

**DRAFT ENGINEERING EVALUATION**

**Facility ID No. 1148  
Coit Services Incorporated  
897 Hinckley Road, Burlingame, CA 94010  
Application No. 421921**

**Background**

Coit Services Incorporated is applying for an Authority to Construct/Permit to Operate for the following equipment:

**S-4 Emergency Standby Natural Gas Generator Set  
Make: General Motors, Model: 5.7L Vortec, Model Year: 2017  
104 bhp, 0.806 MMBtu/hr  
Abated by Catalytic Converter  
Make: Nett Technologies, Model: TG-Series**

**Permit Condition No. 23107**

The criteria pollutants are nitrogen oxides (NOx), carbon monoxide (CO), precursor organic compounds (POC) from unburned fuel, sulfur dioxide (SO<sub>2</sub>) and particulate matter (PM<sub>10</sub>). All of these pollutants are briefly discussed on the District’s web site at [www.baaqmd.gov](http://www.baaqmd.gov).

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

**Emissions**

**Table 1. Annual and Daily Emissions from S-4**

<b>Pollutant</b>	<b>Emission Factor (g/bhp-hr)</b>	<b>Max Daily Emissions (lb/day)</b>	<b>Annual Emissions (lb/yr)</b>	<b>Annual Emissions (tons/yr)</b>
NOx	0.21	1.2	2.4	0.001
POC	0.01	0.1	0.1	0.000
CO	1.32	7.3	15.1	0.008
<b>Pollutant</b>	<b>Emission Factor (lb/MMBtu)</b>	<b>Max Daily Emissions (lb/day)</b>	<b>Annual Emissions (lb/yr)</b>	<b>Annual Emissions (tons/yr)</b>
PM10	0.0100	0.2	0.4	0.000
SO2	0.00059	0.0	0.0	0.000

Basis:

- Annual emissions: Reliability-related activity 50 hours for S-4
- Max daily emissions: 24-hour operation
- NO<sub>x</sub>, POC, and CO emission factors based on manufacturers data
- SO<sub>2</sub> and PM<sub>10</sub> emission factor from AP-42 section 3.2, table 3.2-2

### **Plant Cumulative Increase**

Table 2 summarizes the cumulative increase in criteria pollutant emissions that will result from this application.

**Table 2. Plant Cumulative Emissions Increase, Post 4/5/91**

<b>Pollutant</b>	<b>Existing Emissions Post 4/5/91 (tons/yr)</b>	<b>Application Emissions (tons/yr)</b>	<b>Cumulative Emissions (tons/yr)</b>
NO <sub>x</sub>	0.000	0.001	0.001
POC	0.000	0.000	0.000
CO	0.000	0.008	0.008
PM <sub>10</sub>	0.000	0.000	0.000
SO <sub>2</sub>	0.000	0.000	0.000

### **Health Risk Screening Analysis (HRSA)**

To estimate Hazardous Air Pollutants (HAPs) or Toxic Air Contaminants (TACs) emissions from S-1, the higher emission factors of those from EPA AP-42 Table 3.2-2 for natural gas fired 4-stroke lean burn engines and CARB California Air Toxics Emission Factors (CATEFs) for natural gas fired 4-stroke lean burn engines with less than 650 hp are used. The engine being permitted has a maximum firing rate of 0.806 MMBtu/hr and a maximum rating of 104 hp.

The HAP emission estimates are based on uncontrolled emission factors for natural gas engines and assume a conservative abatement efficiency of 50% removal of organic HAP compounds. The abatement efficiency assumption is based on the fact that the engine is being permitted with an exhaust catalyst and an air/fuel ratio controller.

As shown in Tables 3 and 4 below, no TACs exceed the District's Risk Screening trigger levels. Therefore, a Health Risk Screening Analysis (HRSA) is not required.

