

DRAFT ENGINEERING EVALUATION

Facility ID 202754
Candlestick Point/Bayview Vehicle Triage Center
500 Hunters Point Expressway, San Francisco, CA 94124
Application No. 663096

Background

In October 2021, the City of San Francisco (City) approved the Candlestick Point/ Bayview Vehicle Triage Center (VTC). The City has been operating the VTC/Low Barrier Navigation Center since January 2022 to provide secure shelter and services to unhoused persons and support their moving to permanent housing. The site includes electrical utilities, but upgrades are needed to provide permanent power to the site. It is expected these upgrades will be completed in the Spring of 2023. To provide temporary power to the VTC, the San Francisco Department of Public Works and Department of Homelessness and Supportive Housing are applying for an Authority to Construct/Permit to Operate for the generators (engines) listed below. The City intends to cease operating the engines once permanent power is established.

- S-1 Prime Diesel Engine**
Make: John Deere, Model: 6068HFG05, Model Year: 2019
215 bhp, 1.22 MMBTU/hour,
w/ Integral Diesel Oxidation Catalyst & Selective Catalytic Reduction

- S-2 Prime Diesel Engine**
Make: Isuzu, Model: BR-4HK1X, Model Year: 2018
170.8 bhp, 0.98 MMBTU/hour
w/ Integral Diesel Oxidation Catalyst & Selective Catalytic Reduction

- S-3 Prime Liquefied Petroleum Gas (LPG) Engine**
Make: PSI, Model: 8.8 Industrial, Model Year: 2022
230.12 bhp, 1.84 MMBTU/hour
w/ Integral Catalyst

The engines will emit the following criteria pollutants: nitrogen oxides (NO_x), carbon monoxide (CO), precursor organic compounds (POC) from unburned fuel, sulfur dioxide (SO₂) and particulate matter (PM_{2.5}/PM₁₀). The engines will also emit toxic air contaminants (TACs) as shown in Table 7 and Table 8. As discussed in more detail below, the project will comply with the District's project health risk limits in Regulation 2-5-302.

S-1 and S-2 meet the Environmental Protection Agency and California Air Resources Board (EPA/CARB) Final Tier 4 Off-road standard. The engines will burn commercially available California low sulfur diesel fuel. The sulfur content of the diesel fuel will not exceed 0.0015% by weight. Both S-1 and S-2 will be equipped with an integral diesel oxidation catalyst and integral selective catalytic reduction (SCR) to reduce emissions.

S-3 is a spark-ignited engine that will be fueled with liquefied petroleum gas (LPG). S-3 will also be equipped with an integral catalyst to reduce emissions.

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

Emissions

This section lays out the daily and annual emissions for each source. Table 1 below summarizes the daily operating hour limitations and the annual hour limitations for each engine. These operating hours will be used to calculate daily and annual emission rates for each engine.

Table 1. Operating Schedule for S-1, S-2, and S-3

Source ID	Maximum Daily Hours (hours/day)	Annual Operating Hours Limit (hours/year)
S-1	24	678
S-2	24	801
S-3	20	2,352

For S-1 and S-2, the emission factors for NO_x, POC, CO, and Particulate Matter (PM₁₀/PM_{2.5}) were obtained from the EPA Annual Certification Data for Nonroad Compression Ignition Engines. The SO₂ emission factors are from AP-42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Table 3.4-1 Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual-Fuel Engines.

Table 2. Annual and Daily Emissions from S-1

Pollutant	Emission Factor (g/kW-hour)	Emission Factor (g/bhp-hour)	Max Daily Emissions (lb/day)	Annual Emissions (lbs/year)	Annual Emissions (tons/year)
NO _x	0.06	0.0447	0.51	14.38	0.0072
POC	0.02	0.0149	0.17	4.79	0.0024
CO	0.01	0.0075	0.085	2.40	0.0012
PM ₁₀ /PM _{2.5} ¹	0.02	0.0149	0.17	4.79	0.0024
SO ₂	based on concentration ²		0.062	1.76	0.00088

Basis:

- Annual emissions: Operation for 678 hours for S-1
- Max daily emissions: 24-hour operation
- Emissions from EPA Engine Family KJDXL06.8312 for S-1
- Emission factors for NO_x, POC, CO, and PM are assumed to be after CARB certified abatement, per CARB Executive Order U-R-004-0580
- 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-hour

