

**Engineering Evaluation
PG&E Generator Enhancement Daly City
3004 Geneva Ave,
Daly City, CA 94014
Application No. 31181
Plant No. 14159**

BACKGROUND

Pacific Gas and Electric has applied for an Authority to Construct (AC)/Permit to Operate (PO) for the following equipment:

- S-4 Emergency Standby Natural Gas (NG) Engine
Peterson Caterpillar, Model: DG400, Model Year: 2021
620 BHP, 4.94 MMBtu/hr
Equipped with 3-Way Catalyst Converter (TWC)**
- S-5 Emergency Standby Natural Gas (NG) Engine
Peterson Caterpillar, Model: DG400, Model Year: 2021
620 BHP, 4.94 MMBtu/hr
Equipped with 3-Way Catalyst Converter (TWC)**
- S-6 Emergency Standby Natural Gas (NG) Engine
Generac, Model: E14.2MSN279A2, Model Year: 2021
374 BHP, 3.06 MMBtu/hr
Equipped with 3-Way Catalyst Converter (TWC)**

EMISSIONS CALCULATIONS

The engine will operate during emergency. Total Hydrocarbon emission rates were assumed to be equal to Precursor Organic Compound (POC) emission rates. S-4, S-5 and S-6 are all identical in emission rating.

Basis:

- 620 bhp Max Rated Output for S-4, S-5, and 374 bhp Max Rated Output for S-6
- 4,823 cf/hr Max Fuel Use Rate = 4.92 MMBtu/hr (620 bhp)
- 2,983 cf/hr Max Fuel Use Rate = 3.04 MMBtu/hr (374 bhp)
- NOx, POC and CO emission factors are from the engine's manufacturer
- The PM and SO2 emission factors are from EPA AP-42, Table 3.2-3 for 4 stroke Rich-burn Engines;
- SO₂ Emission Factor for 620 bhp = (5*5.88E-04 lb/MMBtu); AP-42; $\left[5 * \left\{ 5.88 * 10^{-4} \frac{lb}{MMBtu} * \left(\frac{1}{620 \text{ bhp}} \right) * \left(4.94 \frac{MMBtu}{hr} \right) * 453.59237 \frac{g}{lb} \right\} = 0.0106 \frac{g}{bhp-hr} \right]$
- SO₂ Emission Factor for 374 bhp = (5*5.88E-04 lb/MMBtu); AP-42; $\left[5 * \left\{ 5.88 * 10^{-4} \frac{lb}{MMBtu} * \left(\frac{1}{374 \text{ bhp}} \right) * \left(3.06 \frac{MMBtu}{hr} \right) * 453.59237 \frac{g}{lb} \right\} = 0.0108 \frac{g}{bhp-hr} \right]$
- Assum sulfur content = 10,000 gr/10⁶ scf for PG&E natural gas = 5 X 5.88E-04 lb/MMBtu from AP-42
- PM₁₀ Emission Factor = 9.91E⁻³ lb/MMBtu;
 $\left[\left\{ 9.91 * 10^{-3} \frac{lb}{MMBtu} * \left(\frac{1}{620 \text{ bhp}} \right) * \left(4.94 \frac{MMBtu}{hr} \right) * 453.59237 \frac{g}{lb} \right\} = 0.0357 \frac{g}{bhp-hr} \right]$ for 620 bhp; aerodynamic particle diameter ≥ 1 μm
 $\left[\left\{ 9.91 * 10^{-3} \frac{lb}{MMBtu} * \left(\frac{1}{374 \text{ bhp}} \right) * \left(3.06 \frac{MMBtu}{hr} \right) * 453.59237 \frac{g}{lb} \right\} = 0.0366 \frac{g}{bhp-hr} \right]$ for 374 bhp; aerodynamic particle diameter ≥ 1 μm
- Filterable emissions PM₁₀= PM_{2.5}. These emissions are expected to be negligible but included for completeness;

- Annual Emissions are based on the Annual Limit (50 hrs/year) of operation for testing and maintenance;
- Max daily emissions are based on 24 hrs/day since no daily limits are imposed on emergency operations;
- S-4, S-5, and S-6 are equipped with 3-way Catalyst converters to meet current 2021 CARB emission standard, and S-4, S-5, and S-6 are also SCAQMD Certified.

