

**DRAFT EVALUATION REPORT**  
**230 E Grand Ave**  
**South San Francisco, CA 94080**  
**PLANT NUMBER 25311**  
**APPLICATION NUMBER 32079**

**Background**

Spring Electric is applying for an Authority to Construct/Permit to Operate for the following equipment on behalf of Pfizer Inc:

**S-3 Standby Emergency Diesel Generator, 755 bhp**  
**Make: Cummins Inc, Model: QSX15-G9, Model Year: 2022**  
**4.78 MMBtu/hr**

The Diesel engine will be used for backup power for critical facility/life safety system at 230 E Grand Ave, South San Francisco and mitigate emergency power failure. The engine will be able to operate unrestricted during emergency use events. The engine will be limited to a maximum of 50 hours per year for maintenance and testing. The criteria pollutants associated with the source are nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), precursor organic compounds (POC), sulfur dioxide (SO<sub>2</sub>), and particulate matter (PM).

S-3 meets the Environmental Protection Agency and California Air Resources Board (EPA/CARB) Tier 2 Final Off-road standard. The engine will burn commercially available California low sulfur diesel fuel. The sulfur content of the diesel fuel will not exceed 0.0015% by weight.

**Emissions Calculation**

**Table 1. Engine Specifications and EPA Certified Emission Factors**

<b>Engine Manufacturer</b>	Cummins INC
<b>Model</b>	QSX15-G9
<b>Model Year</b>	2022
<b>Family Name</b>	PCEXL015.AAJ
<b>Engine Power Rating, hp</b>	755
<b>Fuel Consumption, gal/hr</b>	35
<b>Displacement, L</b>	15
<b>NO<sub>x</sub>, g/kW-hr (g/hp-hr)*</b>	6.12 (4.56)
<b>Non-Methane Hydrocarbons (NMHC), g/kW-hr (g/hp-hr) *</b>	0.31 (0.24)
<b>CO, g/kW-hr (g/hp-hr)*</b>	3.50 (2.6)
<b>PM, g/kW-hr (g/hp-hr)*</b>	0.20 (0.15)

\*EPA certified emission rates converted assuming 1 kW = 1.341 hp.

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

<b>Pollutant</b>	<b>Emission Factor (g/bhp-hr)</b>	<b>Max Daily Emissions<sup>1</sup> (lb/day)</b>	<b>Annual Emissions (lb/year)</b>	<b>Annual Emissions<sup>2</sup> (ton/year)</b>
NO <sub>x</sub>	4.56	182.0	379.2	0.190
POC	0.24	9.6	20.0	0.010
CO	2.60	103.8	216.2	0.108
PM <sub>10</sub>	0.15	6.0	12.5	0.006
PM <sub>2.5</sub>	0.15	6.0	12.5	0.006

SO <sub>2</sub> <sup>3</sup>	0.006	0.2	0.5	0.0003
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Basis:

- <sup>1</sup>Max daily emissions: Assume 24-hour operation;

$$4.56 \frac{g \text{ NO}_x}{bhp - hr} * 755 \text{ bhp} * \frac{24 \text{ hr}}{\text{day}} * \frac{0.0022 \text{ lb}}{1 \text{ g}} = 182 \frac{\text{lb of NO}_x}{\text{day}}$$

- <sup>2</sup>Annual emissions: Reliability-related activity, 50 hours is permissible for S-3
- <sup>3</sup>SO<sub>2</sub> emission factor from AP-42 Table 3.4-1

$$SO_2 \text{ Emission Factor } \left( \frac{g \text{ of SO}_2}{bhp - hr} \right) = 0.00809 * 0.0015 \frac{\text{lb SO}_2}{bhp \text{ hr}} * 453.592 \frac{g}{lb} = 0.006 \frac{g \text{ of SO}_2}{bhp - hr}$$