**Table 3. HAP EMISSIONS ESTIMATES BASED ON AP-42 TABLE 3.2-2**

Compound		AP-42 EF (lb/MMBTU)	Assumed Abatement Efficiency (%)	Emissions (lb/hr)	Trigger Level (lb/hr)	HRSA Triggered? (Yes/No)	Emissions (lb/year)	Chronic Trigger Level (lb/yr)	HRSA Triggered? (Yes/No)
1,1,2,2-Tetrachloroethane	<	4.00E-05	50	1.61E-05	None	No	8.06E-04	1.90E+00	No
1,1,2-Trichloroethane	<	3.18E-05	50	1.28E-05	None	No	6.41E-04	6.60E+00	No
1,1-Dichloroethane	<	2.36E-05	50	9.51E-06	None	No	4.75E-04	6.60E+01	No
1,2,3-Trimethylbenzene		2.30E-05	50	9.27E-06	None	No	4.63E-04	None	No
1,2,4-Trimethylbenzene		1.43E-05	50	5.76E-06	None	No	2.88E-04	None	No
1,2-Dichloroethane	<	2.36E-05	50	9.51E-06	None	No	4.75E-04	5.30E+00	No
1,2-Dichloropropane	<	2.69E-05	50	1.08E-05	None	No	5.42E-04	None	No
1,3,5-Trimethylbenzene		3.38E-05	50	1.36E-05	None	No	6.81E-04	None	No
1,3-Butadiene		2.30E-05	50	1.08E-04	None	No	5.38E-03	6.30E-01	No
1,3-Dichloropropene	<	2.64E-05	50	1.06E-05	None	No	5.32E-04	None	No
2-Methylnaphthalene		3.32E-05	50	1.34E-05	None	No	6.69E-04	None	No
2,2,4-Trimethylpentane		2.50E-04	50	1.01E-04	None	No	5.04E-03	None	No
Acenaphthene		1.25E-06	50	CATEF	--	No	CATEF	--	No
Acenaphthylene		5.53E-06	50	CATEF	--	No	CATEF	--	No
Acetaldehyde		8.36E-03	50	CATEF	--	No	CATEF	--	No
Acrolein		5.14E-03	50	CATEF	--	No	CATEF	--	No
Benzene		4.40E-04	50	CATEF	--	No	CATEF	--	No
Benzo(b)fluoranthene		1.66E-07	50	CATEF	--	No	CATEF	--	No
Benzo(e)pyrene		4.15E-07	50	1.67E-07	None	No	8.36E-06	None	No
Benzo(g,h,i)perylene		4.14E-07	50	CATEF	--	No	CATEF	--	No
Biphenyl		2.12E-04	50	8.54E-05	None	No	4.27E-03	None	No
Butane		5.41E-04	50	2.18E-04	None	No	1.09E-02	None	No
Butyr/Isobutyraldehyde		1.01E-04	50	4.07E-05	None	No	2.03E-03	None	No
Carbon Tetrachloride	<	3.67E-05	50	1.48E-05	4.20E+00	No	7.39E-04	2.50E+00	No
Chlorobenzene	<	3.04E-05	50	1.22E-05	None	No	6.12E-04	3.90E+04	No
Chloroethane		1.87E-06	50	7.53E-07	None	No	3.77E-05	None	No
Chloroform	<	2.85E-05	50	1.15E-05	3.30E-01	No	5.74E-04	2.00E+01	No
Chrysene		6.93E-07	50	CATEF	--	No	CATEF	--	No
Cyclopentane		2.27E-04	50	9.15E-05	None	No	4.57E-03	None	No
Ethane		1.05E-01	50	4.23E-02	None	No	2.12E+00	None	No
Ethylbenzene		4.43E-05	50	1.60E-05	None	No	8.00E-04	4.30E+01	No
Ethylene Dibromide	<	4.43E-05	50	1.78E-05	None	No	8.92E-04	1.50E+00	No

