



**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

**COMPLIANCE GUIDE TO RULE 1110.2 AMENDMENTS  
ADOPTED FEBRUARY 1, 2008**

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## INTRODUCTION

South Coast Air Quality Management District (AQMD) Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines was amended on February 1, 2008. The basic purposes of the amendments are to: 1) improve the compliance record of stationary engines with better monitoring, recordkeeping and reporting; and 2) achieve further emission reductions from stationary engines based on the cleanest available technologies. A summary of the amendments follows. They are discussed in order of importance rather than in rule subdivision order.

The amendments primarily affect stationary non-emergency engines. The amendments do not affect portable engines. Emergency engine operators should review the change to the Rule 1110.2 exemption in paragraph (h)(2) described below.

**Note to RECLAIM Facilities:** RECLAIM facilities are generally not subject to the requirements of this rule pertaining to NO<sub>x</sub> emissions, except that new electrical generators are subject to all emission limits, including NO<sub>x</sub>, of subparagraph (d)(1)(F).

## EXEMPTIONS – SUBDIVISION (h)

This is the last subdivision in the rule, but it is useful to discuss it first so that it is understood up front what the exemptions are.

### **Emergency Generator, Flood Control and Fire Fighting Engines – Paragraph (h)(2)**

#### What Changed?

In order for emergency generators, fire fighting and flood control engines to be exempt there must be a condition on the AQMD permit that requires these engines to operate less than 200 hours per year.

#### Actions Required

By August 1, 2008, submit a written request to AQMD Attn: Permit Services to revise your permit conditions (no fee is required) if there is no 200 hour per year limit on the current permit for your emergency, flood control or fire-fighting engine. AQMD will also put a limit on the permit for emergency diesel engines of 20 hours per year of maintenance and testing (M&T), in accordance with Rule 1470, unless you submit an application for a change of permit conditions (fee required) with documentation to substantiate that the diesel engine qualifies under Rule 1470 for more than 20 hours per year of M&T. You may contact AQMD Permit Services at (909) 396-3385, or go to <http://www.aqmd.gov/permit/index.html> on AQMD's website about applying for a change of permit conditions.

#### Exceptions

Emergency agricultural engines that are exempt from an AQMD permit, have an elapsed time meter, and operate less than 200 hours per year.

### **Start-up Exemption - Paragraph (h)(10)**

#### What Changed?

An exemption is provided from the rule emission limits during routine start ups until emission controls reach operating temperature, for up to 30 minutes. Longer start-up times may be approved if necessary on a case-by-case basis and made a permit condition.

#### Actions Required

As soon as possible, submit an application for a change of permit conditions, if a start-up period longer than 30 minutes is required. This will generally not be necessary for engines without CEMS. Documentation to support the start-up period, such as CEMS data, is required.

### **Overhaul Exemption - Paragraph (h)(11)**

#### What Changed?

An exemption is provided from the rule emission limits in the rule for up to four hours after an engine overhaul or major repair requiring removal of a cylinder head.

Actions Required: None

### **Initial Commissioning Exemption - Paragraph (h)(12)**

#### What Changed?

An exemption is provided from rule emission limits 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 is limited to not exceed a total of 150 operating hours.

#### Actions Required

If your engine has not yet had an initial commissioning, and there is no condition on your permit to construct regarding a commissioning period, submit an application for a change of permit conditions as soon as possible.

## **REQUIREMENTS – SUBDIVISION (d)**

### **Reduction of the Emission Concentration Limits for Non-Biogas Engines - Subparagraph (d)(1)(B)**

#### What Changed?

For engines that do not use biogas (landfill and digester gas)<sup>1</sup>, the amendments immediately eliminate the efficiency correction factor for NO<sub>x</sub> and VOC in the previous rule, and by 2010 or 2011 reduce the limits to levels comparable to current BACT, as shown in the following Table II from the rule. Engines rated at 500 bhp or more will be subject to the lower limits on July 1, 2010, and smaller engines a year later on July 1, 2011.

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<sup>1</sup> Engines that use less than 90% biogas, on a monthly facility-average basis, are also subject to these requirements, unless AQMD approves using more than 10% natural gas with the biogas.

**Table II -Concentration Limits for Non-Biogas Engines**

<b>CURRENT CONCENTRATION LIMITS</b>		
<b>NO<sub>x</sub> (ppm)<sup>1</sup></b>	<b>VOC (ppm)<sup>2</sup></b>	<b>CO (ppm)<sup>1</sup></b>
bhp ≥ 500: 36 bhp < 500: 45	250	2000
<b>CONCENTRATION LIMITS EFFECTIVE JULY 1, 2010</b>		
<b>NO<sub>x</sub> (ppm)<sup>1</sup></b>	<b>VOC (ppm)<sup>2</sup></b>	<b>CO (ppm)<sup>1</sup></b>
bhp ≥ 500: 11 bhp < 500: 45	bhp ≥ 500: 30 bhp < 500: 250	bhp ≥ 500: 250 bhp < 500: 2000
<b>CONCENTRATION LIMITS EFFECTIVE JULY 1, 2011</b>		
<b>NO<sub>x</sub> (ppm)<sup>1</sup></b>	<b>VOC (ppm)<sup>2</sup></b>	<b>CO (ppm)<sup>1</sup></b>
11	30	250

<sup>1</sup> Corrected to 15% oxygen on a dry basis and averaged over 15 minutes.

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

Actions Required

If modifications to your engine or control equipment will be needed to comply with the lower limits that go into effect in 2010 or 2011, you must comply with the following compliance schedule (Table VI of Rule 1110.2):

<b>TABLE VIa - COMPLIANCE SCHEDULE FOR NON-AGRICULTURAL, NON-BIOGAS STATIONARY ENGINES</b>		
<b>Action Required</b>	<b>Engines Rated at 500 bhp or More</b>	<b>Engines Rated at Less than 500 bhp</b>
Submit to AQMD applications for permits to construct (PC) engine modifications, control equipment, or replacement engines	July 1, 2009	July 1, 2010
Initiate construction of engine modifications, control equipment, or replacement engines	April 1, 2010 or 60 days after the PC is issued, whichever is later	April 1, 2011 or 60 days after the PC is issued, whichever is later
Complete construction and comply with applicable requirements	July 1, 2010 or 120 days after the PC is issued, whichever is later	July 1, 2011 or 120 days after the PC is issued, whichever is later

Complete initial source testing	August 30, 2010, or 180 days after the PC is issued, whichever is later	August 30, 2011, or 180 days after the PC is issued, whichever is later
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**Note to Agricultural Engine Operators:** The compliance schedule for agricultural engines was not changed by the February 1, 2008 amendments. See Table V of the current rule.

