

Draft Engineering Evaluation
SFPUC Sunol Corporation Yard
505 Paloma Way, Sunol, CA 94586
Plant No. 18476
Application No. 30999

Project Description: New Portable Emergency Diesel Engine-Generator Set

BACKGROUND

SFPUC (San Francisco Public Utilities Commission) Sunol Corporation Yard is requesting a Permit to Operate (PTO) for the following equipment:

S-6 Portable Emergency Engine Generator Set: Diesel Engine, Make John Deere, Model 6068TF275, Model Year 2007, Rated 150 BHP

The portable emergency diesel engine-generator set was installed at 505 Paloma Way, Sunol, CA 94586, in year 2017. The engine provides support to facility operations during emergencies as defined by Regulation 9-8-231. The engine will be able to operate unrestricted during emergency-use events. However, the engine’s annual maintenance and testing hours will be limited to 50 hours per year. The criteria pollutants associated with the sources are nitrogen oxides (NO_x), carbon monoxide (CO), precursor organic compounds (POC), sulfur dioxide (SO₂), and particulate matter (PM).

The proposed engine meets the Environmental Protection Agency (EPA) Tier 2 Interim emission standards. The engine will burn commercially available CARB ultra-low sulfur diesel fuel. The sulfur content of the diesel fuel shall not exceed 0.0015% by weight. The operation of the engines should not pose any health threat to the surrounding community or the public at large.

Portable engines are non-road engines as defined by 40 CFR 89.2. Section 209(e) of the Federal Clean Air Act and Appendix A to Subpart A of 40 CFR 89 do not allow states “or political subdivisions” to impose emission control on non-road engines. The exception is standards and other requirements imposed by the State of California necessary to achieve attainment of air pollution standards. The regulatory analysis for this application will take this into account.

The applicant has submitted supporting documents, which include a picture of the engine nameplate and some of the manufacturer specifications. However, some of the needed information were not available for this engine. The missing but needed information were adapted from another but similar diesel engine. Table 1 provides a summary of all the information compiled for this engine.

Table 1. Engine Specifications and Certified Emission Factors for S-6		
Engine Manufacturer	John Deere	
Model	6068TF275	
Model Year	2007	
Family Name		
Engine Power Rating, hp (kW)	150 (112)	
Fuel Consumption ¹, gal/hr	7.9	
Displacement, L (cu. in.)	6.8 (415)	
	g/kW-hr	g/bhp-hr ²
Non-Methane Hydrocarbons (NMHC)	0.54	0.4
NO_x	6.03	4.5
CO	4.96	3.7
PM	0.30	0.22

¹ Adapted from a similar diesel engine.

² Emissions: EPA Tier 2 Certification.

EMISSION CALCULATIONS

Table 2. Source Potential to Emit Review						
Pollutant	Emission Rate (g/bhp-hr)	PTE Daily Operating Hours¹ (hr/day)	PTE Daily Emissions (lb/day)	PTE Annual Operation² (hr/yr)	PTE Annual Emissions (lb/yr)	PTE Annual Emissions (ton/yr)
POC ³	0.4	24	3.175	50	6.61	0.003
NO _x	4.5	24	35.714	50	74.4	0.037
CO	3.7	24	29.365	50	61.18	0.031
PM ⁴	0.22	24	1.746	50	3.64	0.002
SO ₂ ⁵	0.0055	24	0.044	50	0.09	0.000

¹Maximum daily operation is assumed to be 24 hours.

²Maximum annual operation is assumed to be 50 hours, per Regulation 9-8-330. Maximum annual operation will only include reliability-related activities as defined in Regulation 9-8-232.

³NMHC is assumed to be in the form of POC.

⁴PM is assumed to be in the form of PM with a diameter of less than 10 μm (PM₁₀).

