

## DRAFT ENGINEERING EVALUATION

**Facility ID No. 14315  
Solano County Facilities  
2500 Clay Bank Road, Fairfield, CA 94533  
Application No. 29079**

### Background

Solano County Facilities is applying for an Authority to Construct and/or a Permit to Operate for the following equipment:

**S-7 Emergency Standby Diesel Generator Set  
Make: Cummins, Model: QSB7-G5 NR3, Model Year: 2017  
324 bhp, 1.61 MMBtu/hr**

The criteria pollutants are nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), precursor organic compounds (POC) from unburned diesel fuel, sulfur dioxide (SO<sub>2</sub>) and particulate matter (PM<sub>10</sub>). These five pollutants are briefly discussed on the District's web site at [www.baaqmd.gov](http://www.baaqmd.gov).

S-7 meets the Environmental Protection Agency and California Air Resources Board (EPA/CARB) Tier 3 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.

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

### Emissions

**Table 1. Emissions from S-7 from Manufacturer's Emissions Data**

<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>
NO <sub>x</sub>	2.57	43.97	91.61	0.046
POC	0.14	2.31	4.82	0.002
CO	0.70	12.00	25.00	0.013
PM <sub>10</sub>	0.07	1.20	2.50	0.001
SO <sub>2</sub>	0.001515	0.06	0.12	0.000

Basis:

- Annual emissions: Reliability-related activity 50 hours for S-7
- Max daily emissions: 24-hour operation
- <sup>1</sup> SO<sub>2</sub> emission factor from AP-42 Table 3.4-1, SO<sub>2</sub> (15 ppm) = 1.01\*0.0015 lb SO<sub>2</sub>/MMBtu/hr

### **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>	0.039	0.046	0.085
POC	0.002	0.002	0.004
CO	0.023	0.013	0.036
PM <sub>10</sub>	0.001	0.001	0.002
SO <sub>2</sub>	0.000	0.000	0.000

### **Health Risk Assessment (HRA)**

At a maximum rate of 2.50 lbs/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 were no other related projects permitted in the last three years.

S-7 is subject to the District's HRA streamlining policy for stationary diesel-fueled combustion engines used for backup power or fire pumps. The included HRA streamlining policy checklist shows that a refined HRA is not required for this permit application. The project is presumed to be in compliance with project risk requirements as recommended, limiting reliability-related activity hours by permit condition.

### **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>.

BACT for this source is presented in the current BAAQMD BACT/TBACT Workbook for IC Engine – Compression Ignition: Stationary Emergency, non-Agricultural, non-direct drive fire pump, Document #96.1.3, Revision 7. dated 12/22/2010. For NO<sub>x</sub>, CO,

POC and PM<sub>10</sub>, BACT(2) is the CARB ATCM standard for the respective pollutant at the applicable horsepower rating. For SO<sub>2</sub>, BACT(2) is using fuel with sulfur content not to exceed 0.0015%, or 15 ppm. The more restrictive BACT(1) standards are not applicable to this engine because it will be limited to operation as an emergency standby engine.

S-7 satisfies the current BACT(2) standards for the following pollutants which exceed 10 lb/day in Table 1:

<b>Pollutant</b>	<b>Emission Factor</b>	<b>BACT(2) Standard</b>
NO <sub>x</sub>	2.57 g/bhp-hr	2.85 g/bhp-hr
CO	0.70 g/bhp-hr	2.60 g/bhp-hr

**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:

**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 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), 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 within 1,000 feet of the nearest K-12 school, and is therefore subject to the public notification requirements.

### **Permit Conditions**

#### **Permit Condition #22850 for S-7**

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 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 a 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 a Authority to Construct/Permit to Operate for the following source:

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Prepared by: Jeffrey Cleary, Air Quality Engineer