Table 1-Estimated Abated Emissions From S-4 or S-5 (620 bhp each)

Pollutant	Emission Factor (g/bhp-hr)	Emission (lbs/hour)	Emission (lbs/year)	Emission (tons/year)	Maximum Daily Emissions (lbs/day)
NO _x	0.017	0.023	1.16	0.001	0.56
POC	0.109	0.149	7.45	0.004	3.58
CO	0.228	0.312	15.58	0.008	7.48
PM ₁₀	0.036	0.049	2.44	0.001	1.17
PM _{2.5}	0.036	0.049	2.44	0.001	1.17
SO ₂	0.011	0.014	0.72	0.0004	0.35

Table 1-Estimated Abated Emissions From S-6 (374 bhp)

Pollutant	Emission Factor (g/bhp-hr)	Emission (lbs/hour)	Emission (lbs/year)	Emission (tons/year)	Maximum Daily Emissions (lbs/day)
NO _x	0.044	0.036	1.81	0.001	0.87
POC	0.043	0.035	1.77	0.001	0.85
CO	0.263	0.217	10.84	0.005	5.20
PM ₁₀	0.037	0.030	1.51	0.001	0.72
PM _{2.5}	0.037	0.030	1.51	0.001	0.72
SO ₂	0.011	0.009	0.45	0.0002	0.21

Table 2-Estimated Abated Total Emissions From S-4, S-5, and S-6

Pollutant	Emission (lbs/hour)	Emission (lbs/year)	Emission (tons/year)	Maximum Daily Emissions (lbs/day)
NO _x	0.083	4.14	0.003	1.99
POC	0.333	16.67	0.009	8.00
CO	0.840	42	0.021	20.16
PM ₁₀	0.128	6.38	0.003	3.06
PM _{2.5}	0.128	6.38	0.003	3.06
SO ₂	0.038	1.89	0.001	0.91

TOXIC RISK SCREENING ANALYSIS

The emission factors used to estimate toxic emissions from the natural gas engine S-4, S-5, and S-6 are from Toxic Air Contaminant (TAC) emission factor guidance, proposed by BAAQMD Toxic Section. The guidance is based from AP-42 for natural gas fired 4-cycle rich burn engine (Table 3.2-3) and the California Air Toxics Emission Factor Database (maintained by the California Air Resources Board) for natural gas fired 4-cycle rich burn engines with less than 650 hp.

- Natural gas's TAC emission factors are given 50% control efficiency for use of 3-way catalytic if the engine equipped with 3-way catalytic converter.
- No control efficiency was given for CATEF factor since they are listed as abated factor.

As shown in Table 3 and Table 4 below, individual source does not exceeds the District Risk Screening Triggers; However, total emission for S-4, S-5, and S-6 exceed the District Risk Screening Triggers. Therefore, a Risk Screening Analysis is required for this applicaiton. S-4 and S-5 are identical engine and TAC emissions are the same for 620 bhp Natural Gas engines.

Table 3. Toxic Air Contaminants from S-4 or S-5 (620 bhp each)

