

ENGINEERING EVALUATION

Facility ID 13335
San Jose Water Co-3Mile
1221 So Bascom Ave, San Jose, CA 95128
Application No. 711206

Background

San Jose Water Co-3Mile (Facility) is applying for an Authority to Construct and Permit to Operate for the following equipment:

S-7 Emergency Standby Diesel Engine-Genset
Make: Kohler, Model: KD45V20, Model Year: 2023
EPA Engine Family: PLHAL45.0ESP
2,353 bhp, 15.32 MMBTU/hr

Abated by A-1 & A-2

A-1 Diesel Particulate Filter (DPF)
Make: Johnson Matthey, Model: SCRT System

A-2 Selective Catalytic Reduction (SCR)
Make: Johnson Matthey, Model: SCRT System

The Facility is a water utility company station and currently has two (2) permitted emergency standby engines powering backup generators. In this application, the Facility is applying for an Authority to Construct for an emergency standby diesel engine (S-7) to power a backup generator.

S-7 meets the Environmental Protection Agency (EPA) and California Air Resources Board (CARB) Tier 2 Off-road standard and will be equipped with a Diesel Particulate Filter (DPF) and Selective Catalytic Reduction (SCR) to meet Tier 4 emissions standards. The engine will burn commercially available California ultra-low sulfur diesel fuel (ULSD). The sulfur content of the diesel fuel will not exceed 0.0015% by weight.

The new source is within 1,000 feet of a K-12 school and therefore this application is subject to the public notice requirements of BAAQMD Regulation 2-1-412.

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

Emissions Summary

The criteria pollutants emitted from S-7 include nitrogen oxides (NO_x), carbon monoxide (CO), precursor organic compounds (POC) from unburned diesel fuel, sulfur dioxide (SO₂), and particulate matter (PM₁₀/PM_{2.5}). Criteria pollutant emissions from S-7 are outlined below.

Table 1. Annual Emissions from S-7

Pollutant	Unabated Emission Factor (g/bhp-hr)	Abatement Efficiency (%)	Abated Emission Factor⁴ (g/bhp-hr)	Annual Emissions (lb/yr)	Annual Emissions (tons/yr)
NO _x	4.36	88.5%	0.50	129.8	0.065
POC	0.30	53.3%	0.14	36.1	0.018
CO ³	2.60	0%	2.60	673.8	0.337
PM ₁₀ /PM _{2.5} ¹	0.112	82.1%	0.02	5.19	0.003
SO ₂	See Basis ²	0%	See Basis ²	1.42	0.001

Basis:

- Annual emissions: Reliability-related activity 50 hours for S-7
- Unabated emission factors for NO_x, POC, and PM are from EPA Engine Family PLHAL45.0ESP
- 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. Assume no abatement of SO₂.
- ³ The unabated CO emission factor is assumed to the Tier 4 limit.
- ⁴ Used Final Tier 4 limit as abated emission factor for NO_x, CO, and PM.

Daily emissions are calculated to establish whether a source triggers the requirement for Best Available Control Technology (BACT) (10 lb/highest day total source emissions for any BACT pollutant). A full 24-hour day is assumed since no daily limits are imposed on intermittent and unexpected operations. Since the abated emission rates are not certified by EPA/CARB, the unabated emission factors are used to calculate the maximum daily emissions from the engine. The table below shows the calculated maximum daily emissions from S-7.

Table 2. Maximum Daily Emissions from S-7

Pollutant	Unabated Emission Factor (g/bhp-hr)	Max Daily Emissions (lb/day)
NO _x	4.36	541.7
POC	0.30	37.1
CO	2.60	323.4
PM ₁₀ /PM _{2.5}	0.112	13.9
SO ₂	See Table 1	0.68

Ammonia Slip

S-7 will be equipped with an SCR (A-2), 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 3. Ammonia Slip Emissions from S-7

Source #	Ammonia Slip Conc. (ppmv @ 15% 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-7	10	962	12,042	1,421.7	0.249	12.4

Basis:

- Annual emissions: Reliability-related activity 50 hours for S-7
- Ammonia volumetric concentration corrected to 0% O₂ from 15% O₂
- Engine exhaust H₂O content: 7.5%
- Engine exhaust O₂ content: 7.5%
- Exhaust flow rate adjusted to 0% H₂O, 0% O₂, and standard temperature and pressure

Plant Cumulative Increase

Cumulative Increase is defined as the sum of all emissions increases authorized by authorities to construct and permits to operate issued to a facility since the applicable cumulative increase baseline date, which is April 5, 1991, for POC, NO_x, SO₂, PM₁₀, and CO, and August 31, 2016, for PM_{2.5}. The cumulative increase for the facility is summarized in the table below.