Table 3. Annual and Daily Emissions from S-2

Pollutant	Emission Factor (g/kW-hour)	Emission Factor (g/bhp-hour)	Max Daily Emissions (lb/day)	Annual Emissions (lbs/year)	Annual Emissions (tons/year)
NO _x	0.12	0.0895	0.81	26.99	0.013
POC	0.01	0.0075	0.067	2.25	0.0011
CO	0.10	0.0746	0.67	22.49	0.011
PM ₁₀ /PM _{2.5} ¹	0.02	0.0149	0.13	4.50	0.0022
SO ₂	based on concentration ²		0.05	1.66	0.00083

Basis:

- Annual emissions: Operation for 801 hours for S-2
- Max daily emissions: 24-hour operation
- Emissions from EPA Engine Family JSZXL05.2RXB for S-2
- Emission factors for NO_x, POC, CO, and PM are assumed to be after CARB certified abatement, per CARB Executive Order U-R-006-0454
- 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-hour

Both S-1 and S-2 will include an integral selective catalytic reduction (SCR), which will abate NO_x emissions. NO_x in the exhaust reacts with ammonia and oxygen in the presence of a catalyst to form nitrogen and water. However, there will be a small amount of ammonia that will not react and will slip through the SCR. Below are estimated Ammonia emissions from this project.

Table 4. Emissions from Ammonia Slip for S-1 & S-2

Source #	Ammonia Slip Conc. (ppmv @ 15% O ₂)	Ammonia Slip Conc. (ppmv @ 0% O ₂)	Actual Temp. (°F)	Actual Exhaust Flow Rate (acfm)	Dry Standard Exhaust Flow Rate (dscfm)	Hourly Emission Rate (lb/hour)	Annual Emission Rate (lbs/year)
S-1	10	35.42	685	812	171.46	0.016	10.9
S-2	10	35.42	658	512	110.73	0.010	8.33

Basis:

- Annual emissions: Operation for 678 hours for S-1 and 801 hours for S-2
- It is assumed that the exhaust water content is 12.5% by weight
- It is assumed that the exhaust is at standard pressure
- Volumetric concentrations were corrected to 0% O₂ from 15% O₂
- The exhaust flow rates were corrected to 0% O₂ from 10% O₂

For S-3, the emission factors for NO_x, POC, and CO were obtained from the EPA Annual Certification Data for Large Nonroad Spark Ignition Engines. Particulate matter (PM₁₀/PM_{2.5}) and sulfur dioxide (SO₂) emission factors are based on AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 3.2.4.1 Control Techniques for 4-Cycle Rich-Burn Engines and Table 3.2-3 Uncontrolled

Emission Factors for 4-Stroke Rich-Burn Engines ³. The proposed engine is equipped with an integral catalyst to reduce emissions of NOx, POC, and CO.

Table 5. Annual and Daily Emissions from S-3

Pollutant	Emission Factor (g/kW-hour)	Emission Factor (g/bhp-hour)	Max Daily Emissions (lbs/day)	Annual Emissions (lbs/year)	Annual Emissions (tons/year)
NOx	0.19	0.142	1.44	169.04	0.085
POC	0.01	0.0075	0.076	8.90	0.0044
CO	1.30	0.97	9.84	1,156.58	0.578
³ PM ₁₀ /PM _{2.5}	0.095	0.071	0.72	84.08	0.042
³ SO ₂	0.0029	0.0021	0.022	2.55	0.0013

Basis:

- Annual emissions: Operation for 2,352 hours for S-3
- Max daily emissions: 20-hour operation
- 230.12 bhp Max Rated Output
- 713 cubic feet /hour Max fuel use Rate = 19.59 gal LPG/hour = 1.842 MMBTU/hour
- NOx, POC and CO emission factors are from the EPA Annual Certification Data for Large Nonroad Spark Ignition Engines. Engine Family: NPSIB8.80EMT
- The engine is equipped with an integral catalyst, therefore NOx, POC, and CO emission factors are assumed to be after abatement.
- The emission factor of NOx is combined with POC. It is assumed that the composition is 95% NOx and 5% POC.