**Figure 1. Emission Standard for New Stationary Emergency Standby Diesel-Fueled CI Engines**

**Table 1: Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines g/bhp-hr (g/kW-hr)**

Maximum Engine Power	Model year(s)	PM	NMHC+NOx	CO
50 ≤ HP < 75 (37 ≤ kW < 56)	2007	0.15 (0.20)	5.6 (7.5) 3.5 (4.7)	3.7 (5.0)
	2008+			
75 ≤ HP < 100 (56 ≤ kW < 75)	2007	0.15 (0.20)	5.6 (7.5) 3.5 (4.7)	3.7 (5.0)
	2008+			
100 ≤ HP < 175 (75 ≤ kW < 130)	2007	0.15 (0.20)	3.0 (4.0)	3.7 (5.0)
	2008+			
175 ≤ HP < 300 (130 ≤ kW < 225)	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
	2008+			
300 ≤ HP < 600 (225 ≤ kW < 450)	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
	2008+			
600 ≤ HP < 750 (450 ≤ kW < 560)	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
	2008+			
HP > 750 (kW > 560)	2007	0.15 (0.20)	4.8 (6.4)	2.6 (3.5)
	2008+			

S-3 meets ATCM Emission Standard of engines power larger than 750 bhp.

Reference: Title 17, California Code of Regulations Section 93115, ATCM, May 19, 2011.

**Cumulative Increase**

Table 3 summarizes the cumulative increase in criteria pollutant emissions that will result from this application.

**Table 3. Plant Cumulative Emissions Increase, Post 4/5/91**

Criteria Pollutant	Existing Emissions Post 4/5/91 (tons/yr)	Application Emissions (tons/yr)	Cumulative Emissions (tons/yr)
NOx	0.000	0.190	0.190
POC	1.415	0.010	1.425
CO	0.000	0.108	0.108
PM <sub>10</sub>	0.000	0.006	0.006
PM <sub>2.5</sub>	0.000	0.006	0.006
SO <sub>2</sub>	0.000	0.000	0.000

**Health Risk Assessment (HRA)**

At a maximum rate of 12.5 lb/year, the Diesel particulate emissions from the project are greater than the toxic trigger level of 0.26 lb/year. All PM<sub>10</sub> emissions are considered diesel particulate emissions. There was one other application (29115), which was considered a related project permitted in the last five years.

Using the EPA certified PM emission factor for the engine, a 50 hour per year limit for reliability-related activities, and assuming PM is in the form of diesel exhaust PM, the following annual emission rate for diesel exhaust PM was calculated.

$$\frac{0.15 \text{ g PM}}{\text{hp-hr}} \times 755 \text{ hp} \times \frac{\text{lb}}{454 \text{ g}} \times \frac{50 \text{ hr}}{\text{yr}} = 12.5 \text{ lb PM/yr}$$

Pursuant to Regulation 2-5-110, the application is subject to the provisions of the rule since the increase in diesel exhaust PM emissions from the project is above the trigger level listed in Table 2-5-1 of the regulation 2-5-110 (0.26 lb/yr).

S-3 is not eligible for the District’s HRA streamlining policy for stationary Diesel-fuel combustion engines used for backup power or fire pumps. The included HRA streamlining policy checklist shows that a refined HRA is required for this permit application. The District’s HRA analysis estimates the incremental health risk resulting from toxic air contaminant (TAC) emissions from non-emergency operation of a standby generator diesel engine (S-3) at this facility. Results from this HRA indicate that the project cancer risk is estimated at **2.2 in a million**, and the project chronic hazard index (HI) is estimated at **0.0017**. In accordance with the District’s Regulation 2-5-301, this source requires TBACT because the estimated source risk exceeds a cancer risk of 1.0 in a million and/or a chronic HI of 0.20. Since the estimated project cancer risk does not exceed 6.0 in a million, and project chronic HI does not exceed 1.0, this project complies with the District’s Regulation 2-5-302 project risk requirements, for projects located in an Overburdened Community, as defined in Regulation 2- 1-243.

In accordance with the District’s Regulation 2, Rule 5, this source complies with the TBACT (see below) and project risk requirements since S-3 complies with the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (ATCM).

**Best Available Control Technology (BACT/TBACT)**

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<sub>2</sub>, PM<sub>10</sub> or PM<sub>2.5</sub>.