Table 4. Cumulative Emissions Increase for Facility ID 13335

Pollutant	Existing Emissions Post 4/5/91 (tons/yr)	Application Emissions (tons/yr)	Cumulative Emissions (tons/yr)
NO _x	0.958	0.065	1.023
POC	0.054	0.018	0.072
CO	0.055	0.337	0.392
PM ₁₀	0.017	0.003	0.020
PM _{2.5}	0.017	0.003	0.020
SO ₂	0.021	0.001	0.021

Toxic Risk Screening

A project is subject to Regulation 2, Rule 5 if emissions of toxic air contaminants (TAC) exceed any acute or chronic trigger levels in Table 2-5-1 of Regulation 2, Rule 5. There were no related sources permitted within the 5-year lookback period. Therefore, the project TAC emissions will include only the emissions from S-7. All PM emissions are considered Diesel Particulate Matter (Diesel PM). Table 5 below summarizes the project TAC emissions from S-7.

Table 5. Project Toxic Air Contaminant Emissions

Toxic Air Contaminant	Hourly Emission Rate (lbs/hr)	Acute Trigger Level (lbs/hr)	Annual Emission Rate (lbs/year)	Chronic Trigger Level (lbs/year)	Exceeds Acute or Chronic Trigger Level?
Diesel PM	-	-	5.19	0.26	Yes
Ammonia	0.249	1.4	12.4	7,700	No

As shown in Table 5, the annual project emission rate of Diesel PM exceeds the chronic trigger level. Therefore, the project is subject to Regulation 2, Rule 5. This application does not qualify for HRA streamlining due to the PM emission rates and proximity to the nearest sensitive receptor. A refined health risk assessment (HRA) was conducted and the results are summarized in Table 6 below.

Table 6. Project HRA Results

Receptor	Cancer Risk	Chronic Hazard Index	Acute Hazard Index
Resident	0.15 in a million	0.000043	N/A
Worker	0.086 in a million	0.000070	N/A
Student	0.052 in a million	0.000030	N/A
PMI (1-hour)	N/A	N/A	0.00070

The HRA results indicate that the maximum project cancer risk (resident) is estimated at **0.15 in a million**, the maximum project chronic hazard index (worker) is estimated at **0.000070**, and the maximum project acute hazard index (PMI) is **0.00070**.

The HRA results deem that the project complies with the project risk limitations of Regulation 2-5-302, limiting reliability-related activity hours by permit condition to 50 hours/year. See HRA report.

Best Available Control Technology for Toxics (TBACT)

Pursuant to Regulation 2-5-301, a new or modified source is subject to TBACT if the individual source cancer risk exceeds 1.0 in a million and/or if the chronic hazard index exceeds 0.20.

As shown in Table 6, the maximum cancer risk and chronic hazard index are below the TBACT trigger thresholds. Therefore, S-7 is not subject to TBACT.

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.

Based on the emission calculations in Table 2, S-7 triggers BACT for NO_x, POC, CO, and PM₁₀/PM_{2.5} (PM) because the maximum daily emissions exceed 10 lbs/day for those pollutants.

Per Air District Regulation 2-2-202, BACT is defined as the most stringent emissions limitation, control device, or control technique that (1) has been achieved in practice at other similar sources and/or (2) is technologically feasible and cost-effective. To determine what level of control constitutes BACT for this emergency standby diesel engine, the Air District reviewed available control technologies that can be effective at controlling NO_x, POC, CO, and PM from these sources.

Control Technology Review

Several control technologies can reduce NO_x, CO, POC, and PM emissions from emergency backup diesel engines. These technologies have been divided into three categories: Clean Fuels, Combustion Technologies, and Post-Combustion Technologies.

Clean Fuel Technology

The use of diesel fuel with a low nitrogen content reduces the amount of NO_x formed during combustion. The less nitrogen available in the fuel, the less that can be converted to NO_x upon combustion. Diesel fuel producers are not required to remove nitrogen from the fuel specifically for NO_x reduction purposes. But they are required to remove sulfur to comply with regulatory mandates, and the hydro-treating technique they use to remove the sulfur also removes most of the nitrogen. As a result, using ultra-low-sulfur diesel (ULSD) fuel will provide benefits in reducing NO_x emissions as well as reducing sulfur dioxide emissions. ULSD fuel is required to be used by the California Air Resources Board (CARB) and is therefore achieved in practice for S-7.

