ENGINEERING EVALUATION REPORT
AMAZON DATA SERVICES INC
PLANT #25018
APPLICATION #31986

BACKGROUND

Amazon Data Services Inc (Applicant) currently operates a data center at 25800 Clawiter Road in Hayward, California. The facility consists of four industrial core and shell structures totaling approximately 616,000 square feet and a transformer yard, as well as surface parking and landscaping. The Bay Area Air Quality Management District (BAAQMD) has previously issued Authorities to Construct for seventeen (17) diesel fired backup generators at the facility. When fully built out, the facility will consist of twenty-three (23) 3,634 bhp diesel fired backup generators to provide backup power to the facility's data storage equipment, as well as one (1) 900 bhp diesel-fired backup generator to provide emergency backup power to support fire suppression and other emergency operations for the facility buildings.

The City of Hayward Planning Division (City) is the lead agency under the California Environmental Quality Act (CEQA) and has adopted a mitigated negative declaration (MND) for this project. Per the City's MND, the proposed data center is designed to provide up to 37.8 MW of load and has a peak load of 49 MW. Because the peak load is less than 50 MW, the facility is not subject to the California Energy Commission's (CEC) review or approval. Other agencies, including the BAAQMD, conduct further review of the project, including any necessary additional environmental review. These agencies act as "responsible agencies" under CEQA.

Currently, the Applicant is applying for an Authority to Construct and Permit to Operate seven (7) new emergency backup power generators. Following the review of these engines, the Applicant will not be permitted to construct any additional engines until further CEQA review is conducted. The proposed sources require Authorities to Construct and Permits to Operate per BAAQMD Regulation 2-1-301 and Regulation 2-1-302, respectively. All seven of these new generators will have identical engines that will each be equipped with a Diesel Particulate Filter (DPF), a Diesel Oxidation Catalyst (DOC), and Selective Catalytic Reduction (SCR). The sources covered by this application for an authority to construct/permit to operate are identified as follows:

S-18: **Stationary Emergency Diesel Engine-Generator Set**
Make: Caterpillar; Model: 3516C, Model Year: 2023
EPA Engine Family: PCPXL78.1NZS
3,634 bhp, 24.5 MMBtu/hr

Abated by

A-34: **Diesel Particulate Filter and Diesel Oxidation Catalyst Abatement Package:**
Rypos Model No. HDPF/C

And

A-35: Selective Catalytic Reduction Package: Miratech Model No. AT-IV

And

S-19: Stationary Emergency Diesel Engine-Generator Set
Make: Caterpillar; Model: 3516C, Model Year: 2023
EPA Engine Family: PCPXL78.1NZS
3,634 bhp, 24.5 MMBtu/hr

Abated by

A-36: Diesel Particulate Filter and Diesel Oxidation Catalyst Abatement Package: Rypos Model No. HDPF/C

And

A-37: Selective Catalytic Reduction Package: Miratech Model No. AT-IV

And

S-20: Stationary Emergency Diesel Engine-Generator Set
Make: Caterpillar; Model: 3516C, Model Year: 2023
EPA Engine Family: PCPXL78.1NZS
3,634 bhp, 24.5 MMBtu/hr

Abated by

A-38: Diesel Particulate Filter and Diesel Oxidation Catalyst Abatement Package: Rypos Model No. HDPF/C

And

A-39: Selective Catalytic Reduction Package: Miratech Model No. AT-IV

And

S-21: Stationary Emergency Diesel Engine-Generator Set
Make: Caterpillar; Model: 3516C, Model Year: 2023
EPA Engine Family: PCPXL78.1NZS
3,634 bhp, 24.5 MMBtu/hr

Abated by

A-40: Diesel Particulate Filter and Diesel Oxidation Catalyst Abatement Package: Rypos Model No. HDPF/C

And

A-41: Selective Catalytic Reduction Package: Miratech Model No. AT-IV

And

S-22: Stationary Emergency Diesel Engine-Generator Set
Make: Caterpillar; Model: 3516C, Model Year: 2023
EPA Engine Family: PCPXL78.1NZS

3,634 bhp, 24.5 MMBtu/hr

Abated by

A-42: Diesel Particulate Filter and Diesel Oxidation Catalyst Abatement Package: Rypos Model No. HDPF/C

And

A-43: Selective Catalytic Reduction Package: Miratech Model No. AT-IV

And

S-23: Stationary Emergency Diesel Engine-Generator Set
Make: Caterpillar; Model: 3516C, Model Year: 2023
EPA Engine Family: PCPXL78.1NZS
3,634 bhp, 24.5 MMBtu/hr

Abated by

A-44: Diesel Particulate Filter and Diesel Oxidation Catalyst Abatement Package: Rypos Model No. HDPF/C

And

A-45: Selective Catalytic Reduction Package: Miratech Model No. AT-IV

And

S-24: Stationary Emergency Diesel Engine-Generator Set
Make: Caterpillar; Model: 3516C, Model Year: 2023
EPA Engine Family: PCPXL78.1NZS
3,634 bhp, 24.5 MMBtu/hr

Abated by

A-46: Diesel Particulate Filter and Diesel Oxidation Catalyst Abatement Package: Rypos Model No. HDPF/C

And

A-47: Selective Catalytic Reduction Package: Miratech Model No. AT-IV

EMISSIONS SUMMARY

Criteria pollutant emissions from the diesel engines that are the subject of this application are outlined below.