	Emission	Assumed		Acute			Chronic	
	Factor	Abatement	Abated	Trigger	HRSA	Abated	Trigger	HRSA
SUBSTANCE	(lbs/MMBtu)	Efficiency	Emissions	Level	Triggered?	Emissions	Level	Triggered?
	(lbs/MMBtu)	%	(lb/hr)	(lb/hr)	(Y/N)	(lb/yr)	(lb/yr)	(Y/N)
1,1,2,2-Tetrachloroethane	2.53E-05	50%	6.22E-05	None	no	3.11E-03	1.4E+00	no
1,1,2-Trichloroethane	1.53E-05	50%	3.76E-05	None	no	1.88E-03	5.0E+00	no
1,1-Dichloroethane	1.13E-05	50%	2.78E-05	None	no	1.39E-03	5.0E+01	no
1,2-Dichloroethane	1.13E-05	50%	2.78E-05	None	no	1.39E-03	4.0E+00	no
1,3-Butadiene	1.01E-04	0%	5.02E-04	1.5E+00	no	2.51E-02	4.8E-01	no
Acetaldehyde	8.61E-04	0%	4.26E-03	1.0E+00	no	2.13E-01	2.9E+01	no
Acrolein	5.34E-04	0%	2.64E-03	5.5E-03	no	1.32E-01	1.4E+01	no
Benzene	7.21E-05	0%	3.56E-04	6.0E-02	no	1.78E-02	2.9E+00	no
Carbon Tetrachloride	1.77E-05	50%	4.35E-05	4.2E+00	no	2.18E-03	1.9E+00	no
Chlorobenzene	1.29E-05	50%	3.17E-05	None	no	1.59E-03	3.9E+04	no
Chloroform	1.37E-05	50%	3.37E-05	3.3E-01	no	1.68E-03	1.5E+01	no
Ethylbenzene	1.13E-05	50%	2.80E-05	None	no	1.40E-03	3.3E+01	no
Ethylene Dibromide	2.13E-05	50%	5.24E-05	None	no	2.62E-03	1.1E+00	no
Formaldehyde	4.87E-05	0%	2.41E-04	1.2E-01	no	1.20E-02	1.4E+01	no
Methanol	3.06E-03	50%	7.53E-03	6.2E+01	no	3.76E-01	1.5E+05	no
Methylene Chloride	4.12E-05	50%	1.01E-04	3.1E+01	no	5.07E-03	8.2E+01	no
Naphthalene	7.46E-05	50%	1.84E-04	None	no	9.22E-03	2.4E+00	no
Propylene	1.56E-02	50%	3.86E-02	None	no	1.93E+00	1.2E+05	no
Styrene	1.19E-05	50%	2.93E-05	4.6E+01	no	1.46E-03	3.5E+04	no
Toluene	1.04E-03	50%	2.58E-03	8.2E+01	no	1.29E-01	1.2E+04	no
Vinyl Chloride	7.18E-06	50%	1.77E-05	4.0E+02	no	8.83E-04	1.1E+00	no
Xylene (m,p)	4.30E-04	50%	1.06E-03	4.9E+01	no	5.32E-02	2.7E+04	no
Xylene (o)	2.12E-04	50%	5.23E-04	4.9E+01	no	2.62E-02	2.7E+04	no
Xylene (Total)	5.87E-05	50%	1.59E-03	4.9E+01	no	7.93E-02	2.7E+04	no

Polycyclic Aromatic Hydrocarbons (PAHs)								
Acenaphthene	1.89E-06	50%	4.68E-06	None	no	2.34E-04	None	no
Acenaphthylene	1.41E-05	50%	3.50E-05	None	no	1.75E-03	None	no
Anthracene	1.80E-06	50%	4.44E-06	None	no	2.22E-04	None	no
Benzo(a)anthracene	3.31E-07	50%	8.17E-07	None	no	4.09E-05	None	no
Benzo(a)pyrene	1.12E-07	50%	2.77E-07	None	no	1.39E-05	None	no
Benzo(b)fluoranthene	2.31E-07	50%	5.72E-07	None	no	2.86E-05	None	no
Benzo(g,h,i)perylene	1.90E-07	50%	4.70E-07	None	no	2.35E-05	None	no
Benzo(k)fluoranthene	1.00E-07	50%	2.48E-07	None	no	1.24E-05	None	no
Chrysene	3.02E-07	50%	7.48E-07	None	no	3.74E-05	None	no
Dibenz(a,h)anthracene	1.22E-08	50%	3.01E-08	None	no	1.51E-06	None	no
Fluoranthene	9.71E-07	50%	2.40E-06	None	no	1.20E-04	None	no
Fluorene	6.74E-06	50%	1.67E-05	None	no	8.33E-04	None	no
Indeno(1,2,3-cd)pyrene	1.65E-07	50%	4.08E-07	None	no	2.04E-05	None	no
Phenanthrene	6.90E-06	50%	1.70E-05	None	no	8.52E-04	None	no
Pyrene	1.75E-06	50%	4.32E-06	None	no	2.16E-04	None	no
PAH Equivalents as Benzo(a)pyrene	2.54E-08	50%	6.28E-08	None	no	3.14E-06	3.3E-03	no