Exceptions

- Low-use engines that either operate less than 500 hours/year or use less than  $1 \times 10^9$  Btus per year (higher heating value) of fuel are exempt from the 2010 and 2011 limits.
- Two-stroke engines are not exempt, but if they are equipped with oxidation catalysts and insulated exhaust ducts and catalyst housings, they may be given case-by-case CO and VOC limits, that do not exceed 250 ppm VOC and 2000 ppm CO, if approved by EPA and AQMD.
- Engines using non-pipeline quality natural gas (usually an oilfield gas that is not treated sufficiently to meet pipeline standards) may be given longer averaging times, if required, but not to exceed six hours.

**Reduction of the Emission Concentration Limits for Biogas Engines - Subparagraph (d)(1)(C)**

What Changed?

The following Table III from the rule shows the revised concentration limits for biogas (landfill or digester gas) engines. The rule amendments will initially still allow an efficiency correction for biogas engines, provided that 1) the correction be based on actual efficiency from ASME test procedures; 2) the engines use at least 90% biogas (higher heating value) on a monthly facility-average basis; and 3) the corrected emission limits be stated on the operating permit. In July 2012, the emission limits are reduced as shown, but first AQMD staff must conduct a technology assessment in cooperation with an advisory committee, find that the limits are achievable, and report to the AQMD Board by July 2010.

Once a biogas engine complies with the 2012 emission standards, the 10% natural gas limit will no longer apply.

<b>TABLE III - CONCENTRATION LIMITS FOR BIOGAS ENGINES</b>		
$\text{NO}_x$ (ppmvd) <sup>1</sup>	VOC (ppmvd) <sup>2</sup>	CO (ppmvd) <sup>1</sup>
bhp $\geq$ 500: 36 x ECF <sup>3</sup>	Landfill Gas: 40	2000
bhp < 500: 45 x ECF <sup>3</sup>	Digestor Gas: 250 x ECF <sup>3</sup>	
<b>BIOGAS ENGINE CONCENTRATION LIMITS EFFECTIVE JULY 1, 2012</b>		
$\text{NO}_x$ (ppm) <sup>1</sup>	VOC (ppm) <sup>2</sup>	CO (ppm) <sup>1</sup>
11	30	250

<sup>1</sup> Corrected to 15% oxygen on a dry basis and averaged over 15 minutes.

<sup>2</sup> 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.

Actions Required

AQMD may approve a biogas engine to use more than 10% natural gas if:

- the 10% limit would result in more biogas flaring; or
- more than 10% natural gas is required in order for an engine’s waste heat boiler to provide enough thermal energy for a sewage treatment plant, and if other boilers are unable provide the needed thermal energy.

By April 1, 2008, operators of biogas engines that will qualify to use more than 10% natural gas, must apply for a change of permit conditions and demonstrate the need for the additional natural gas. AQMD will evaluate each case and put appropriate conditions on each permit that will allow additional natural gas use that complies with the exceptions, but only under conditions when it is deemed necessary. By August 1, 2008, the revised permit must be reissued. Until then, the operator must comply with previous permit conditions and the previous Rule 1110.2.

By August 1, 2008, operators of biogas engines that wish to have ECF-corrected NO<sub>x</sub> and VOC emission limits must apply for a change of permit conditions to add these limits to the permit. The operator must conduct the testing to determine the engine efficiency, using ASME Performance Test Code PTC 17-1973, at the average engine load. See subparagraph (d)(1)(C) for details. By February 1, 2009, the revised permit must be reissued with the efficiency-corrected emission limits. Until then, the operator must comply with previous permit conditions and the previous Rule 1110.2 emission limits.

If the technology assessment finds that the July 1, 2012 emission limits are achievable, biogas engine operators must comply with the following compliance schedule from the rule’s Table VI.

<b>TABLE VIb - COMPLIANCE SCHEDULE FOR BIOGAS ENGINES</b>	
<b>Action Required</b>	<b>Compliance Date</b>
Submit to AQMD applications for permits to construct (PC) engine modifications, control equipment, or replacement engines	July 1, 2011
Initiate construction of engine modifications, control equipment, or replacement engines	April 1, 2012 or 60 days after the PC is issued, whichever is later
Complete construction and comply with applicable requirements	July 1, 2012 or 120 days after the PC is issued, whichever is later
Complete initial source testing	August 30, 2012, or 180 days after the PC is issued, whichever is later

Exceptions

The calculation of the monthly facility average natural gas percentage may exclude natural gas used during the following situations:

- electrical outages;
- Stage 2 or higher electrical emergencies called by the California Independent System Operator; and
- when a sewage treatment plant operator activates an Emergency Operations Center or Incident Command System because of a disaster or high influent flows due to precipitation.

Low-use engines that operate less than 500 hours/year or use less than  $1 \times 10^9$  Btus/yr are not subject to the July 1, 2012 emissions limits.

**Emission Standards for New Non-Emergency Electrical Generation Engines - Subparagraph (d)(1)(F)**

What Changed?

New non-emergency electrical generation engines, including engines at RECLAIM facilities, are subject to the emission standards in the following table.

<b>TABLE IV - EMISSION STANDARDS FOR NEW ELECTRICAL GENERATION ENGINES</b>	
<b>Pollutant</b>	<b>Emission Standard (lbs/MW-hr)</b>
NO <sub>x</sub>	0.07
CO	0.20
VOC	0.10

For engines that do not produce combined heat and power (CHP), the emission standards are based on the net electrical megawatt-hours ( $MW_e$ -hrs) produced. CHP (also known as cogeneration) engines may also take credit for the thermal megawatt-hours ( $MW_{th}$ -hrs) of useful heat produced, with one  $MW_{th}$ -hr for each 3.4 million Btus. The thermal energy could take the form of hot water, steam or other medium.

For CHP engines, the operator will choose short-term emission limits in lbs/  $MW_e$ -hrs that the engine must meet at all times. The operator will also choose an annual electrical energy factor (EEF), such that when the short-term emission limit is multiplied by the annual EEF, the result does not exceed the values in the above table. The EEF is the annual net electrical energy produced divided by the sum of the electrical and thermal energy produced. The operator will have to also meet the annual EEF limit. See subparagraphs (d)(1)(F) and (f)(1)(F) of the rule for details.

#### Actions Required

None for existing engines. New engines must comply upon startup.

#### Exceptions

- Biogas-fired engines that comply with subparagraph (d)(1)(C)
- Engines installed by an electric utility on Catalina Island
- Engines installed at a remote location without natural gas or electric power
- Engines that provide electrical power to ships while at berth until January 1, 2014
- Engines installed prior to February 1, 2008
- Engines issued a permit to construct by February 1, 2008 and installed within 1 year of the date of the permit to construct
- Engines for which an application was deemed complete by October 1, 2007.

#### **Air-to-Fuel Ratio Controllers – Subparagraph (d)(1)(E)**

##### What Changed?

The rule requires engines without a Rule 218 or Regulation XX-approved CEMS to install an air-to-fuel ratio controller (AFRC) with an oxygen sensor and feedback control, or other equivalent technology approved by the AQMD, CARB, and EPA, by February 1, 2009.

