DRAFT ENGINEERING EVALUATION

Facility ID No. 204171
Hillview Junior High School
333 Yosemite Pittsburg, CA 94565-5285
Application No. 753409

Background

Hillview Junior High is applying for an Authority to Construct (AC) for the following equipment:

S-2 Emergency Standby Natural Gas (NG) Engine for Electrical Generation
Make: Power Solutions International, Inc, Model: D08.8PDX0203Z, Model Year: 2026
EPA Family: TPSIB8.80EMT
272 BHP, 1.905 MMBtu/hour with integral catalyst

The project site is the existing Hillview Junior High School, located at 333 Yosemite Drive, Pittsburg, 94565. The site is zoned for GQ, "Government / Quasipublic." The proposed emergency generator will provide emergency electrical generation to the middle school campus**.** The proposed generator installation is part of a larger facility upgrades project, including the addition of new classrooms, an administrative building, multipurpose building gymnasium building, lunch shelter, plaza, and parking areas. The Division of the State Architect (DSA) approved the project on November 7, 2024 (Application # 01-121139).

Emissions Calculations

Emission factors for nitrogen oxides (NOx), precursor organic compounds (POC), and carbon monoxide (CO) were obtained from the engine manufacturer. Particulate matter ($PM_{10}/PM_{2.5}$) and sulfur dioxide (SO_2) emission factors are based on AP 42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources, Section 3.2.4.1 Control Techniques for 4-Cycle Rich-Burn Engines and Table 3.2-3 Uncontrolled Emission Factors for 4-Stroke Rich-Burn Engines.[1] The engine will operate for emergencies and will be limited to a maximum of 50 hours per year for maintenance and testing.

Table 1. Estimated Emissions from S-2

Pollutant	Emission Factor (g/hp-hour)	Emissions		
		Daily (lbs/day)	Annual (lbs/year)	Annual (tons/year)
NOx	0.07	1.01	2.10	0.0010
POC	0.01	0.14	0.30	0.0001
CO	0.20	2.88	5.99	0.0030
$PM_{10}/PM_{2.5}$	0.06	0.89	1.85	0.0009
SO_2	0.002	0.03	0.06	0.00003

[1] **SO_2** Emission Factor = 5.88 E-04 lb/MMBtu; calculations assume 100% of fuel sulfur conversion with the content in natural gas = 2000 gr/10^6scf. **$PM_{10}/PM_{2.5}$** fuel input emission factor = 9.50E-03 lb/MMBtu (filterable) + 9.91E-03 lb/MMBtu (condensable) = 1.94E-02 lb/MMBtu; aerodynamic particle diameter =< 1 µm, for the purposes of filterable emissions PM_{10}= $PM_{2.5}$. These emissions are expected to be negligible but included for completeness.

Basis:

- 272 bhp Max Rated Output
- 1814.7 scf/hour Max fuel use Rate = 1.905 MMBTU/hour
- NOx, POC and CO emission factors are from the engine manufacturer.
- $PM_{10}/PM_{2.5}$ and SO_2 emission factors are from EPA AP-42, Table 3.2-3 Uncontrolled Emission Factors for 4-Stroke Rich-Burn Engines. The $PM_{10}/PM_{2.5}$ emission factor is the total of filterable and condensable particulates.
- Annual Emissions are based on an annual limit (50 hour/year) for testing and maintenance.
- Max daily emissions are based on 24 hour/day since no daily limits are imposed on emergency operations.

Health Risk Assessment (HRA)

Pursuant to Regulation 2-5-110, a project, including all new or modified sources of toxic air contaminants (TAC) within a 5-year period, is not subject to this rule if the total project emissions are below the acute and chronic trigger levels listed in Table 2-5-1 "Toxic Air Contaminant Trigger Levels" of this regulation.

The emission factors are from the California Air Toxics Emission Factors (CATEF) and the Compilation of Air Pollutant Emissions Factor: AP-42. CATEF emission factors are preferentially chosen over AP-42 factors. If the AP-42 emission factor is based on the detection limit, the emission factor will equal 1/2 of the AP-42 emission factor.

