

DRAFT ENGINEERING EVALUATION

Facility ID No. 14873
County of San Mateo
31 Tower Road and 40 Tower Road, San Mateo, CA 94402
Application No. 29357

Background

County of San Mateo is applying for an Authority to Construct and a Permit to Operate for the following equipment:

- S-2 Emergency Standby Diesel Generator Set -- (31 Tower Road)**
Make: Caterpillar, Model: C7.1, Model Year: 2018
280 bhp, 1.87 MMBtu/hr
and
- S-3 Emergency Standby Diesel Generator Set – (40 Tower Road)**
Make: Caterpillar, Model: C9, Model Year: 2018
398 bhp, 2.66 MMBtu/hr

The criteria pollutants are nitrogen oxides (NO_x), carbon monoxide (CO), precursor organic compounds (POC) from unburned diesel fuel, sulfur dioxide (SO₂) and particulate matter (PM₁₀). These five pollutants are briefly discussed on the District's web site at www.baaqmd.gov.

S-2 and S-3 meet the Environmental Protection Agency and California Air Resources Board (EPA/CARB) Tier 3 Off-road standard. These engines will burn commercially available California low sulfur diesel fuel. The sulfur content of the diesel fuel will not exceed 0.0015% by weight.

This evaluation report will discuss compliance of the proposed project with all applicable rules and regulations.

Emissions

Table 1. Emissions from S-2 from EPA Certificate Emissions Data

Pollutant	Emission Factor (g/bhp-hr)	Max Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Annual Emissions (tons/yr)
NO _x	2.61	38.67	80.56	0.040
POC	0.14	2.07	4.32	0.002
CO	0.75	11.11	23.15	0.012
PM ₁₀ /PM _{2.5} ¹	0.10	1.48	3.09	0.002
SO ₂	N/A ²	0.07	0.14	0.000

Table 2. Emissions from S-3 from EPA Certificate Emissions Data

Pollutant	Emission Factor (g/bhp-hr)	Max Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Annual Emissions (tons/yr)
NO _x	2.54	53.49	111.43	0.056
POC	0.18	3.79	7.90	0.004
CO	0.97	20.43	42.56	0.021
PM ₁₀ /PM _{2.5} ¹	0.10	2.11	4.39	0.002
SO ₂	N/A ²	0.10	0.20	0.000

Basis:

- S-2 EPA emissions data: EPA Engine Family JPKXL07.0PW1
- S-3 EPA emissions data: EPA Engine Family JCPXL08.8NZS
- Annual emissions: Reliability-related activity 50 hours for S-2 and S-3
- Max daily emissions: 24-hour operation
- ¹ Conservative Assumption: All PM emissions are PM_{2.5}
- ² SO₂ emission factor from AP-42 Table 3.4-1, SO₂ (15 ppm) = 0.00809*0.0015 lb SO₂/bhp-hr

Plant Cumulative Increase

Table 3 summarizes the cumulative increase in criteria pollutant emissions that will result from this application.

Table 3. Plant Cumulative Emissions Increase, Post 4/5/91

Pollutant	Existing Emissions Post 4/5/91 (tons/yr)	Application Emissions (tons/yr)	Cumulative Emissions (tons/yr)
NO _x	0.000	0.096	0.096
POC	0.000	0.006	0.006
CO	0.000	0.033	0.033
PM ₁₀ /PM _{2.5}	0.000	0.004	0.004
SO ₂	0.000	0.000	0.000

Health Risk Assessment (HRA)

At a maximum rate of 7.47 lbs/year, the diesel particulate emissions from the project are greater than the toxic trigger level of 0.26 lb/year. All PM₁₀ emissions are considered diesel particulate emissions. There were no other related projects permitted in the last three years.

S-2 and S-3 are subject to the District’s HRA streamlining policy for stationary diesel-fueled combustion engines used for backup power or fire pumps. Per the District’s streamlining policy, this project does not require a refined HRA because this project meets the following criteria:

- It is not located at a Data Center or Internet Service Exchange
- The total engine rated output is less than 600 bhp *or* the total engine PM emissions are less than 9.9 lbs per year
- The distance to the nearest receptor is greater than 100 ft
- Complies with CARB ATCM for Stationary Compression Ignition Engines
- Complies with BAAQMD TBACT Requirements
- Complies with Standard BAAQMD Template Permit Conditions

The project is presumed to follow project risk requirements as recommended, limiting reliability-related activity hours by permit condition.