Table 4. Toxic Air Contaminants from S-6 (374 bhp)

	Assumed		Acute			Chronic		
	Emission	Abatement	Abated	Trigger	HRSA	Abated	Trigger	HRSA
	Factor	Efficiency	Emissions	Level	Triggered?	Emissions	Level	Triggered?
SUBSTANCE	(lbs/MMBtu)	%	(lb/hr)	(lb/hr)	(Y/N)	(lb/yr)	(lb/yr)	(Y/N)
1,1,2,2-Tetrachloroethane	2.53E-05	50%	3.85E-05	None	no	1.92E-03	1.4E+00	no
1,1,2-Trichloroethane	1.53E-05	50%	2.33E-05	None	no	1.16E-03	5.0E+00	no
1,1-Dichloroethane	1.13E-05	50%	1.72E-05	None	no	8.60E-04	5.0E+01	no
1,2-Dichloroethane	1.13E-05	50%	1.72E-05	None	no	8.60E-04	4.0E+00	no
1,3-Butadiene	1.01E-04	0%	3.10E-04	1.5E+00	no	1.55E-02	4.8E-01	no
Acetaldehyde	8.61E-04	0%	2.63E-03	1.0E+00	no	1.32E-01	2.9E+01	no
Acrolein	5.34E-04	0%	1.63E-03	5.5E-03	no	8.16E-02	1.4E+01	no
Benzene	7.21E-05	0%	2.20E-04	6.0E-02	no	1.10E-02	2.9E+00	no
Carbon Tetrachloride	1.77E-05	50%	2.69E-05	4.2E+00	no	1.35E-03	1.9E+00	no
Chlorobenzene	1.29E-05	50%	1.96E-05	None	no	9.81E-04	3.9E+04	no
Chloroform	1.37E-05	50%	2.08E-05	3.3E-01	no	1.04E-03	1.5E+01	no
Ethylbenzene	1.13E-05	50%	1.73E-05	None	no	8.65E-04	3.3E+01	no
Ethylene Dibromide	2.13E-05	50%	3.24E-05	None	no	1.62E-03	1.1E+00	no
Formaldehyde	4.87E-05	0%	1.49E-04	1.2E-01	no	7.44E-03	1.4E+01	no
Methanol	3.06E-03	50%	4.66E-03	6.2E+01	no	2.33E-01	1.5E+05	no
Methylene Chloride	4.12E-05	50%	6.27E-05	3.1E+01	no	3.13E-03	8.2E+01	no
Naphthalene	7.46E-05	50%	1.14E-04	None	no	5.70E-03	2.4E+00	no
Propylene	1.56E-02	50%	2.39E-02	None	no	1.19E+00	1.2E+05	no
Styrene	1.19E-05	50%	1.81E-05	4.6E+01	no	9.05E-04	3.5E+04	no
Toluene	1.04E-03	50%	1.60E-03	8.2E+01	no	7.98E-02	1.2E+04	no
Vinyl Chloride	7.18E-06	50%	1.09E-05	4.0E+02	no	5.46E-04	1.1E+00	no