Table 2. Toxic Air Contaminant Review for Engine

Compound	Emission Factor (lb/MMBtu)	Basis	Hourly Emission Rate (lbs/hour)	Acute Trigger Level (lbs/hour)	Annual Emission Rate (lbs/year)	Chronic Trigger Level (lbs/year)	Exceeds Acute or Chronic Trigger Level?
1,1,2,2-Tetrachloroethane	2.53E-05	AP-42	2.4E-05	None	1.2E-03	1.4E+00	No
1,1,2-Trichloroethane	1.53E-05	AP-42	1.5E-05	None	7.3E-04	5.0E+00	No
1,1-Dichloroethane	1.13E-05	AP-42	1.1E-05	None	5.4E-04	5.0E+01	No
1,3-Butadiene	9.90E-05	CATEF	9.4E-05	2.9E-01	4.7E-03	4.8E-01	No
Acetaldehyde	8.41E-04	CATEF	8.0E-04	2.1E-01	4.0E-02	2.9E+01	No
Acrolein	5.21E-04	CATEF	5.0E-04	1.1E-03	2.5E-02	1.4E+01	No
Benzene (no control)	1.82E-03	CATEF	1.7E-03	1.2E-02	8.7E-02	2.9E+00	No
Carbon Tetrachloride	1.77E-05	AP-42	1.7E-05	8.4E-01	8.4E-04	1.9E+00	No
Chlorobenzene	1.29E-05	AP-42	1.2E-05	None	6.1E-04	3.9E+04	No
Chloroform	1.37E-05	AP-42	1.3E-05	6.6E-02	6.5E-04	1.5E+01	No
Ethylbenzene	1.10E-05	CATEF	1.1E-05	None	5.3E-04	3.3E+01	No
Ethylene Dibromide	2.13E-05	AP-42	2.0E-05	None	1.0E-03	1.1E+00	No
Formaldehyde (no control)	2.24E-03	CATEF	2.1E-03	2.4E-02	1.1E-01	1.4E+01	No
Methanol	3.06E-03	AP-42	2.9E-03	1.2E+01	1.5E-01	1.5E+05	No
Methylene Chloride	4.12E-05	AP-42	3.9E-05	6.2E+00	2.0E-03	8.2E+01	No
Naphthalene	7.29E-05	CATEF	6.9E-05	None	3.5E-03	2.4E+00	No
PAH	1.73E-07	CATEF	1.7E-07	None	8.3E-06	3.3E-03	No
Propylene	1.52E-02	CATEF	1.5E-02	None	7.3E-01	1.2E+05	No
Styrene	1.19E-05	AP-42	1.1E-05	9.3E+00	5.7E-04	3.5E+04	No

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Compound	Emission Factor (lb/MMBtu)	Basis	Hourly Emission Rate (lbs/hour)	Acute Trigger Level (lbs/hour)	Annual Emission Rate (lbs/year)	Chronic Trigger Level (lbs/year)	Exceeds Acute or Chronic Trigger Level?
Toluene	1.02E-03	CATEF	9.7E-04	2.2E+00	4.9E-02	1.6E+04	No
Vinyl Chloride	7.18E-06	AP-42	6.8E-06	8.0E+01	3.4E-04	1.1E+00	No
Xylene (total)	6.27E-04	CATEF	6.0E-04	9.7E+00	3.0E-02	2.7E+04	No

Basis:

- Abatement efficiency by integral catalyst is assumed to be 50% by weight for each TAC above and has been applied to the emission calculations in Table 2 above.

The project does not exceed any acute or chronic trigger level. Therefore, the project is not subject to the requirements of Regulation 2-5-110.

Best Available Control Technology (BACT)

Pursuant to Regulation 2-2-301, Best Available Control Technology (BACT) shall apply to new or modified sources with a Potential to Emit equal to or greater than 10.0 lb per highest day of the pollutants in Table 1.

BACT is not triggered for any pollutant since the maximum daily emission of each pollutant does not exceed 10.0 lb/day.

Plant Cumulative Emissions

Table 3 summarizes the cumulative increase in criteria pollutant emissions that will result from the operation of S-2. The S-1 engine application (AN745264) was withdrawn on 04/20/26, there was not considered in the cumulative increase emissions.

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

Pollutant	Existing Emissions Post 4/5/91 (tons/year)	Application Emissions (tons/year)	Cumulative Emissions (tons/year)
NOx	0.000	0.001	0.001
POC	0.000	0.0001	0.0001
CO	0.000	0.003	0.003
$PM_{10}/PM_{2.5}$	0.000	0.001	0.001
SO_2	0.000	0.00003	0.00003

Offsets

Per Regulation 2-2-302, offsets must be provided for any new or modified source at a facility that has the potential to emit (PTE) more than 10 tons/year of POC or NOx. 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. Based on the emission calculations in Table 4, offsets are not required for this application.