Combustion Technologies

NO_x, CO, and POC emissions can be minimized by optimizing the engines' combustion process using techniques such as injection timing retard, preignition chamber combustion, air-to-fuel ratio adjustments, and derating. These combustion characteristics are determined by the design of the engine, which is dictated by the manufacturer and cannot be controlled by the end user. The end user can reduce emissions by using the cleanest engines available, however. Engines are certified to meet progressively more stringent emissions performance standards using EPA's "Tier" system, with higher-tier engines representing more stringent levels of emissions control. For the size of engines that will be used for this project, the most stringent level of emissions control that can be achieved using combustion controls is Tier 2.¹ The use of Tier 2 engines is achieved in practice.

Post-Combustion Technologies

Currently, the most effective and prevalent post combustion technologies used to abate NO_x, CO, and POC rely on the use of catalysts. For NO_x reduction, catalytic technology can come in the form of a selective catalytic reduction unit, lean-NO_x catalyst, or NO_x adsorber. For CO and POC, reduction is typically achieved through an oxidation catalyst. For each of these technologies, the catalyst is used to lower the heat of reaction that is required for the breakdown and/or conversion of the target pollutants. For PM, the most effective and prevalent post-combustion control technology used is a diesel particulate

¹ EPA's diesel emission tiers range from Tier 0 through Tier 4. The Tier 4 standards require catalytic control devices, which are addressed below. For diesel engines over 750 horsepower, there are no Tier 3 standards. The next most stringent set of standards for this size category after Tier 2 is Tier 4, which requires catalytic control devices. See California Air Resources Board, Non-Road Diesel Engine Certification Tier Chart, available at: <https://ww2.arb.ca.gov/resources/documents/non-road-diesel-engine-certification-tier-chart-pdf>. The most stringent tier that can be achieved with combustion controls only is therefore Tier 2 for this size category.

filter. For larger engines with a rated power output exceeding 1,000 bhp, the use of post-combustion control technologies is also achieved in practice. Other facilities operating similar emergency standby engines have achieved emission rates equivalent to EPA's Tier 4 standards, which are the most stringent standards achievable by any engines that are available on the market today. The use of post-combustion technologies to achieve EPA Tier 4 emission standards is achieved in practice.

BACT Analysis for S-7

S-7 is an emergency standby engine with a rated power output exceeding 1,000 bhp. Post-combustion control technologies have been achieved in practice. Other facilities operating similar emergency backup engines have achieved emissions rates equivalent to EPA's Tier 4 standards, which are the most stringent standards achievable by any engines that are available on the market today. These control technologies are therefore required as BACT. S-7 will be required by CARB regulations to use ULSD fuel, and will be required by Air District permit conditions to utilize post-combustion technologies to meet the EPA Tier 4 emissions standards for the applicable pollutants. Therefore, S-7 complies with the BACT requirements under Regulation 2-2-301 for all applicable pollutants.

According to the emission data submitted to EPA for the engine family for S-7 and the expected abatement efficiencies of the post-combustion control devices, the abated NO_x, POC, CO, and PM emission rates comply with the applicable BACT emission limits shown below. However, because the engine is not certified to meet Tier 4 standards for NO_x, POC, and PM by EPA, source testing will be required to verify compliance. To prevent engine tuning to reduce NO_x emissions at the expense of increasing CO emissions, source testing will also be required for CO. These source testing requirements will be outlined in the permit conditions for S-7.

Table 7. BACT Analysis Summary: S-7

BACT Pollutant Triggered	BACT Limit Tier 4 for Engines > 750 HP (g/bhp-hr)	Abated Emission Rate (g/bhp-hr)
NO _x	0.5	0.5
CO ¹	2.6	0.6
POC	0.14	0.14
PM	0.02	0.02

Notes:

1. The EPA certified emission factor for CO is 0.6 g/bhp-hr, but the engine will only be required to verify that it meets the Tier 4 standard of 2.6 g/bhp-hr for CO as BACT limit.

