

DRAFT ENGINEERING EVALUATION

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

Background

The San Francisco Department of Public Works and Department of Homelessness and Supportive Housing are applying for an Authority to Construct for the following equipment:

- S-1 Prime Diesel Engine**
Make: John Deere, Model: 6068HFG05, Model Year: 2019
215 bhp, 1.22 MMBTU/hr,
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/hr
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/hr
w/ Integral Catalyst
Permit Condition No. 27760

The facility is proposing to use the above engines to provide temporary power to a temporary housing site while waiting on PG&E to provide permanent power to the site.

The criteria pollutants from all sources are nitrogen oxides (NO_x), carbon monoxide (CO), precursor organic compounds (POC) from unburned fuel, sulfur dioxide (SO₂) and particulate matter (PM_{2.5}/PM₁₀). All of these pollutants are briefly discussed on the District's web site at www.baaqmd.gov.

S-1 and S-2 meet the Environmental Protection Agency and California Air Resources Board (EPA/CARB) Tier 4 Off-road standard. The engine 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 proposed project with all applicable rules and regulations.

Emissions

The facility has provided an operating schedule for the engines that will be used to estimate emissions for the duration of their use. The proposed operating schedule is described below and will apply to S-1, S-2, and S-3.

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

Max Daily Operation (hrs/day)	Max Weekly Operation (days/week)	Max Weeks of Operation (weeks/year)	Annual Operating Hours (hours/yr)
12	7	28	2,352

Table 2. Annual and Daily Emissions from EPA/CARB Certified Data from S-1

Pollutant	Emission Factor (g/kw-hr)	Emission Factor (g/bhp-hr)	Max Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Annual Emissions (tons/yr)
NOx	0.06	0.0447	0.25	49.88	0.025
POC	0.02	0.0149	0.085	16.63	8.31E-03
CO	0.01	0.0075	0.042	8.31	4.16E-03
PM ₁₀ /PM _{2.5} ¹	0.02	0.0149	0.085	16.63	8.31E-03
SO ₂	N/A ²	N/A ²	0.031	6.12	3.06E-03

Basis:

- Annual emissions: Operation for 2,352 hours for S-1
- Max daily emissions: 12-hour operation
- Emissions from EPA Engine Family KJDXL06.8312 for S-1
- Emission factors for NOx, 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-hr

Table 3. Annual and Daily Emissions from EPA/CARB Certified Data from S-2

Pollutant	Emission Factor (g/kw-hr)	Emission Factor (g/bhp-hr)	Max Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Annual Emissions (tons/yr)
NOx	0.12	0.0895	0.40	79.25	0.040
POC	0.01	0.0075	0.034	6.60	3.30E-03
CO	0.10	0.0746	0.34	66.04	0.033
PM ₁₀ /PM _{2.5} ¹	0.02	0.0149	0.067	13.21	6.60E-03
SO ₂	N/A ²	N/A ²	0.025	4.86	2.43E-03

Basis:

- Annual emissions: Operation for 2,352 hours for S-2
- Max daily emissions: 12-hour operation
- Emissions from EPA Engine Family JSZXL05.2RXB for S-2
- Emission factors for NOx, 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-hr

Both S-1 and S-2 will include an integral SCR, which will control emissions with ammonia via catalytic reactions. 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/hr)	Annual Emission Rate (lb/yr)
S-1	10	35.42	685	812	171.46	1.61E-02	3.79E+01
S-2	10	35.42	658	512	110.73	1.04E-02	2.45E+01

Basis:

- Annual emissions: Operation for 2,352 hours for S-1 and 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 NOx, 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 Engines³. The proposed engine is equipped with an integral catalyst to reduce emissions of NOx, POC, and CO.