##### Actions Required

If your engine has an AFRC, but it is not listed on the permit to operate, in either the equipment description or the permit conditions, file an application for an equipment alteration by May 1, 2008.

If an AFRC is mentioned on your permit, but not its make and model, include this information in the Inspection and Monitoring Plan that is discussed later.

If you are required to install an AFRC, the following schedule applies.

<b>COMPLIANCE SCHEDULE FOR AFRCs</b>	
<b>Action Required</b>	<b>Compliance Date</b>
Submit to AQMD applications for permits to construct (PC) an equipment modification	May 1, 2008
Initiate installation of AFRC	60 days after the PC is issued
Complete construction and comply with applicable requirements	February 1, 2009 or 120 days after the PC is issued, whichever is later
Complete initial source testing	When normal source testing is required by subparagraph (f)(1)(C)

If your engine has technology equivalent to an AFRC, submit with your Inspection and Monitoring Plan application (see later section) documentation to substantiate that it can maintain the air-to-fuel ratio as well as an AFRC when there are changes in ambient temperature, humidity and fuel composition.

Replacing an existing AFRC with another model is an alteration that requires a permit to construct.

Exceptions

- Engines with Rule 218 or Regulation XX approved CEMS.
- Operators of more than five engines that do not have AFRCs may take an additional three months, to May 1, 2009, to install the equipment on up to 50% of the affected engines.

**Portable Engines - Subparagraph (d)(2)(A)**

The emission limits for portable engines were removed from the rule, because paragraph (h)(7) exempts non-road engines, including portable engines. However, to alert portable engine operators to possible requirements of state law, references to the following were added:

- For portable diesel engines, Subchapter 7.5 Airborne Toxic Control Measures for diesel particulate matter in Chapter 1, Division 3, Title 17 of the California Code of Regulations.
- For portable spark-ignited engines, Large Spark Ignition Engine Fleet Requirements, Article 2, Chapter 15, Division 3, Title 13 of the California Code of Regulations.

**MONITORING, TESTING AND RECORDKEEPING – SUBDIVISION (f)**

The purpose of the amendments in this subdivision is to improve the compliance of stationary engines.

**Additional Continuous Emission Monitoring System (CEMS) Requirements - Subparagraph (f)(1)(A)**

What Changed?

The CEMS requirement has been extended to stationary engines at facilities with multiple engines at the same location (within 75 feet of each other, measured from engine block to engine block) that 1) have a cumulative stationary engine brake horsepower (bhp) rating of 1500 hp or more; and 2) use more than  $16 \times 10^9$  Btu per year (higher heating value), which is equivalent to 160,000 therms.

Operators cannot move an engine to avoid the CEMS requirement. Also, operators of new engines may not install an engine farther than 75 feet from another engine unless the operator demonstrates that operational needs or space limitations require it.

Engines rated below 1000 bhp may time share a CEMS as discussed later.

Actions Required

For facilities that are not public agencies, the compliance dates from Table VII of the rule are as follows:

<b>TABLE VIIa - COMPLIANCE SCHEDULE FOR NEW OR MODIFIED CEMS ON EXISTING STATIONARY ENGINES AT NON-PUBLIC AGENCIES</b>			
<b>Action Required</b>	<b>Applicable Compliance Dates For:</b>		
	<b>Non-Biogas Engines Rated at 750 bhp or More</b>	<b>Non-Biogas Engines Rated at Less than 750 bhp</b>	<b>Biogas Engines*</b>
Submit to AQMD 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

For facilities that are public agencies, the compliance dates are as follows, which allow an additional year for non-biogas engines:

<b>TABLE VIIb-COMPLIANCE SCHEDULE FOR NEW OR MODIFIED CEMS ON EXISTING STATIONARY ENGINES AT PUBLIC AGENCIES</b>			
<b>Action Required</b>	<b>Applicable Compliance Dates For:</b>		
	<b>Non-Biogas Engines Rated at 750 bhp or More</b>	<b>Non-Biogas Engines Rated at Less than 750 bhp</b>	<b>Biogas Engines*</b>
Submit to AQMD applications for new or modified CEMS	August 1, 2009	August 1, 2010	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

\*Biogas engines are those that use at least 90% biogas (HHV), or are approved by AQMD to use more than 10% natural gas.

Exceptions

The following engines are not counted toward the cumulative bhp rating or fuel usage:

- Engines rated at less than 500 hp;
- 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  $8 \times 10^9$  Btu per year (higher heating value), equivalent to 80,000 therms per year. In addition, the 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 these usage limits;
- Engines already required to have a CEMS;
- 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 rated at 1000 bhp or more that are required to have a CEMS by the clause (f)(1)(A)(i).

Also, a CEMS isn't 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.

In lieu of installing a CEMS on engines rated less than 1000 bhp, an operator that is a public agency, or is contracted to operate engines solely for a public agency, may comply with the I&M Plan requirements discussed later, except that the operator must conduct 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 District test using a portable analyzer on three or more occasions in any 12-month period, the operator must comply with the CEMS requirements of this subparagraph for such engine in accordance with the above compliance schedule, except that the operator shall submit a CEMS application to AQMD within six months of the third exceedance.

### **Carbon Monoxide CEMS Requirements - Subparagraph (f)(1)(A)**

#### What Changed?

Rich-burn engines that are required to have a CEMS will need a CO monitor in addition to a NO<sub>x</sub> monitor.

In spite of the requirements of Rule 218 and Regulation XX (RECLAIM), clause (f)(1)(A)(ix) will allow current CEMS operators to take their CEMS out of operation for up to two weeks in order to add the required CO CEMS, without requiring a variance. Operators in RECLAIM will still have to follow the missing data procedures of Rule 2012 while the CEMS is out of operation.

#### Actions Required

Operators of engines with a NO<sub>x</sub> CEMS must apply for a modification to their CEMS to add a CO monitor by the same schedules in the previous two tables (Tables VIIa and VIIb) for non-public and public agencies.

#### Exceptions

- Lean-burn engines

### **CEMS Certification and Reporting Requirements - Subclause (f)(1)(A)(iii)(I)**

#### What Changed?

Instead of requiring CEMS to comply with the requirements of Title 40, Part 60 of the Code of Federal Regulations (40 CFR Part 60), CEMS must comply with the applicable requirements of Rule 218, including equipment specifications and certification, operating, recordkeeping, quality assurance and reporting requirements. Rule 218 still allows the option for a CEMS to meet the certification requirements of 40 CFR Part 60.

#### Actions Required

Operators of existing CEMS must immediately start complying with the reporting requirements of subdivision (f) of Rule 218. This includes the following reporting to AQMD:

- Emissions in excess of emission limits, within 24 hours or the next working day;

- A CEMS failure or shutdown that exceeds 24 hours, within 24 hours or the next working day;
- A semi-annual summary of emission data, due on July 30 for the first six months of each calendar year and January 30 for the last six months of each calendar year.