Offsets

Per Regulation 2-2-302, offsets must be provided if, after a new or modified source is constructed, a facility has a potential to emit (PTE) more than 10 tons/yr of POC or NO_x. Per Regulation 2-2-303, offsets must be provided if, after a new or modified source is constructed, a facility has a PTE of 100 tons/year or more of PM_{2.5}, PM₁₀, or SO₂. The PTE for emergency-use engines will include the hours allowed for test and maintenance, as well as an assumed 100 hours per year for emergencies. For reference, the other

sources at this facility are also emergency engines. The table below summarized the facility PTE.

Table 8. Potential to Emit for Facility ID 13335

Pollutant	Existing Annual PTE Emissions (ton/yr)	Application Annual PTE (ton/yr)	Facility Annual PTE (ton/yr)	Offset Requirement (ton/yr)	Offset Required?
POC	0.162	0.054	0.216	10	N
NO _x	2.873	0.195	3.068	10	N
PM ₁₀ /PM _{2.5}	0.051	0.008	0.059	100	N
SO ₂	0.062	0.002	0.064	100	N
CO	0.166	1.011	1.177	-	N

As shown above, the facility's PTE is below the offset trigger levels specified in Regulation 2-2. Therefore, offsets are not required.

Statement of Compliance

Regulation 2 - Permits, Rule 1 – General Requirements

CEQA (Section 2-1-312)

Because S-7 is subject to BACT requirements, the approval of this project is discretionary. After review of the permit application materials and the submitted Appendix H (Environmental Information Form), it is determined that the project is categorically exempt from the California Environmental Quality Act (CEQA). CEQA Guidelines, Section 15301 exempts projects that involve negligible or no expansion of use of existing facilities. This proposed new emergency standby engine (S-7) would be installed at an existing water utility company station and will not expand the facility's normal operation and will result in no increase or only a negligible increase in use of the facility. 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. Therefore, the project is exempt from CEQA.

Public Notice, Schools & Overburdened Communities (Section 2-1-412)

A new or modified source located (1) within 1,000 feet of the outer boundary of a K-12 school site which results in the increase in emissions of a toxic air contaminant in Table 2-5-1 of Regulation 2, Rule 5 New Source Review of Toxic Air Contaminants or (2) within an Overburdened Community as defined in Regulation 2-1-243 that requires a Health Risk Assessment pursuant to Regulation 2-5-401 shall prepare and distribute a public notice in accordance with subsections 412.1 and 412.2 of Regulation 2, Rule 1 General Requirements.

The proposed source is not located in an Overburdened Community but this application proposes a new source of TACs and the proposed source is located within 1,000 feet of Del Mar High School at 1224 Del Mar Ave, San Jose, CA 95128. Therefore, a public notification pursuant to Reg. 2-1-412 is required. No other schools are located within a quarter mile of the proposed source. A public notice will be sent to all parents/guardians

of the above-mentioned school and all addresses within 1,000 feet of the facility. There will be a 30-day public comment period.

Prevention of Significant Deterioration (PSD) (Sections 2-2-304 through 307)

These sections establish standards for PSD BACT requirements, PSD source impact analysis requirements, and PSD additional impacts analysis requirements.

This facility will not emit 100 tons or more per year of any PSD pollutant and, therefore, is not a major PSD facility and is not subject to any of the PSD requirements in Regulations 2-2-304 through 2-2-307 per Regulation 2-2-224.

NAAQS Protection Requirement (Section 2-2-308)

Per Regulation 2-2-308, if a project will result in a significant net increase in emissions of CO, NO₂, SO₂, PM₁₀, PM_{2.5}, or lead, the applicant must demonstrate that the emissions will not cause or contribute to any exceedance of the National Ambient Air Quality Standards for these pollutants.

This project will not involve any significant net emissions increases, as defined in Regulation 2-2-227.2.

Publication of Notice and Opportunity for Public Comment (Section 2-2-404)

If an application involves a major facility, a PSD project, or an increase in CO, NO_x, SO₂, PM₁₀, PM_{2.5}, VOC, or lead in an amount that is significant as defined in Regulation 2-2-227.2, the BAAQMD must prepare and distribute a public notice and provide an opportunity for public comment in accordance with Regulation 2-2-404 (Publication of Notice and Opportunity for Public Comment).

This application does not involve a major facility or PSD project, and it will not increase emissions above any of the significance levels defined in Regulation 2-2-227.2.