Table 5. Annual and Daily Emissions from EPA/CARB Certified Data from S-3

Pollutant	Emission Factor (g/kw-hr)	Emission Factor (g/bhp-hr)	Max Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Annual Emissions (tons/yr)
NOx	0.19	0.142	0.86	169.04	0.085
POC	0.01	0.0075	0.045	8.90	4.45E-03
CO	1.30	0.97	5.90	1,156.58	0.578
³ PM ₁₀ /PM _{2.5}	0.095	0.071	0.43	84.08	0.042
³ SO ₂	0.0029	0.0021	0.013	2.55	1.27E-03

Basis:

- 230.12 bhp Max Rated Output
- 713 cf/hr Max fuel use Rate = 19.59 gal LPG/hr = 1.842 MMBTU/hr
- 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.

Plant Cumulative Increase

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

Table 6. 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)
NOx	0.000	0.149	0.149
POC	0.000	0.016	0.016
CO	0.000	0.615	0.615
PM ₁₀ /PM _{2.5}	0.000	0.057	0.057
SO ₂	0.000	0.007	0.007

Toxic Air Contaminant Emissions

This application was deemed complete after the amendment to Regulation 2, Rule 5 took effect on July 1, 2022. Therefore, the analysis of toxic air contaminant (TAC) emissions will use the current trigger levels in Table 2-5-1 of Regulation 2, Rule 5.

For the diesel engines (S-1 & S-2), the toxic air contaminants (TACs) to review 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 is not expected to emit any of the same TACs as S-1 and S-2, therefore total TAC emissions from S-1 and S-2 are assumed to be 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 (lbs/hr)	Acute Trigger Level (lbs/hr)	Annual Emissions (lbs/yr)	Chronic Trigger Level (lbs/yr)	Exceeds Trigger Level?
S-1	Diesel PM	N/A	-	-	1.66E+01	2.60E-01	Yes
	Ammonia	7667-41-7	1.61E-02	1.40E+00	3.79E+01	7.70E+03	No
S-2	Diesel PM	N/A	-	-	1.32E+01	2.60E-01	Yes
	Ammonia	7667-41-7	1.04E-02	1.40E+00	2.45E+01	7.70E+03	No
Project	Diesel PM	N/A	-	-	2.98E+01	2.60E-01	Yes
	Ammonia	7667-41-7	2.65E-02	1.40E+00	6.24E+01	7.70E+03	NO

Notes:

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

For the LPG engine (S-3), the 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. If the AP-42 emission factor is based on the detection limit, the emission factor will equal 1/2 of the AP-42 emission factor. Table 8 provides a summary of the TAC emissions from S-3. Emissions of these TACs are not expected to be emitted from S-1 or S-2, therefore emissions of these TACs are assumed to be project emissions.

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

Compound	Emission Factor (lb/MMBTU)	Basis	Hourly Emission Rate (lbs/hr)	Acute Trigger Level (lbs/hr)	Annual Emission Rate (lbs/yr)	Chronic Trigger Level (lbs/yr)	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 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 final HRA results are based upon relocating the two diesel engines (S-1 & S-2) 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 summarized in Tables 9 & 10 below.

Table 9. Project HRA Results

Receptor	Cancer Risk	Chronic Hazard Index	Acute Hazard Index
Resident	4.9 in a million	0.0057	N/A
PMI (1-hour)	N/A	N/A	0.32

Table 10. Source Health Risks

Source #	Cancer Risk
S-1	3.4 in a million
S-2	2.9 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 4.9 in a million, the maximum project chronic hazard index (resident) is estimated at 0.0057, and the maximum acute hazard index 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 HRA results deem the project is in compliance with project risk requirements as recommended, limiting operation by permit condition to 12 hours per day, and a total of 2,352 hours per year. 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. Both S-1 and S-2 will also be required to operate with a stack outlet height of 15 feet. The residents at this facility will not be allowed to reside in any areas where the cancer risk exceeds 6.0 in a million, as shown in the isopleth diagram provided by the air dispersion modeler. In accordance with the District's Regulation 2, Rule 5, this risk level is considered acceptable, as it has been determined that the sources in this project meet the current TBACT standards. See HRA report.