Based on the emission calculations above, the owner/operator of S-3 is subject to BACT for the following pollutant: NO<sub>x</sub> and CO. BACT 1 levels do not apply for “engines used exclusively for emergency use during involuntary loss of power” as per Reference b, Document 96.1.2 of the BAAQMD BACT Guidelines for IC Engines. Hence, the owner/operator has to meet BACT 2 limits presented below.

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

Source Category:

<b>Source:</b>	<b>IC Engine-Compression Ignition: Stationary Emergency, non- Agricultural, non-direct drive fire pump</b>	<b>Revision:</b>	<b>7</b>
		<b>Document #:</b>	<b>96.1.3</b>
<b>Class:</b>	<input type="checkbox"/> 50 BHP Output	<b>Date:</b>	<b>12/22/2010</b>

Determination:

Pollutant	<b>BACT</b> <b>1. Technologically Feasible/ Cost Effective</b> <b>2. Achieved in Practice</b> <b>TBACT</b>	TYPICAL TECHNOLOGY
POC (NMHC)	1. n/s <sup>c</sup> 2. CARB ATCM standard <sup>a</sup> for POC at applicable horsepower rating (see attached Table 1).	1. n/s <sup>c</sup> 2. Any engine certified or verified to achieve the applicable standard. <sup>a</sup>
NOx	1. n/s <sup>c</sup> 2. CARB ATCM standard <sup>a</sup> for NOx at applicable horsepower rating (see attached Table 1).	1. n/s <sup>c</sup> 2. Any engine certified or verified to achieve the applicable standard. <sup>a</sup>
SO <sub>2</sub>	1. n/s <sup>c</sup> 2. Fuel sulfur content not to exceed 0.0015% (wt) or 15 ppm (wt).	1. n/s <sup>c</sup> 2. CARB Diesel Fuel (Ultra Low Sulfur Diesel)
CO	1. n/s <sup>c</sup> 2. CARB ATCM standard <sup>a</sup> for CO at the applicable horsepower rating (see attached Table 1).	1. n/s <sup>c</sup> 2. Any engine certified or verified to achieve the applicable standard. <sup>a</sup>
PM <sub>10</sub>	1. n/s <sup>c</sup> 2. 0.15 g/bhp-hr 3. 0.15 g/bhp-hr	1. n/s <sup>c</sup> 2. Any engine or technology demonstrated, certified or verified to achieve the applicable standard. 3. Any engine or technology demonstrated, certified or verified to achieve the applicable standard.
NPOC	1. n/s 2. n/s	1. n/s 2. n/s

**References**

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| <ol style="list-style-type: none"> <li>a.</li> <li>b.</li> <li>c.</li> </ol> | <p>ATCM standard (listed below): Where NMHC + NOx is listed (with no individual standards for NOx or NMHC) as the standard, the portions may be considered 95% NOx and 5% NMHC. For the purposes of determining BACT NMHC = POC. Any engine which has been certified or demonstrated to meet the current year tier standard may be considered compliant with the certified emission standard for that pollutant.</p> <p>Deleted (no longer applies).</p> <p>Cost effectiveness analysis must be based on lesser of 50 hr/yr or non-emergency operation as limited by District health risk screen analysis.</p> |
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Therefore, S-3 will comply with the proposed TBACT by meeting the ATCM requirements.

**Offsets**

In accordance with the Air District’s Policy for Calculating Potential to Emit (PTE) for Emergency Backup Power Generators, the Potential to Emit for S-3 was estimated assuming 150 hours of operation per year (50 hours per year for reliability-related and testing operation + 100 hours per year for emergency operation).