Annual Emissions:

Table 1A. Engine Data

Source ID	Non-Emergency Hrs/year	Output rating for full-load, standby operation (Bhp)	Engine Displacement	Rating, Constant Speed (RPM)	EPA Engine Family
S-18	50	3,634	78.1 L ÷ 16 = 4.9 L/cylinder	1800	PCPXL78.1NZS
S-19	50	3,634	78.1 L ÷ 16 = 4.9 L/cylinder	1800	PCPXL78.1NZS
S-20	50	3,634	78.1 L ÷ 16 = 4.9 L/cylinder	1800	PCPXL78.1NZS
S-21	50	3,634	78.1 L ÷ 16 = 4.9 L/cylinder	1800	PCPXL78.1NZS
S-22	50	3,634	78.1 L ÷ 16 = 4.9 L/cylinder	1800	PCPXL78.1NZS
S-23	50	3,634	78.1 L ÷ 16 = 4.9 L/cylinder	1800	PCPXL78.1NZS
S-24	50	3,634	78.1 L ÷ 16 = 4.9 L/cylinder	1800	PCPXL78.1NZS

Table 1B. Emission Factor Assumptions for S-18 through S-24

Pollutant[1]	Unabated Emission Factor[2,3] (g/kW-hr)	Unabated Emission Factor[4] (g/bhp-hr)	Abatement Device Efficiency[5,6] DRE %	Abated Emission Factor[7] (g/bhp-hr)
NOx	5.07	3.78	87%	0.50
CO	3.5	2.60	0%	2.60
POC (NMHC)	0.26	0.19	26%	0.14
$PM_{10}/PM_{2.5}$	0.12	0.09	70%	0.027

References:

1. *It is assumed that all PM emissions are both PM_{10} and $PM_{2.5}$*
2. *Emission factors for NOx, POC (NMHC), and PM_{10} taken from US EPA Annual Certification Database for Vehicles, Engines, and Equipment: Nonroad Compression Ignition Engines, NRCI Certification Data (Model Years: 2011-Present.xlsx), Certification Level Steady-State Discrete Modal Test Results. https://www.epa.gov/compliance-and-fuel-economy-data/annual-certification-data-vehicles-engines-and-equipment*
3. *Emission factor for CO is assumed to be the Tier 4 limit of 3.5 g/kW-hr (2.6 b/bhp-hr) because this is the maximum CO emission factor that will be an enforceable permit condition verified by source test.*
4. *Assume 1.341 hp/kw conversion factor.*
5. *NOx and POC abatement efficiencies are back-calculated to meet applicable BACT limits of 0.5 and 0.14 g/bhp-hr, respectively, because BACT is triggered for these pollutants and applying a DRE is necessary to satisfy BACT. Permit limits will be imposed for complying with these limits.*

6. *The proposed DPF is verified to achieve 85% abatement efficiency per CARB Executive Order DE-07-001-08. However, the addition of the SCR invalidates the CARB-verification. Therefore, a minimum abatement efficiency of 70% is assumed for PM.*
7. *Abated emission factor = Unabated emission factor * (1 – Abatement Device Efficiency %)*

The emission factor for SO_2 is from Chapter 3, Table 3.4-1 of the EPA Document AP-42, Compilation of Air Pollutant Emission Factors, which is based on full conversion of fuel sulfur to SO_2 and which will therefore be considered applicable to any diesel engine (sulfur content will be assumed to be the California limit of 0.0015 wt% sulfur) is calculated as follows:

SO_2: 8.09E-3 (% S in fuel oil) lb/hp-hr = 8.09E-3 (0.0015% S) (454 g/lb)
= **0.006 g/hp-hr**

Table 1C. Calculated Annual Emissions Per Engine

Per Engine																
NOx	=	(	0.50	g/hp-hr)	(	3634	hp)	(	50	hr/yr)	(lb/454g)	=	200.110	lb/yr	=	0.100 TPY
CO	=	(	2.60	g/hp-hr)	(	3634	hp)	(	50	hr/yr)	(lb/454g)	=	1040.573	lb/yr	=	0.520 TPY
POC	=	(	0.14	g/hp-hr)	(	3634	hp)	(	50	hr/yr)	(lb/454g)	=	56.031	lb/yr	=	0.028 TPY
$PM_{10}/PM_{2.5}$	=	(	0.027	g/hp-hr)	(	3634	hp)	(	50	hr/yr)	(lb/454g)	=	10.806	lb/yr	=	0.005 TPY
SO_2	=	(	0.006	g/hp-hr)	(	3634	hp)	(	50	hr/yr)	(lb/454g)	=	2.401	lb/yr	=	0.001 TPY

Table 1D below summarizes the combined annual emissions from all seven engines.

