



**MAR 28 2011**

Boon Tee  
Veterans Home of California, Fresno  
4682 E. Olive Ave  
Fresno, CA 93702

**Re: Notice of Preliminary Decision - Authority to Construct  
Project Number: C-1110227**

Dear Mr. Tee:

Enclosed for your review and comment is the District's analysis of Veterans Home of California, Fresno's application for an Authority to Construct for the installation of a 2,220 bhp Tier 2 certified diesel-fired emergency standby IC engine powering an electrical generator, at 2811 W. California, Fresno.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. Please submit your written comments on this project within the 30-day public comment period which begins on the date of publication of the public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. John Yoshimura of Permit Services at (559) 230-5887.

Sincerely,

David Warner  
Director of Permit Services

DW:jy

Enclosures

**Seyed Sadredin**  
Executive Director/Air Pollution Control Officer

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**Northern Region**  
4800 Enterprise Way  
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MAR 28 2011

Mike Tollstrup, Chief  
Project Assessment Branch  
Stationary Source Division  
California Air Resources Board  
PO Box 2815  
Sacramento, CA 95812-2815

**Re: Notice of Preliminary Decision - Authority to Construct**  
**Project Number: C-1110227**

Dear Mr. Tollstrup:

Enclosed for your review and comment is the District's analysis of Veterans Home of California, Fresno's application for an Authority to Construct for the installation of a 2,220 bhp Tier 2 certified diesel-fired emergency standby IC engine powering an electrical generator, at 2811 W. California, Fresno.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. Please submit your written comments on this project within the 30-day public comment period which begins on the date of publication of the public notice.

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Fresno Bee

**NOTICE OF PRELIMINARY DECISION  
FOR THE PROPOSED ISSUANCE OF  
AN AUTHORITY TO CONSTRUCT**

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Unified Air Pollution Control District solicits public comment on the proposed issuance of Authority to Construct to Veterans Home of California, Fresno for the installation of a 2,220 bhp Tier 2 certified diesel-fired emergency standby IC engine powering an electrical generator, at 2811 W. California, Fresno.

The analysis of the regulatory basis for this proposed action, Project #C-1110227, is available for public inspection at [http://www.valleyair.org/notices/public\\_notices\\_idx.htm](http://www.valleyair.org/notices/public_notices_idx.htm) and the District office at the address below. Written comments on this project must be submitted within 30 days of the publication date of this notice to **DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT, 1990 EAST GETTYSBURG AVENUE, FRESNO, CA 93726.**



### III. Project Location

The project is located at 2811 W. California Avenue in Fresno, CA.

### IV. Process Description

The emergency standby engine powers an electrical generator. Other than emergency standby operation, the engine may be operated up to 50 hours per year for maintenance and testing purposes.

### V. Equipment Listing

**C-8176-1-0:** 2220 BHP CUMMINS MODEL QSK50-G4 NR2 TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR

### VI. Emission Control Technology Evaluation

The applicant has proposed to install a Tier 2 certified diesel-fired IC engine that is fired on very low-sulfur diesel fuel (0.0015% by weight sulfur maximum).

The proposed engine(s) meet the latest Tier Certification requirements; therefore, the engine(s) meets the latest ARB/EPA emissions standards for diesel particulate matter, hydrocarbons, nitrogen oxides, and carbon monoxide (see Appendix C for a copy of the emissions data sheet and/or the ARB/EPA executive order).

The use of very low-sulfur diesel fuel (0.0015% by weight sulfur maximum) reduces SO<sub>x</sub> emissions by over 99% from standard diesel fuel.

### VII. General Calculations

#### A. Assumptions

Emergency operating schedule:	24 hours/day
Non-emergency operating schedule:	50 hours/year
Density of diesel fuel:	7.1 lb/gal
EPA F-factor (adjusted to 60 °F):	9,051 dscf/MMBtu
Fuel heating value:	137,000 Btu/gal
BHP to Btu/hr conversion:	2,542.5 Btu/bhp-hr
Thermal efficiency of engine:	commonly ≈ 35%
PM <sub>10</sub> fraction of diesel exhaust:	0.96 (CARB, 1988)

#### B. Emission Factors

The applicant has supplied the emissions factors for NO<sub>x</sub>, PM<sub>10</sub>, CO, and VOC at 25% load, 50% load, 75% load, and full standby. Therefore, the District will use the ISO 8178 weighted average of each emissions factor as the emissions factors for this engine as follows (District calculation to determine emissions).

Certified emission factors are calculated as a weighted average of engine emissions at the different loads in which the engine operates.