Basis for PTE calculation:

- LOE Diesel engine Emission Factors are from AP 42, Chapter 3.3.1, Table 3.3-1
- Operating hours of 150 hours is used for calculating PTE for S-3
- Yearly allowance usages for LOE engines are 120 hour per year for S-2

**Table 4. List of Sources at the facility**

Source Number	Power (bhp) or (MMBtu/hr)	Fuel	Source Description
1	900 bhp	Diesel	A/N 16211 LOE Gen set
2	NA	NA	Wipe Cleaning
3	755 bhp	Diesel	A/N 32079

**Table 5. Potential to Emit at the Facility**

Source Number/Pollutant	NO <sub>x</sub> (ton/year)	CO (ton/year)	SO <sub>2</sub> (ton/year)	PMs (ton/year)	TOC or POC (ton/year)	NPOC (ton/year)
1	1.582	0.133	0.001	0.022	0.050	0.000
2	0.000	0.000	0.000	0.000	0.325	0.000
3	1.122	0.640	0.001	0.037	0.059	0.000
Total	2.71	0.773	0.002	0.059	0.434	0.000

Note. Please see detail Excel Spreadsheet calculation for Application 32079

This facility has a PTE of 2.71 tons of NO<sub>x</sub> per year and 0.409 tons of POC per year. The facility has a potential to emit less than 10 tons per years of NO<sub>x</sub> and POC after the new or modified source is constructed. Since the facility PTE levels are below the offset trigger levels specified in Regulation 2-2-302, offsets are not required.

**Statement of Compliance**

The owner/operator is expected to comply with all applicable requirements. Key requirements are listed below:

**Airborne Toxic Control Measure for Stationary Compression Ignition Engines**

ATCM, 5/19/2011, section 93115, title 17, CA Code of Regulations

**District Rules**

Regulation 6-1-303 (*Ringelmann No. 2 Limitation*)

Regulation 6-1-305 (Visible Particles)

Regulation 9-1-301 (*Limitations on Ground Level Concentrations of SO<sub>2</sub>*)

Regulation 9-8 (*NO<sub>x</sub> and CO from Stationary Internal Combustion Engines*)

Section 9-8-110.5 – Limited exemption for emergency standby engines

Section 9-8-330 – Hours of operation for emergency standby engines

Section 9-8-502 – Recordkeeping

**California Environmental Quality Act (CEQA)**

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

**New Source Performance Standards (NSPS)**

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

**National Emissions Standards for Hazardous Air Pollutants (NESHAP)**

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

**Prevention of Significant Deterioration (PSD)**

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

**School Notification (Regulation 2-1-412)**

This project is not within 1,000 feet from the nearest K-12 school and therefore is not subject to the public notification requirements of Regulation 2-1-412.

**Overburdened Community (Regulation 2-1-243)**

This project is located within the Overburdened Community (OBC) as defined in Regulation 2-1-243. Therefore, Public Notice is required for this application. The public comment period lasted from xxxxx to xxxxx. At the end of the comment period, there were xxx written comments and xxxx voicemails received.

**Permit Conditions**

Condition no. 22850  
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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]

***End of Conditions***

**Recommendation**

The Air District has evaluated the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable District, state, and federal air quality-related regulations, including the health risks resulting from toxic air contaminant emissions. The preliminary recommendation is to issue a permit for this project. After considering all comments received, the Air District will make a final determination.

Recommend that the Air District initiate the public comment period and consider any comments received prior to taking any final action on issuance of an Authority to Construct for the following source:

**S-3                    Standby Emergency Diesel Generator, 755 bhp**  
**Make: Cummins Inc, Model: QSX15-G9, Model Year: 2022**  
**4.78 MMBtu/hr**

Prepared by: Thuya Maw, Air Quality Engineer  
Data: 06/26/2023

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**Appendix A. List of Sources for PTE calculation**

**Table 1. List of Sources at the facility**

Number	Source	Power (BHP)	Fuel	Description
1	1	900	Diesel	A/N 16211 LOE Gen set
2	2	NA	NA	Wipe Cleaning
3	3	102	Diesel	A/N 32079

**Table 2. Potential to Emit from sources**

Source Number/Pollutant	NOx (ton/year)	CO (ton/year)	SO2 (ton/year)	PMs (ton/year)	TOC (ton/year)	NPOC (ton/year)
1	1.582	0.133	0.001	0.022	0.050	0.000
2	0.000	0.000	0.000	0.000	0.325	0.000
3	1.122	0.640	0.001	0.037	0.059	0.000
Total	2.71	0.773	0.002	0.059	0.434	0.000