diesel engines and other lean-burn engines that operate at a RECLAIM or former RECLAIM facility or have a NO<sub>x</sub> CEMS, and that are not subject to a CO limit more stringent than the 2000 ppmvd limit of
- (f)

Tables II or III, diagnostic emission checks are not required.

- (IV) No engine or control system maintenance or tuning may be conducted within 72 hours prior to the diagnostic emission check, unless it is an unscheduled, required repair.
  - (V) The portable analyzer shall be calibrated, maintained and operated in accordance with the manufacturer's specifications and recommendations and the Protocol for the Periodic Monitoring of Nitrogen Oxides, Carbon Monoxide, and Oxygen from Stationary Engines Subject to South Coast Air Quality Management District Rule 1110.2, approved on February 1, 2008, or subsequent protocol approved by EPA and the Executive Officer.
- (iii) Requirements for responding to, diagnosing and correcting breakdowns, faults, malfunctions, alarms, diagnostic emission checks finding emissions in excess of rule or permit limits, and parameters out-of-range.
- (I) For any diagnostic emission check or breakdown that results in emissions in excess of those allowed by this rule or a permit condition, the operator shall correct the problem as soon as possible and demonstrate compliance with another diagnostic emission check, or shut down an engine by the end of an operating cycle, or within 24 hours from the time the operator knew of the breakdown or excess emissions, or reasonably should have known, whichever is sooner.
- (f)
- (II) For excess emissions due to breakdowns that result in NOx or CO emissions greater than the concentrations specified in Table VIII, the operator shall not be considered in violation of this rule if the operator demonstrates the all of the following: (1) compliance with subclause (f)(1)(D)(iii)(I), (2) compliance with the reporting requirements of subparagraph (f)(1)(H),

and (3) the engine with excess emissions has no more than three incidences of breakdowns with emissions exceeding Table VIII limits in the calendar quarter.

<b>TABLE VIII EXCESS EMISSION CONCENTRATION THRESHOLDS FOR BREAKDOWNS</b>		
	<b>NO<sub>x</sub> (ppmvd)<sup>1</sup></b>	<b>CO (ppmvd)<sup>1</sup></b>
Lean-Burn Engines	45	250
Rich-Burn Engines	150	2000
Biogas Engines <sup>2</sup>	185	2000

<sup>1</sup> Corrected to 15% oxygen.

<sup>2</sup> Effective up to the time of compliance with the limits specified in Table III-B, after which the thresholds revert to the applicable lean or rich-burn engine limits.

(III) Any emission check conducted by South Coast AQMD staff that finds excess emissions will be treated as a violation.

(IV) For other problems, such as parameters out-of-range, an operator shall correct the problem and demonstrate compliance with another diagnostic emission check within 48 hours of the operator first knowing of the problem.

(iv) If an engine has a NO<sub>x</sub> CEMS and does not have a CO CEMS, it is subject to this subparagraph (f)(1)(D) as it pertains to CO only.

(f)

(E) Operating Log

Maintain a monthly engine operating log that includes:

- (i) Total hours of operation;
- (ii) Type of liquid and/or type of gaseous fuel;
- (iii) Fuel consumption (cubic feet of gas and gallons of liquid); and
- (iv) Cumulative hours of operation since the last source test required in subparagraph (f)(1)(C).

Facilities subject to Regulation XX may maintain a quarterly log for engines that are designated as a process unit on the facility permit until such time that the facility becomes a former RECLAIM facility. The facility shall maintain a monthly engine log starting in the month that it has become a former RECLAIM facility.

**(F) New Non-Emergency Electrical Generating Engines**

Operators of engines subject to the requirements of subparagraph (d)(1)(L) shall also meet the following requirements.