Regulation 2- Permits, Rule 6 Major Facility Review

Regulation 2 Rule 6 implements the operating permit requirements of Title V of the federal Clean Air Act as amended in 1990. The rule applies to major facilities, Phase II acid rain facilities, subject solid waste incinerator facilities and any facility in a source category designated by the Administrator of the EPA in a rulemaking as requiring a Title V permit. The rule also provides a means by which facilities can avoid the Title V or other requirements by limiting their potential to emit. A major facility is defined in Section 2-6-212 as one that has the potential to emit 100 tons per year of any regulation air pollutant as defined in Section 2-6-222, or that has the potential to emit 10 tons per year of a single hazardous air pollutant (HAP) or 25 tons per year or more of a combination of HAPs.

The facility's potential to emit of criteria pollutants was calculated in accordance with District Policy and presented previously in Table 8; all emissions are below 100 tons per year per pollutant threshold for a major facility.

A summary of the facility's potential to emit of HAPs is summarized in Table 9 below. The PTE for Ammonia emissions was calculated with the assumption of 100 additional hours per year.

Table 9. Potential to Emit of Hazardous Air Pollutants for Facility ID 13335

Pollutant	Existing Annual PTE Emissions (ton/yr)	Application Annual PTE (ton/yr)	Facility Annual PTE (ton/yr)	Major Facility Threshold (ton/yr)
Diesel PM	0.051	0.008	0.059	10
Ammonia	0.000	0.019	0.019	10
Total HAP	0.051	0.026	0.077	25

As shown above, the facility's HAP PTE is well below the Major Facility thresholds.

The facility is not a Phase II Acid Rain Facility (Section 2-6-217) or a Subject Solid Waste Incinerator Facility (Section 2-6-229), or a facility defined in a source category defined by EPA requiring a Title V permit. Therefore, Title V requirements, as implemented by Regulation 2, Rule 6 are not triggered.

Regulation 6 - Particulate Matter, Rule 1 - General Requirements

Ringelmann No. 1 Limitation (Section 6-1-301)

Except as provided in Sections 6-1-303, 6-1-304 and 6-1-306, a person shall not emit from any source for a period or periods aggregating more than three minutes in any hour, a visible emission which is as dark or darker than No. 1 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree.

Since the engine is expected to emit low amount of PM₁₀, it is expected to comply with *Regulation 6-1-301*, pending a regular inspection.

Opacity Limitation (Section 6-1-302)

Except as provided in Sections 6-1-303, 6-1-304 and 6-1-306, a person shall not emit from any source for a period or periods aggregating more than three minutes in any hour an emission equal to or greater than 20% opacity as perceived by an opacity-sensing device, where such device is required by BAAQMD regulations.

Since the engine is expected to emit low amount of PM₁₀, it is expected to comply with *Regulation 6-1-302*, pending a regular inspection.

Visible Particles (Section 6-1-305)

A person shall not emit particles which are large enough to be visible as individual particles at the emission point or of such size and nature as to be visible individually as incandescent particles.

Since the engine is expected to emit low amounts of PM₁₀, not expected to produce visible emissions or fallout in violation of this regulation and will be assumed to comply with *Regulation 6-1-305*, pending a regular inspection.

Particulate Weight Limitation (Section 6-1-310)

A person shall not emit from any source particulate matter in excess of 0.15 grains/dscf of exhaust gas volume.

The PM emission rate from S-7 is 0.02 grams/bhp-hr, which results in an outlet grain loading of about 0.003 grains/dscf based on the engine's set specifications (2,353 bhp, 12,042 acfm exhaust flow, and 962° F emissions stack temperature). The PM emission rate for the project is much less than the 0.15 grains/dscf limit and complies with *Regulation 6-1-310.1*. Note that the TSP concentration limits set forth in Regulation 6-1-310.2 do not apply because the PTE for PM per source is below the 1000 kg per year applicability threshold.

Regulation 9 – Inorganic Gaseous Pollutants, Rule 1 Sulfur Dioxide

The proposed engine is subject to the following sections of Regulation 9, Rule 1 and will comply with all sections by burning Ultra Low Sulfur Diesel with a sulfur content of 15 ppm, which results in less than 1 ppmv of SO₂ in the exhaust gas.

Limitations on Ground Level Concentrations (Section 9-1-301)

Sulfur Dioxide emissions shall not result in ground level concentrations in excess of 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes or 0.05 ppm averaged over 24 hours.

General Emission Limitation (Section 9-1-302)

A gas stream containing Sulfur Dioxide shall not contain sulfur dioxide in excess of 300 ppm (dry).