**Table 3. HAP EMISSIONS ESTIMATES BASED ON AP-42 TABLE 3.2-2  
(Continued)**

Compound	AP-42 E.F. (lb/MMBTU)	Assumed Abatement Efficiency (%)	Emissions (lb/hr)	Trigger Level (lb/hr)	HRSA Triggered? (Yes/No)	Emissions (lb/year)	Chronic Trigger Level (lb/yr)	HRSA Triggered? (Yes/No)
Fluoranthene	1.11E-06	50	CATEF	--	No	CATEF	--	No
Fluorene	5.67E-06	50	CATEF	--	No	CATEF	--	No
Formaldehyde	5.28E-02	50	CATEF	--	No	CATEF	--	No
Methanol	2.50E-03	50	1.01E-03	6.20E+01	No	5.04E-02	1.50E+05	No
Methylcyclohexane	1.23E-03	50	4.96E-04	None	No	2.48E-02	None	No
Methylene Chloride	2.00E-05	50	8.06E-06	3.10E+01	No	4.03E-04	1.10E+02	No
n-Hexane	1.11E-03	50	4.47E-04	None	No	2.24E-02	None	No
n-Nonane	1.10E-04	50	4.43E-05	None	No	2.22E-03	None	No
n-Octane	3.51E-04	50	1.41E-04	None	No	7.07E-03	None	No
n-Pentane	2.60E-03	50	1.05E-03	None	No	5.24E-02	None	No
Naphthalene	7.44E-05	50	CATEF	--	No	CATEF	--	No
PAH	2.69E-05	50	CATEF	--	No	CATEF	--	No
Phenanthrene	1.04E-05	50	CATEF	--	No	CATEF	--	No
Phenol	2.40E-05	50	9.67E-06	1.30E+01	No	4.83E-04	7.70E+03	No
Propane	4.19E-02	50	1.69E-02	None	No	8.44E-01	None	No
Pyrene	1.36E-06	50	CATEF	--	No	CATEF	--	No
Styrene	< 2.36E-05	50	9.51E-06	4.60E+01	No	4.75E-04	3.50E+04	No
Tetrachloroethane	2.48E-06	50	9.99E-07	None	No	5.00E-05	None	No
Toluene	4.08E-04	50	CATEF	--	No	CATEF	--	No
Vinyl Chloride	1.49E-05	50	6.00E-06	4.00E+02	No	3.00E-04	1.40E+00	No
Xylene	1.84E-04	50	7.41E-05	4.90E+01	No	3.71E-03	2.70E+04	No

<sup>1</sup>CATEFs are used when AP-42 EFs are less conservative (lower) than CATEFs.

**Table 4. HAP Emission Estimates Based on CATEF Emission Factors**

Substance	E.F. (lb/MMcf)	Assumed Abatement Efficiency (%)	Emissions (lb/hr)	Acute Trigger Level (lb/hr)	HRSA Triggered? (Yes/No)	Abated Emissions (lb/yr)	Chronic Trigger Level (lb/yr)	HRSA Triggered? (Yes/No)	PAH PEF	PAH Equivalents
Acenaphthene	7.17E-04	50	2.83E-07	None	No	1.42E-05	None	No	--	--
Acenaphthylene	7.59E-03	50	3.00E-06	None	No	1.50E-04	None	No	--	--
Acetaldehyde	3.99E+00	50	1.58E-03	1.00E+00	No	7.88E-02	3.80E+01	No	--	--
Acrolein	1.63E+00	50	6.44E-04	5.50E-03	No	3.22E-02	1.40E+01	No	--	--
Anthracene	2.56E-04	50	1.01E-07	None	No	5.06E-06	None	No	--	--
Benzene	1.21E+00	50	4.78E-04	2.90E+00	No	2.39E-02	3.80E+00	No	--	--
Benzo(a)anthracene	7.78E-05	50	3.07E-08	None	No	1.54E-06	None	No	0.1	1.12E-07
Benzo(a)pyrene	3.55E-05	50	1.40E-08	None	No	7.01E-07	None	No	1.0	5.12E-07
Benzo(b)fluoranthene	3.27E-04	50	1.29E-07	None	No	6.46E-06	None	No	0.1	4.72E-07
Benzo(g,h,i)perylene	1.03E-04	50	4.07E-08	None	No	2.03E-06	None	No	--	--