Table 1D. Combined Annual Emissions for S-18 through S-24

Pollutant	Annual Emissions (lbs/year)	Annual Emissions (tons/year)
NOx	1,400.77	0.700
CO	7,284.01	3.640
POC	392.22	0.196
$PM_{10}/PM_{2.5}$	75.64	0.035
SO_2	16.81	0.007

Maximum Daily Emissions:

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. The table below shows the calculated maximum daily emissions for each new source proposed in this application.

Table 1E. Calculated Daily Emissions Per Engine

Per Engine													
NOx	=	(	0.50	g/hp-hr)	(	3634	hp)	(	24	hr/day)	(lb/454g)	=	96.053 lb/day
CO	=	(	2.60	g/hp-hr)	(	3634	hp)	(	24	hr/day)	(lb/454g)	=	499.475 lb/day
POC	=	(	0.14	g/hp-hr)	(	3634	hp)	(	24	hr/day)	(lb/454g)	=	26.895 lb/day
$PM_{10}/PM_{2.5}$	=	(	0.027	g/hp-hr)	(	3634	hp)	(	24	hr/day)	(lb/454g)	=	5.187 lb/day
SO_2	=	(	0.006	g/hp-hr)	(	3634	hp)	(	24	hr/day)	(lb/454g)	=	1.153 lb/day

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, NOx, SO_2, PM_{10}, and CO, and August 31, 2016, for $PM_{2.5}$. The cumulative increase for the facility is summarized in the table below.

Table 2. Calculated Plant Cumulative Increase for Plant #25018

Pollutant	Current[1] (ton/year)	Application Increase (ton/year)	New Total (ton/year)
NOx	1.809	0.700	2.509
CO	8.350	3.640	11.990
POC	0.452	0.196	0.648
PM_{10}	0.039	0.035	0.074
$PM_{2.5}$	0.039	0.035	0.074
SO_2	0.016	0.007	0.023

Notes:

1. The current cumulative increase includes the increase of permitted CO emissions for S-2 through S-17 resulting from the revised permitted CO limit for those engines. This CO emission increase will be explained in detail in evaluation addendums to Applications 31255, 31702, and 31837.

STATEMENT OF COMPLIANCE

Regulation 2 - Permits, Rule 1 – General Requirements

Applicability of CEQA (Section 2-1-310)

In accordance with 2-1-310.1, all proposed new and modified sources for which an Authority to Construct must be obtained from the BAAQMD shall be reviewed in accordance with the requirements of CEQA by a lead agency. Per 2-1-310.2, the issuance of an Authority to Construct or Permit to Operate for the same new or modified source or stationary source are considered to be parts of the same project for the purposes of CEQA.

In addition, per 2-1-310.3, the APCO shall not authorize, on an interim basis or otherwise, the installation or operation of any proposed new or modified source, the permitting of which is subject to the requirements of CEQA, until all the requirements of CEQA have been satisfied.

The City of Hayward is the lead agency for this project. The City adopted an MND on February 11, 2021, finding that the project will not have the potential to cause any significant adverse environmental impacts. The BAAQMD has considered the project's environmental impacts as discussed in the City's evaluation pursuant to CEQA Guidelines Section 15096. As the project will not have any significant impacts, there is no need to consider alternatives or mitigation measures (beyond what the BAAQMD is already imposing under its regulations as outlined in this evaluation) to avoid or minimize any such impacts.

The District is a responsible agency for the facility. The BAAQMD has reviewed and considered the City's environmental analysis in connection with its decision to issue the Authority to Construct. Based on such review, the District has determined that the project will not have a significant effect on the environment. Issuance of the Authority to Construct will constitute certification that the BAAQMD has considered the City's environmental analysis and determined that the project will not have any significant impacts.

CEQA-Related Information Requirements (Section 2-1-426)

The BAAQMD has received the necessary information indicating that the City is acting as the Lead Agency for CEQA purposes. As described above, this project is subject to an MND prepared by the City. Therefore, this project complies with Regulation 2-1-426.2.6 and the application has been deemed complete for CEQA purposes.

Public Notice (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 (HRA) 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*.

This application proposes a new source of TACs, but it is not located within 1,000 feet of the outer boundary of the nearest K-12 school (with more than 12 children enrolled). However, the proposed sources are subject to an HRA and are located within an Overburdened Community in Hayward, CA. Therefore, a public notification is required, pursuant to Regulation 2-1-412. A public notice will be distributed to all addresses within 1,000 ft and there will be a 30-day public comment period.

