

ENGINEERING EVALUATION

Facility ID No. 203223
Target Store – T0324
1811 Hillsdale Ave, San Jose, CA 95124
Application No. 733923

Background

Target Store – T0324 is applying for an Authority to Construct/Permit to Operate for the following equipment:

S-2 Emergency Standby Diesel Engine
Make: AB Volvo Penta, Model: TAD1180VE, Model Year: 2025
320 bhp, 1.99 MMBtu/hr
Permit Condition No. 100072 and 100073

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 and PM_{2.5}). All of these pollutants are briefly discussed on the Air District's website at www.baaqmd.gov.

S-2 meets the Environmental Protection Agency and California Air Resources Board (EPA/CARB) Tier 4 final 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.

Although this project will emit toxic air contaminants that have the potential to cause or contribute to adverse health impacts, the Air District has evaluated the permit application and has made a preliminary determination that the project is expected to comply with all applicable Air District, state, and federal air quality-related laws and regulations, including health protective limits for toxic air contaminant emissions.

Emissions

Basis:

- Annual emissions: Reliability-related activity 50 hours for S-2
- Max daily emissions: 24-hour operation
- NO_x emissions from EPA Engine Family SVPXL10.8CJB for S-2
- POC, CO, and PM emission factors are current Best Available Control Technology (BACT) standards (tier 4 final).
- Conservative Assumption: All PM emissions are PM_{2.5}
- SO₂ emission factor from AP-42 Table 3.4-1, SO₂ (15 ppm) = 0.00809*0.0015 lb SO₂/bhp-hr * 453.6 g/lb= 0.006 g/bhp-hr

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

Pollutant	Emission Factor (g/bhp-hr)	Max Daily Emissions (lb/day)	Annual Emissions (lb/year)	Annual Emissions (ton/year)
NO _x	0.21	3.6	7.4	0.004
POC	0.14	2.4	4.9	0.002
CO	2.6	44.0	91.6	0.046
PM ₁₀	0.015	0.3	0.53	0.0003
PM _{2.5}	0.015	0.3	0.53	0.0003
SO ₂	0.006	0.09	0.19	0.0001

Plant Cumulative Increase

Table 2 summarizes the cumulative increase in criteria pollutant emissions from this application.

Table 2. Plant Cumulative Emissions Increase, Post 4/5/91

Pollutant	Existing Emissions Post 4/5/91 (tons/year)	Application Emissions (tons/year)	Cumulative Emissions (tons/year)
NO _x	0.017	0.004	0.021
POC	0.001	0.002	0.003
CO	0.005	0.046	0.051
PM ₁₀	0.001	0.0003	0.001
PM _{2.5}	0.001	0.0003	0.001
SO ₂	0.000	0.0001	0.0001

Health Risk Assessment (HRA)

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. The PM₁₀ emissions from this application are summarized above. Application #683201 for S-1 was permitted on 12/12/2023, so it is included in the five year project history.

Since the 1.86 lb/year of diesel particulate emissions from the project are greater than the toxic trigger level of 0.26 lb/year, an HRA is required. The project did not qualify for HRA streamlining. Therefore, a refined HRA was required.

The project is in compliance with project risk requirements as recommended, limiting reliability-related activity hours by permit condition. See the HRA report for further details.

HRA Results

This analysis estimates the incremental health risk resulting from toxic air contaminant (TAC) emissions from non-emergency operation of a standby generator diesel engine at this facility. Results from this HRA indicate that the maximum project cancer risk is

estimated at 2.2 in a million, and the maximum project chronic hazard index is estimated at 0.00059. See HRA Report for more details.

Table 3. Individual Source Risks

Source No.	Cancer Risk (in a million)
S1	1.6
S2	0.63

Table 4. Risk Analysis Results

Maximally Exposed Receptor	Maximum Cancer Risk	Maximum Chronic Hazard Index
Residential	2.2 chances in a million	0.00059
Worker	0.34 chances in a million	0.00026

TBACT

In accordance with the District’s Regulation 2-5-301, S-2 does not require TBACT because the source risk is less than a cancer risk of 1.0 in a million, and/or chronic hazard index of 0.20. Since the estimated project cancer risk does not exceed 10.0 in a million and hazard indices do not exceed 1.0, this project complies with the Air District’s Regulation 2-5-302 project risk requirements for projects located within an Overburdened Community as defined in Regulation 2-1-243.

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, PM₁₀ or PM_{2.5}.