See Rule 218 for more details about these reports.

### **CEMS Requirements Changes for Engines under 1000 bhp**

#### What Changed?

For engines that are required to install a CEMS because they are in groups exceeding 1500 bhp, the rule provides some exceptions from normal Rule 218 requirements for engines of 1000 bhp or more.

#### Clause (f)(1)(A)(v)

This clause does two things. It allows:

- Digital storage of data, instead of a strip chart;
- It allows relative accuracy testing on the same schedule as source testing (two years or 8,760 hours), instead of annually.

#### Clause (f)(1)(A)(vi)

This clause provides several exceptions to Rule 218 for timeshared CEMS to make timesharing more feasible, and to reduce costs. They include:

- requiring a 15-minute sampling time for each timeshared engine;
- allowing unequal sample line lengths;
- reducing the minimum number of relative accuracy tests to five for each engine;
- reducing cylinder gas audits to quarterly;
- not requiring NO<sub>2</sub> monitoring for rich-burn engines if NO<sub>2</sub> is less than 10% of total NO<sub>x</sub>;
- allowing daily calibration error (CE) tests at the analyzer instead of at the probe tip, except for once per week, and;
- not requiring CEMS operation or calibration when there is a continuous record of engine non-operation.

See clause (f)(1)(A)(vi) for more details.

#### Actions Required

None required, but operators may take advantage of these exceptions to Rule 218 when they apply for their CEMS for groups of engines over 1500 bhp.

### **Source Testing for Stationary Engines - Subparagraph (f)(1)(C)**

#### What Changed?

The following source testing requirements were adopted:

- The frequency of source testing is increased from every three years to every two years, or 8,760 hours, whichever occurs first.

- NO<sub>x</sub>, CO and VOC emissions must be tested for at least 30 minutes during normal operation. The source test can't just be at one load under steady state conditions, unless that is the typical duty cycle. In addition NO<sub>x</sub> and CO must be tested for at least 15 minutes at actual peak load and actual minimum load that can be practically achieved during the test. The two additional NO<sub>x</sub>/CO tests are not required if the engine permit limits operation to one defined load,  $\pm 10\%$ .
- Pretests to determine if the engine needs repairs are not allowed; the test must be conducted at least 40 operating hours or one week after any engine tuning or maintenance.
- If a test is started and shows non-compliance, it may not be aborted to allow engine tuning or repairs. The test run must be completed and reported. However, the problem may be corrected, and the remaining test runs completed immediately, if possible, without rescheduling the test.
- A source testing contractor approved by AQMD must be used. Call AQMD at (909) 396-2228 or go to <http://www.aqmd.gov/tao/LaboratoryApprovalProgram/LAP.htm> to get a list of approved contractors.
- The source test must be conducted in accordance with a protocol approved by AQMD. The source test protocol must include:
  - the name, address and phone number of the engine operator and a District-approved source testing contractor that will conduct the test;
  - the application and permit number(s), emission limits, and a description of the engine(s) to be tested;
  - the test methods and procedures to be used;
  - the number of tests to be conducted (normally three) 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 must be approved by AQMD 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 AQMD takes longer than 60 days to approve the protocol, the operator is allowed the additional time needed to conduct the test.

- AQMD must be notified of the test date.
- The test report must be submitted to AQMD (Attn: Compliance).
- The operator must provide source testing facilities, including sampling ports, safe sampling platforms and access, utilities for test equipment.

#### Actions Required

Sixty (60) days before the test is scheduled to be conducted, submit to AQMD (Attn: Source Test Engineering) for approval: a source test protocol, as described above; and a protocol

evaluation fee required by Rule 306 –Plan Fees, subdivision (m). Until June 30, 2008 the fee is \$287.76, but it is likely to go up by a cost-of-living adjustment after that. To simplify the preparation of an adequate protocol, AQMD is developing a standard protocol for engine testing that operators will be able to use and reference. The protocol will be posted soon on AQMD's website at:

<http://www.aqmd.gov/tao/methods/stprotocols.html>

The test should be scheduled prior to two years or 8,760 operating hours, whichever occurs first, after the last source test. If there is not enough time to schedule a source test and get a protocol approved within the two year or 8,760 hours period, the rule allows the test to be conducted up until July 31, 2008.

Provide AQMD at least 30 days prior notice of any source test to afford AQMD the opportunity to have an observer present. The notice may be made in writing to AQMD Attn: Compliance, or by calling (800) CUT-SMOG. If after 30 days notice for an initially scheduled source test, there is a delay (due to operational problems, etc.) in conducting the scheduled source test, the engine operator must notify AQMD 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 source test, or by arranging a rescheduled date with AQMD by mutual agreement.

Submit to AQMD (Attn: Compliance) a copy of the source test report and description of the engine tested within 60 days of the test date.

By August 1, 2008, apply for a change of permit conditions to limit the engine operation to one load,  $\pm 10\%$ , if you wish to reduce the source testing requirement to one run at normal load.

By February 1, 2009, provide for each engine that is required to be tested the following source testing facilities:

- (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; and
- (III) Utilities for sampling and testing equipment.

#### Exceptions

- An exception for low-use engines has been added that would allow testing once in three years, the previous requirement, if the engine has operated less than 2,000 hours since the last source test.
- Only a single-load test is required if an engine is limited by permit condition to one load within  $\pm 10\%$ .
- Agricultural stationary engines are excused from the platform, scaffolding or mechanical lift requirement if they are moved to storage during the off-season. They are also excused from providing utilities if they are in a remote location without electrical power.

## **Inspection and Monitoring (I&M) Plan for Stationary Engines - Subparagraph (f)(1)(D)**

### What Changed?

Except for engines monitored by a NO<sub>x</sub> and CO CEMS, stationary engine operators are required to have an AQMD-approved I&M Plan (one per facility) to assure continued compliance of the engines between source tests. The I&M Plan will include:

- Identification of control equipment parameters and engine operating parameters that are necessary to keep pollutant concentrations within the rule limits. This shall include, but are not 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). Note: The oxygen sensor set points often need to vary depending on engine load because of differences in emissions and catalyst temperatures. Most AFRCs are capable of different set points at different loads.
  2. Procedures for verifying that the AFRC is controlling the engine to the set point during the daily monitoring required by clause (f)(1)(E)(iv). Note: The operator should identify which AFRC warning lights, alarms and fault codes indicate that the AFRC is not properly controlling the air-to-fuel ratio. AFRCs will generally signal a fault and alarm if they are not able to adjust the air-to-fuel ratio to the proper set point, and operators can generally rely on the AFRC to detect this problem. However, operators should include in their I&M Plan the criteria that the AFRC uses to determine when to signal this fault and evaluate the daily monitoring data to assure that the AFRC is operating properly.
  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. Note: The second adjustment is because the output of new oxygen sensor often drifts after installation;
  4. For engines with catalysts, the maximum allowed exhaust temperature at the catalyst inlet, based on catalyst manufacturer specifications. Note: This is necessary to protect a catalyst from damage;
  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.
- Procedures for alerting the operator to emission control malfunctions. An AFRC malfunction indicator light (MIL) and audible alarm are required. Note: Many AFRCs have a MIL and an output that can trigger an audible alarm.