Xylene (m,p)	4.30E-04	50%	6.58E-04	4.9E+01	no	3.29E-02	2.7E+04	no
Xylene (o)	2.12E-04	50%	3.24E-04	4.9E+01	no	1.62E-02	2.7E+04	no
Xylene (Total)	5.87E-05	50%	9.81E-04	4.9E+01	no	4.91E-02	2.7E+04	no
Polycyclic Aromatic Hydrocarbons (PAHs)								
Acenaphthene	1.89E-06	50%	2.89E-06	None	no	1.45E-04	None	no
Acenaphthylene	1.41E-05	50%	2.16E-05	None	no	1.08E-03	None	no
Anthracene	1.80E-06	50%	2.74E-06	None	no	1.37E-04	None	no
Benzo(a)anthracene	3.31E-07	50%	5.06E-07	None	no	2.53E-05	None	no
Benzo(a)pyrene	1.12E-07	50%	1.72E-07	None	no	8.58E-06	None	no
Benzo(b)fluoranthene	2.31E-07	50%	3.53E-07	None	no	1.77E-05	None	no
Benzo(g,h,i)perylene	1.90E-07	50%	2.91E-07	None	no	1.45E-05	None	no
Benzo(k)fluoranthene	1.00E-07	50%	1.54E-07	None	no	7.68E-06	None	no
Chrysene	3.02E-07	50%	4.62E-07	None	no	2.31E-05	None	no
Dibenz(a,h)anthracene	1.22E-08	50%	1.86E-08	None	no	9.32E-07	None	no
Fluoranthene	9.71E-07	50%	1.48E-06	None	no	7.42E-05	None	no
Fluorene	6.74E-06	50%	1.03E-05	None	no	5.15E-04	None	no
Indeno(1,2,3-cd)pyrene	1.65E-07	50%	2.52E-07	None	no	1.26E-05	None	no
Phenanthrene	6.90E-06	50%	1.05E-05	None	no	5.27E-04	None	no
Pyrene	1.75E-06	50%	2.67E-06	None	no	1.33E-04	None	no
PAH Equivalents as Benzo(a)pyrene	1.57E-08	50%	2.40E-08	None	no	1.20E-06	3.3E-03	no

Table 5. Total Toxic Air Contaminants from S-4, S-5, and S-6

	Assumed	Acute	Chronic	HRSA				
Emission	Abatement	Abated	Trigger	HRSA				
Factor	Efficiency	Emissions	Level	Triggered?				
SUBSTANCE	(lbs/MMBtu)	%	(lb/hr)	(lb/hr)	(Y/N)	(lb/yr)	(lb/yr)	(Y/N)
1,1,2,2-Tetrachloroethane	2.53E-05	50%	1.63E-04	None	no	9.33E-03	1.4E+00	no
1,1,2-Trichloroethane	1.53E-05	50%	9.85E-05	None	no	5.65E-03	5.0E+00	no
1,1-Dichloroethane	1.13E-05	50%	7.28E-05	None	no	4.17E-03	5.0E+01	no
1,2-Dichloroethane	1.13E-05	50%	7.28E-05	None	no	4.17E-03	4.0E+00	no
1,3-Butadiene	1.01E-04	0%	1.31E-03	1.5E+00	no	7.52E-02	4.8E-01	no
Acetaldehyde	8.61E-04	0%	1.12E-02	1.0E+00	no	6.39E-01	2.9E+01	no
Acrolein	5.34E-04	0%	6.91E-03	5.5E-03	YES	3.96E-01	1.4E+01	no
Benzene	7.21E-05	0%	9.33E-04	6.0E-02	no	5.35E-02	2.9E+00	no
Carbon Tetrachloride	1.77E-05	50%	1.14E-04	4.2E+00	no	6.53E-03	1.9E+00	no
Chlorobenzene	1.29E-05	50%	8.31E-05	None	no	4.76E-03	3.9E+04	no
Chloroform	1.37E-05	50%	8.82E-05	3.3E-01	no	5.05E-03	1.5E+01	no
Ethylbenzene	1.13E-05	50%	7.32E-05	None	no	4.20E-03	3.3E+01	no
Ethylene Dibromide	2.13E-05	50%	1.37E-04	None	no	7.86E-03	1.1E+00	no
Formaldehyde	4.87E-05	0%	6.30E-04	1.2E-01	no	3.61E-02	1.4E+01	no
Methanol	3.06E-03	50%	1.97E-02	6.2E+01	no	1.13E+00	1.5E+05	no
Methylene Chloride	4.12E-05	50%	2.65E-04	3.1E+01	no	1.52E-02	8.2E+01	no
Naphthalene	7.46E-05	50%	4.83E-04	None	no	2.77E-02	2.4E+00	no
Propylene	1.56E-02	50%	1.01E-01	None	no	5.79E+00	1.2E+05	no
Styrene	1.19E-05	50%	7.66E-05	4.6E+01	no	4.39E-03	3.5E+04	no