TBACT

In accordance with the District's Regulation 2-5-301, S-1 and S-2 require TBACT because the estimated source cancer risk is greater than 1.0 in a million from both engines. BACT and TBACT determinations for prime-power compression ignition engines with a rated capacity greater than 50 bhp are described in BAAQMD BACT/TBACT Workbook for IC

Engines – Compression Ignition: Stationary Prime; non-Agricultural, Document #96.1.4, Revision 6. dated 04/13/2009 (see Attachment 1). S-1 and S-2 comply with TBACT by having a certified PM emission rate that is less than or equal to 0.01 g/bhp-hour. The certified PM emission rate for these engines is 0.01 g/bhp-hour for both. The 0.0149 g/bhp-hr shown in Tables 2 and 3 would be rounded to 0.01 g/bhp-hr to use the same significant figures as the TBACT limit. Furthermore, 0.0149 g/bhp-hr is equivalent to the 0.02 g/kw-hr limit as noted in Table 4 of CARB ATCM for Prime-Power Diesel-fired Internal Combustion Engines.

S-3 does not require TBACT because the estimated source risk is less than 1.0 in a million.

Project Risk Limits

Since the proposed engines, operating at a maximum of 2,352 hours/year, comply with TBACT, and the estimated project cancer risk does not exceed 6.0 in a million and the chronic hazard index does not exceed 1.0, this project complies with the District’s Regulation 2-5-302 project 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, or PM₁₀.

Operating at the proposed 12 hours per day, the maximum daily emissions of any criteria pollutant from S-1, S-2, and S-3 are expected to be below 10 lbs/day, respectively. Therefore, BACT review is not required. However, S-3 will be limited to a maximum of 20 hours of operation per day to ensure emissions of CO will not exceed 10 pounds per day.

Offsets

Per Regulation 2-2-302, 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/yr of POC or NO_x. Based on 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/yr)	Application Annual PTE (ton/yr)	Facility Annual PTE (ton/yr)	Offset Requirement (ton/yr)	Offset Required?
POC	0.000	0.016	0.016	10	N
NO _x	0.000	0.149	0.149	10	N
PM ₁₀ /PM _{2.5}	0.000	0.057	0.057	100	N
SO ₂	0.000	0.007	0.007	100	N

CO	0.000	0.615	0.615	-	N
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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 Type	Engine Output (bhp)	Applicable Reg 9-8 Section	Emission Factors		Reg 9-8 Emission Limit		Complies w/ Reg 9-8?
				ppmv NO _x @ 15% O ₂	ppmv CO @ 15% O ₂	ppmv NO _x @ 15% O ₂	ppmv CO @ 15% O ₂	
1	Compression Ignition	215	9-8-304.2	4.5	1.2	110	310	Yes
2	Compression Ignition	170.8	9-8-304.1	8.9	12.2	180	440	Yes
3	Spark Ignition	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)

This project is ministerial under the District Regulation 2-1-311 (Permit Handbook Chapters 2.3.1 and 2.3.2) and is therefore not subject to CEQA review.

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 the 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

NO_x: 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

NO_x: 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 is required to 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-hr	2.84 g/bhp-hr
CO	0.97 g/bhp-hr	4.85 g/bhp-hr

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

National Emissions Standards for Hazardous Air Pollutants (NESHAP) for S-1 & S-2

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 is located in an overburdened community (OBC). Therefore, this project is subject to a public notification. A public notice will be sent to all residents 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 for more than 2,352 hours in any consecutive 12-month period. The owner/operator of S-1 and S-2 shall not operate the engines after October 1, 2025.
[Basis: Cumulative Increase, Regulation 2-5]

2. 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 S1 and S2 shall not operate these engines unless exhaust stack outlet is at least 15 feet above the ground for both engines.

[Basis: Regulation 2-5]

3. 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]

4. 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]

5. 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]

6. 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]

7. To demonstrate compliance with Part 6, 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 6 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]

8. 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 8a and amount of diesel fuel in Part 8b shall be totaled on a rolling consecutive 12-month basis.
 - d. Date of quarterly monitoring conducted per Part 7 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. The owner/operator shall not operate S-3 after October 1, 2025.