- Procedures for weekly, or every 150 hours, emission checks by a portable NO<sub>x</sub>, CO and O<sub>2</sub> analyzer.
  1. If an engine is in compliance for three consecutive 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 emission check or, for rich-burn engines with three-way catalysts, the oxygen sensor is replaced.
  2. For diesel engines and other lean-burn engines that are subject to Regulation XX 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 emission check shall be performed at least quarterly, or every 2,000 engine operating hours, whichever occurs later.
  3. For diesel engines and other lean-burn engines that are subject to Regulation XX 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 Tables II or III, emission checks are not required.
  4. No engine or control system maintenance or tuning may be conducted within 72 hours prior to the emission check, unless it is an unscheduled, required repair.
  5. 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. AQMD is preparing an updated version of this document that will be available soon on AQMD's website at: <http://www.aqmd.gov/tao/methods/stprotocols.html>.
- 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 clause (f)(1)(D)(i), and the actual values of the same parameters;
  3. the engine elapsed time meter operating hours;
  4. the operating hours since the last emission check required by (f)(1)(D)(iii)
  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). Note: The operator does not have to include in the I&M Plan an acceptable range for catalyst  $\Delta T$ , but the operator should consider conducting an emission check if there is a significant change in catalyst  $\Delta T$ . AQMD inspectors should not issue a notice of violation for only a change in the catalyst  $\Delta T$ ; and
  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.
- Procedures for responding to, diagnosing and correcting breakdowns, faults, malfunctions, alarms, emission checks finding emissions in excess of rule or permit limits, and parameters out-of-range.

1. For breakdowns resulting in a rule or permit violation or for an emission check that finds excess emissions, the operator is required to either correct the problem and conduct another emission check or shut down the engine by the end of an operating cycle, or within 24 hours from the time the operator knew, or reasonably should have known, whichever is sooner.
  2. For other problems, such as parameters out-of-range, an operator must correct the problem and demonstrate compliance with another emission check within 48 hours of the operator first knowing of the problem.
  3. An operator will not be considered in violation if the operator complies with these requirements and the reporting requirements of subparagraph (f)(1)(H).
  4. Any emission check conducted by District staff that finds excess emissions will be considered a violation.
- Procedures for preventive and corrective maintenance, and their schedules.
  - Procedures for reporting noncompliance to AQMD in accordance with subparagraph (f)(1)(H).
  - Procedures for recordkeeping of monitoring and other actions, including formats of the recordkeeping.
  - Procedures for plan revisions. Before any change in I&M Plan operations can be implemented, the revised I&M plan will have to be submitted to and approved by AQMD. If there is a change to control equipment or emission limits, the operator must apply for a plan revision.

If new technology becomes available in the future that is demonstrated to maintain reliable engine compliance with less rigorous I&M, AQMD will consider modifying the I&M requirements in a future rule amendment.

#### Actions Required

By August 1, 2008, operators of engines subject to I&M Plan requirements must submit an initial I&M Plan application to AQMD for approval. Only one plan per facility is required. With each plan, submit one Form 400A (available on AQMD's website at <http://www.aqmd.gov/permit/Formspdf/Basic/AQMDForm400-A.pdf>) to AQMD Attn: Permit Services. On the Form 400A, check the "Compliance Plan" in Box 6 and write "Rule 1110.2 I&M Plan" in Box 8. If you apply before July 1, 2008 the application fee is \$485.45 (\$107.88 filing fee plus an initial plan evaluation fee of \$377.57). If you apply after June 30, 2008, check Rule 306 – Plan Fees for the current fees. Title V facilities must also submit another Form 400A for an administrative revision to their Title V permit, including Forms 400-CEQA, 500-A2 and 500-C1.

By December 1, 2008, operators must 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 dates for at least 50% of the operator's engines, and for the remaining engines shall:

- (A) By February 1, 2009, submit an initial I&M Plan application to AQMD for approval;
- (B) By June 1, 2009, implement an approved I&M Plan or the I&M Plan as submitted if the plan is not yet approved.

Exceptions

- Engines monitored by a NO<sub>x</sub> and CO CEMS are not required to have an I&M Plan. Note: Lean-burn engines with only a NO<sub>x</sub> CEMS must still have an I&M Plan that addresses CO emissions.

**Portable Analyzer Training - Subparagraph (f)(1)(G)**

What Changed?

In order to assure that persons conducting the portable analyzer testing are properly trained to understand the equipment and the procedures for conducting testing, maintenance and calibration, subparagraph (f)(1)(G) requires these persons to take an AQMD-approved training program and obtain a certification issued by AQMD. Persons conducting the testing must follow the procedures in “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”.

Actions Required

By December 1, 2008, complete the portable analyzer training offered by AQMD. AQMD will offer this Internet-based training soon on AQMD’s website at:

<http://www.aqmd.gov/comply/compclass.html>.

Exceptions

- Operators of engines that are not subject to periodic testing by a portable analyzer.

**Reporting Requirements - Subparagraph (f)(1)(H)**

What Changed?

Breakdowns<sup>2</sup>

1. The operator shall report to AQMD, by telephone (1-800-CUT-SMOG or 1-800-288-7664) or other 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, AQMD may extend the time for the reporting of required information provided the operator has notified AQMD of the noncompliance within the one-hour limit.
2. 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 AQMD, the operator shall submit a written breakdown report to AQMD (Attn: Compliance) which includes:

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<sup>2</sup> Per Rule 102, breakdown means a condition caused by an accidental fire or nonpreventable mechanical or electrical failure.

- (A) An identification of the equipment involved in causing, or suspected of having caused, or having been affected by the breakdown;
- (B) The duration of the breakdown;
- (C) The date of correction and information demonstrating that compliance is achieved;
- (D) An identification of the types of excess emissions, if any, resulting from the breakdown;
- (E) A quantification of the excess emissions, if any, resulting from the breakdown and the basis used to quantify the emissions;
- (F) Information substantiating whether the breakdown resulted from operator error, neglect or improper operation or maintenance procedures;
- (G) 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;
- (H) A description of the corrective measures undertaken and/or to be undertaken to avoid such a breakdown in the future; and
- (I) Pictures of any equipment which failed, if available.

Note: These requirements duplicate the requirements of Rule 430-Breakdowns. Rule 430 provides protection from enforcement action if the requirements of the rule are met.