Regulation 2 - Permits, Rule 2 – New Source Review

In accordance with District Policy[1], the standard potential to emit for emergency engines is based on 150 hr/yr operation (50 hr/yr non-emergency plus 100 hr/yr emergency purposes).

The assumption of 100 hours per year of emergency operation is used to determine the applicability of certain District permitting regulations, such as New Source Review and Title V Major Facility Review. The District Policy is not used to determine the quantity of emission offsets required for a project that triggers New Source Review or for PSD. It is also not applicable for purposes of the Toxics New Source Review requirements of District Reg. 2-5 (per Regulation 2-5-111).

Therefore, the potential to emit for the emergency engines in this application is based on 150 hr/yr/engine operation (50 hr/yr non-emergency plus 100 hr/yr emergency purposes).

The table below shows the calculated facility-wide potential to emit based on District Policy.

Table 3. Facility-Wide Potential to Emit
(Per BAAQMD Policy: Calculating PTE for Emergency Backup Power Generators)

Pollutant	Current[1] (ton/year)	Application Increase (ton/year)	New Total (ton/year)
NOx	5.426	2.100	7.526
CO	25.049	10.927	35.976
POC	1.356	0.588	1.944
$PM_{10}/PM_{2.5}$	0.130	0.112	0.242
SO_2	0.065	0.028	0.093

Notes:

1. The current PTE includes the increase of permitted CO emissions for S-2 through S-17 resulting from the revised permitted CO limit for those engines. This CO emissions increase will be explained in detail in evaluation addendums to Applications 31255, 31702, and 31837.

Best Available Control Technology Requirement (Section 2-2-301)

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, SO_2, or PM_{10}.

Based on the emission calculations in Table 1E, BACT is triggered for all proposed new engines (S-18 through S-24) for NOx, POC, and CO because the maximum daily emissions exceed 10 lbs/day for those pollutants.

[1] BAAQMD Policy: Calculating Potential to Emit for Emergency Backup Power Generators. Approval date June 3, 2019. (Referred to as "District Policy" in this engineering evaluation).

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 these emergency standby diesel engines, the BAAQMD reviewed available control technologies that can be effective at controlling NOx, POC, and CO from these sources.

Control Technology Review

Several control technologies can reduce NOx, CO, and POC 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 NOx formed during combustion. The less nitrogen available in the fuel, the less that can be converted to NOx upon combustion. Diesel fuel producers are not required to remove nitrogen from the fuel specifically for NOx 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 NOx 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 these engines.

Combustion Technologies

NOx, 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.[2] 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 NOx, CO, and POC rely on the use of catalysts. For NOx reduction, catalytic technology can come in the form of a selective catalytic reduction unit, lean-NOx catalyst, or NOx adsorber. For CO and POC, reduction is typically achieved through an oxidation catalyst.

[2] 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.

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 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-18 through S-24

S-18 through S-24 are all identical engines, so the following BACT analysis applies to all seven of the new proposed engines.

All seven proposed engines are emergency standby engines 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-18 through S-24 will be required by CARB regulations to use ULSD fuel, and will be required by BAAQMD permit conditions to utilize post-combustion technologies to meet the EPA Tier 4 emissions standards for the applicable pollutants. Therefore, S-18 through S-24 comply 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-18 through S-24, and the expected abatement efficiencies of the post-combustion control devices, the abated NOx, POC, and CO emission rates comply with the applicable BACT emission limits shown below. However, because the engines are not certified to meet Tier 4 standards for NOx and POC by EPA, source testing will be required to verify compliance. To prevent engine tuning to reduce NOx 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 the seven new engines.

BACT Analysis Summary: S-18 through S-24

BACT Pollutant Triggered	BACT Limit Tier 4 for Engines > 750 HP (g/bhp-hr)	Emission Rates per Engine (g/bhp-hr)
NOx	0.5	0.5
CO[1]	2.6	0.67
POC	0.14	0.14

Notes:

1. The EPA certified emission factor for CO is 0.67 g/bhp-hr, but the engines will only be required to verify that they meet the Tier 4 standard of 2.6 g/bhp-hr for CO as BACT limit.

Offset Requirements, POC and NO_x (Section 2-2-302)

This section establishes emission offset requirements for POC and NO_x at facilities that will have the potential to emit more than 10 tons per year of POC or NO_x. If the facility will have the potential to emit more than 10 tons per year but less than 35 tons per year of NO_x or POC after the new or modified source is constructed, offsets must be provided at a 1:1 ratio for any un-offset cumulative increase in emissions at the facility. These offsets shall be provided by the District's Small Facility Banking Account (SFBA) unless the applicant owns offsets. If the facility will have the potential to emit more than 35 tons per year of NOx or POC after the new or modified source is constructed, offsets must be provided by the facility at a 1.15:1 ratio for any un-offset cumulative increase in emissions at the facility.