- (i) The engine generator shall be monitored with a calibrated electric meter that measures the net electrical output of the engine generator system, which is the difference between the electrical output of the generator and the electricity consumed by the auxiliary equipment necessary to operate the engine generator.
  - (ii) For engines monitored with a CEMS, the emissions of the monitored pollutants in ppmvd corrected to 15% O<sub>2</sub>, lbs/hr, and lbs/MW<sub>e</sub>-hr and the net MW<sub>e</sub>-hrs produced shall be calculated and recorded for the four 15-minute periods of each hour of operation. The mass emissions of NO<sub>x</sub> shall be calculated based on the measured fuel flow and one of the F factor methods of 40 CFR Part 60, Appendix A, Method 19, or other method approved by the Executive Officer. Mass emissions of CO shall be calculated in the same manner as NO<sub>x</sub>, except that the ppmvd CO shall be converted to lb/scf using a conversion factor of  $0.727 \times 10^{-7}$ .
- (f)
  - (iii) For NO<sub>x</sub> and CO emissions from engines not monitored with a CEMS and VOC emissions from all engines, the emissions of NO<sub>x</sub>, CO and VOC in lbs/MW<sub>e</sub>-hr shall be calculated and recorded whenever the pollutant is measured by a source test or diagnostic emission check. Mass emissions of NO<sub>x</sub> and CO shall be calculated in the same manner as the previous clause. Mass emissions of VOC shall be calculated in the same manner, except that the ppmvd VOC as carbon shall be converted to lb/scf using a conversion factor of  $0.415 \times 10^{-7}$ .

- (iv) For engines generating combined heat and power that rely on the EEF to comply with Table IV emission standards, the daily and annual useful heat recovered ( $MW_{th}\text{-hrs}$ ), net electrical energy generated ( $MW_e\text{-hrs}$ ) and EEF shall be monitored and recorded.
  - (v) Other methods of calculating mass emissions than those specified, such as by direct measurement of exhaust volume, may be used if approved by the Executive Officer. All monitoring, calculation, and recordkeeping procedures must be approved by the Executive Officer.
  - (vi) Operators of combined heat and power engines shall submit to the Executive Officer the reports of the following information within 15 days of the end of the first year of operation, and thereafter within 15 days of the end of each calendar year: the annual net electrical energy generated ( $MW_e\text{-hrs}$ ); the annual useful heat recovered ( $MW_{th}\text{-hrs}$ ), the annual EEF calculated in accordance with clause (d)(1)(L)(ii); and the maximum annual EEF allowed by the operating permit. If the actual annual EEF exceeds the allowed EEF, the report shall also include the time periods and emissions for all instances where emissions exceeded any emission standard in Table IV.
- (G) Portable Analyzer Operator Training  
The portable analyzer tests required by the I&M Plan requirements of subparagraph (f)(1)(D) shall only be conducted by a person who has completed an appropriate South Coast AQMD-approved training program in the operation of portable analyzers and has received a certification issued by the District.
- (f)
  - (H) Reporting Requirements
    - (i) The operator shall report to the Executive Officer, by telephone (1-800-CUT-SMOG or 1-800-288-7664) or other South Coast AQMD-approved method, any breakdown resulting in emissions in excess of rule or permit emission limits within one hour of such noncompliance or within one hour of the time the operator knew or reasonably should have known of its occurrence. Such report shall identify the time,



specific location, equipment involved, responsible party to contact for further information, and to the extent known, the causes of the noncompliance, and the estimated time for repairs. In the case of emergencies that prevent a person from reporting all required information within the one-hour limit, the Executive Officer may extend the time for the reporting of required information provided the operator has notified the Executive Officer of the noncompliance within the one-hour limit.

- (ii) Within seven calendar days after the reported breakdown has been corrected, but no later than thirty calendar days from the initial date of the breakdown, unless an extension has been approved in writing by the Executive Officer, the operator shall submit a written breakdown report to the Executive Officer which includes:

- (I) An identification of the equipment involved in causing, or suspected of having caused, or having been affected by the breakdown;
- (II) The duration of the breakdown;
- (III) The date of correction and information demonstrating that compliance is achieved;
- (IV) An identification of the types of excess emissions, if any, resulting from the breakdown;
- (V) A quantification of the excess emissions, if any, resulting from the breakdown and the basis used to quantify the emissions;
- (f) (VI) Information substantiating whether the breakdown resulted from operator error, neglect or improper operation or maintenance procedures;
- (VII) Information substantiating that steps were immediately taken to correct the condition causing the breakdown, and to minimize the emissions, if any, resulting from the breakdown;
- (VIII) A description of the corrective measures undertaken and/or to be undertaken to avoid such a breakdown in the future; and