³SO₂ Emission Factor = 5.88 E-04 lb/MMBtu; calculations assume 100% of fuel sulfur conversion with the content in natural gas = 2000 gr/10⁶scf. PM₁₀/PM_{2.5} fuel input emission factor = 9.50E-03 lb/MMBtu (filterable) + 9.91E-03 lb/MMBtu (condensable) = 1.94E-02 lb/MMBtu; aerodynamic particle diameter = < 1 μm, for the purposes of filterable emissions PM₁₀= PM_{2.5}. These emissions are expected to be negligible but included for completeness.

Cumulative Increase

Table 6 summarizes the cumulative increase in criteria pollutant emissions that will result from this application.

Table 6. Cumulative Emissions Increase

Pollutant	Existing Emissions Post 4/5/91 (tons/year)	Application Emissions (tons/year)	Cumulative Emissions (tons/year)
NOx	0.000	0.105	0.105
POC	0.000	0.008	0.008
CO	0.000	0.591	0.591
PM ₁₀ /PM _{2.5}	0.000	0.047	0.047
SO ₂	0.000	0.003	0.003

Toxic Air Contaminant Emissions

The District’s regulation of TACs is laid out in Regulation 2, Rule 5. As discussed in the following sections, this rule addresses requirements related to preparing health risk assessments, when Best Available Control Technology for Toxics (TBACT) is required, and project health risk limitations.

For the diesel engines (S-1 & S-2), the relevant toxic air contaminants (TACs) are Diesel Particulate Matter (Diesel PM) and Ammonia. All PM₁₀ emissions are assumed to be Diesel PM. Table 7 summarizes the TAC emissions from S-1 and S-2. S-3 will not emit Diesel PM or Ammonia, so emissions from S-1 and S-2 constitute the project emissions for Diesel PM and Ammonia.

Table 7. Toxic Air Contaminant Review for Diesel Engines S-1 & S-2

Source #	TAC	CAS	Hourly Emissions (lb/hour)	Acute Trigger Level (lbs/hour)	Annual Emissions (lbs/year)	Chronic Trigger Level (lbs/year)	Exceeds Trigger Level?
S-1	Diesel PM	N/A	-	-	4.79E+00	2.60E-01	Yes
	Ammonia	7667-41-7	1.61E-02	1.40E+00	1.09E+01	7.70E+03	No
S-2	Diesel PM	N/A	-	-	4.50E+00	2.60E-01	Yes
	Ammonia	7667-41-7	1.04E-02	1.40E+00	8.33E+00	7.70E+03	No
Project	Diesel PM	N/A	-	-	9.29E+00	2.60E-01	Yes
	Ammonia	7667-41-7	2.65E-02	1.40E+00	1.93E+01	7.70E+03	No

Notes:

1. Annual emissions are based on a maximum of 678 hours per year for S-1 and 801 hours per year for S-2.

For the LPG engine (S-3), the relevant TACs are shown in Table 8. Because S-1 and S-2 will not emit these TACs, Table 8 provides the project emissions for the listed TACs. TAC emission factors are from the California Air Toxics Emission Factors (CATEF) and the Compilation of Air Pollutant Emissions Factor: AP-42. CATEF emission factors are preferentially chosen over AP-42 factors, such that AP-42 emission factors are only used for TACs not included in CATEF. If the AP-42 emission factor is based on the detection limit, per Air District policy, the emission factor will equal 1/2 of the AP-42 emission factor.