Toluene	1.04E-03	50%	6.76E-03	8.2E+01	no	3.87E-01	1.2E+04	no
Vinyl Chloride	7.18E-06	50%	4.62E-05	4.0E+02	no	2.65E-03	1.1E+00	no
Xylene (m,p)	4.30E-04	50%	2.78E-03	4.9E+01	no	1.60E-01	2.7E+04	no
Xylene (o)	2.12E-04	50%	1.37E-03	4.9E+01	no	7.85E-02	2.7E+04	no
Xylene (Total)	5.87E-05	50%	4.15E-03	4.9E+01	no	2.08E-01	2.7E+04	no
Polycyclic Aromatic Hydrocarbons (PAHs)								
Acenaphthene	1.89E-06	50%	1.23E-05	None	no	7.02E-04	None	no
Acenaphthylene	1.41E-05	50%	9.16E-05	None	no	5.25E-03	None	no
Anthracene	1.80E-06	50%	1.16E-05	None	no	6.66E-04	None	no
Benzo(a)anthracene	3.31E-07	50%	2.14E-06	None	no	1.23E-04	None	no
Benzo(a)pyrene	1.12E-07	50%	7.26E-07	None	no	4.16E-05	None	no
Benzo(b)fluoranthene	2.31E-07	50%	1.50E-06	None	no	8.57E-05	None	no
Benzo(g,h,i)perylene	1.90E-07	50%	1.23E-06	None	no	7.05E-05	None	no
Benzo(k)fluoranthene	1.00E-07	50%	6.50E-07	None	no	3.73E-05	None	no
Chrysene	3.02E-07	50%	1.96E-06	None	no	1.12E-04	None	no
Dibenz(a,h)anthracene	1.22E-08	50%	7.89E-08	None	no	4.52E-06	None	no
Fluoranthene	9.71E-07	50%	6.28E-06	None	no	3.60E-04	None	no
Fluorene	6.74E-06	50%	4.36E-05	None	no	2.50E-03	None	no
Indeno(1,2,3-cd)pyrene	1.65E-07	50%	1.07E-06	None	no	6.11E-05	None	no
Phenanthrene	6.90E-06	50%	4.46E-05	None	no	2.56E-03	None	no
Pyrene	1.75E-06	50%	1.13E-05	None	no	6.47E-04	None	no
PAH Equivalents as Benzo(a)pyrene	1.57E-08	50%	1.50E-07	None	no	9.42E-06	3.3E-03	no

Table 5. HRA results

Source	S-4, S-5, and S-6 total	Project Risk Requirement (Reg 2-5-302)
The Maximum Cancer Risk	0.061	10.0 in one million
The Maximum Chronic Hazard	0.29	1.0

Results from the HRA indicate that the project cancer risk is estimated at 0.061 in a million, the project chronic hazard index is estimated at 0.00042, and the project acute hazard index is estimated at 0.29. In accordance with the District's Regulation 2, Rule 5, these sources do not require TBACT because each estimated source risk is a cancer risk less than 1.0 in a million and/or a chronic hazard index less than 0.20. This project complies with the Regulation 2-5-302 project risk requirements.

PLANT CUMULATIVE EMISSIONS

Table 5 summarizes the cumulative increase in criteria pollutant emissions that will result from the operation of S-4, S-5, and S-6.

Table 6

Plant Cumulative Increase: (tons/year)			
Pollutant	Existing	New	Total
NOx	0	0.003	0.003

POC	0.001	0.009	0.010
CO	0	0.021	0.021
PM ₁₀	0	0.003	0.003
PM _{2.5}	0	0.003	0.003
SO ₂	0	0.001	0.001

BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

In accordance with Regulation 2-2-301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NO_x, CO, SO₂, PM₁₀ or PM_{2.5}.