The facility has the potential to emit 7.526 tons per year (tpy) of NO_x and 1.944 tpy of POC based on District Policy (see Table 3). Therefore, offsets are not triggered.

Offset Requirement, $PM_{2.5}$, PM_{10} and Sulfur Dioxide (Section 2-2-303)

This section establishes emission offset requirements for $PM_{2.5}$, PM_{10} and Sulfur Dioxide from new or modified sources located at facility with the potential to emit 100 tons per year of $PM_{2.5}$, PM_{10} or Sulfur Dioxide.

Since the potential to emit $PM_{2.5}$, PM_{10} or Sulfur Dioxide at the facility where these engines operates are each below 100 tons per year, the application is not subject to the offset requirements of *Regulation 2-2-303*.

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, NO_2, SO_2, PM_{10}, $PM_{2.5}$, 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, NOx, SO_2, PM_{10}, $PM_{2.5}$, 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 5 New Source Review of Toxic Air Contaminants

This rule requires that any new or modified source of toxic air contaminant (TAC) emissions subject to Authority to Construct or Permit to Operate requirements shall be evaluated for potential public exposure and health risk and meet the applicable standards and administrative requirements, as specified in Sections 300 and 400, respectively.

The proposed engines will emit diesel exhaust particulate matter (Diesel PM) from the combustion of diesel fuel, and Ammonia (NH_3) as secondary emissions from the operation of the SCRs. Both Diesel PM and Ammonia are TACs under BAAQMD Regulation 2, Rule 5. BAAQMD Regulation 2, Rule 5 specifies that diesel exhaust particulate matter will be used as a surrogate for all TAC emissions from diesel-fueled compression-ignition internal combustion engines, as this is the principal driver of the health risk associated with this type of equipment. The calculated emissions increase of diesel exhaust particulate matter and ammonia associated with the project are summarized in the tables below.

The project includes three related NSR applications (A/Ns 31255, 31702, and 31837) for new or modified sources permitted within the previous five-year period (per BAAQMD Reg 2-5-216).

Table 5A. Project Diesel Exhaust Particulate Matter Emissions

Source	PM Emission Factor (g/bhp-hr)	Horsepower	Annual Usage (hours/year)	Diesel PM Emissions (lb/year)
S-1 (A/N 31255)	0.012	900	50	1.19
S-2 (A/N 31255)	0.014	3,634	50	5.60
S-3 (A/N 31255)	0.014	3,634	50	5.60
S-4 (A/N 31255)	0.014	3,634	50	5.60
S-5 (A/N 31255)	0.014	3,634	50	5.60
S-6 (A/N 31255)	0.014	3,634	50	5.60
S-7 (A/N 31255)	0.014	3,634	50	5.60
S-8 (A/N 31702)	0.014	3,634	50	5.60
S-9 (A/N 31702)	0.014	3,634	50	5.60
S-10 (A/N 31702)	0.014	3,634	50	5.60
S-11 (A/N 31702)	0.014	3,634	50	5.60
S-12 (A/N 31837)	0.014	3,634	50	5.60
S-13 (A/N 31837)	0.014	3,634	50	5.60
S-14 (A/N 31837)	0.014	3,634	50	5.60
S-15 (A/N 31837)	0.014	3,634	50	5.60
S-16 (A/N 31837)	0.014	3,634	50	5.60
S-17 (A/N 31837)	0.014	3,634	50	5.60
S-18 (A/N 31986)	0.027	3,634	50	10.81
S-19 (A/N 31986)	0.027	3,634	50	10.81
S-20 (A/N 31986)	0.027	3,634	50	10.81
S-21 (A/N 31986)	0.027	3,634	50	10.81
S-22 (A/N 31986)	0.027	3,634	50	10.81
S-23 (A/N 31986)	0.027	3,634	50	10.81
S-24 (A/N 31986)	0.027	3,634	50	10.81
			Total	**166.48**
			HRA Trigger (Chronic)	***0.26***