- (IX) Pictures of any equipment which failed, if available.
  - (iii) Within 15 days of the end of each calendar quarter, the operator shall submit to the Executive Officer a report that lists each occurrence of a breakdown, fault, malfunction, alarm, engine or control system operating parameter out of the acceptable range established by an I&M plan or permit condition, or a diagnostic emission check that finds excess emissions. Such report shall be in a South Coast AQMD-approved format, and for each incident shall identify the time of the incident, the time the operator learned of the incident, specific location, equipment involved, responsible party to contact for further information, to the extent known the causes of the event, the time and description of corrective actions, including shutting an engine down, and the results of all portable analyzer NOx and CO emissions checks done before or after the corrective actions. The operator shall also report if no incidents occurred.
- (2) Portable engines:

The operator of any portable engine shall maintain a monthly engine operating log that includes:

  - (i) Total hours of operation; or
  - (ii) Type of liquid and/or type of gaseous fuel; and
  - (iii) Fuel consumption (cubic feet of gas and gallons of liquid).

Facilities subject to Regulation XX may maintain a quarterly log for engines that are designated as a process unit on the facility permit until such time that the facility becomes a former RECLAIM facility.
- (f) (3) Recordkeeping for All Engines

All data, logs, test reports and other information required by this rule shall be maintained for at least five years and made available for inspection by the Executive Officer.

(g) Test Methods

Testing to verify compliance with the applicable requirements shall be conducted in accordance with the test methods specified in Table IX, or any test methods approved by CARB and EPA, and authorized by the Executive Officer.

<b>TABLE IX TESTING METHODS</b>	
<b>Pollutant</b>	<b>Method</b>
NO <sub>x</sub>	South Coast Air Quality Management District Method 100.1
CO	South Coast Air Quality Management District Method 100.1
VOC	South Coast Air Quality Management District Method 25.1* or Method 25.3*

\* Excluding ethane and methane

A violation of any standard of this rule established by any of the specified test methods, or any test methods approved by the CARB or EPA, and authorized by the Executive Officer, shall constitute a violation of this rule.

(h) Alternate Compliance Option

(1) In lieu of complying with the applicable emission limits by the effective date specified in Table III-B or subparagraph (d)(1)(F), owners or operators of biogas-fired units may elect to defer compliance in quarterly increments up to one additional year, provided the owner or operator:

(A) Submits an alternate compliance plan and pays a Compliance Flexibility Fee, as provided for in paragraph (h)(2), to the Executive Officer at least 60 days prior to the applicable compliance date in either Table III-B or subparagraph (d)(1)(F) for qualified biogas technology demonstration project engines, and

(B) Maintains on-site a copy of verification of Compliance Flexibility Fee payment and South Coast AQMD approval of the alternate compliance plan that shall be made available upon request to South Coast AQMD staff.

(2) Plan Submittal

The alternate compliance plan submitted pursuant to paragraph (h)(1) shall include:

- (A) A completed South Coast AQMD Form 400A with company name, South Coast AQMD Facility ID, identification that application is for a compliance plan (Section 7a of form), and identification that request is for Rule 1110.2 Compliance Flexibility Fee option (Section 9 of form);
- (B) Attached documentation of unit permit ID, unit rated brake horsepower (bhp), and fee calculation;
- (C) Filing Fee payment; and
- (D) Compliance Flexibility Fee payment as calculated by the following equation:

$$\text{CFF} = \text{bhp} \times \text{R} \times \text{Q}$$

Where,

CFF = Compliance Flexibility Fee, \$

bhp = rated brake horsepower of unit

R = Fee Rate = \$11.75 per brake horsepower per quarter

Q = Number of quarters (up to four)

- (3) Usage of Compliance Flexibility Fee funds

The funds collected from the Compliance Flexibility Fee will be applied to South Coast AQMD NO<sub>x</sub> reduction programs pursuant to protocols approved under South Coast AQMD rules.

- (i) Exemptions

- (1) The provisions of subdivision (d) shall not apply to:

- (A) All orchard wind machines powered by an internal combustion engine.
    - (B) Emergency standby engines, engines used for fire-fighting and flood control, and any other emergency engines approved by the Executive Officer, which have permit conditions that limit operation to 200 hours or less per year as determined by an elapsed operating time meter, and agricultural emergency standby engines that are exempt from a South Coast AQMD permit and operate 200 hours or less per year as determined by an elapsed operating time meter.
    - (C) Laboratory engines used in research and testing purposes.