[Basis: BACT, Cumulative Increase, Regulation 2-5]

2. 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]

3. The owner/operator of S-3 shall only operate the engines 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]

4. 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]

5. To demonstrate compliance with Part 4, 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 4 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]

6. To determine compliance with the above conditions for S3, 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 6a and amount of LPG fuel in Part 6b shall be totaled on a rolling consecutive 12-month basis.
 - d. Date of quarterly monitoring conducted per Part 5 and the measured NOx 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 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 in an overburdened community (OBC), 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 source:

- S-1 Prime Diesel Engine**
Make: John Deere, Model: 6068HFG05, Model Year: 2019
215 bhp, 1.22 MMBTU/hr,
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/hr
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/hr
w/ Integral Catalyst
Permit Condition No. 27760

Prepared by: Cameron Fee, Air Quality Engineer I

Date: August 22, 2022

Source Category

Source:	IC Engine – Compression Ignition, Stationary Prime; non-Agricultural	Revision:	6
		Document #:	96.1.4
Class:	> 50 BHP Output	Date:	04/13/2009

Determination

Pollutant	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	<ol style="list-style-type: none"> 50% reduction of current tier^{a,b} standard for POC. Current tier^{a,b} standard for POC at applicable horsepower rating. 	<ol style="list-style-type: none"> Catalytic oxidation combined with current POC certified engine.^{a,b} Current POC certified engine.^{a,b}
NOx	<ol style="list-style-type: none"> 85% reduction of current tier^{a,b} standard for NOx. Current tier^{a,b} standard for NOx at applicable horsepower rating. 	<ol style="list-style-type: none"> Selective catalytic reduction (SCR) + current NOx certified engine.^{a,b} Current NOx certified engine.^{a,b}
SO ₂	<ol style="list-style-type: none"> n/s Fuel sulfur content not to exceed 0.0015% (wt) or 15 ppm. 	<ol style="list-style-type: none"> n/s CARB Diesel Fuel (Ultra Low Sulfur Diesel).
CO	<ol style="list-style-type: none"> 50% reduction of current tier^{a,b} standard for CO. 2.75 g/bhp-hr [319 ppmvd @ 15% O₂]^d 	<ol style="list-style-type: none"> Catalytic oxidation combined with current CO certified engine.^{a,b} Any engine demonstrated or certified to meet 2.75 g/bhp-hr.
PM ₁₀	<ol style="list-style-type: none"> n/s 0.01 g/bhp-hr or equiv^c technology.^c TBACT: 0.01 g/bhp-hr or equivalent^c technology^c. 	<ol style="list-style-type: none"> n/s Any engine/technology verified or certified to achieve 0.01 g/bhp-hr.^c (See 2., above)^c
NPOC	<ol style="list-style-type: none"> n/s n/s 	<ol style="list-style-type: none"> n/s n/s

References

a.	<u>Current tier standard</u> : The current CARB or EPA off-road tier standard for the pollutant of concern within the appropriate horsepower range. Where NMHC + NOx is listed (with no individual standards for NOx or NMHC) as the standard, the portions may be considered 95% NOx and 5% NMHC. For the purposes of determining BACT NMHC = POC. Any engine which has been certified or demonstrated to meet the current year tier standard may be considered a current certified engine for that pollutant.
b.	An engine which does not meet the current EPA or CARB off-road tier standard may represent BACT2, providing 1) the engine met the most stringent EPA Tier Standard in effect prior to the Tier change for that horsepower rating, and 2) the permit application is submitted within 6 months of the effective date of the Tier change. [Source: California Health & Safety Code Section 93116.3(b)(7)]
c.	Compliance with 0.01 g/bhp-hr may be demonstrated by use of <i>Alternative Compliance Demonstration</i> , specified in California Health & Safety Code Section 93115.13(f) [Stationary CI Engine ATCM].
d.	Previous BACT determination dated 01/11/02.
e.	Specified because not all BAAQMD-defined stationary engines are subject to the Stationary ATCM.

DRAFT