2.3.3 PORTABLE DIESEL ENGINES

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Process Description

Portable diesel engines are internal combustion (IC) engines used in generators, pumps, and material handling equipment (such as tub grinders) that will meet the criteria of portable as defined in Regulation 2-1-220; such as to remain at any single location (facility boundaries) for less than twelve consecutive months, not be within 1000 feet of a school, will comply with Regulation 2-5, and will not cause a public nuisance. This chapter shall cover exempt, loss of exemption, emergency, and prime portable diesel engines. Stationary diesel engines are covered in Permit Handbook Chapter 2.3.1.

Exempt Engines – The following engines are exempt from District permitting requirements (Regulation 2-1-301 and 2-1-302):

1. IC engines which are less than 50 HP (exempt per Regulation 2-1-114.2.1);
2. IC engines used for instructional purposes at research, teaching, or educational facilities (exempt per Regulation 2-1-114.2.2);
3. portable IC engines which are at a location for less than 72 consecutive hours (exempt per Regulation 2-1-114.2.3);
4. any engine mounted on, within, or incorporated into any vehicle, train, ship, boat, or barge used to provide propulsion for the vehicle, train, ship or barge (exempt per Regulation 2-1-114.2.4); and
5. any engine mounted on, within, or incorporated into any vehicle, train, ship, boat, or barrage, used to provide propulsion for any vehicle, train, ship or barge, and which is also used to supply mechanical or electrical power to ancillary equipment, which is affixed to or is a part of the vehicle, train, ship, boat, or barge (exempt per Regulation 2-1-114.2.5)

Loss of Exemption (LOE) Engines – On May 17, 2000, the general IC engine permit exemption was lowered from 250 to 50 HP. In addition, the exemption for portable and standby IC engines, and standby gas turbines was amended to allow equipment to operate for no more than 200 hours in any calendar year (plus 100 hours per calendar year for maintenance and testing) without triggering permit requirements. Subsequently, that permit exemption for portable and standby IC engines, and standby gas turbines was deleted on September 1, 2001. As a result, the following engines are considered LOE engines:

1. IC engine less than 250 HP installed prior to May 17, 2000 (LOE – Regulation 2-1-113.2.8);
2. Portable or standby IC engine installed prior to May 17, 2000 which was used on a temporary basis of no more than 30 days per calendar year at any one facility or used for the emergency pumping of water (LOE – Regulation 2-1-113.10); and
3. Portable or standby IC engine installed prior to September 1, 2001 which was used for no more than 200 hours in any calendar year (plus 100 hours per calendar year for maintenance and testing) and not subject to permits per Regulation 2-1-319 (LOE – Regulation 2-1-114.2.3)

Completeness Determination

The following District forms should be completed and fees provided for portable diesel engines. Use the Completeness Determination Checklist to verify completeness. Use the Data Form Guidance to ensure that the forms are completed correctly. Use the Fee Calculation Guidance to ensure that the fees are calculated accurately.

1. Form 101-B (one for owner/operator). For facility address, indicate the physical address where the equipment will be operated initially, or the mailing address, if it is within the Bay Area counties that the District covers.
2. Form ICE (1 per engine).
3. Manufacturer specification data including: fuel consumption, rated horsepower output, emission rates for NOx, CO, hydrocarbons (VOC) and particulate.
4. CARB-certified emission data or if no CARB-certified data, then EPA-certified emission data. If no such certified data exists, then load adjusted data from D2 testing.
5. For engines installed after May 17, 2000, Form HRSA (one per source).
6. Fees, calculated per Regulation 3 (Schedule B). If engine is a LOE engine, then the fees shall be calculated according to the policy for LOE engines.

Emission Calculations

The primary pollutants from IC engines are oxides of nitrogen (NOx), hydrocarbon and other organic compounds (POC), carbon monoxide (CO), sulfur dioxide (SO2), and particulate (PM10). In calculating

these emissions, emission factor data from CARB, EPA, and/or the manufacturer are used to estimate emissions for NOx, CO, POC, and PM10. If NOx and POC (hydrocarbon) have a combined emission factor, District policy is to estimate that 5% of the NMHC+NOx emission factor as the POC emission factor when the CARB HC emission factor isn't available independently. The SO2 emission factor (0.05 lb/MMBTU) is from EPA AP-42, Table 3.4-1, which is based on full conversion of fuel sulfur to SO2 and which will therefore be considered applicable to any diesel engine (sulfur content will be assumed to be the California limit of 0.05 wt% sulfur). PM10 certified level no greater than 0.1 g/bhp-hr means an emission level of 0.15 g/bhp-hr or less as determined during a steady-state engine certification test (ISO 8178).

Fire Pumps & Other Engines with No Emission Factor Data– Because of the special requirements of fire pumps, the engines on fire pumps are rarely CARB- or EPA- certified. In addition, the manufacturer rarely has emission factor data on these fire-pump modified engines. As a result, if no data exist, then emission factor data from EPA AP-42, Table 3.4-1, should be used.

The emission factors, which are typically in grams per brake-horsepower-hour (g/bhp-hr), are multiplied by the maximum annual hours of operations and the brake horsepower of the engine to determine the annual rates of emissions of the various criteria pollutants. Note that unless CARB or EPA certified emission factor data is used, the permit evaluator shall require source testing for any engine over 250 HP to verify the manufacturer's emission factors.

LOE Engines – In general, emission data on LOE engines often does not exist, because the engines predated existing emission standards. Because there is no cumulative increase associated with a LOE sources, per Regulation 2-2-212, emission calculations are not required for a LOE diesel engine.