Fuel Burning (Liquid and Solid Fuels) (Section 9-1-304)

The sulfur content of liquid fuel burned shall not exceed 0.5% by weight.

Regulation 9 – Inorganic Gaseous Pollutants, Rule 8 NO_x and CO from Stationary Internal Combustion Engines***Exemptions (Section 9-8-110)***

Section 110.5 exempts emergency standby engines from the requirements of Sections 9-8-301 through 305, 501 and 503.

Emergency Standby Engines, Hours of Operation (Section 9-8-330)

The engine is subject to the requirements of *Regulation 9-8-330*, which limits reliability related operation of the engine to 50 hours per year per engine.

Permit Conditions for S-7 will include an operating limit that complies with this standard.

Monitoring and Records (Section 9-8-500)

The engine is subject to the reporting requirements of Sections 502 and 530.

Permit Conditions for S-7 will include reporting requirements that meet this standard.

Regulation 10 – Standards of Performance for New Stationary Sources

New Source Performance Standards (NSPS)

Any new or modified source is required to comply with *Regulation 10, Standard of Performance for New Stationary Sources* – which is Title 40, Part 60 of the Code of Federal Regulation incorporated by reference. According to §60.4200(a)(1), the provisions of 40 CFR Part 60 Subpart IIII *Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines (ICE)* are applicable to (1) manufacturers of stationary CI ICEs with a displacement of less than 30 L/cylinder where the model year is 2007 or later for non-fire pump engines, and (2) owners and operators of stationary CI ICE that commence construction after July 11, 2005 and are manufactured after April 1, 2006 (and are not fire pump engines).

§60.4205 specifies the emission standards that must be met by owners/operators of stationary CI ICE emergency engines. Per §60.4205(b), owners/operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 L/cylinder that are not fire pump engines must comply with the emission standards for new nonroad CI engines in §60.4202 for all pollutants (for the same model year and maximum engine power for their 2007 model year and later emergency stationary CI ICE).

§60.4202 specifies emergency engine emissions standards for manufacturers of stationary CI ICEs. Per §60.4202(a)(2), manufacturers must certify their 2007 model year and later CI ICEs with a maximum engine power less than 3000 HP and displacement of less than 10 liters per cylinder that are not fire pump engines to the Tier 2 emission standards as described in in 40 CFR Part 1039, Appendix I for all pollutants. The emission rates from the manufacturer’s Performance Data Sheet and the EPA certified emission rates for the engine family compared to the Tier 2 emission standards contained in 40 CFR Part 1039, Appendix I, Table 2 for engines rated higher than 560 kW for model years effective in 2006, is summarized below.

Table 10. Engine Emission Rates vs. 40 CFR 1039, Appendix I, Table 2 Emission Standards

Pollutant	40 CFR 1039, Appendix I Table 2 Emission Standard (g/kW-hr)	EPA Certified Emission Rates for Engine Family PLHAL45.0ESP (g/kW-hr)
NMHC + NO _x	6.4	6.2
CO ¹	3.5	0.8
PM	0.20	0.15

Notes:

1. EPA certified unabated CO emission factor is 0.80 g/kW-hr, but the engine will be subject to source testing to verify that it meets the Tier 4 CO emission standard of 3.5 g/kW-hr (2.6 g/bhp-hr).

As shown above, the EPA certified emissions rates for the engine family for S-7 satisfy the applicable emissions standards.

The engine is exempt from the smoke emission standards of 40 CFR 1039.105 because the engine is constant-speed (exemption 1039.105(a)(2)).

§60.4206 requires that the owner/operator of a stationary CI ICE meet the applicable emission standards specified in §60.4205 over the entire life of the engine.

The owner/operator is expected to comply with this requirement.

§60.4207 specifies fuel requirements that must be met for owners/operators of a stationary CI ICE engine subject to Subpart III. Effective October 1, 2010, engines with a displacement less than 30 L/cylinder that use diesel fuel must meet the requirements of 40 CFR 80.510(b) for nonroad diesel fuel. 40 CFR 80.510(b) specifies standards of 15 ppm maximum sulfur content for nonroad diesel fuel and a cetane index of 40 or aromatic content of 35%.

The owner/operator is expected to comply with this requirement because CARB allows only ultra-low sulfur diesel to be used for stationary engines in California.