The EPA and California Air Resources Board require that certified emissions for constant-speed compression-ignition engines, such as those used in emergency generators, be calculated in accordance with 40 CFR 89, Subpart E – Exhaust Emission Test Procedures, Appendix B, Table 2-5-Mode Test Cycle for Constant-Speed Engines. This test cycle is equivalent to the ISO 8178 D2 test cycle. Correspondence with Michael Pham of ARB verified that the off-road compression-ignition engines must be tested in accordance with the ISO 8178 D2 test cycle and that the ISO 8178 D2 weighting factors of must be used to calculate overall emission results for each pollutant. The 40 CFR 89, Subpart E, Appendix B test cycle for constant-speed engines (ISO 8178 D2) is given below:

<b>Test Cycle for Constant-Speed Engines (ISO 8178 D2)</b>					
<b>Mode Number</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Engine Speed	Rated Speed	Rated Speed	Rated Speed	Rated Speed	Rated Speed
% of Maximum Torque (percent load)	100	75	50	25	N/A
Weighting Factor	0.05	0.25	0.30	0.40	N/A

The certified Emission Factor (EF) is calculated as follows:

$$EF = \frac{0.05(ER_{-100\%}) + 0.25(ER_{-75\%}) + 0.30(ER_{-50\%}) + 0.30(ER_{-25\%}) + 0.10(ER_{-10\%})}{0.05(\text{hp}_{-100\%}) + 0.25(\text{hp}_{-75\%}) + 0.30(\text{hp}_{-50\%}) + 0.30(\text{hp}_{-25\%}) + 0.10(\text{hp}_{-10\%})}$$

However, the engine manufacturer did not provide emissions information for mode 5 (10% load). The ISO 8178 emissions factors will be estimated by assigning 0.40 weighting factor to mode 4 and keeping the weighting factors for the remaining modes unchanged.

The certified Emission Factor (EF) is calculated as follows:

$$EF = \frac{0.05(ER_{-100\%}) + 0.25(ER_{-75\%}) + 0.30(ER_{-50\%}) + 0.40(ER_{-25\%})}{0.05(\text{hp}_{-100\%}) + 0.25(\text{hp}_{-75\%}) + 0.30(\text{hp}_{-50\%}) + 0.40(\text{hp}_{-25\%})}$$

Where:

- EF is the emission factor in mass per unit of power (g/hp·hr or g/kw·hr)
- ER is the emissions rate in mass of pollutant emitted per unit of time (g/hr) for the particular mode
- hp is the engine bhp for the particular mode

Therefore:

NO<sub>x</sub>

$$EF = [0.05(5.20 \text{ g/hp-hr} \times 2220 \text{ hp}) + 0.25(3.57 \text{ g/hp-hr} \times 1665 \text{ hp}) + 0.30(3.52 \text{ g/hp-hr} \times 1110 \text{ hp}) + 0.40(3.98 \text{ g/hp-hr} \times 555 \text{ hp})] \div [0.05(2220 \text{ hp}) + 0.25(1665 \text{ hp}) + 0.30(1110 \text{ hp}) + 0.40(555 \text{ hp})] = 3.81 \text{ g-NO}_x/\text{hp} \cdot \text{hr}$$

Emissions Factor Calculator							
Mode	Percent Load	Weighting Factor	Engine Power (hp)	NO <sub>x</sub> Emissions Factor (g/hp-hr)	PM <sub>10</sub> Emissions Factor (g/hp-hr)	CO Emissions Factor (g/hp-hr)	VOC Emissions Factor (g/hp-hr)
1	100	0.05	2220	5.20	0.04	0.45	0.06
2	75	0.25	1665	3.57	0.07	0.51	0.06
3	50	0.30	1110	3.52	0.09	0.80	0.09
4	25	0.40	555	3.98	0.32	1.36	0.22
5	10	--	--	--	--	--	--
<b>Emissions Factor (g/hp-hr)</b>				3.81	0.12	0.77	0.10

$$\frac{0.000015 \text{ lb} - S}{\text{lb} - \text{fuel}} \times \frac{7.1 \text{ lb} - \text{fuel}}{\text{gallon}} \times \frac{2 \text{ lb} - SO_2}{\text{lb} - S} \times \frac{1 \text{ gal}}{137,000 \text{ Btu}} \times \frac{1 \text{ bhp input}}{0.35 \text{ bhp out}} \times \frac{2,542.5 \text{ Btu}}{\text{bhp} - \text{hr}} \times \frac{453.6 \text{ g}}{\text{lb}} = 0.0051 \frac{\text{g} - SO_x}{\text{bhp} - \text{hr}}$$

### C. Calculations

#### 1. Pre-Project Emissions (PE1)

Since this is a new emissions unit, PE1 = 0.