Table 8. Toxic Air Contaminant Review for LPG Engine S-3

Compound	Emission Factor (lb/MMBTU)	Basis	Hourly Emission Rate (lbs/hour)	Acute Trigger Level (lbs/hour)	Annual Emission Rate (lbs/year)	Chronic Trigger Level (lbs/year)	Exceeds Acute or Chronic Trigger Level?
1,1,2,2-Tetrachloroethane	2.53E-05	AP-42	4.7E-05	None	1.1E-01	1.40E+00	No
1,1,2-Trichloroethane	7.65E-06	AP-42	2.8E-05	None	6.6E-02	5.00E+00	No
1,1-Dichloroethane	5.65E-06	AP-42	2.1E-05	None	4.9E-02	5.00E+01	No
1,3-Butadiene	4.03E-05	CATEF	1.9E-04	2.90E-01	4.4E-01	4.80E-01	No
Acetaldehyde	3.42E-04	CATEF	1.6E-03	2.10E-01	3.8E+00	2.90E+01	No
Acrolein	2.12E-04	CATEF	9.9E-04	1.10E-03	2.3E+00	1.40E+01	No
Benzene (no control)	7.39E-04	CATEF	3.4E-03	1.20E-02	8.1E+00	2.90E+00	Yes
Carbon Tetrachloride	8.85E-06	AP-42	3.3E-05	8.40E-01	7.7E-02	1.90E+00	No
Chlorobenzene	6.45E-06	AP-42	2.4E-05	None	5.6E-02	3.90E+04	No
Chloroform	6.85E-06	AP-42	2.5E-05	6.60E-02	5.9E-02	1.50E+01	No
Ethylbenzene	4.49E-06	CATEF	2.1E-05	None	4.9E-02	3.30E+01	No
Ethylene Dibromide	1.07E-05	AP-42	3.9E-05	None	9.2E-02	1.10E+00	No
Formaldehyde (no control)	9.10E-04	CATEF	4.2E-03	2.40E-02	1.0E+01	1.40E+01	No
Methanol	3.06E-03	AP-42	5.6E-03	1.20E+01	1.3E+01	1.50E+05	No
Methylene Chloride	4.12E-05	AP-42	7.6E-05	6.20E+00	1.8E-01	8.20E+01	No
Naphthalene	2.96E-05	CATEF	1.4E-04	None	3.2E-01	2.40E+00	No
PAH Equivalent as Benzo(a)pyrene	8.36E-08	CATEF	3.3E-07	None	7.7E-04	3.30E-03	No
Propylene	6.19E-03	CATEF	2.9E-02	None	6.8E+01	1.20E+05	No
Styrene	5.95E-06	AP-42	2.2E-05	9.30E+00	5.2E-02	3.50E+04	No
Toluene	4.14E-04	CATEF	1.9E-03	2.20E+00	4.5E+00	1.60E+04	No
Vinyl Chloride	3.59E-06	AP-42	1.3E-05	8.00E+01	3.1E-02	1.10E+00	No
Xylene (total)	2.55E-04	CATEF	1.2E-03	9.70E+00	2.8E+00	2.70E+04	No

Notes:

1. Annual emissions are based on a maximum of 2,352 hours per year.

As shown in Tables 7 and 8 above, the project emissions of Diesel PM and Benzene exceed the respective chronic trigger levels. Therefore, a health risk assessment (HRA) is required for this project.

Health Risk Assessment (HRA)

Due to project emissions of Diesel PM and Benzene exceeding the respective chronic trigger levels, an HRA is required for this project. There were no other related projects permitted in the last five years. The project is located within an overburdened community (OBC) as defined in Regulation 2-1-243, and must therefore comply with a cancer risk limitation of no more than 6.0 in a million.

The site is expected to have permanent power in Spring of 2023, at which point the City intends to cease operating the engines. Pursuant to BAAQMD Air Toxics Control Programs Health Risk Assessment Guidelines, December 2021, Section 2.1.3.2, a three (3) year exposure period is the minimum exposure period recommended by the Air District for short-term projects lasting three years or less. Thus, due to the short duration of the project, the HRA was modeled with an exposure period of three (3) years. The results of the initial HRA found that cancer risk from the project would exceed 6.0 in a million. Air District staff then discussed other options with the applicant to find engine locations and stack outlet heights that would decrease the cancer risk to an acceptable level. The applicant also later accepted reduced annual hours limits for S-1 and S-2. The final HRA results are based upon 678 hours/year for S-1, 801 hours/year for S-2, relocating both diesel engines to the southern boundary of the East Lot, and raising each exhaust gas stack outlet (P-1 & P-2) to 15 feet above the ground. The final HRA results are also based upon limiting S-3's operations to 2,352 hours per year. The final HRA results are summarized in Tables 9 & 10 below.