Table 5B. Project Ammonia Emissions

Source ID (Application No.)	Molecular Wt.	Max. Conc.	Conc.	Hourly Emissions	Acute Toxic trigger	Exceeds Trigger ?	Annual Emissions	Chronic Toxic trigger	Exceeds Trigger ?
	lb/lb-mol	ppmv, at 15% O2, dry basis	ratio, corrected to exhaust %O2	lb/hr	lb/hr		lb/yr	lb/yr	
S-2 (A/N 31255)	17	10	1.95E-05	3.49E-01	1.4	No	1.75E+01	7.70E+03	No
S-3 (A/N 31255)				3.49E-01		No	1.75E+01		No
S-4 (A/N 31255)				3.49E-01		No	1.75E+01		No
S-5 (A/N 31255)				3.49E-01		No	1.75E+01		No
S-6 (A/N 31255)				3.49E-01		No	1.75E+01		No
S-7 (A/N 31255)				3.49E-01		No	1.75E+01		No
S-8 (A/N 31702)				3.49E-01		No	1.75E+01		No
S-9 (A/N 31702)				3.49E-01		No	1.75E+01		No
S-10 (A/N 31702)				3.49E-01		No	1.75E+01		No
S-11 (A/N 31702)				3.49E-01		No	1.75E+01		No
S-12 (A/N 31837)				3.49E-01		No	1.75E+01		No
S-13 (A/N 31837)				3.49E-01		No	1.75E+01		No
S-14 (A/N 31837)				3.49E-01		No	1.75E+01		No
S-15 (A/N 31837)				3.49E-01		No	1.75E+01		No
S-16 (A/N 31837)				3.49E-01		No	1.75E+01		No
S-17 (A/N 31837)				3.49E-01		No	1.75E+01		No
S-18 (A/N 31986)				3.49E-01		No	1.75E+01		No
S-19 (A/N 31986)				3.49E-01		No	1.75E+01		No
S-20 (A/N 31986)				3.49E-01		No	1.75E+01		No
S-21 (A/N 31986)				3.49E-01		No	1.75E+01		No
S-22 (A/N 31986)				3.49E-01		No	1.75E+01		No
S-23 (A/N 31986)				3.49E-01		No	1.75E+01		No
S-24 (A/N 31986)				3.49E-01		No	1.75E+01		No
Total Ammonia Emissions				**8.03E+00**	**1.4**	**Yes**	**4.01E+02**	**7.70E+03**	**No**

Basis:

- Annual emissions based on 50 hours/year of non-emergency operation.
- Exhaust water content is 10% by volume.
- Exhaust is assumed to be at standard pressure.
- Exhaust flow rate corrected to 0% O_2 from 9.4% O_2.

Regulation 2-5-402 requires a Health Risk Assessment (HRA) if TAC emissions exceed the screening thresholds set forth in Table 2-5-1 in Regulation 2, Rule 5. For this project, the emissions of diesel particulate matter and ammonia exceed the Table 2-5-1 chronic and acute trigger levels, respectively.

This application does not qualify for HRA streamlining due to the project TAC emission rates and proximity to nearby sensitive receptors. Therefore, a refined HRA was performed to evaluate the potential chronic carcinogenic and non-carcinogenic health risks from Diesel PM and Ammonia emissions from this project. The HRA evaluated risks to workers and to residents in the vicinity of the project as well as the point of maximum impact (PMI). The HRA assumes that the applicable engines will operate up to the maximum allowable hours/year of non-emergency operation for each engine. Emissions from emergency operation are not included pursuant to the exemption set forth in Regulation 2-5-111. The results of the HRA are summarized in Tables 6A and 6B below.

Table 6A. Individual New Source HRA Results

Source ID	Source Cancer Risk
S-18	0.31 in a million
S-19	0.37 in a million
S-20	0.23 in a million
S-21	0.31 in a million
S-22	0.19 in a million
S-23	0.25 in a million
S-24	0.14 in a million

Table 6B. Project HRA Results

Receptor	Cancer Risk	Chronic Hazard Index	Acute Hazard Index[1]
Resident	2.6 in a million	0.00074	N/A
Worker	4.3 in a million	0.0035	N/A
PMI (1-hour)	N/A	N/A	0.024

Note:

1. The original Acute Hazard Index result for the PMI was 0.023311 (reported as 0.023). After the HRA results were received, the ammonia emission calculations were revised to account for the correct O_2 content of the exhaust. This revision in ammonia slip calculations resulted in an increase of ammonia emissions by approximately 1.8%. A corresponding 1.8% increase in Acute Hazard Index results in 0.02373 (reported as 0.024 in Table 6B).

For the project, the HRA analysis estimated the health risk resulting from TAC emissions from the non-emergency operation of the standby emergency diesel generator engines at this facility. Results from the HRA indicate that the maximum project cancer risk (worker) is **4.3 in a million**, the project maximum chronic hazard index (worker) is **0.0035**, and the project maximum acute hazard index (PMI) is **0.024**. In accordance with the District's Regulation 2-5-301, these sources do not require TBACT because each estimated source cancer risk and hazard indices is less than 1.0 in a million and 0.20, respectively. This project is located in an overburdened community (OBC), as defined by Regulation 2-1-243, and this application was deemed complete after July 1, 2022 (Regulation 2-1-409);

therefore, the project must comply with the project cancer risk limit of 6 in a million. Since the estimated project cancer risk does not exceed 6 in a million and project hazard indices do not exceed 1.0, this project complies with the District's Regulation 2-5-302 project risk requirements.

Compliance with Regulation 2-5 is satisfied for this project.

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 or 25 tons per year or more of a combination of hazardous air pollutants.

The project's potential to emit (PTE) of criteria pollutants was calculated in accordance with District Policy and presented previously in Table 3; all emissions are below 100 tons per year per pollutant threshold for a major facility.