**Table 4. HAP Emission Estimates Based on CATEF Emission Factors (Continued)**

Substance	E.F. (lb/MMcf)	Assumed Abatement Efficiency (%)	Emissions (lb/hr)	Acute Trigger Level (lb/hr)	HRSA Triggered? (Yes/No)	Abated Emissions (lb/yr)	Chronic Trigger Level (lb/yr)	HRSA Triggered? (Yes/No)	PAH PEF	PAH Equiv- alents
Benzo(k)fluoranthene	5.30E-04	50	2.09E-07	None	No	1.05E-05	None	No	0.1	7.65E-07
Chrysene	9.64E-05	50	3.81E-08	None	No	1.90E-06	None	No	0.01	1.39E-08
Dibenz(a,h)anthracene	1.09E-05	50	4.31E-09	None	No	2.15E-07	None	No	1.05	1.65E-07
Fluoranthene	2.50E-04	50	9.88E-08	None	No	4.94E-06	None	No	--	
Fluorene	4.60E-04	50	1.82E-07	None	No	9.09E-06	None	No	--	
Formaldehyde	2.87E+01	50	1.13E-02	1.20E-01	No	5.67E-01	1.80E+01	No	--	
Indeno(1,2,3-cd)pyrene	1.20E-04	50	4.74E-08	None	No	2.37E-06	None	No	0.1	1.73E-07
Naphthalene	1.22E-01	50	4.82E-05	None	No	2.41E-03	3.20E+00	No	--	
Phenanthrene	8.93E-04	50	3.53E-07	None	No	1.76E-05	None	No	--	
Propylene	1.87E+01	50	7.39E-03	None	No	3.69E-01	1.20E+05	No	--	
Pyrene	1.23E-04	50	4.86E-08	None	No	2.43E-06	None	No	--	
Toluene	4.12E-01	50	1.63E-04	8.20E+01	No	8.14E-03	1.20E+04	No	--	
Xylene (m,p)	8.63E-02	50	3.41E-05	4.90E+01	No	1.70E-03	2.70E+04	No	--	
Xylene (o)	4.94E-02	50	1.95E-05	4.90E+01	No	9.76E-04	2.70E+04	No	--	
PAH Equivalents as Benzo(a)pyrene	--	--	--	None	No	--	6.90E-03	No	--	2.21E-06

**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<sub>x</sub>, CO, SO<sub>2</sub>, or PM<sub>10</sub>.

Based on the emission displayed above, BACT is not triggered for any pollutant since the maximum daily emission of each pollutant does not exceed 10lbs/day.

**Offsets**

Since the facility permitted levels are below the offset triggers levels specified in Regulation 2-2, offsets are not required.

## **Statement of Compliance**

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

### **District Rules**

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

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 2.3.2), and is therefore not subject to CEQA review.

### **New Source Performance Standards (NSPS)**

40 CFR 60, Subpart JJJJ (*Stationary Spark 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)**

Because this equipment will be located within 1,000 feet of The Avalon Academy, the project is subject to the public notification requirements of Regulation 2-1-412 due to the increase in emissions from the project. 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.

## **Permit Conditions**

### **Permit Condition #23107 for S-4**

1. The owner or operator shall operate the stationary emergency standby engine only to mitigate emergency conditions or for reliability-related activities (maintenance and testing). Operating while mitigating emergency conditions and while emission testing to show compliance with this part is unlimited. Operating for reliability-related activities are limited to 50 hours per year. (Basis: Emergency Standby Engines, Hours of Operation Regulation 9-8-330)
2. The Owner/Operator shall equip the emergency standby engine(s) with: a non-resettable totalizing meter that measures hours of operation or fuel usage. (Basis: Emergency Standby Engines, Monitoring and Record keeping 9-8-530)
3. The Owner/Operator shall not operate unless the natural gas fired engine is abated with a Catalytic Converter/Silencer Unit (Basis: Cumulative Increase)
4. 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. 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 (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: Emergency Standby Engines, Monitoring and Recordkeeping 9-8-530)

***End of Conditions***

## **Recommendation**

The District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, state, and federal air quality-related regulations. The preliminary recommendation is to issue an Authority to Construct/Permit to Operate for the equipment listed below. However, the proposed source will be located within 1,000 feet of at least one school, which triggers the public notification requirements of District 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/Permit to Operate for the following source:

**S-4    Emergency Standby Natural Gas Generator Set**  
**Make: General Motors, Model: 5.7L Vortec, Model Year: 2017**  
**104 bhp, 0.806 MMBtu/hr**  
**Abated by Catalytic Converter**  
**Make: Nett Technologies, Model: TG-Series**

**Permit Condition No. 23107**

Prepared by: Simon Margolis, Air Quality Engineer II