Table 9. Project HRA Results

Receptor	Cancer Risk	Chronic Hazard Index	Acute Hazard Index
Resident	1.6 in a million	0.0058	N/A
¹ PMI (1-hour)	N/A	N/A	0.32

Note:

1. PMI stands for "Point of Maximum Impact".

Table 10. Source Health Risks

Source #	Cancer Risk
S-1	0.97 in a million
S-2	0.98 in a million
S-3	0.33 in a million

The results from the health risk screening analysis indicate that the maximum project cancer risk (resident) is estimated at 1.6 in a million, the maximum project chronic hazard index (resident) is estimated at 0.0058, and the maximum acute hazard index (PMI) is 0.32. Worker risk estimates were not included because the nearest offsite worker is located farther than 1,000 feet from the project. The sum of individual source cancer risks in Table 10 differs from the project cancer risk because each source's individual cancer risk is the maximum risk from that source at any location, while the project cancer risk is the maximum risk at any location from all three sources operating simultaneously.

The HRA results deem the project is in compliance with project risk requirements as recommended, limiting operation by permit condition to 678 hours/year for S-1, 801 hours/year for S-2, and 2,352 hours/year for S-3. To ensure compliance with the project risk requirement, the diesel engines (S-1 & S-2) will be conditioned to operate in the

applicant-proposed locations on the southern boundary of the East Lot (see Attachment A for source locations). Both S-1 and S-2 will also be required to operate with a stack outlet height of 15 feet. Additionally, S-1, S-2, and S-3 will be prohibited from operating any more than three (3) years. The three (3) year limit on operation will be implemented because the HRA was performed with emissions for a three (3) year exposure period, as described above. The three (3) year limit will be reflected in the permit conditions as a final operation date of three (3) years after the initial day of start-up. See HRA report. However, as stated, the City intends to cease operating the engines after permanent power is established, which is expected in Spring 2023.

TBACT

In accordance with the District's Regulation 2-5-301, TBACT is required for any new or modified source with a cancer risk greater than 1.0 in a million and/or a chronic hazard index greater than 0.20. As shown in Table 10, S-1, S-2, and S-3 do not require TBACT because the estimated source cancer risk is less than 1.0 in a million for each source. Additionally, the chronic hazard index does not exceed 0.20. As shown in Table 9, the maximum chronic hazard index for the project is 0.0058, therefore the chronic hazard index for each source would be well below 0.20.

Project Health Risk Limits

Pursuant to Regulation 2-5-302, a project's risk cannot exceed 6.0 in a million cancer risk in an overburdened community (OBC) or a chronic or acute hazard index of 1.0. As shown in Table 9, the project cancer risk is 1.6 in a million, the chronic hazard index is 0.0058, and the acute hazard index is 0.32. Because these are all well below the risk limitations, the project complies with the District's Regulation 2-5-302 project health risk requirements.

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, NO_x, CO, SO₂, PM₁₀, or PM_{2.5}.

The maximum daily emissions of any criteria pollutant from S-1, S-2, and S-3 will be below 10 lbs/day, respectively, as shown in Tables 2, 3, and 5. Therefore, BACT is not required.

For reference, if S-1 and S-2 were to operate 24 hours in a day, neither of them would trigger BACT requirements. Therefore, a limit on the maximum number of daily hours is not required for S-1 and S-2. However, S-3 will be limited by permit condition to a maximum of 20 hours of operation per day to ensure emissions of CO will not exceed 10 pounds per day.

Offsets

Per Regulations 2-2-302 and 2-2-303, offsets must be provided if, after a new or modified source is constructed, a facility that has the potential to emit (PTE) more than 10 tons/year of POC or NO_x or 100 tons/year SO₂, PM₁₀, or PM_{2.5}. As demonstrated by the summary of PTE in Table 11, offsets are not required for this application.

Table 11. Potential to Emit for Facility ID 202754

Pollutant	Existing Annual PTE Emissions (ton/year)	Application Annual PTE (ton/year)	Facility Annual PTE (ton/year)	Offset Requirement (ton/year)	Offset Required?
POC	0.000	0.008	0.008	10	N
NO _x	0.000	0.105	0.105	10	N
PM ₁₀ /PM _{2.5}	0.000	0.047	0.047	100	N
SO ₂	0.000	0.003	0.003	100	N

Note:

1. PM_{2.5} is a subset of PM₁₀ and they have been included together since they are cumulatively under the offsets trigger level.