The PTE of Hazardous Air Pollutants (HAP) for the facility is summarized in Table 7 below.

Table 7. Potential to Emit of Hazardous Air Pollutants for Plant #25012

HAP	Current (ton/year)	Application Increase (ton/year)	New Total (ton/year)
Diesel PM	0.130	0.112	0.242
Ammonia	0.419	0.183	0.602
Total HAP	**0.549**	**0.295**	**0.844**

As shown above, emissions are well below 10 tons per year single HAP threshold for a major facility.

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 engines are expected to emit low amount of PM_{10}, they are 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 engines are expected to emit low amounts of PM_{10}, they are 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 engines are expected to emit low amounts of PM_{10}, they are 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 for the proposed engines is 0.027 grams/bhp-hr, which results in an outlet grain loading of about 0.003 grains/dscf based on the engine sets' specifications (3634 bhp, 18497.4 acfm exhaust flow, & 853.1° F emissions stack temperature). The PM emission rates for the project are much less than the 0.15 grains/dscf limit and comply with *Regulation 6-1-310.1.* Note that the TSP concentration limits set forth in Regulation 6-1-301.2 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 engines are 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 SO_2 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 engines are subject to the requirements of *Regulation 9-8-330,* which limits reliability-related operation of the engines to 50 hours per year per engine.

Permit Conditions for S-18 through S-24 will include an annual reliability-related operating limit of 50 hours/year, which complies with this standard.

Monitoring and Records (Section 9-8-500)

The engines are subject to the reporting requirements of Sections 502 and 530.

Permit Conditions for S-18 through S-24 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(b)(2), manufacturers must certify their 2011 model year and later CI ICEs with a maximum engine power greater 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 proposed engines satisfy 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, as summarized below.

Table 8. Engine Emission Rates vs. 40 CFR 1039, Appendix I, Table 2 Emission Standards

Pollutant	40 CFR 1039, Appendix I Table 2 Emission Standard (g/bhp-hr)	EPA Certified Emission Rate (g/bhp-hr)
NMHC + NO_X	4.8	3.97
CO[1]	2.6	0.67
PM	0.15	0.09

Notes:

1. EPA certified CO emission factor is 0.67 g/bhp-hr, but the engines will be subject to source testing to verify that they meet the Tier 4 CO emission standard of 2.6 b/bhp-hr.

The engines are exempt from the smoke emission standards of 40 CFR 1039.105 because the engines are 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 IIII. 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-18 through S-24 meet the standards applicable to emergency engines and will be equipped with a non-resettable hour meter prior to startup of the engines (even though they are 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 compliance requirements outlined in §60.4211. The proposed engines are part of certified EPA Engine Family PCPXL78.1NZS. 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.

The proposed engines S-18 through S-24 are not subject to initial notification requirements of §60.4214(b) because they are emergency engines and meet 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 engines S-18 through S-24 are new stationary RICE CIs 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 engines 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-18 through S-24 are subject to and meet the requirement of this section of the ATCM as shown in the table below:

Table 9. Engine Emission Rates vs. ATCM Emission Standards

Pollutant	ATCM Emission Standards (g/bhp-hr)	S-18 through S-24 Unabated Emission Rate (g/bhp-hr)
PM	**0.15**	0.09
NMHC + NO_x	**4.8**	3.97
CO[1]	**2.6**	0.67

Notes:

1. EPA certified unabated CO emission factor is 0.67 g/bhp-hr, but the engines 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 IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*.

The proposed engines are certified to meet EPA Tier 2 standards and they comply with 40 CFR Part 60 Subpart IIII; therefore, S-18 through S-24 comply 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-18 through S-24 will limit non-emergency operation to 50 hours/year/engine and as such, will comply with this section of the ATCM.

PUBLIC COMMENTS RECEIVED

Standard BAAQMD permitting procedures stipulate that all complete applications undergo a 10-Day Public Participation Period (PPP). During this time, members of the public may submit comments on application materials. During the 10-day PPP for this application, no comments were received on the application materials.

PERMIT CONDITIONS

Permit Condition #22850 – Applies to S-18 through S-24

Condition No. 22850

1. The owner/operator shall not exceed 50 hours per year per engine for reliability-related testing.
   [Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

2. The owner/operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, State or Federal emission limit, or for reliability-related activities (maintenance and other testing, but excluding emission testing). Operating while mitigating emergency conditions or while emission testing to show compliance with District, State or Federal

emission limits is not limited.
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained.
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff upon request.
   a. Hours of operation for reliability-related activities (maintenance and testing).
   b. Hours of operation for emission testing to show compliance with emission limits.
   c. Hours of operation (emergency).
   d. For each emergency, the nature of the emergency condition.
   e. Fuel usage for each engine(s).
   [Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

5. At School and Near-School Operation:
   If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:

   The owner/operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:
   a. Whenever there is a school sponsored activity (if the engine is located on school grounds)
   b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session.