- (D) Engines operated for purposes of performance verification and testing of engines.
- (E) Auxiliary engines used to power other engines or gas turbines during start-ups.
- (F) Portable engines that are registered under the state registration program pursuant to Title 13, Article 5 of the CCR.
- (G) Nonroad engines, with the exception that subparagraph (d)(2)(A) shall apply to portable generators.
- (H) Engines operating on San Clemente Island.
- (I) Agricultural stationary engines provided that:
  - (i) The operator submits documentation to the Executive Officer by the applicable date in Table V when permit applications are due that the applicable electric utility has rejected an application for an electrical line extension to the location of the engines, or the Executive Officer determines that the operator does not qualify, due to no fault of the operator, for funding authorized by California Health and Safety Code Section 44229; and
  - (ii) The operator replaces the engines, in accordance with the compliance schedule of Table X, with engines certified by CARB to meet the Tier 4 emission standards of 40 CFR Part 1039 Section 1039.101, Table 1. These Tier 4 replacement engines shall be considered to comply with Best Available Control Technology; and
  - (iii) The operator does not operate the Tier 4 engines in a manner that exceeds the not-to-exceed standards of 40 CFR Part 1039 Section 1039.101(e), as determined by the test methods of subdivision (g) of this rule.

(i)

<b>TABLE X COMPLIANCE SCHEDULE FOR INSTALLATION OF NEW TIER 4 STATIONARY AGRICULTURAL ENGINES</b>	
<b>Action Required</b>	<b>Due Date</b>
Submit to the Executive Officer applications for permits to construct engine modifications, control equipment, or replacement engines	March 1, 2013
Initiate construction of engine modifications, control equipment, or replacement engines	September 30, 2013, or 30 days after the permit to construct is issued, whichever is later
Complete construction and comply with applicable requirements	January 1, 2014, or 60 days after the permit to construct is issued, whichever is later
Complete initial source testing	March 1, 2014, or 120 days after the permit to construct is issued, whichever is later

- (J) An engine start-up, until sufficient operating temperatures are reached for proper operation of the emission control equipment or for the tuning of the engine and/or emission control equipment, and an engine shutdown period. The periods shall not exceed 30 minutes, unless the Executive Officer approves in writing a longer period not exceeding two hours for an engine and makes it a condition of the engine permit.
- (K) An engine start-up, after an engine overhaul or major repair requiring removal of a cylinder head or for the installation or the replacement of catalytic emission control equipment, for a period not to exceed four operating hours.
- (L) The initial commissioning of a new engine for a period specified by permit conditions, provided the operator takes measures to reduce emissions and the duration of the commissioning to the extent possible. The commissioning period shall not exceed 150 operating hours.

- (i) (M) An engine used exclusively for electrical generation at remote two-way radio transmission towers where no utility, electricity, or natural gas is available within a ½ mile radius, has a manufacturer's rating of 100 bhp or less, and is fired exclusively on diesel #2, compressed natural gas, or liquefied petroleum gas.
- (N) Any engine at a RECLAIM or former RECLAIM facility that is subject to a NOx emission limit in a different rule for an industry-specific category defined in Rule 1100 – Implementation Schedule for NOx facilities.
- (O) An engine operated in either the Southern California Coastal Waters or Outer Continental Shelf Waters provided:
  - (i) The engine is used to power a crane;
  - (ii) The engine is certified by CARB to meet the Tier 4 – Final emission standards of 40 CFR Part 1039 Section 1039.101 Table 1;
  - (iii) The engine is operated per the specifications of the engine manufacturer; and
  - (iv) The operator submits an I&M Plan to the Executive Officer for approval and implementation, pursuant to the requirements of subparagraph (f)(1)(D).
- (2) The facility operator of MM PRIMA DESHECHA ENERGY, LLC, or any of its successors, shall not be required to meet the emissions requirements specified in Table III-B if they submit a detailed retirement plan that is approved by the Executive Officer for the permanent shutdown of all equipment subject to Rule 1110.2 by October 1, 2022. The plan shall describe in detail the steps and schedule that will be taken to remove the equipment or render the equipment permanently inoperable by October 1, 2022 and shall require the surrendering of the permits for the equipment by that date. The plan shall be submitted before July 1, 2016 and include:
  - (A) South Coast AQMD Form 400A with company name, South Coast AQMD Facility ID, and permit number(s) for the subject equipment; and
  - (B) Filing Fee payment pursuant to Rule 306.The Executive Officer shall act on the plan before January 1, 2017.