Best Available Control Technology (BACT)

In accordance with Regulation 2-2-301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NOx, CO, SO₂, or PM₁₀.

BACT for these sources is presented in the current BAAQMD BACT/TBACT Workbook for IC Engine – Compression Ignition: Stationary Emergency, non-Agricultural, non-direct drive fire pump, Document #96.1.3, Revision 7. dated 12/22/2010. For NOx, CO, POC and PM₁₀, BACT(2) is the CARB ATCM standard for the respective pollutant at the applicable horsepower rating. For SO₂, BACT(2) is using fuel with sulfur content not to exceed 0.0015%, or 15 ppm. The more restrictive BACT(1) standards are not applicable to these engines because they will be limited to operation as emergency standby engines.

S-2 satisfies the current BACT(2) standards for the following pollutants which exceed 10 lb/day in Table 1:

Pollutant	Emission Factor	BACT(2) Standard
NOx	2.61 g/bhp-hr	2.85 g/bhp-hr
CO	0.75 g/bhp-hr	2.60 g/bhp-hr

S-3 satisfies the current BACT(2) standards for the following pollutants which exceed 10 lb/day in Table 2:

Pollutant	Emission Factor	BACT(2) Standard
NOx	2.54 g/bhp-hr	2.85 g/bhp-hr
CO	0.97 g/bhp-hr	2.60 g/bhp-hr

Offsets

Since the facility permitted levels are below the offset triggers levels specified in Regulation 2-2, offsets are not required.

Statement of Compliance

The owner/operator is expected to comply with all applicable requirements. Key requirements are listed below:

Airborne Toxic Control Measure for Stationary Compression Ignition Engines

ATCM, 5/19/2011, section 93115, title 17, CA Code of Regulations

District Rules

Regulation 6-1-303 (*Ringelmann No. 2 Limitation*)

Regulation 9-1-301 (*Limitations on Ground Level Concentrations of SO₂*)

Regulation 9-8 (*NO_x and CO from Stationary Internal Combustion Engines*)

Section 9-8-110.5 – Limited exemption for emergency standby engines

Section 9-8-330 – Hours of operation for emergency standby engines

Section 9-8-502 – Recordkeeping

California Environmental Quality Act (CEQA)

This project is ministerial under the District Regulation 2-1-311 (Permit Handbook Chapter 2.3), and is therefore not subject to CEQA review.

New Source Performance Standards (NSPS)

40 CFR 60, Subpart IIII (*Stationary Compression Ignition Internal Combustion Engines*)

National Emissions Standards for Hazardous Air Pollutants (NESHAP)

40 CFR 63, Subpart ZZZZ (*Stationary Reciprocating Internal Combustion Engines (RICE)*)

Prevention of Significant Deterioration (PSD)

This application is not part of a PSD project as defined in Regulation 2-2.

School Notification (Regulation 2-1-412)

This project is located within 1,000 feet from the nearest K-12 school and therefore is subject to the public notification requirements of Regulation 2-1-412

Permit Conditions

Permit Condition #22850 for S-2 & S-3

1. The owner/operator shall not exceed 50 hours per year per engine for reliability-related testing. [Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
2. The owner/operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, State or Federal emission limit, or for reliability-related activities (maintenance and other testing, but 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: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
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: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's 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).[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

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:

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]

End of Conditions

Recommendation

The 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 an Authority to Construct/Permit to Operate for the equipment listed below. However, the proposed source will be located within 1,000 feet of a school, which triggers the public notification requirements of District Regulation 2-1-412. After the comments are received and reviewed, the District will make a final determination on the permit.

I recommend that the District initiate a public notice and consider any comments received prior to taking any final action on issuance of an Authority to Construct/Permit to Operate for the following sources:

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