#### 2. Post-Project PE (PE2)

The daily and annual PE are calculated as follows:

Annual Post Project Emissions (C-8176-1-0)					
Pollutant	Emissions Factor (g/bhp-hr)	Rating (bhp)	Daily Hours of Operation (hrs/day)	Conversion (g/lb)	PE2 Total (lb/day)
NO <sub>x</sub>	3.81	2,220	24	453.6	447.5
SO <sub>x</sub>	0.0051	2,220	24	453.6	0.6
PM <sub>10</sub>	0.12	2,220	24	453.6	14.1
CO	0.77	2,220	24	453.6	90.4
VOC	0.10	2,220	24	453.6	11.7

Annual Post Project Emissions (C-8176-1-0)					
Pollutant	Emissions Factor (g/bhp-hr)	Rating (bhp)	Annual Hours of Operation (hrs/yr)	Conversion (g/lb)	PE2 Total (lb/yr)
NO <sub>x</sub>	3.81	2,220	50	453.6	932
SO <sub>x</sub>	0.0051	2,220	50	453.6	1
PM <sub>10</sub>	0.12	2,220	50	453.6	29
CO	0.77	2,220	50	453.6	188
VOC	0.10	2,220	50	453.6	25

### 3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to Section 4.9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid ATCs or PTOs at the Stationary Source and the quantity of Emission Reduction Credits (ERCs) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

Since this is a new facility, **SSPE1 = 0 lb/yr for all criteria pollutants**

### 4. Post-Project Stationary Source Potential to Emit (SSPE2)

Pursuant to Section 4.10 of District Rule 2201, the Post Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid ATCs or PTOs, except for emissions units proposed to be shut down as part of the Stationary Project, at the Stationary Source and the quantity of Emission Reduction Credits (ERCs) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

For this project the change in emissions for the facility is due to the installation of the new emergency standby IC engine, permit unit '1-0. Thus:

SSPE2					
Permit Unit	NO <sub>x</sub> (lb/yr)	SO <sub>x</sub> (lb/yr)	PM <sub>10</sub> (lb/yr)	CO (lb/yr)	VOC (lb/yr)
SSPE1	0	0	0	0	0
C-8176-1-0	932	1	29	188	25
<b>SSPE2 Total</b>	932	1	29	188	25
<b>Offset Threshold</b>	<b>20,000</b>	<b>54,750</b>	<b>29,200</b>	<b>200,000</b>	<b>20,000</b>
<b>Offset Threshold Surpassed?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>



## 5. Major Source Determination

Pursuant to Section 3.24 of District Rule 2201, a Major Source is a stationary source with post project emissions or a Post Project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the following threshold values. However, Section 3.24.2 states, "for the purposes of determining major source status, the SSPE2 shall not include the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site."

This facility does not contain ERCs which have been banked at the source; therefore, no adjustment to SSPE2 is necessary.

Major Source Determination					
Pollutant	SSPE1 (lb/yr)	SSPE2 (lb/yr)	Major Source Threshold (lb/yr)	Existing Major Source?	Becoming a Major Source?
NO <sub>x</sub>	0	932	20,000	No	No
SO <sub>x</sub>	0	1	140,000	No	No
PM <sub>10</sub>	0	29	140,000	No	No
CO	0	188	200,000	No	No
VOC	0	25	20,000	No	No

As seen in the table above, the facility is not an existing Major Source and also is not becoming a Major Source as a result of this project.

## 6. Baseline Emissions (BE)

BE = Pre-project Potential to Emit for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to Section 3.22

Since this is a new emissions unit, BE = PE1 = 0 for all criteria pollutants.

## 7. Major Modification

Major Modification is defined in 40 CFR Part 51.165 as "any physical change in or change in the method of operation of a major stationary source that would

*result in a significant net emissions increase of any pollutant subject to regulation under the Act."*

As discussed in Section VII.C.5 previously, the facility is not a Major Source for any criteria pollutant; therefore, the project does not constitute a Major Modification.

### **8. Federal Major Modification**

As shown in the previous section, this project does not constitute a Major Modification. Therefore, in accordance with District Rule 2201, Section 3.17, this project does not constitute a Federal Major Modification and no further discussion is required.

### **9. Quarterly Net Emissions Change (QNEC)**

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in Appendix E.

## **VIII. Compliance**

### **Rule 2201 New and Modified Stationary Source Review Rule**

#### **A. Best Available Control Technology (BACT)**

##### **1. BACT Applicability**

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following\*:

- a) Any new emissions unit with a potential to emit exceeding two pounds per day,
- b) The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
- c) Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
- d) Any new or modified emissions unit, in a stationary source project, which results in a Major Modification.