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Table 4. Potential to Emit for Plant 204171

Pollutant	Existing Annual Emissions (tons/year)	Application Annual Emission (tons/year)	Facility Annual Emissions (tons/year)	Offset Requirement (tons/year)	Offset Required?
NOx	0.000	0.003	0.003	10	No
POC	0.000	0.0004	0.0004	10	No
CO	0.000	0.009	0.009	100	No
$PM_{10}/PM_{2.5}$	0.000	0.003	0.003	100	No
SO_2	0.000	0.001	0.001	-	No

New Source Performance Standards

The New Source Performance Standard (NSPS) in 40 CFR 60, Subpart JJJJ apply because the engine will be installed after January 1, 2011. The engine will comply with the following limits in Table 1 for emergency spark-ignited engines greater than 25 hp and greater than 130 hp:

Pollutant	S-2 Emission Factor	NSPS Standard
NOx	0.07 g/bhp-hour	2.0 g/bhp-hour
CO	0.2 g/bhp-hour	4.0 g/bhp-hour

As the information above shows, S-2 is in compliance with these NSPS emission requirements.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

This engine will be operated at a hazardous air pollutant (HAP) area source. Therefore, the engine will be subject to the Reciprocating Internal Combustion Engine (RICE) National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR Part 63, Subpart ZZZZ) because it is a new source and installed after 2007. A new RICE at an area source that is subject to 40 CFR Part 60, Subpart JJJJ, has no further requirements under 40 CFR Part 63, Subpart ZZZZ pursuant to 40 CFR Part 63.6590(c). Therefore, S-1 complies with the NESHAP by meeting the requirements under 40 CFR Part 60, Subpart JJJJ.

Statement of Compliance

The owner/operator of S-2 shall comply with Regulation 6, Rule 1 (*Particulate Matter and Visible Emissions Standards*) and Regulation 9-1-301 (*Inorganic Gaseous Pollutants: Sulfur Dioxide for Limitations on Ground Level Concentrations*). From Regulation 9-1-301, the ground level concentrations of SO_2 will not exceed 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.

Sections 6-1-310.1 and 6-1-310.2 limit total suspended particulate (TSP) emissions to 0.15 grains/dscf of exhaust gas volume or less depending on the exhaust gas rate (see Table 6-1-310.2 for the corresponding TSP concentration limit). As shown in the emission calculations in the table below, the particulate emission rate from this engine 0.06 grams per bhp-hour, which results in an outlet grain loading of **0.013** grains per dscf. Since this emission rate is less than the limit in Section 6-1-310, compliance with this section is expected through use of the engine.

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Table 5. Section 6-1-310 Emissions Calculations

Engine Maximum Exhaust Flow Rate*	1177.5	acfm	=	328.8	dscf/min	= 19728.9	dscf/hour
Engine Maximum Exhaust Temperature	1200	F					
Water (H_2O) Content (%)	12.50%						
PM_{10} abatement for Engine	0.00%						
Engine PM_{10} emissions	0.04	lb/hour	=	2.52	kg/year	= 258.89	gr/hour
Are PM_{10} Emissions > 1000 kg/year?	NO						
Applicable Regulation 6-1-310 section?	6-1-310.1						
TSP Concentration for Engine	0.013	gr/dscf					
Regulation 6-1 TSP Limit	0.15	gr/dscf					
PM_{10} emissions < Reg 6-1 Limit?	YES						

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

S-2 is an emergency standby generator; from Regulation 9, Rule 8 (*NOx and CO from Stationary Internal Combustion Engines*), Section 110.5 (*Emergency Standby Engines*), S-2 is exempt from the requirements of Regulations 9-8-301 (*Emission Limits on Fossil Derived Fuel Gas*), 9-8-302 (*Emission Limits on Waste Derived Fuel Gas*), 9-8-303 (*Emissions Limits – Delayed Compliance, Existing Spark-Ignited Engines, 51 to 250 bhp or Model Year 1996 or Later*), 9-8-304 (*Emission Limits – Compression-Ignited Engines*), 9-8-305 (*Emission Limits – Delayed Compliance, Existing Compression-Ignited Engines, Model Year 1996 or Later*), 9-8-501 (*Initial Demonstration of Compliance*) and 9-8-503 (*Quarterly Demonstration of Compliance*).

Allowable operating hours and the corresponding record keeping in Regulations 9-8-330 (*Emergency Standby Engines, Hours of Operation*) or Regulation 9-8-331 (Essential Public Service, Hours of Operation) and 9-8-530 (*Emergency Standby Engines, Monitoring and Recordkeeping*) will be included in the Permit Conditions below.

This permit application is not subject to the California Environmental Quality Act (CEQA) because the Air District's evaluation is a ministerial action (Public Resources Code Section 21080(b)(1) and CEQA Guidelines Section 15268(a)) conducted using the fixed standards and objective measurements in the Air District's rules and regulations.