#### Quarterly Report of All Reportable Incidents

Within 15 days of the end of each calendar quarter, the operator shall submit to AQMD (Attn: Compliance) 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 an emission check that finds excess emissions. Such report shall be in an 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 NO<sub>x</sub> and CO emissions checks done before or after the corrective actions. The operator shall also report if no incidents occurred.

Operators can use the attached Rule 1110.2 –Quarterly Report for Stationary Engines form or any other format approved by AQMD. The form will also be available soon on AQMD’s website at <http://www.aqmd.gov/comply/formsbyrule.htm>. Note: Enforcement discretion by AQMD will apply depending on the frequency, nature and severity of the noncompliance.

#### Actions Required

Operators shall immediately comply with the breakdown reporting requirements.

By April 15, 2008, operators shall submit the first quarterly report to AQMD. Note: Although the I&M Plans will not be in effect until October 1, 2008, breakdowns, faults, and malfunctions may occur sooner, and some engines are already required by permit conditions to operate within certain parameters or do periodic testing with a portable analyzer.

## **Monitoring of New Non-Emergency Electrical Generating Engines –Subparagraph (f)(1)(F)**

### What Changed?

New monitoring procedures are required for the emission standards for new, non-emergency, electrical generating engines. All such new engines are required to monitor: the net electrical output ( $MW_e$ -hrs) 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 and heat recovery equipment; and the useful heat recovered ( $MW_{th}$ -hrs), which is the thermal energy recovered and put to an actual useful purpose.

Emissions in  $lbs/MW_e$ -hr must be calculated based on CEMS data, source tests, and weekly emission checks. Mass emissions will be calculated using an F factor method from EPA 40 CFR 60, Appendix A, Method 19, or other approved method such as direct measurement of exhaust volume. Because Method 19 does not directly address VOC and CO, necessary conversion factors are provided in the rule. An annual report is required to verify compliance with the annual EEF. See subparagraph (f)(1)(F) for complete details.

### Actions Required

None, except new non-emergency, electrical generating engines must comply upon startup.

### Exceptions

- Biogas-fired engines that comply with subparagraph (d)(1)(C)
- Engines installed by an electric utility on Catalina Island
- Engines installed at a remote location without natural gas or electric power
- Engines that provide electrical power to ships while at berth until January 1, 2014
- Engines installed prior to February 1, 2008
- Engines issued a permit to construct by February 1, 2008 and installed within 1 year of the date of the permit to construct
- Engines for which an application is deemed complete by October 1, 2007.

## **COMPLIANCE – SUBDIVISION (e)**

The compliance schedules and dates for most requirements are addressed in other parts of this document. However there are two paragraphs of subdivision (e) to discuss here.

### **New Engines – Paragraph (e)(6)**

New engines are required by paragraph (e)(6) to comply with the new CEMS or I&M requirements when they begin operation, rather than wait for a future compliance date in subdivision (e) for existing engines.

### **Removing an Engine from Service - Paragraph (e)(8)**

#### What Changed?

For engines that will be removed from service, paragraph (e)(8) provides an exception for complying with the requirements for submitting applications and plans and other steps in

advance of a compliance date for a particular requirement, such as an I&M Plan, a new CEMS or an equipment modification to comply with a future emission limit. The engine must have a permit condition that causes the permit to expire by the effective date of the rule requirement.

#### Actions Required

If an operator decides to remove an engine from service, rather than comply with a future rule requirement, then the operator should apply for the administrative change of conditions by the same date that the application for a CEMS, I&M Plan or equipment modification would otherwise be due.

### **Exceeding a Usage Limit - Paragraph (e)(9)**

#### What Changed?

This paragraph establishes compliance schedules for engines that do not have to initially comply with a rule requirement because of low usage, but at some time in the future the engines exceed the usage limits.

#### Actions Required

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, 2010 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.

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.

### **DEFINITIONS – SUBDIVISION (c)**

A new definition for “oxides of nitrogen” and revised definition of “approved emission control plan” simply clarify the intent of the rule. New definitions for “lean-burn engine”, “net electrical energy”, “operating cycle”, “rich-burn engine with a three-way catalyst”, and “useful heat recovered” were necessary to support the new requirements previously discussed.

The definition of “engine” is revised to clarify that stationary engines used to control VOC emission, such as those used to control VOCs from soil vapor extraction, are subject to Rule 1110.2.

### **IMPORTANT INTERNET LINKS**

For a copy of Rule 1110.2: <http://www.aqmd.gov/rules/reg/reg11/r1110-2.pdf>

For a copy of Rule 218 regarding CEMS: <http://www.aqmd.gov/rules/reg/reg02/r218.pdf>

For AQMD-approved source-testing contractors:

<http://www.aqmd.gov/tao/LaboratoryApprovalProgram/LAP.htm>

For the standard source testing protocol or the portable analyzer periodic monitoring protocol: <http://www.aqmd.gov/tao/methods/stprotocols.html>

For AQMD application forms: <http://www.aqmd.gov/permit/forms.html>.

For the portable analyzer training class: <http://www.aqmd.gov/comply/compclass.html>

For the compliance report forms: [http://www.aqmd.gov/comply/forms\\_redirect\\_page.html](http://www.aqmd.gov/comply/forms_redirect_page.html)