§60.4209 specifies the monitoring requirements for owner/operators of stationary CI ICEs: emergency engines not meeting emission standards must be equipped with a non-resettable hour meter prior to startup, and DPFs (if equipped) must be installed with a backpressure monitor that notifies the owner/operator when high backpressure limit is approached. In addition, monitoring requirements of §60.4211 must be met (see next subsection, below).

S-7 meets the standards applicable to emergency engines and will be equipped with a non-resettable hour meter prior to startup of the engine (even though it is not specifically required to do so per this section). The DPF will be equipped with a backpressure monitor to comply with this requirement. Standard permit conditions will be imposed to ensure compliance with these requirements.

§60.4211 requires (a) owners/operators operate and maintain the engine and control device according to manufacturer's emission-related written instructions, change only those emission-related settings that are permitted by the manufacturer, and meet the requirements of 40 CFR 89, 94, and/or 1068 if applicable. In addition, §60.4211(c) requires owner/operators of 2007 model year and later CI ICEs complying with §60.4205(b) standards to purchase a certified engine, installed and configured according to the manufacturer's emission-related specifications. Lastly, §60.4211(f) specifies emergency engine operation for non-emergency purposes are limited to 50 hours per year (up to 100 hours per year for certain situations) and emergency use is unlimited.

The owner/operator is expected to comply with the requirements outlined in §60.4211. The proposed engine is part of certified EPA Engine Family PCPXL18.1NYS. Due to the CARB ATCM limiting non-emergency use to 50 hours per year, the 100 hours per year provision does not apply.

§60.4214 specifies notification, reporting and recordkeeping requirements for owners/operators of CI ICEs.

S-7 is not subject to initial notification requirements of §60.4214(b) because it is an emergency engine that meets the standards applicable to non-emergency engines in the applicable model year.

§60.4218 specifies the general provisions in 40 CFR 60.1 to 60.19 applicable.

The owner/operator is expected to comply with these provisions.

Regulation 11 – National Emission Standards for Hazardous Air Pollutants
National Emission Standards for Hazardous Air Pollutants (NESHAP)

There are no subparts under 40 CFR Part 61 that apply to ICEs. Therefore, this regulation does not apply to any of the proposed sources in this application.

40 CFR Part 63 Subpart ZZZZ establishes NESHAPs for Stationary Reciprocating Internal Combustion Engines (RICEs). Both area and major sources of RICEs are subject to Subpart ZZZZ. The facility constitutes an area source of HAPs because the potential to emit any single/combined HAP are below the 10/25 tons per year threshold for major sources. The proposed engine (S-7) is a new stationary RICE CI at an area source subject to (and compliant with) regulations under 40 CFR Part 60 Subpart IIII. Therefore, per 40 CFR 63.6590(c)(1), no further requirements apply for the proposed engine under Subpart ZZZZ.

Other Regulations

The BAAQMD is charged with enforcing the requirements of California’s Air Toxic Control Measure for Stationary Compression Ignition Engines *Title 17, California Code of Regulations, Section 93115* for the purpose of reducing diesel particulate matter (PM) and criteria pollutant emissions from stationary diesel-fueled compression ignition (CI) engines.

Airborne Toxic Control Measure (ATCM) for Emergency Standby Diesel-Fueled CI Engines (>50 bhp)

Subsection 93115.6(a)(3)(A)(1)(a) sets forth Emission Standards for new stationary emergency standby diesel fueled compression ignition engines with maximum engine power greater than 50 HP.

S-7 is subject to and meets the requirement of this section of the ATCM as shown in the table below:

Table 11. Engine Emission Rates vs. ATCM Emission Standards

Pollutant	ATCM Emission Standards Engine HP > 750 (g/bhp-hr)	EPA Certified Emission Rate (g/bhp-hr)
PM	0.15	0.112
NMHC + NO _x	4.8	4.62
CO ¹	2.6	0.60

Notes:

1. EPA certified unabated CO emission factor is 0.6 g/bhp-hr, but the engine will be subject to source testing to verify that they meet the Tier 4 CO emission standard of 2.6 b/bhp-hr.

Subsection 93115.6(a)(3)(A)(1)(b) requires that new stationary emergency standby diesel-fueled engines (>50 bhp) be certified to the emission standards as specified in *40 CFR, Part 60, Subpart III – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*.

S-7 is certified to meet EPA Tier 2 standards, it will meet EPA Tier 4 standards with abatement, and it meets 40 CFR Part 60 Subpart III; therefore, S-7 complies with this section of the ATCM.