   "School" or "School Grounds" means any public

or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, athletic field, or other areas of school property but does not include unimproved school property.
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

Permit Condition #27748 – Applies to S-18 through S-24

S-2 through S-17 at the facility are also subject to this permit condition.

Condition No. 27748

Tier 2 Engines, equipped with add-on SCR and DPF; ST for NOX/CO and POC

1. The owner/operator shall ensure the 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, TBACT]

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, TBACT]

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, TBACT]

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
   POC: 0.14 g/bhp-hour
   CO: 2.60 g/bhp-hour
   [Basis: BACT and Cumulative Increase]

6. To demonstrate compliance with Part 5, the owner/operator shall conduct an initial Air District-approved source test on a minimum of one third of the identical engines installed in a calendar year by October 31st of the following calendar year 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, preferable 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.

   The owner/operator shall test a different one third of the identical engine group installed in a given calendar year during each subsequent triennial source test. After every engine in an identical group has been tested, the next triennial test shall be performed on the first 1/3 set of engines tested in the identical group. Identical engines must be of the same make, displacement, engine family, model, and model year.
   [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
POC EPA Method 25A and EPA Method 18 or Air District-approved equivalent
CO EPA Method 10 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 a 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 District reviewed the material contained in the permit application for the proposed project and 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 was to issue an Authority to Construct for the equipment listed below. However, the proposed sources will be located within an Overburdened Community and require an HRA, which triggers the public notification requirements of 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 for the following sources:

S-18: Stationary Emergency Diesel Engine-Generator Set
Make: Caterpillar; Model: 3516C, Model Year: 2023
EPA Engine Family: PCPXL78.1NZS
3,634 bhp, 24.5 MMBtu/hr

Abated by

A-34: Diesel Particulate Filter and Diesel Oxidation Catalyst Abatement Package:
Rypos Model No. HDPF/C

And

A-35: Selective Catalytic Reduction Package: Miratech Model No. AT-IV

And

S-19: Stationary Emergency Diesel Engine-Generator Set
Make: Caterpillar; Model: 3516C, Model Year: 2023
EPA Engine Family: PCPXL78.1NZS
3,634 bhp, 24.5 MMBtu/hr

Abated by

A-36: Diesel Particulate Filter and Diesel Oxidation Catalyst Abatement Package:
Rypos Model No. HDPF/C

And

A-37: Selective Catalytic Reduction Package: Miratech Model No. AT-IV

And

S-20: Stationary Emergency Diesel Engine-Generator Set
Make: Caterpillar; Model: 3516C, Model Year: 2023
EPA Engine Family: PCPXL78.1NZS
3,634 bhp, 24.5 MMBtu/hr

Abated by

A-38: Diesel Particulate Filter and Diesel Oxidation Catalyst Abatement Package: Rypos Model No. HDPF/C

And

A-39: Selective Catalytic Reduction Package: Miratech Model No. AT-IV

And

S-21: Stationary Emergency Diesel Engine-Generator Set
Make: Caterpillar; Model: 3516C, Model Year: 2023
EPA Engine Family: PCPXL78.1NZS
3,634 bhp, 24.5 MMBtu/hr

Abated by

A-40: Diesel Particulate Filter and Diesel Oxidation Catalyst Abatement Package: Rypos Model No. HDPF/C

And

A-41: Selective Catalytic Reduction Package: Miratech Model No. AT-IV

And

S-22: Stationary Emergency Diesel Engine-Generator Set
Make: Caterpillar; Model: 3516C, Model Year: 2023
EPA Engine Family: PCPXL78.1NZS
3,634 bhp, 24.5 MMBtu/hr

Abated by

A-42: Diesel Particulate Filter and Diesel Oxidation Catalyst Abatement Package: Rypos Model No. HDPF/C

And

A-43: Selective Catalytic Reduction Package: Miratech Model No. AT-IV

And

S-23: Stationary Emergency Diesel Engine-Generator Set
Make: Caterpillar; Model: 3516C, Model Year: 2023
EPA Engine Family: PCPXL78.1NZS
3,634 bhp, 24.5 MMBtu/hr

Abated by

A-44: Diesel Particulate Filter and Diesel Oxidation Catalyst Abatement Package: Rypos Model No. HDPF/C

And

A-45: Selective Catalytic Reduction Package: Miratech Model No. AT-IV

And

S-24: Stationary Emergency Diesel Engine-Generator Set
Make: Caterpillar; Model: 3516C, Model Year: 2023
EPA Engine Family: PCPXL78.1NZS
3,634 bhp, 24.5 MMBtu/hr

Abated by

A-46: Diesel Particulate Filter and Diesel Oxidation Catalyst Abatement Package: Rypos Model No. HDPF/C

And

A-47: Selective Catalytic Reduction Package: Miratech Model No. AT-IV

By: Cameron Fee Date: 6/7/23
Cameron Fee
Air Quality Engineer