## IMPORTANT DATES IN AMENDED RULE 1110.2

Location in Rule	Affected Engines	Date	Requirement (limits are ppmvd @ 15% O2)	Notes
<b>Agricultural Engines</b>				
(e)(1)(A)	Agricultural, installed or issued PC before 6/3/05 at facilities with emissions > or = R219(q) table and not Tier 2 or 3 diesel or certified spark-ignition.	3/30/2008	Initiate construction	Date may be extended to 30 days after PC issue date.
(e)(1)(A)	Same as above	7/1/2008	Comply with rule	Date may be extended to 60 days after PC issue date.
(e)(1)(A)	Same as above	9/1/2008	Source test	Date may be extended to 120 days after PC issue date.
(e)(1)(A)	Agricultural, installed or issued PC before 6/3/05 at facilities with emissions less than R219(q) table; Tier 2 or 3 diesel; certified spark-ignition.	3/1/2009	Apply for PC for engine modifications, control equipment or replacement engine	
(e)(1)(A)	Same as above	9/30/2009	Initiate construction	Date may be extended to 30 days after PC issue date.
(e)(1)(A)	Same as above	1/1/2010	Comply with rule	Date may be extended to 60 days after PC issue date.
(e)(1)(A)	Same as above	3/1/2010	Source test	Date may be extended to 120 days after PC issue date.
<b>Non-Biogas Emission Limit Changes</b>				
(e)(2)(A)	Non-biogas, 500+ hp subject to emission limits in (d)(1)(B)	7/1/2009	Apply for PC for engine modifications, control equipment or replacement engine	Alternative: Per paragraph (e)(8), apply for change of permit conditions to remove the engine from service by 7/1/2010.
(e)(2)(A)	Same as above	4/1/2010	Initiate construction	Date may be extended to 60 days after PC issue date.
(e)(2)(A)	Same as above	7/1/2010	Comply with new NOx/CO/VOC limits of 11/250/30	Low-use engines exempt. Higher CO/VOC limits allowed for two-stroke engines with oxidation catalyst. Compliance date may extend to 120 days after PC is issued.
(e)(2)(A)	Same as above	8/30/2010	Source test	Date may be extended to 180 days after PC issue date.
(e)(2)(A)	Non-biogas, <500 hp subject to emission limits in (d)(1)(B)	7/1/2010	Apply for PC for engine modifications, control equipment or replacement engine	Alternative: Per paragraph (e)(8), apply for change of permit conditions to remove the engine from service by 7/1/2011.
(e)(2)(A)	Same as above	4/1/2011	Initiate construction	Date may be extended to 60 days after PC issue date.
(e)(2)(A)	Same as above	7/1/2011	Comply with new NOx/CO/VOC limits of 11/250/30	Low-use engines exempt. Higher CO/VOC limits allowed for two-stroke engines with oxidation catalyst. Compliance date may extend to 120 days after PC is issued.
(e)(2)(A)	Same as above	8/30/2011	Source test	Date may be extended to 180 days after PC issue date.
<b>Biogas Emission Limit and Fuel Usage Requirements</b>				
(e)(7)	Biogas	4/1/2008	Limit natural gas usage to 10% or apply for change of permit conditions to use >10% natural gas.	Provide documentation to support need for more than 10% natural gas use.
(e)(7)	Same as above	8/1/2008	Comply with natural gas limit on revised permit	
(e)(2)(B)	Same as above	8/1/2008	Comply with (d)(1)(C) emission limits without an ECF or apply for change of permit conditions to add ECF-adjusted limits.	
(e)(2)(B)	Same as above	2/1/2009	Comply with ECF-adjusted limits	
(e)(2)(A)	Biogas, subject to emission limits in (d)(1)(C)	7/1/2011	Apply for PC for engine modifications, control equipment or replacement engine	Alternative: Per paragraph (e)(8), apply for change of permit conditions to remove the engine from service by 7/1/2012.
(e)(2)(A)	Same as above	4/1/2012	Initiate construction	Date may be extended to 60 days after PC issue date.
(e)(2)(A)	Same as above	7/1/2012	Comply with new NOx/CO/VOC limits of 11/250/30. For engines meeting these limits, fuel input may be <90% biogas	Limits could change based on results of technology assessment concluding 7/1/2010. Low-use engines exempt. Compliance date may extend to 120 days after PC is issued.
(e)(2)(A)	Same as above	8/30/2012	Source test	Date may be extended to 180 days after PC issue date.

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Location in Rule	Affected Engines	Date	Requirement (limits are ppmvd @ 15% O2)	Notes
<b>Continuous Emission Monitoring System (CEMS) Requirements</b>				
(e)(3)(A)	Equipped with CEMS	2/1/2008	Comply with Rule 218, Subdivision F, Reporting	
(e)(3)(A)	Same as above	7/30/2008	Submit first semi-annual emissions summary report	
(e)(3)(B)	Non-biogas, non-public agency 750+ hp requiring new CEMS or CEMS modification	8/1/2008	Submit CEMS application or apply for change of permit conditions to limit usage per (f)(1)(A)(ii)(III) or public agency 2014 exemption	Days after initial approval: 180-commence operation, 270-complete certification tests, 315-submit certification report, 365-obtain final approval
(e)(3)(B)	Non-biogas, non-public agency <750 hp or public agency 750+ hp requiring new CEMS or CEMS modification	8/1/2009	Submit CEMS application or apply for change of permit conditions to limit usage per (f)(1)(A)(ii)(III) or public agency 2014 exemption	Days after initial approval: 180-commence operation, 270-complete certification tests, 315-submit certification report, 365-obtain final approval
(e)(3)(B)	Non-biogas, public agency <750 hp requiring new CEMS or CEMS modification	8/1/2010	Submit CEMS application or apply for change of permit conditions to limit usage per (f)(1)(A)(ii)(III) or public agency 2014 exemption	Days after initial approval: 180-commence operation, 270-complete certification tests, 315-submit certification report, 365-obtain final approval
(e)(3)(B)	Biogas, subject to emission limits in (d)(1)(C) requiring new CEMS or CEMS modification	1/1/2011	Submit CEMS application or apply for change of permit conditions to limit usage per (f)(1)(A)(ii)(III) or public agency 2014 exemption	Days after initial approval: 180-commence operation, 270-complete certification tests, 315-submit certification report, 365-obtain final approval
<b>Inspection and Monitoring (I&amp;M) Plans</b>				
(e)(4)	Not equipped with CEMS, <15 engines or half of 15+ engines	8/1/2008	Submit I&M plan	Alternative: Per paragraph (e)(8), apply for change of permit conditions to remove the engine from service by 12/1/2008.
(e)(4)	Same as above	12/1/2008	Begin I&M Plan implementation and complete AQMD portable analyzer training	
(e)(4)	Not equipped with CEMS, half of 15+ engines	2/1/2009	Submit I&M plan	Operators with 15 or more engines are allowed 6 months more time for half their engines. Alternative: Per paragraph (e)(8), apply for change of permit conditions to remove the engine from service by 6/1/2009.
(e)(4)	Same as above	6/1/2009	Begin I&M Plan implementation	Operators with 15 or more engines are allowed 6 months more time for half their engines.
<b>Air-to-Fuel Ratio Controller (AFRC) Requirements</b>				
(e)(5)(B)	Has AFRC, but AFRC not listed on permit	5/1/2008	Apply for an equipment alteration	If the AFRC was inadvertently left off the equipment description by AQMD, then the operator can file for an administrative change of the equipment description.
(d)(1)(E), (e)(5)	Spark-ignited w/o CEMS, required to add AFRC	5/1/2008	Apply for permit modification	Alternative: Per paragraph (e)(8), apply for change of permit conditions to remove the engine from service by 2/1/2009 (or by 5/1/2009 for half of 5+ engines).
(d)(1)(E), (e)(5)	Same as above	11/1/2008	Start construction	Date may extend to 60 days after PC issued
(d)(1)(E), (e)(5)	Same as above	2/1/2009	Install AFRC	Date may extend to 120 days after PC issued
(d)(1)(E), (e)(5)	Spark-ignited w/o CEMS, required to add AFRC, half of 5+ engines	2/1/2009	Start construction	Operators with five or more engines are allowed three months more time for half their engines. Date may extend to 60 days after PC issued
(d)(1)(E), (e)(5)	Same as above	5/1/2009	Install AFRC	Operators with five or more engines are allowed three months more time for half their engines. Date may extend to 120 days after PC issued