As shown in Table 2, CO emissions from S-2 exceed 10 pounds per day and thus BACT is required for S-2. As a certified Tier 4 Final engine, S-2 complies with current BACT CO requirements of meeting United States Environmental Protection Agency (US EPA) Final Tier 4 standards for engines greater than 300 hp but less than 600 hp.

Offsets

Offsets must be provided for any new or modified source at a facility that will have the potential to emit more than 10 tons per year of NOx or POC, as specified in Regulation 2-2-302; 100 tons per year or more of PM_{2.5}, PM₁₀ or sulfur dioxide, as specified in Regulation 2-2-303.

Table 5. Potential to Emit for FID 203223

Pollutant	Existing Annual Emissions (TPY)	Application Annual Emissions* (TPY)	Facility Annual Emissions* (TPY)	Offset Requirement (TPY)	Offset Required
NO _x	0.052	0.011	0.063	>10	N
POC	0.003	0.007	0.010	>10	N
CO	0.016	0.137	0.154	-	N
PM ₁₀	0.002	0.0004	0.002	≥100	N
PM _{2.5}	0.002	0.0004	0.002	≥100	N
SO ₂	0.000	0.0003	0.0004	≥100	N

*Annual emissions: Reliability-related activity of 50 hours and emergency operation of 100 hours for a total of 150 hours for S-2.

Since the facility’s potential to emit is below the offsets 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 6-1-305 (*Visible Particles*)

Regulation 6-1-310 (*Total Suspended Particulate (TSP) Concentration Limits*)

Sections 6-1-310.1 and 6-1-310.2 limit TSP emissions to 0.15 grains/dscf of exhaust gas volume or less depending on the exhaust gas rate (see Table 6-1-310.2 for the corresponding TSP concentration limit). The particulate emission rate from S-2 is 0.0015 grams per bhp-hour, which results in an outlet grain loading of 0.00014 gr/dscf. The corresponding emission rate is less than the 0.0425 gr/dscf limit in Section 6-1-310. Since the outlet grain loading rate for S-2 is less than the limits of Section 6-1-310, S-2 complies with this section.

Table 6. Section 6-1-310 Emissions Calculations

Engine Maximum Exhaust Flow Rate*	1,564 acfm = 570.90 dscf/min = 34,253.94 dscf/hr
Engine Maximum Exhaust Temperature	810 F
Water (H ₂ O) Content (%)	12.5%
PM ₁₀ abatement for Engine	0%
Engine PM ₁₀ emissions**	0.01 lb/hr = 42.05 kg/yr = 4.80 gr/hr
Are Engine PM ₁₀ Emissions > 1000 kg/yr?	NO
Applicable Regulation 6-1-310 section?	6-1-310.1

TSP Concentration for Engine	0.00014 gr/dscf
Corresponding Regulation 6-1 TSP Limit	0.15 gr/dscf
PM10 emissions < Corresponding Reg 6-1 TSP Limit?	YES

* dscfm = acfm x (460 R + 70 F)/(460 R + Engine Maximum Exhaust Temperature in F) x (1- water (H2O Content))

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 permit application is categorically exempt from the California Environmental Quality Act (CEQA). CEQA Guidelines, Section 15301 exempts projects that involve negligible or no expansion of use. The emergency standby engine will not expand the facility's normal operation and will result in no increase or only a negligible increase in use of the facility. Further, based on the review of the permit application materials, including Appendix H, environmental information form, the project will not have any significant environmental impacts, and cumulative impacts from successive projects of the same type in the same place will not result in significant environmental impacts.

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.

Public Notification (Regulation 2-1-412)

This project is not located within Overburdened Community, as defined in Regulation 2-1-243. The project is located within 1000' of Steindorf STEAM School (K-8), Learning Pathways (Kindergarten), and Learning Springs Academy (K-5). Therefore, this project is subject to the school public notification requirements of Regulation 2-1-412.

A public notice will be sent to all addresses within ¼ mile of the source and all businesses and residents within 1000' of the facility. There will be a 30-day public comment period.

Permit Conditions

Permit Condition #100072 for S-2

1. The owner or 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]
2. 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]
3. 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. Fuel usage for each engine(s).
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
4. At School and Near-School Operation: If the emergency standby engine is located on school grounds or within 1000 feet of any school grounds, the following requirements shall apply: The owner or 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, playground, 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]

Permit Condition #100073 for S-2

The owner/operator shall not exceed the following limits per year per engine for reliability-related activities:

- 50 Hours of Diesel fuel (Diesel fuel)

[Basis: Cumulative Increase; Regulation 2-5; Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

End of Conditions

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 Air 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 is within 1000' of Steindorf STEAM School (K-8), Learning Pathways (Kindergarten), and Learning Springs Academy (K-5), which triggers the public notification requirements of Air District Regulation 2-1-412. After the comments are received and reviewed, the Air District will make a final determination on the permit.