Based on the emission calculations above, the owner/operator of S-4, S-5, and S-6 are not subject to BACT because each criteria pollutant is less than 10 lb/highest day.

OFFSETS

Per Regulation 2-2-302, offsets must be provided for any new or modified source at a facility that emits more than 10 tons/yr of POC, NO_x, SO₂ and PM₁₀/PM_{2.5}. Based on the emission calculations above, offsets are not required for this application.

New Source Performance Standards (NSPS)

The New Source Performance Standard (NSPS) in 40 CFR 60, Subpart JJJJ applies to S-4, S-5, and S-6. The engines will comply with the following limits in 40 CFR 60, Subpart JJJJ, Table 1 for emergency spark-ignited engines greater than 130 hp:

Table 4. Comparison between S-4, S-5, and S-6 Emission factors and 40 CFR 60, Subpart JJJJ, Table 1.

Pollutant	S-6 Emission Factor (g/bhp-hr)	S-4, and S-5 Emission Factors (g/bhp-hr)	NSPS Table 1. for greater than 130 bhp (g/bhp-hr)
NO _x	0.044	0.017	2.0
POC	0.043	0.109	1.0
CO	0.263	0.228	4.0

As the information above shows, S-4, S-5, and S-6 are in compliance with these NSPS emission requirements.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

This engine will be classified as a HAP area source therefore will be subject to the Reciprocating Internal Combustion Engine (RICE) 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 Part 60 Subpart JJJJ NSPS requirements has no further requirements under Subpart ZZZZ pursuant to 40 CFR Part 63.6590(c). Therefore, S-4, S-5, and S-6 comply with NESHAP by meeting the requirements under 40 CFR 60 (Subpart JJJJ NSPS).

Statement of Compliance

The owner/operator of S-4, S-5, and S-6 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 SO₂ 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.

S-4, S-5, and S-6 are emergency standby generators; from Regulation 9, Rule 8 (*NOx and CO from Stationary Internal Combustion Engines*), Section 110.5 (*Emergency Standby Engines*), S-4, S-5, and S-6 are 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*) and 9-8-530 (*Emergency Standby Engines, Monitoring and Recordkeeping*) will be included in the Permit Conditions below.

The project is considered to be ministerial under the District's CEQA regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emissions factors and therefore is not discretionary as defined by CEQA. (Permit Handbook Chapter 2.3)

Public School Notification

Public Notice is required because the equipment is located within 1000 feet of a K-12 school. The parents, guardians, all residential and business neighbors located within 1000 feet of the following school will be notified.

Bayshore Elementary School District
155 Oriente Street
Daly City, CA 94014

The school public notice started on December XX, 2021 and ended on January XX, 2022. There are XXX comment(s).

Source S-4, S-5 or S-6 each will be subject to Condition 23107.

PERMIT CONDITIONS

Permit Condition # 27554

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

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

“School” or “School Grounds” means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). “School” or “School Grounds” includes any building or structure, playground, athletic field, or other areas of school property but does not include unimproved school property.
[Basis: Regulation 2-5]

RECOMMENDATION

Recommend that a conditional Authority to Construct be issued for the following equipment:

**S-4 Emergency Standby Natural Gas (NG) Engine
 Peterson Caterpillar, Model: DG400, Model Year: 2021
 620 BHP, 2.0 MMBtu/hr
 Equipped with 3-Way Catalyst Converter (TWC)**

S-5 Emergency Standby Natural Gas (NG) Engine

**Peterson Caterpillar, Model: DG400, Model Year: 2021
620 BHP, 2.0 MMBtu/hr
Equipped with 3-Way Catalyst Converter (TWC)**

**S-6 Emergency Standby Natural Gas (NG) Engine
Peterson Caterpillar, Model: DG400, Model Year: 2021
620 BHP, 2.0 MMBtu/hr
Equipped with 3-Way Catalyst Converter (TWC)**

by TM

Thuya Maw
Air Quality Engineer I

December 8, 2021