Since the facility permitted levels are below the offset trigger 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 6-1-310 (*Particulate Weight 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 9-8-301 – *Emission Limits – Spark Ignited Engines Powered by Fossil Derived Fuels (S-3)*

Section 9-8-304 – *Emission Limits – Compression-Ignited Engines (S-1 & S-2)*

Section 9-8-502 – *Recordkeeping*

Section 9-8-503 – *Quarterly Demonstration of Compliance*

Table 12. Regulation 9-8 Emissions Compliance Summary

Source #	Engine Ignition Type	Engine Output (bhp)	Applicable Reg 9-8 Section	Emission Factors (ppmv @ 15% O ₂)		Reg 9-8 Emission Limit (ppm @ 15% O ₂)		Complies with Reg 9-8?
				NOx	CO	NOx	CO	
1	Compression	215	9-8-304.2	4.5	1.2	110	310	Yes
2	Compression	170.8	9-8-304.1	8.9	12.2	180	440	Yes
3	Spark	230.12	9-8-301.1, 301.3	10.6	119.1	25	2000	Yes

As shown in Table 12, the EPA certified emission factors for the engines will meet the applicable emission limits in Regulation 9, Rule 8.

California Environmental Quality Act (CEQA)

In October 2021, the City approved the VTC and determined it is not subject to CEQA pursuant to Assembly Bill 101, California Government Code Sections 65660 – 65668 (AB 101).

The District finds that pursuant to AB 101, this project is a “use by right.” It is an action the District is taking to “otherwise approve” a Low Barrier Navigation Center as provided in Government Code section 65660(b). The project is a necessary component of the VTC, which is a Low Barrier Navigation Center as defined by AB 101. It is needed to provide temporary power to the VTC to ensure the health, welfare, and safety of those sheltered by the VTC until Pacific Gas & Electric completes the necessary upgrades to existing electrical utilities at the site. Accordingly, the project is ministerial, and CEQA does not apply.

Further, the project is exempt from CEQA under CEQA Guidelines section 15301, which exempts projects involving a negligible expansion of an existing use. Since the beginning of the COVID-19 pandemic, unhoused people in approximately 100 to 150 vehicles lived in the vicinity of the Candlestick Point State Recreation Area, and since January 2022, the site has been operating as an authorized Low Barrier Navigation Center. The project would support and facilitate this existing use by enabling the City to provide temporary power to the VTC. This amounts to no more than a negligible expansion in the existing Low Barrier Navigation Center use because the ongoing operations, including providing shelter, security, sanitary facilities, and other critical services and resources, will not expand or change as a result of the project.

New Source Performance Standards (NSPS) for S-1 & S-2

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

Both S-1 & S-2 have an engine displacement of less than 10 liters per cylinder and were manufactured after 2007. Therefore, per Section 60.4204(b), they must both meet the emission standards for new Compression Ignition (CI) in Section 60.4201, which references emission standards in 40 CFR 1039.

Section 1039.101(b) – *Emission Standards for steady-state testing (after 2014 model year)*

EPA certified emission standards for S-1 and S-2 comply with Section 1039.101(b) emission standards for the applicable engine power class. The following applicable standards for the power class for S-1 and S-2 apply:

S-1: Between 130 kW and 560 kW

PM: 0.02 g/kW-hr

NOx: 0.40 g/kW-hr

NMHC: 0.19 g/kW-hr

CO: 3.5 g/kW-hr

S-2: Between 56 kW and 130 kW

PM: 0.02 g/kW-hr

NOx: 0.40 g/kW-hr

NMHC: 0.19 g/kW-hr

CO: 5.0 g/kW-hr

Section 1039.105 – *Smoke standards*

Per Section 1039.105(a)(3), engines certified to PM emission standard of 0.07 g/kW-hr or lower are not subject to the smoke emissions standards of Section 1039.105.

Sections 60.4206 and 60.4211(a) require that the owner/operator operate and maintain the engine according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine. The owner/operator is expected to comply with this requirement.

Section 60.4207(b) requires that by October 1, 2010, the owner/operator must use fuel that complies with 40 CFR 80.510(b). This means that the fuel must have a maximum sulfur content of 15 ppm and the same cetane index or aromatic content as above. The owner/operator is expected to comply with this requirement because CARB diesel fuel, which meets this requirement, must be used in California.