⁵SO₂ emissions are based upon the Permit Handbook. The Permit Handbook suggests the use of EPA AP-42, Table 3.4-1. Assuming a sulfur content of 15 ppm, pursuant to the fuel requirements of CARB, the emission factor equates to 0.0015 lbs SO₂/MMBtu. The following provides the calculations for the emission rate of SO₂.

$$SO_2: 8.09E-3 (\% S \text{ in the fuel}) \text{ lb/hp-hr} = 8.09E-3 (0.0015) (454 \text{ g/lb}) = 0.0055 \text{ g/hp-hr}$$

California diesel fuel has 0.0015% Sulfur.

Table 3 provides the PTE (Potential to Emit) for the facility.

Table 3. Facility Sources PTE Emission Review			
Pollutant	Existing (ton/yr)	New (ton/yr)	Total (ton/yr)
POC	0.003	0.003	0.006
NO _x	0.067	0.037	0.104
CO	0.016	0.031	0.047
PM	0.003	0.002	0.005
SO ₂	0.000	0.000	0.000

Health Risk Assessment

The proposed engine meets the EPA Tier 2 emission standards with a PM emission factor of 0.22 g/bhp-hr. Using the EPA-certified PM emission factor for the engine, a 50 hour per year limit for reliability-related activities, and assuming PM is in the form of diesel exhaust PM, the following annual emission rate for diesel exhaust PM was calculated.

$$\frac{0.22 \text{ g PM}}{\text{bhp-hr}} \times 150 \text{ bhp} \times \frac{\text{lb}}{453.6 \text{ g}} \times \frac{50 \text{ hr}}{\text{yr}} = 3.64 \text{ lb PM/yr} > 0.26 \text{ lb PM/yr}$$

Pursuant to Regulation 2-5-110, the application is subject to the provisions of this rule since the increase in diesel exhaust PM emissions from the project is above the trigger level listed in Table 2-5-1 of this regulation.

Being portable, this engine does not qualify for the HRSA Streamlining Policy for Stationary Emergency Standby Engines.

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Regulation 2-5 requires that the cumulative impacts from all related projects permitted within the last three years be included in the health risk assessment. The facility did not submit another application within the last three years.

A health risk assessment (HRA) was completed for this permit application. This analysis estimates the incremental health risk resulting from toxic air contaminant (TAC) emissions from non-emergency operation of one portable standby generator diesel engine at this facility. Results from this HRA indicate that the project cancer risk is estimated at **0.25 in a million**, and the project chronic hazard index is estimated at **0.00019**. In accordance with the District's Regulation 2, Rule 5, this source does not require TBACT because the estimated source risk is a cancer risk less than 1.0 in a million and/or a chronic hazard index less than 0.2. This project complies with the Regulation 2-5-302 project risk requirements.

BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

Per Regulation 2, Rule 2, Section 301, BACT is required for new or modified sources with potential emissions of 10.0 pounds per day or more of POC, NPOC, NOX, PM10, PM2.5, or SO2. However, S-6 is not subject to BACT because it is a non-road engine, and the federal Clean Air Act Section 209(e) preempts states and Districts from adopting any standard relating to control of emissions from non-road engines that is more stringent than the applicable federal Tier standard.

OFFSETS

Pursuant to Regulation 2-2-302, offsets must be provided for any new or modified source at a facility that emits, or is permitted to emit, more than 10 tons per year of POC or NO_x. Furthermore, pursuant to Regulation 2-2-303, offsets must be provided for any new or modified source with a cumulative increase that exceeds 100 tons per year of PM₁₀ or SO₂. As shown in Table 3, the facility emissions do not exceed the offset threshold for any pollutant. Therefore, offsets are not triggered for this project.

NEW SOURCES PERFORMANCE STANDARDS (NSPS)

According to §60.4200(a)(2)(i), the engine may be subject to the requirements of 40 CFR Part 60 Subpart IIII, "Standards of Performance of Stationary Compression Ignition Internal Combustion Engines."

The requirements of this subpart do not apply because the engine is not stationary.

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

Pursuant to §63.6585, engines located at an area source are subject to the requirements of 40 CFR Part 63 Subpart ZZZZ, "National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines."

The requirements of this subpart do not apply because the engine is not stationary.

