

ENGINEERING EVALUATION (DRAFT)
Safeway, Inc.
1 Camino Alto, Mill Valley, CA 94941
Plant Number: 32122
Application Number: 27274

BACKGROUND

The Applicant has submitted an application for a Permit to Operate for the following:

- S-1 Emergency Standby Natural Gas Generator Set**
- Generac, Model 45950, Model Year 2001**
- 67 BHP, 2.14 MMBTU/hr**
- Abated by A-1 Integrated 3-way Catalyst**

This engine was installed at the site in December 2004. The natural gas powered lean burn engine generator set (S-1) provides emergency standby power in the event of a disruption to power service. S-1 was installed in 2004 without a permit. Therefore, late fees and back fees have been assessed. During an emergency, the generator operates 24 hours a day until regular electric supply is restored. The engine will operate for a maximum of 50 hours per year for maintenance and testing, as limited by Regulation 9-8-330.3.

EMISSION CALCULATIONS

Criteria Pollutants

Table 1 summarizes criteria pollutant emissions resulting from the operation of this engine.

Table 1

Pollutant	Emission Factor		Emissions		
	(lb/MMBTU)	(g/hp-hr)	Annual (lb/yr)	Annual (TPY)	Maximum Daily (lb/day)
NOx		0.06	0.44	0.0002	0.21
NMHC (POC)		0.31	2.29	0.0011	1.10
CO		0.25	1.84	0.0009	0.89
PM10	7.71E-05		0.01	0.0000	0.00
SO2	5.88E-04		0.06	0.0000	0.03

Basis:

- 67 hp Max Rated Output
- 850 cf/hr Max Fuel Use Rate = 2.14 MMBTU/hr Max Combustion Capacity
- Emission Factors for NOx, POC, and CO are from manufacturer data
- Emission Factors for PM₁₀ and SO₂ are from EPA AP-42, Table 3.2-3 4-Stroke Lean-burn Engines.
- Annual emissions are based on the annual limit (50 hr/yr) of operation for testing and maintenance
- Max daily emissions are based on 24hr/day since no daily limits are imposed on emergency operations

Cumulative Increase

Table 2 summarizes the cumulative increase in criteria pollutants resulting from the operation of this engine.

Table 2

Pollutant	Pre-Existing Cumulative Increase (TPY)	Application Emissions Increase (TPY)	Final Cumulative Increase (TPY)
POC	0.0	0.001	0.001
CO	0.0	0.001	0.001

Toxic Pollutants

The California Air Toxics Emission Factor (CATEF) Database for Natural Gas and liquid petroleum gas fired 4-cycle lean burn engines with less than 650 hp and AP-42 Table 3.2-2 Emission Factors for Natural Gas and liquid petroleum gas fired 4-cycle lean burn engines were used to calculate emissions of Toxic Air Contaminants that are listed on BAAQMD Table 2-5-1 Toxic Air Contaminant Trigger Levels. The AP-42 emission factors were used for compounds that did not have a CATEF Emission Factor. Table 3 summarizes these calculations which are detailed in Appendix 1.

The HAP emission calculations include an assumed abatement efficiency of 50% removal of organic HAP compounds based on the fact that the engine is being permitted with a catalytic converter.