Public Notification (Regulation 2-1-412)

The proposed equipment is located within 1000 feet of a K-12 school, and within an Overburdened Community as defined in Regulation 2-1-243. The application did not require an HRA. This project is therefore subject to the public notification requirements of Regulation 2-1-412. Public notice will be prepared and sent to all addresses within 1,000 feet of the proposed source, below:

Hillview Junior High School: 333 Yosemite Pittsburg, CA 94565-5285

A public notice will be sent to all parents of students of the above mentioned school(s) and all residents within 1,000 feet of the facility. There will be a 30-day public comment period. All comments received shall be summarized in the final evaluation report.

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Permit Conditions

Permit Condition No. 23107 for S-2

1. Operating time for reliability related activities is limited to 50 hours per year per engine. (Basis: Regulation 9-8-330.3)

2. The owner/operator shall operate the stationary 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: Regulation 9-8-330)

3. The owner/operator shall operate each emergency standby engine(s) 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: Regulation 9-8-530)

4. The owner/operator shall not operate the natural gas fired engine unless it is abated with an integral or add-on three-way catalyst, or other approved abatement device. (Basis: Cumulative Increase)

5. Records: The owner/operator shall maintain the following monthly records in a District approved log for at least 24 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.
   c. Hours of operation (emergency).
   d. For each emergency, the nature of the emergency condition.
   e. Fuel usage or operating hours for engine. (Basis: Regulations 9-8-502 and 9-8-530)

End of Conditions

Recommendation

The Air District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of Air District, state and federal air quality-related regulations. The preliminary recommendation is to issue an Authority to Construct for the equipment listed below. However, the proposed source will be located within 1000 feet of a **K-12** school site and an **Overburdened Community**, which requires a public notification per Air District Regulation 2-1-412. After the comments are received and reviewed, the Air District will make a final determination on the permit.

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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 for the following.

S-2 Emergency Standby Natural Gas (NG) Engine for Electrical Generation
Make: Power Solutions International, Inc, Model: D08.8PDX0203Z, Model Year: 2026
EPA Family: TPSIB8.80EMT
272 BHP, 1.905 MMBtu/hour with integral catalyst

By Udval B Argo, Air Quality Specialist June 11, 2026

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Table 1 to Subpart JJJJ of Part 60—NO_X, CO, and VOC Emission Standards for Stationary Non-Emergency SI Engines ≥100 HP (Except Gasoline and Rich Burn LPG), Stationary SI Landfill/Digester Gas Engines, and Stationary Emergency Engines >25 HP

Engine type and fuel	Maximum engine power	Manufacture date	Emission standards[a]					
			g/HP-hr			ppmvd at 15% O_2		
			NO_X	CO	VOC[d]	NO_X	CO	VOC[d]
Non-Emergency SI Natural Gas[b] and Non-Emergency SI Lean Burn LPG[b]	100≤HP<500	7/1/2008	2.0	4.0	1.0	160	540	86
		1/1/2011	1.0	2.0	0.7	82	270	60
Non-Emergency SI Lean Burn Natural Gas and LPG	500≤HP<1,350	1/1/2008	2.0	4.0	1.0	160	540	86
		7/1/2010	1.0	2.0	0.7	82	270	60
Non-Emergency SI Natural Gas and Non-Emergency SI Lean Burn LPG (except lean burn 500≤HP<1,350)	HP≥500	7/1/2007	2.0	4.0	1.0	160	540	86
	HP≥500	7/1/2010	1.0	2.0	0.7	82	270	60
Landfill/Digester Gas (except lean burn 500≤HP<1,350)	HP<500	7/1/2008	3.0	5.0	1.0	220	610	80
		1/1/2011	2.0	5.0	1.0	150	610	80
	HP≥500	7/1/2007	3.0	5.0	1.0	220	610	80
		7/1/2010	2.0	5.0	1.0	150	610	80
Landfill/Digester Gas Lean Burn	500≤HP<1,350	1/1/2008	3.0	5.0	1.0	220	610	80
		7/1/2010	2.0	5.0	1.0	150	610	80
Emergency	25<HP<130	1/1/2009	[c] 10	387	N/A	N/A	N/A	N/A
	HP≥130		2.0	4.0	1.0	160	540	86

[a] Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O_2.

[b] Owners and operators of new or reconstructed non-emergency lean burn SI stationary engines with a site rating of greater than or equal to 250 brake HP located at a major source that are meeting the requirements of 40 CFR part 63, subpart ZZZZ, Table 2a do not have to comply with the CO emission standards of Table 1 of this subpart.

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