CARB AIRBORNE TOXIC CONTROL MEASURE FOR PORTABLE COMPRESSION IGNITION ENGINES

Pursuant to §93116.1, engines with maximum power rating equal to or greater than 50 hp are subject to this regulation. S-6 is rated at 150 hp and subject to the requirements of this regulation. Furthermore, the facility's fleet of portable engines is small. Pursuant to §93116.2 (a)(17)(B) a small fleet has a total maximum horsepower of 750 bhp or less for all portable engines under common ownership and control of a fleet on June 30, 2019.

According to §93116.3(b)(3), a small fleet shall not newly designate Tier 2 engines, built prior to January 1, 2009 and rated in between 50 hp to 750 hp, as emergency-use after July 1, 2022. S-6 is a Tier 2 engine and has been in use as of 2017. Therefore, this engine can be designated as emergency-use.

Pursuant to §93116.3(c)(1), Tier 2 engines as part of a Small Fleet, built prior to 1/1/2009, may not operate in California after 1/1/2023. Portable diesel-fueled emergency-use engines are excluded from the fleet requirements of this regulation pursuant to §93116.3(c)(3)(B). Since S-6 is portable diesel-fueled emergency-use engines, this engine is excluded from the fleet requirements of this regulation.

S-6 is expected to meet the requirements of this regulation.

STATEMENT OF COMPLIANCE

Regulation 1

The engine is subject to and expected to comply with the requirements of Regulation 1-301 (Public Nuisance).

Regulation 2, Rule 1

Pursuant to Regulation 2-1-114.2.1, internal combustion engines greater than 50 hp are subject to the requirements of Regulation 2-1. According to Regulation 2-1-302, prior to the use or operation of any equipment which may cause emission, a PO must be obtained. The facility has submitted this application and therefore is expected to comply with Regulation 2-1.

California Health & Safety Code §42301.6 and Regulation 2-1-412

Pursuant to California Health & Safety Code §42301.6(a), prior to approving an application for a permit to construct or modification of a source, which is located within 1,000 feet from the outer boundary of a school site, the District shall prepare a public notice as detailed in §42301.6. §42301.9(a) defines a “school” as any public or private school used for the purposes of the education of more than 12 children in kindergarten or any grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in private homes.

Public School Notification

The proposed engine will be located within 1,000 feet of the outer boundary of a school (Sunol Glen School at 11601 Main St., Sunol, CA 94586). Therefore, public notification pursuant to Reg. 2-1-412 is required. A public notice was prepared and sent to all addresses within 1000 feet of the Portable diesel Engine Generator set and parents and guardians of students of Sunol Glen School. The public comment period lasted from 00/00/2021 to 00/00/2021. At the end of the comment period, there was no written comment and no voicemail received. **(This template to be updated according to this report).**

Regulation 2-1-413 establishes operating requirements and emission limitations for multiple locations operating limits. This engine is not expected to operate in multiple locations.

Regulation 2, Rule 2

Pursuant to Regulation 2-2-301, BACT is required for a new source with PTE emission increases that equal 10.0 lbs or greater of POC, NPOC, NO_x, SO₂, PM₁₀, or CO. This source is not subject to BACT because it is a non-road engine.

Furthermore, pursuant to Regulation 2-2-302, a facility that emits more than 10 tons of POC or NO_x per year is subject to offsets. The facility is not expected to emit more than 10 tons of POC or NO_x per year and will not require the provision of offsets.

Lastly, the facility is not expected to emit greater than 100 tons per year or more of any air pollutant subject to regulation under the Clean Air Act or 10 tons of a single hazardous air pollutant (HAP) or 25 tons of a combination of HAPs per year. The facility is not a major facility and is not required to meet the requirements of Regulation 2-2-303 (Offsets for PM₁₀ and SO_x), 2-2-304 (Prevention of Significant Deterioration (PSD)), and 2-2-405 (Publication and Public Comment).

Regulation 2, Rule 5

Pursuant to Regulation 2-5-110, the provisions of this rule are not subject to sources with an increase in emissions less than the trigger levels listed in Table 2-5-1. Based upon 50 hours per year of reliability-related operation, the diesel particulate emissions from the proposed engine exceeds the diesel exhaust PM trigger level of 0.26 lbs per year.