- (i) (3) The provisions of this rule shall not apply to engines~~units~~ located at landfills or publicly owned treatment works that are subject to a NOx emission limit in a Regulation XI rule adopted or amended after November 1, 2019.



**ATTACHMENT 1**

An I&M Plan submitted to the Executive Officer for approval and implementation, pursuant to the requirements of paragraphs (e)(4) and (e)(6), and subparagraph (f)(1)(D) of the rule, shall include:

- A. Identification of engine and control equipment operating parameters necessary to maintain pollutant concentrations within the rule and permit limits. This shall include, but not be limited to:
  - 1. Procedures for using a portable NO<sub>x</sub>, CO and oxygen analyzer to establish the set points of the air-to-fuel ratio controller (AFRC) at 25%, 60% and 95% load (or fuel flow rate),  $\pm 5\%$ , or the minimum, midpoint and maximum loads that actually occur during normal operation,  $\pm 5\%$ , or at any one load within the  $\pm 10\%$  range that an engine permit is limited to in accordance with clause (f)(1)(C)(ii) of the rule;
  - 2. Procedures for verifying that the AFRC is controlling the engine to the set point during the daily monitoring required by subdivision D of this attachment;
  - 3. Procedures for reestablishing all AFRC set points with a portable NO<sub>x</sub>, CO and oxygen analyzer whenever a set point must be readjusted, within 24 hours of an oxygen sensor replacement, and, for rich-burn engines with three way catalysts, between 100 and 150 engine operating hours after an oxygen sensor replacement;
  - 4. For engines with catalysts, the maximum allowed exhaust temperature at the catalyst inlet, based on catalyst manufacturer specifications;
  - 5. For lean-burn engines with selective catalytic control devices, the minimum exhaust temperature at the catalyst inlet required for reactant flow (ammonia or urea), and procedures for using a portable NO<sub>x</sub> and oxygen analyzer to establish the acceptable range of reactant flow rate, as a function of load.

Parameter monitoring is not required for diesel engines without exhaust gas recirculation and catalytic exhaust control devices.
- B. Procedures for alerting the operator to emission control malfunctions. Engine control systems, such as air-to-fuel ratio controllers, shall have a malfunction indicator light and audible alarm.
- C. Procedures for diagnostic emission checks conducted by a portable NO<sub>x</sub>, CO, and oxygen analyzer per the requirements of clause (f)(1)(D)(ii) of the rule.
- D. Procedures for at least daily monitoring, inspection and recordkeeping of:

1. engine load or fuel flow rate;
2. the set points, maximums and acceptable ranges of the parameters identified by subdivision A of this attachment, and the actual values of the same parameters;
3. the engine elapsed time meter operating hours;
4. the operating hours since the last diagnostic emission check required by clause (f)(1)(D)(ii) of the rule;
5. for rich-burn engines with three-way catalysts, the difference of the exhaust temperatures ( $\Delta T$ ) at the inlet and outlet of the catalyst (changes in the  $\Delta T$  can indicate changes in the effectiveness of the catalyst);
6. engine control system and AFRC system faults or alarms that affect emissions.

The daily monitoring and recordkeeping may be done in person by the operator, or by remote monitoring.

- E. Procedures for responding to, diagnosing and correcting breakdowns, faults, malfunctions, alarms, diagnostic emission checks finding emissions in excess of rule or permit limits, and parameters out-of-range, per the requirements of clause (f)(1)(D)(iii) of the rule.
- F. Procedures and schedules for preventive and corrective maintenance.
- G. Procedures for reporting noncompliance to the Executive Officer in accordance with subparagraph (f)(1)(H) of the rule.
- H. Procedures and format for the recordkeeping of monitoring and other actions required by the plan.