The engines will comply with the requirements of Section 60.4211(c) because they have been certified to meet the emission standards specified in Section 60.4204(b).

New Source Performance Standards (NSPS) for S-3

40 CFR 60, Subpart JJJJ (*Stationary Spark Ignition Internal Combustion Engines*)

S-3 will commence construction after June 12, 2006, was manufactured after July 1, 2008, has a maximum engine power that is less than 500 hp, and is rich burn engine that will use LPG. Therefore, per Section 60.4233(c), S-3 must comply with the emission standards of Section 60.4231(c), which references the emission standards in 40 CFR part 1048. The applicable standards for field testing Section 1048.101(c) are as follows:

Pollutant	S-3 Emission Factor	NSPS Standard
NMHC + NO _x	0.15 g/bhp-hour	2.84 g/bhp-hour
CO	0.97 g/bhp-hour	4.85 g/bhp-hour

As shown above, S-3 complies with the applicable NSPS emission requirements.

National Emissions Standards for Hazardous Air Pollutants (NESHAP)

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

S-1 and S-2 are new engines at an area source of hazardous air pollutants (HAPs) and must meet the requirements in 40 CFR 60, Subpart IIII (as shown above). S-3 is a new engine at an area source of HAPs and must meet the requirements in 40 CFR 60, Subpart JJJJ (as shown above).

No further requirements apply to these engines under this subpart according to Section 63.5690(c)(1).

Prevention of Significant Deterioration (PSD)

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

Public Notification (Regulation 2-1-412)

This project is not within 1,000 feet from the nearest K-12 school, however it is located in an overburdened community (OBC). Therefore, this project is subject to a public notification. A public notice will be sent to all addresses within 1,000 feet of the facility and there will be a 30-day public comment period.

Permit Conditions

Permit Condition #27759 for S-1 & S-2

1. The owner/operator of S-1 and S-2 shall not operate these engines any more than the hours listed below in any consecutive 12-month period.

S-1 (John Deere, 215 bhp)	678 hours
S-2 (Isuzu, 170.8 bhp)	801 hours

 [Basis: Cumulative Increase, Regulation 2-5]

2. The owner/operator of S-1 and S-2 shall not operate the engines after three (3) years from their respective date of start-up.

[Basis: Regulation 2-5]

3. The owner/operator of S-1 and S-2 shall only operate these engines in the locations agreed upon during the application process (the southern boundary of the East Lot) unless written approval is obtained from the Air District to operate

the engines in an alternate location. Additionally, the owner/operator of S-1 and S-2 shall not operate these engines unless the exhaust stack outlet is at least 15 feet above the ground for both engines.

[Basis: Regulation 2-5]

4. The owner/operator of S-1 and S-2 shall only operate these engines if each is equipped with a properly operated and properly maintained non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation.
[Basis: "Stationary Diesel Engine ATCM" section 93115.10(e), title 17, CA Code of Regulations]
5. The owner/operator of S-1 and S-2 shall only operate these engines when each is equipped with a properly maintained and properly operated Diesel Oxidation Catalyst/SCR.
[Basis: Cumulative Increase]
6. The owner/operator of S-1 and S-2 shall fire these engines exclusively with diesel fuel with sulfur content no greater than 0.0015 wt%.
[Basis: Cumulative increase; Regulation 9-1]
7. The owner/operator of S-1 and S-2 shall not exceed the following emission limits that are corrected to 15% oxygen, dry basis:
 S-1: 215 bhp diesel engine
 110 ppmv NOx
 310 ppmv CO

 S-2: 170.8 bhp diesel engine
 180 ppmv NOx
 440 ppmv CO
[Basis: Regulation 9-8-304.1, 304.2]
8. To demonstrate compliance with Part 7, the owner/operator shall use a portable analyzer to take NOx and CO emission readings to verify compliance with the applicable emission limits in Part 7 at least once during each calendar quarter in which a source test is not performed. All emission readings shall be taken with the engine operating either at conditions representative of normal operations or conditions specified in the permit to operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations.
[Basis: Regulation 9-8-503]
9. To determine compliance with the above conditions for each S-1 and S-2, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions:
 - a. Total hours of operation of each engine to demonstrate compliance with Part 1.