Table 3

Compound	Hourly Emissions (lb/hr)	Acute Trigger (lb/hr)	HRSA?	Annual Emissions (lb/yr)	Chronic Trigger (lb/yr)	HRSA?
1,1,2,2-Tetrachloroethane	4.28E-05	-		2.14E-03	1.90E+00	No
1,1,2-Trichloroethane	3.40E-05	-		1.70E-03	6.60E+00	No
1,1-Dichloroethane	2.53E-05	-		1.26E-03	6.60E+01	No
1,3-Butadiene	1.13E-07	-		1.43E-02	6.30E-01	No
Acetaldehyde	4.22E-03	1.00E+00	No	2.11E-01	3.80E+01	No
Acrolein	2.33E-03	5.50E-03	No	1.16E-01	1.40E+01	No
Benzene	1.05E-03	2.90E+00	No	5.25E-02	3.80E+00	No
Carbon Tetrachloride	3.93E-05	4.20E+00	No	1.96E-03	2.50E+00	No
Chlorobenzene	3.25E-05	-		1.63E-03	3.90E+04	No
Chloroform	3.05E-05	3.30E-01	No	1.52E-03	2.00E+01	No
Ethylbenzene	1.69E-08	-		2.12E-03	4.30E+01	No
Ethylene Dibromide	4.74E-05	-		2.37E-03	1.50E+00	No
Formaldehyde	4.16E-03	1.20E-01	No	2.08E-01	1.80E+01	No
Methanol	2.68E-03	6.20E+01	No	1.34E-01	1.50E+05	No
Methylene Chloride	2.14E-05	3.10E+01	No	1.07E-03	1.10E+02	No
Naphthalene	7.91E-05	-		3.95E-03	3.20E+00	No
PAH Equivalents as Benzo(a)pyrene (1)	3.28E-04	-		6.51E-06	6.90E-03	No
Phenol	2.57E-05	1.30E+01	No	1.28E-03	7.70E+03	No
Styrene	2.53E-05	4.60E+01	No	1.26E-03	3.50E+04	No
Toluene	4.97E-04	8.20E+01	No	2.49E-02	1.20E+04	No
Vinyl Chloride	1.59E-05	4.00E+02	No	7.97E-04	1.40E+00	No
Xylene	5.44E-04	4.90E+01	No	2.72E-02	2.70E+04	No

STATEMENT OF COMPLIANCE:

Regulation 2 - Permits, Rule 1 – General Requirements

Ministerial Projects (Section 2-1-311)

An application that is classified as ministerial is exempt from the CEQA requirement of *Section 2-1-310 Applicability of CEQA*. An application is considered ministerial if the District's engineering evaluation and basis for approval or denial of the permit application for the project is limited to the criteria set forth in *Section 2-1-428 Criteria for Approval of Ministerial Permit Applications* and the specific procedures, fixed standards and objective measurements set forth in the District's Permit Handbook and BACT/TBACT Workbook.

>Section 2.3.2 of the District's Permit Handbook sets forth evaluation guidelines for Stationary Natural Gas Engines and was used to evaluate this engine. As such, this application is classified as ministerial and this engine is exempt from CEQA review with respect to air quality.

Public Notice, Schools (Section 2-1-412)

A new or modified source located 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 (TAC) in Table 2-5-1 of *Regulation 2, Rule 5 New Source Review of Toxic Air Contaminants* shall prepare and distribute a public notice in accordance with subsections 412.1 and 412.2 of *Regulation 2, Rule 1 General Requirements*.

>The outer boundary of the nearest K-12 school, Tamalpais High School is 755 feet from the location of this engine and this engine is subject to the public notification requirements of this regulation since there are TAC emissions as summarized above.

Regulation 2 - Permits, Rule 2 – New Source Review**Best Available Control Technology Requirement (Section 2-2-301)**

Any new or modified source that has the potential to emit 10.0 pounds or more per highest day of precursor organic compounds (POC), non-precursor organic compounds (NPOC), nitrogen oxides (NOx), sulfur dioxide (SO₂), PM₁₀ or carbon monoxide (CO) is required to use Best Available Control Technology as defined in *Regulation 2-2-206 Best Available Control Technology (BACT)*.

>Based on the emission calculations in Table 1 BACT is not triggered for any pollutant since all emissions are less than 10 lb/day triggered for each pollutant.

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

Emission offsets shall be provided for any new or modified source that emits more than 10 tons/yr of either NOx or POC.

>Based on the emissions as summarized in Table 1, offsets are not required for this application.