Results from a health risk assessment conducted indicate that, this source complies with the TBACT and project risk requirements.

Regulation 6, Rule 1

Non-road engines are not subject to Regulation 6, Rule 1 because this regulation was not imposed by the State of California and deemed necessary to achieve attainment with air pollution standards.

Regulation 9, Rule 1

The engine is not subject to this regulation because it is a non-road engine and Regulation 9, Rule 1 was not imposed by the State of California and deemed necessary to achieve attainment with air pollution standards. However, this standard will be met since California diesel fuel is limited to 0.0015% by weight.

Regulation 9, Rule 8

Regulation 9, Rule 8 applies to stationary internal combustion engines with a rated output greater than 50 bhp. The definition of stationary internal combustion engine includes engines that are operated or intended to be operated at a specific site for more than one year. S-6 is a portable engine, and the federal preemption in Section 209(e) of the Clean Air Act prohibits adoption of any standard for non-road engines. Therefore, this rule does not apply to S-6.

California Environmental Quality Act (CEQA) and Regulation 2-1

Pursuant to Regulation 2-1-311, an application for a proposed new or modified source will be classified as ministerial and will accordingly be exempt from the CEQA requirement of Regulation 2-1-310 if the District's engineering evaluation and basis for approval or denial of the permit application for the project is limited to the criteria set forth in Regulation 2-1-428 and to the specific procedures, fixed standards, and objective measurements set forth in the District's Permit Handbook and BACT/TBACT Workbook. The engineering review for this project requires only the application of procedures and standard permit conditions as specified in District permit handbook chapter 2.3.3 (Portable Diesel Engines). Therefore, the application is ministerial and is not subject to CEQA review.

PERMIT CONDITIONS

Permit Condition # XXXXX will apply to S-6.

1. The owner/operator shall not exceed 50 hours per year per engine for reliability-related activities.
[Basis: Cumulative Increase and 17 CCR §93116.2(a)(15)]
2. The owner/operator shall operate only for the following purposes:
 - a. To mitigate emergency conditions;
 - b. For emission testing to demonstrate compliance with a District, State, or Federal emission limit; or,
 - c. For reliability-related activities (maintenance and other testing, excluding emission testing).

Operating while mitigating emergency conditions or while emission testing to show compliance with District, State, or Federal emission limits is not limited.

[Basis: Cumulative Increase, 17 CCR §93116.2(a)(15), and Regulation 2-1-320]

3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained.
[Basis: 17 CCR §93116.4(b)(2)(A)]
4. The owner/operator shall maintain the following monthly records in a District-approved log for at least five years from the date of entry. Log entries shall be retained on-site at a central location, and made immediately available to the District staff upon request.
 - a. Hours of operation for reliability-related activities (maintenance and testing);
 - b. Hours of operation for emission testing to show compliance with emission limits;
 - c. Hours of operation (emergency);
 - d. For each emergency, the nature of the emergency condition;
 - e. Fuel usage for each engine(s); and,
 - f. Location and total hours of operation at each off-site location.[Basis: Basis: 17 CCR §93116.4]

5. At School and Near-School Operation:
If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:

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The owner/operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:

- a. Whenever there is a school sponsored activity (if the engine is located on school grounds).
- b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session.

"School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, athletic field, or other areas of school property but does not include unimproved school property.

[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

RECOMMENDATION

The Air District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, State and Federal air quality-related regulations. The preliminary recommendation is to issue a Permit to Operate for the equipment listed below.

I recommend that the Air District:

To waive the Authority to Construct and issue the Permit to Operate to SFPUC Sunol Corporation Yard for the following equipment.

**S-6 Portable Emergency Generator Set: Diesel Engine, Make John Deere, Model 6068TF275,
 Model Year 2007, Rated 150 BHP**

By: Sadegh Sadeghipour
 Air Quality Engineer

Date: 8/10/2021