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Location in Rule	Affected Engines	Date	Requirement (limits are ppmvd @ 15% O2)	Notes
<b>Miscellaneous</b>				
(h)(10)	Requiring a startup period exemption exceeding 30 minutes	ASAP	Apply for change of permit conditions.	Provide documentation to support the need for a longer startup period exemption.
(h)(12)	With PC, but uninstalled, and requiring a commissioning period exemption	ASAP	Apply for change of permit conditions.	Operator to minimize emissions and duration. Not to exceed 150 hours.
(f)(1)(H)	All	2/1/2008	Report breakdowns per paragraph (f)(1)(H)	
(f)(1)(H)(iii)	All	4/15/2008	Submit first quarterly report	
(e)(2)(C)	Adding a permit restriction to comply with the rule	8/1/2008	Apply for permit modification	For example, adding an engine use limit to avoid CEMS or future emission limits.
(f)(1)(A)(ii)(III)	Public transit fueling, choosing permit expiration on or before 12/31/2014 in lieu of installing CEMS	8/1/2008	Apply for change of permit conditions to add permit expiration date no later than 12/31/2014.	
(f)(1)(C)(i)	All	8/1/2008	Complete first source test if previous source test was more than two years ago or the engine has operated more than 8760 hours since the previous source test.	Low use exception: The due date for the next source test can be extended to 2000 operating hours or three years after the last test, whichever occurs first. Submit test protocol for approval 60 days before scheduled test date.
(h)(2)	Emergency, flood control and fire fighting	8/1/2008	Request revision to permit to add permit condition limit of 200 hours/yr.	If more than 20 hours/yr of maintenance and testing for a diesel engine is desired, submit an application and fee for a change of permit conditions.
(f)(1)(C)(vii)	Lacking compliant sampling facilities	2/1/2009	Install compliant sampling facilities.	
(f)(1)(A)(ii)(III)	Public transit fueling, choosing permit expiration on or before 12/31/2014 in lieu of installing CEMS	12/31/2014	Engine must be permanently out of service	

**Abbreviations:** AFRC - Air-to-Fuel Ratio Controller  
CEMS - Continuous Emission Monitoring System  
ECF - Efficiency Correction Factor  
I&M - Inspection and Monitoring  
PC - Permit to Construct

<b>IN CHRONOLOGICAL ORDER, IMPORTANT FIRST-STEPS IN FIRST YEAR OF IMPLEMENTING AMENDED RULE 1110.2</b>				
<b>Location in Rule</b>	<b>Affected Engines</b>	<b>Date</b>	<b>Requirement</b>	<b>Notes</b>
(h)(10)	Requiring a startup exemption exceeding 30 minutes	ASAP	Apply for change of permit conditions.	Provide documentation to support the needed startup period exemption.
(h)(12)	With PC, but uninstalled, and requiring a commissioning period exemption	ASAP	Apply for change of permit conditions.	Operator to minimize emissions and duration. Not to exceed 150 hours.
(e)(3)(A)	Has existing CEMS	2/1/2008	Comply with Rule 218, Subdivision F, Reporting	
(f)(1)(H)	All	2/1/2008	Report breakdowns per paragraph (f)(1)(H)	
(e)(7)	Biogas	4/1/2008	Limit natural gas usage to 10% or apply for change of permit conditions to use >10% natural gas.	Provide documentation to justify more than 10% natural gas use in accordance with subparagraph (d)(1)(C).
(f)(1)(H)(iii)	All	4/15/2008	Submit first quarterly report	
(d)(1)(E), (e)(5)	Spark-ignited w/o CEMS, required to add AFRC	5/1/2008	Apply for permit modification	Alternative: Per paragraph (e)(8), apply for change of permit conditions to remove the engine from service by 2/1/2009 (or by 5/1/2009 for half of 5+ engines).
(e)(5)(B)	Has AFRC, but AFRC not listed on permit	5/1/2008	Apply for an equipment alteration	If the AFRC was inadvertently left off the equipment description by AQMD, then the operator can file for an administrative change of the equipment description.
(e)(3)(A)	Equipped with CEMS	7/1/2008	Submit first semi-annual emissions summary report	
(e)(2)(B)	Biogas	8/1/2008	Comply with (d)(1)(C) emission limits without an ECF or apply for change of permit conditions to add ECF-adjusted limits.	
(e)(2)(C)	Adding a permit restriction to comply with the rule	8/1/2008	Apply for permit modification	For example, to add an engine use limit to avoid CEMS or future emission limits, or to limit engine operation to one load $\pm$ 10% to reduce source testing requirements.
(e)(3)(B)	Non-biogas, non-public agency 750+ hp requiring new CEMS or CEMS modification	8/1/2008	Submit CEMS application or apply for change of permit conditions to limit usage per (f)(1)(A)(ii)(III)	Days after initial approval: 180-commence operation, 270-complete certification tests, 315-submit certification report, 365-obtain final approval
(e)(4)	Not equipped with CEMS, <15 engines or half of 15+ engines	8/1/2008	Submit I&M plan	Alternative: Per paragraph (e)(8), apply for change of permit conditions to remove the engine from service by 12/1/2008.
(e)(7)	Biogas that applied for > 10% natural gas	8/1/2008	Comply with natural gas limit on revised permit	
(f)(1)(A)(ii)(III)	Public transit fueling, choosing permit expiration on or before 12/31/2014 in lieu of installing CEMS	8/1/2008	Apply for change of permit conditions to add permit expiration date no later than 12/31/2014.	
(f)(1)(C)(i)	All	8/1/2008	Complete a source test if previous source test was more than two years ago or the engine has operated more than 8760 hours since the previous source test.	Low use exception: The due date for the next source test can be extended to 2000 operating hours or three years after the last test, whichever occurs first.
(h)(2)	Emergency, flood control and fire fighting	8/1/2008	Request revision to permit to add permit condition limit of 200 hours/yr.	If more than 20 hours/yr of maintenance and testing for a diesel engine is desired, submit an application and fee for a change of permit conditions.

Location in Rule	Affected Engines	Date	Requirement	Notes
(e)(4)	Not equipped with CEMS, <15 engines or half of 15+ engines	12/1/2008	Begin I&M Plan implementation and complete AQMD portable analyzer training	Operators with 15 or more engines are allowed 6 months more time for half their engines.
(e)(2)(B)	Biogas	2/1/2009	Comply with ECF-adjusted limits	
(f)(1)(C)(vii)	Lacking compliant sampling facilities	2/1/2009	Install compliant sampling facilities.	

**Abbreviations:** AFRC - Air-to-Fuel Ratio Controller  
 CEMS - Continuous Emission Monitoring System  
 ECF- Efficiency Correction Factor  
 I&M - Inspection and Monitoring  
 PC - Permit to Construct