Offset Requirement, PM₁₀ and Sulfur Dioxide, NSR (2-2-303)

Regulation 2-2-303 establishes emission offset requirements for PM₁₀ and Sulfur Dioxide from new or modified sources located at a Major Facility.

>Since the plant that this engine will be operating at is not a Major Facility, this engine is not subject to the offset requirements of *Regulation 2-2-302*.

Prevention of Significant Deterioration (PSD) (Section 2-2-304)

New major facilities and major modifications at major facilities must meet modeling requirements of *Regulation 2-2-304 PSD Requirement*.

>This is not a new major facility; nor is it a major modification of a major facility and therefore PSD modeling is not required for this application.

Regulation 2- Permits, Rule 5 New Source Review of Toxic Air Contaminants**General (2-5-100)**

Regulation 2-5-101 –Description states that any new or modified source of toxic air contaminant (TAC) shall be evaluated for potential public exposure and health risk. *Regulation 2-5-110 Exemption, Low Emission Levels* provides an exemption if, for each toxic air contaminant, the increase in emissions from the project is below the trigger levels listed in Table 2-5-1 of *Regulation 2-5*.

>As shown in Table 3 above, no toxic air contaminants exceed the District Risk Screening Triggers and a Risk Screening Analysis is not required.

Regulation 6 - Particulate Matter, Rule 1 - General Requirements**Ringelmann No. 2 Limitation (Section 6-1-303)**

All engines less than 1500 in³ displacement, or any engine used solely as a standby source of motive power must meet the Ringelmann No. 2 Limitations of *Regulation 6-1-303* which states that 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. 2 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree.

>Since this engine has a displacement of 350 in³ it is subject to and expected to comply with *Regulation 6-1-303* 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 this engine will emit a very small amount of PM₁₀ it is not expected to produce visible emissions or fallout in violation of this regulation and will be assumed to be in compliance with *Regulation 6-1-305* pending a regular inspection.

Regulation 9 – Inorganic Gaseous Pollutants, Rule 1 Sulfur Dioxide

This engine is subject to the following sections of Regulation 9, Rule 1 and will comply with all sections by burning Natural Gas with a maximum sulfur content of 25 ppm mass.

Limitations on Ground Level Concentrations (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 (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) (9-1-304)

The sulfur content of liquid fuel burned shall not exceed 0.5% by weight.

Regulation 9 – Inorganic Gaseous Pollutants, Rule 8 NOx 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)

This engine is subject to the requirements of *Regulation 9-8-330* which limits reliability related activity to 50 hr/yr.

>Permit Conditions for this engine will include operating limits that meet this requirement.

Monitoring and Records (9-8-500)

This engine is subject to the reporting requirements of Sections 502 and 530.

>Permit Conditions for this engine will include reporting requirements that meet these standards.

Regulation 11 – National Emission Standards for Hazardous Air Pollutants**National Emission Standards for Hazardous Air Pollutants (NESHAP)**

This engine is not subject to 40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (RICE). Per 40 CFR 63.6585(f), Subpart ZZZZ does not apply to a commercial stationary RICE located at an area source and constructed prior to June 12, 2006.

Other Regulations**New Source Performance Standards (NSPS)**

This engine is not subject to 40 CFR 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Combustion Engines because it was manufactured before June 12, 2006, as set forth in Section 60.4230(a)(4),(a)(5).

CONDITIONS

I recommend the following standardized permit condition for S-8:

COND # 23107

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.

(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)

RECOMMENDATIONS:

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 for the equipment listed below. However, the proposed source will emit toxic air contaminants listed on Table 2-5-1 and will be located within 1000 feet of a school, which triggers the public notification requirements of District Regulation 2-1-412.6. 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 source:

**S-1 Emergency Standby Natural Gas Generator Set
Generac, Model 45950, Model Year 2001
67 BHP, 2.14 MMBTU/hr
Abated by A-1 Integrated 3-way Catalyst**

Anne C Werth

November 2, 2015