Subsection 93115.6(a)(3)(A)(1)(c) limits the non-emergency operation of 50 hours/year for maintenance and testing.

Permit Conditions for S-7 will limit non-emergency operation to 50 hours/year/engine and as such, will comply with this section of the ATCM.

PERMIT CONDITIONS

Permit Condition #100072 – Applies to S-7

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.
- e. 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 500 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 – Applies to S-7

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]

Permit Condition #100593– Applies to S-7

Tier 2 Engines, equipped with add-on SCR and DPF; ST for NO_x/CO, POC & PM.

1. The owner/operator shall ensure each engine is abated at all times of operation by an approved Selective Catalytic Reduction (SCR) System and Diesel Particulate Filter (DPF) equipped with a backpressure monitor or other approved Diesel Exhaust Particulate Matter Abatement System. The engine, SCR System, and DPF with backpressure monitor, or other approved system shall be installed, maintained, and operated in accordance with the manufacturer specifications and/or best modern practices.

[Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT, Regulation 2, Rule 5]

2. The owner/operator shall take all corrective actions recommended by the manufacturer in response to backpressure monitor notifications.

[Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT]

3. The owner/operator shall ensure urea injection commences as soon as the SCR catalyst bed reaches the minimum operating temperature as specified by the manufacturer.

[Basis: Cumulative Increase, Title 17 CCR Section 93115.6(a)(3), 40 CFR 1039.101, BACT]

4. The owner/operator shall ensure engine emissions do not exceed an ammonia (NH₃) slip of 10 ppmv, dry @ 15% O₂ from the SCR system. If deemed necessary to demonstrate compliance with Regulation 2, Rule 5, the Air District may require a source test to determine compliance with this emission limit.

[Basis: Regulation 2, Rule 5]

5. The owner/operator shall ensure engine emissions do not exceed the following limits:

NOx: 0.50 g/bhp-hour
CO: 2.60 g/bhp-hour
POC: 0.14 g/bhp-hour
PM: 0.02 g/bhp-hour

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

6. To demonstrate compliance with Part 5, the owner/operator shall conduct an initial Air District-approved source test on the engine within 60 days of startup and once every three years thereafter at the normal or expected load during emergency operation using Air District approved source test methods. The owner/operator shall document urea usage (gallons per minute) and average kW during all tests, preferably as digital records. The owner/operator shall submit the source test results to the Air District's Source Test Section no later than 60 days after source test completion.

[Basis: BACT and Cumulative Increase]

7. The owner/operator shall comply with all applicable testing, sampling port location and safe access requirements as specified in Volume IV of the Air District's Manual of Procedures. The owner/operator shall notify the Air District's Source Test Section, in writing, of the source test protocols, sampling port locations, layout, access and projected test dates at least 30 days prior to testing. The following test methods shall be used for each pollutant:

NOx: EPA Method 7E or Air District-approved equivalent
CO: EPA Method 10 or Air District-approved equivalent
POC: EPA Method 25A and EPA Method 18 or Air District-approved equivalent
PM (filterable): EPA Method 5 or Air District-approved equivalent

[Basis: Regulation 2-1-403]

8. To determine compliance with the above parts, the owner/operator shall maintain the following records in an Air District-approved log and shall make these records available to Air District staff upon request. All records shall be retained 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 Synthetic Minor Operating Permit). These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District or state regulations.

- a. Source Test Notifications.
- b. All source test reports.
- c. Engine serial number and source number for each source test.
- d. Engine load percentage.
- e. Engine, SCR, and DPF maintenance records.
- f. SCR system owner's manual or manufacturer's specifications.
- g. DPF owner's manual or manufacturer's specifications.
- h. All backpressure monitor notifications and corrective actions.
- i. SCR urea injection rate (gpm).

[Basis: BACT, Cumulative Increase, Recordkeeping]

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 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 K-12 school, 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-7 Emergency Standby Diesel Engine-Genset
Make: Kohler, Model: KD45V20, Model Year: 2023
EPA Engine Family: PLHAL45.0ESP
2,353 bhp, 15.32 MMBTU/hr

Abated by A-1 & A-2

A-1 Diesel Particulate Filter (DPF)
Make: Johnson Matthey, Model: SCRT System

A-2 Selective Catalytic Reduction (SCR)
Make: Johnson Matthey, Model: SCRT System

By: *Cameron Fee*

Date: April 14, 2025

Cameron Fee
Senior Air Quality Engineer