- b. Total consumption of diesel fuel at each source.
- c. Hours of operation in Part 9a and amount of diesel fuel in Part 9b shall be totaled on a rolling consecutive 12-month basis.
- d. Date of quarterly monitoring conducted per Part 8 and the measured NO_x and CO concentration, corrected to 15% oxygen, dry basis.

The owner/operator shall record all records in a District-approved log. The owner/operator shall retain the records with the equipment for two years, from the date of entry, and make them available for inspection by District staff upon request. These record-keeping requirements shall not replace the record-keeping requirements contained in any applicable District Regulations.

[Basis: Recordkeeping]

Permit Condition #27760 for S-3

- 1. The owner/operator of S-3 shall not operate the engine for more than 20 hours on any day, nor shall the engine be operated for more than 2,352 hours in any consecutive 12-month period.
[Basis: BACT, Cumulative Increase, Regulation 2-5]
- 2. The owner/operator of S-3 shall not operate the engine after three (3) years from the date of start-up.
[Basis: Regulation 2-5]
- 3. The owner/operator of S-3 shall only operate the engine if it is equipped with a properly operated and properly maintained non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation.
[Basis: Title 17 CCR Section 93115, Regulation 9-8-530]
- 4. The owner/operator of S-3 shall only operate the engine when it is equipped with a properly maintained and properly operated integral or add-on three-way catalyst, or other approved abatement device.
[Basis: Cumulative Increase]
- 5. The owner/operator of S-3 shall not exceed the following emission limits that are corrected to 15% oxygen, dry basis:
25 ppmv NO_x
2,000 ppmv CO
[Basis: Regulation 9-8-301]
- 6. To demonstrate compliance with Part 5, the owner/operator shall use a portable analyzer to take NO_x and CO emission readings to verify compliance with the applicable emission limits in Part 5 at least once during each calendar quarter in which a source test is not performed. All emission readings shall be taken with the engine operating either at conditions representative of normal operations or conditions specified in the permit to operate. The analyzer shall be calibrated,

maintained, and operated in accordance with the manufacturer's specifications and recommendations.

[Basis: Regulation 9-8-503]

7. To determine compliance with the above conditions for S-3, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions:
 - a. Daily and total hours of operation of the engine to demonstrate compliance with Part 1.
 - b. Daily and total consumption of LPG fuel.
 - c. Hours of operation in Part 7a and amount of LPG fuel in Part 7b shall be totaled on a rolling consecutive 12-month basis.
 - d. Date of quarterly monitoring conducted per Part 6 and the measured NO_x and CO concentration, corrected to 15% oxygen, dry basis.

The owner/operator shall record all records in a District-approved log. The owner/operator shall retain the records with the equipment for two years, from the date of entry, and make them available for inspection by District staff upon request. These record-keeping requirements shall not replace the record-keeping requirements contained in any applicable District Regulations.

[Basis: Recordkeeping]

End of Conditions

Recommendation

The District has reviewed the material contained in the permit application for the 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 in an overburdened community (OBC), which triggers the public notification requirements of District Regulation 2-1-412. After the comments are received and taken into consideration, 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:

- S-1 Prime Diesel Engine**
Make: John Deere, Model: 6068HFG05, Model Year: 2019
215 bhp, 1.22 MMBTU/hour,
w/ Integral Diesel Oxidation Catalyst & Selective Catalytic Reduction
Permit Condition No. 27759

S-2 Prime Diesel Engine
Make: Isuzu, Model: BR-4HK1X, Model Year: 2018
170.8 bhp, 0.98 MMBTU/hour
w/ Integral Diesel Oxidation Catalyst & Selective Catalytic Reduction
Permit Condition No. 27759

S-3 Prime Liquefied Petroleum Gas (LPG) Engine
Make: PSI, Model: 8.8 Industrial, Model Year: 2022
230.12 bhp, 1.84 MMBTU/hour
w/ Integral Catalyst
Permit Condition No. 27760

Prepared by: Cameron Fee, Air Quality Engineer I

Date: December 20, 2022

DRAFT

Attachment A: Source Locations

Figure 1: Locations of Stack Outlets for S-1, S-2, and S-3