I recommend that the Air 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-2 Emergency Standby Diesel Engine**
Make: AB Volvo Penta, Model: TAD1180VE, Model Year: 2025
320 bhp, 1.99 MMBtu/hr
Permit Condition No. 100072 and 100073

Attachment 1

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guideline

Source Category

Source:	IC Engine – Compression Ignition: Stationary Emergency, non-Agricultural, non-direct drive fire pump	Revision:	9
		Document #:	96.1.3
Class:	> 50 BHP and < 1000 BHP Output	Date:	12/02/2024

Determination

Pollutant	BACT 1. Technologically Feasible/Cost Effective 2. Achieved in Practice 3. TBACT	TYPICAL TECHNOLOGY
POC	1. n/s ^(a) 2. U.S. EPA Final Tier 4 standard ^(b) for POC at applicable horsepower rating (see attached Table 1)	1. n/s ^(a) 2. Any engine certified or verified to achieve the applicable Tier 4 Final standard for POC
NOx	1. n/s ^(a) 2. U.S. EPA Final Tier 4 standard ^(b) for NO ^x at applicable horsepower rating (see attached Table 1)	1. n/s ^(a) 2. Any engine certified or verified to achieve the applicable Tier 4 Final standard for NO ^x
SO₂	1. n/s ^(a) 2. Fuel sulfur content not to exceed 0.0015% (wt) or 15 ppm (wt)	1. n/s ^(a) 2. CARB Diesel Fuel (Ultra Low Sulfur Diesel)
CO	1. n/s ^(a) 2. U.S. EPA Final Tier 4 standard for CO at applicable horsepower rating (see attached Table 1)	1. n/s ^(a) 2. Any engine certified or verified to achieve the applicable Tier 4 Final standard for CO
PM₁₀	1. n/s ^(a) 2. U.S. EPA Final Tier 4 standard for PM ^(c) at applicable horsepower rating (see attached Table 1) 3. U.S. EPA Final Tier 4 standard for PM ^(c) at applicable horsepower rating (see attached Table 1)	1. n/s ^(a) 2. Any engine certified or verified to achieve the applicable Tier 4 Final standard for PM 3. Any engine or technology demonstrated, certified, or verified to achieve the applicable standard.
PM_{2.5}	1. n/s ^(a) 2. Same as PM ₁₀	1. n/s ^(a) 2. Same as for PM ₁₀
NPOC	1. n/s ^(a) 2. n/s	1. n/s ^(a) 2. n/s

References

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| a. | Cost effectiveness analysis must be based on the lesser of reliability-related testing allowed per Regulation 9, Rule 8 (either 100 hours per year if facility is an essential public service as defined in Regulation 9, Rule 8 or 50 hours per year, otherwise) or as limited by an Air District health risk assessment. |
| b. | Where a standard is combined for non-methane hydrocarbon (NMHC) and NO _x (with no individual standards for NMHC or NO _x), the portions may be considered 5% NMHC and 95% NO _x . For the purposes of determining BACT NMHC = POC. Any engine which has been certified or demonstrated to meet the Tier 4 Final standard may be considered compliant with the certified emission standard for that pollutant. |
| c. | As measured by United States EPA Method 5 (filterable portion only). |

Table 1. Achieved-in-Practice BACT Emission Limits Based on U.S. EPA Final Tier 4 Standards

Maximum Engine Power	Emission Limits (g/bhp-hour)			
	NMHC ⁽¹⁾	NO _x	CO	PM ⁽²⁾
50 ≤ HP < 75	3.5		3.7	0.022
75 ≤ HP < 100	0.14	0.29	3.7	0.015
100 ≤ HP < 175	0.14	0.29	2.6	0.015
175 ≤ HP < 300	0.14	0.29	2.6	0.015
300 ≤ HP < 600	0.14	0.29	2.6	0.015
600 ≤ HP ≤ 750	0.14	0.29	2.6	0.015
750 < HP < 1000	0.14	0.49	2.6	0.022
Notes:				
1. Non-methane hydrocarbons				
2. As measured by United States EPA Method 5 (filterable portion only)				

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