Applicable Requirements

District Rules and Regulations

All portable diesel engines are subject to the Ringlemann No. 2 limitations of Regulation 6-303 (emissions opacity limitations). Properly operated and maintained engines are expected to meet this requirement. All portable diesel engines are also subject to the SO2 limitations of Regulation 9-1-302 (ground level concentration) and 9-1-304 (0.5% by weight in fuel). Compliance with both Regulations 9-1-302 and 9-1-304 is likely since California law mandates using diesel fuel with a 0.05% by weight sulfur.

Any portable diesel engine, which operates exclusively using diesel fuel is not be subject to the requirements of Regulations 9-8-301, 9-8-302, and 9-8-502 per Regulation 9, Rule 8, Section 110.2. However, emergency standby engines (portable or stationary) are subject to the requirements of Regulation 9-8-330, while those emergency engines for essential public use, as defined in Regulation 9-8-233, are subject to Regulation 9-8-331. Regardless of the operating hours allowed in Regulation 9-8-330 or 9-8-331, the permit evaluator cannot approve engine-operating hours in excess of what would fail a Risk Screening Analysis or any operating limitation specified in the compliance with Regulation 2, Rule 5 or the applicable Airborne Toxic Control Measure (ATCM) for portable engines.

ATCM

Portable diesel engines are not subject to the new California Airborne Toxic Control Measure for Stationary Compression Ignition Engines (ATCM) that went into effect on January 1, 2005, as long as they meets the definition of a "portable CI Engine" of ATCM section 93115, title 17, CA Code of Regulations, subsection (d)(50) [i..e., capable of being carried or moved from one location to another and not at the same location for more than 12 consecutive months]. Portable diesel engines are exempt from the stationary ATCM per subsection (c)(1). However, portable diesel engines are subject to their own portable ATCM. The portable ATCM has different standards for "in-use" engines and "low-use" engines.

"**In-Use**"

"In-Use" engines are those engines operated under valid permits or registrations as of December 31, 2005. The standard for "in-use" engines becomes effective on January 1, 2010. The District is working on developing policy for implementing this newest ATCM standard by 2010.

"Low-Use"
A "low-use" engine is defined as an engine, which is operated for 80 hours or less in a calendar year. "Low-use" engines are subject to Section 93116.1(b)(2)(B), which specifies that engines used exclusively in emergency applications or qualifying as low-use engines are subject to satisfying Section 93116.1(b)(3) of the portable ATCM by January 1, 2020. The District is working on developing policy for implementing this newest ATCM standard by 2020.

"New" (i.e., non-"In-use" and non-"Low-use")
Those engines that have not been permitted or registered prior to January 1, 2006 and do not qualify as "low-use" are subject to Section 93116.1(b)(2)(A) of the portable ATCM, which requires that they meet the most stringent of the federal or California emission standard for nonroad engines. A diagram has been provided by CARB that specifies the most stringent of the federal or California emission standards for nonroad engines (i.e., Tier level) based on permitting year.

The permitting engineer should identify the applicable ATCM standards affecting the proposed engine and ensure that the proposed engine will comply with the applicable requirements of the portable ATCM. Template permit conditions are available for each category of portable engine to ensure portable ATCM compliance.

BACT
Unless they are LOE engines, BACT for portable diesel engines is specified in the BACT/TBACT Workbook. The following are the applicable BACT requirements for diesel engines:

Internal Combustion Engines
- I. C. Engine - Compression Ignition < 175 hp
- I. C. Engine - Compression Ignition >= 175 hp

Unless they are LOE engines, for non-emergency diesel engines (i.e., prime use engine), a diesel engine will be permitted only if a gas-fueled engine, or electric motor, is not practical (e.g., a remote location without natural gas availability or electric power, or only a diesel engine will meet the portability and/or power/torque/rpm requirements of the application under review, or the engine is used exclusively for emergency use during involuntary loss of power). The permit evaluator must ensure that the applicant explains why gas fueled engines are not practical for any non-emergency diesel engine under evaluation.

Inform the BACT Coordinator of updates to the BACT/TBACT Workbook.

CEQA
Permit applications which are reviewed following the specific procedures, fixed standards and objective measurements set forth in this chapter (2.3.3) are classified as ministerial and will accordingly be exempt from CEQA review per Regulation 2-1-311.

Risk Screening Analysis
Unless they are LOE engines, typically any portable diesel engine over 50 hp will require a risk screening because the toxics trigger level for diesel particulate is low (0.5 lbs/yr). For portable diesel engines, a worst-case scenario screening analysis shall be performed, because it can potentially be moved to any location that is not within 1000 feet of a school. In addition, a Risk Management Policy for Diesel Engines applies. A permit applicant may apply alternative and/or additional emissions control (e.g., catalyst-based diesel particulate filters (DPFs), diesel oxidation catalysts, ultra-low sulfur diesel fuel) or other risk reduction measures (e.g., increasing stack height within what is considered Good Engineering Practice, maximizing source/receptor separation distances, modifying operating hours to minimize public exposure) as necessary to reduce risks to acceptable levels specified in the policy. All engines not equipped with a DPF must be "plumbed" to facilitate the installation of a DPF at a future date.

In addition to the above-mentioned source-specific applicable requirements, other requirements may also be applicable depending on the facility, its application emissions, and its source location:

- ❑ Offsets
- ❑ Prevention of Significant Deterioration

LOE Engines – Offsets, PSD, and school notification requirements are not triggered for LOE engines, because they are not considered new or modified sources.

Permit Conditions
Standardized conditions for portable diesel engines are available from the Permit Condition Guidance. Refer to the Evaluation Report Template Guidance to obtain the Microsoft Word formatted permit conditions for this source category.