\*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

As discussed in Section I, the facility is proposing to install a new emergency standby IC engine. Additionally, as determined in Section VII.C.7, this project does not result in a Major Modification. Therefore, BACT can only be triggered if the daily emissions exceed 2.0 lb/day for any pollutant.

The daily emissions from the new engine are compared to the BACT threshold levels in the following table:

New Emissions Unit BACT Applicability				
Pollutant	Daily Emissions for unit '1-0 (lb/day)	BACT Threshold (lb/day)	SSPE2 (lb/yr)	BACT Triggered?
NO <sub>x</sub>	447.5	> 2.0	n/a	Yes
SO <sub>x</sub>	0.6	> 2.0	n/a	No
PM <sub>10</sub>	14.1	> 2.0	n/a	Yes
CO	90.4	> 2.0 and SSPE2 ≥ 200,000 lb/yr	188	No
VOC	11.7	> 2.0	n/a	Yes

As shown above, BACT will be triggered for NO<sub>x</sub>, PM<sub>10</sub> and VOC emissions from the engine for this project.

## 2. BACT Guideline

BACT Guideline 3.1.1, which appears in Appendix B of this report, covers diesel-fired emergency IC engines.

## 3. Top Down BACT Analysis

Per District Policy APR 1305, Section IX, "A top-down BACT analysis shall be performed as a part of the Application Review for each application subject to the BACT requirements pursuant to the District's NSR Rule for source categories or classes covered in the BACT Clearinghouse, relevant information under each of the following steps may be simply cited from the Clearinghouse without further analysis."

Pursuant to the attached Top-Down BACT Analysis, which appears in Appendix B of this report, BACT is satisfied with:

- NO<sub>x</sub>: Latest EPA Tier Certification level for applicable horsepower range\*
- VOC: Latest EPA Tier Certification level for applicable horsepower range\*
- PM<sub>10</sub>: 0.15 g/hp-hr or the Latest EPA Tier Certification level for applicable horsepower range, whichever is more stringent. (ATCM)\*

\*Please see Appendix F – Transition Engine-Sell Through Provision

The following condition will be listed on the ATC to ensure compliance with the PM<sub>10</sub> BACT emissions limit:

- Emissions from this IC engine shall not exceed 0.12 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, 17 CCR 93115, 40 CFR Part 60 Subpart IIII]

## B. Offsets

Since emergency IC engines are exempt from the offset requirements of Rule 2201, per Section 4.6.2, offsets are not required for this engine, and no offset calculations are required.

## **C. Public Notification**

### **1. Applicability**

Public noticing is required for:

- a. Any new Major Source, which is a new facility that is also a Major Source

As shown in Section VII.C.6, this facility is not a new Major Source.

- b. Major Modifications

As shown in Section VII.C.7, this project is not a Major Modification.

- c. Any new emissions unit with a Potential to Emit greater than 100 lb/day for any one pollutant

As calculated in Section VII.C.2, the daily emissions for NO<sub>x</sub> is greater than 100 lb/day.

- d. Any project which results in the offset thresholds being surpassed

As shown in Section VII.C.4, an offset threshold will not be surpassed.

- e. Any project with an Stationary Source project Increase in Potential (SSIPE) Emissions greater than 20,000 lb/year for any pollutant.

For this project, the proposed engine is the only emissions source that will generate an increase in Potential to Emit. Since the proposed engine emissions are well below 20,000 lb/year for all pollutants (See Section VII.C.2), the SSIPE for this project will be below the public notice threshold.

### **2. Public Notice Action**

As demonstrated above, this project will require public noticing. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be published in a local newspaper of general circulation prior to the issuance of the ATC(s) for this equipment.

## **D. Daily Emissions Limits**

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Section 3.15 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. Per Sections 3.15.1 and 3.15.2, the DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. Therefore, the following conditions will be listed on the ATC to ensure compliance:

- Emissions from this IC engine shall not exceed any of the following limits: 3.81 g-NO<sub>x</sub>/bhp-hr, 0.77 g-CO/bhp-hr, or 0.10 g-VOC/bhp-hr. [District Rule 2201, 17 CCR 93115, and 40 CFR Part 60 Subpart III]
- Emissions from this IC engine shall not exceed 0.12 g-PM<sub>10</sub>/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, 17 CCR 93115, and 40 CFR Part 60 Subpart III]
- Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801, 17 CCR 93115, and 40 CFR Part 60 Subpart III]

## **E. Compliance Assurance**

### **1. Source Testing**

Pursuant to District Policy APR 1705, source testing is not required for emergency standby IC engines to demonstrate compliance with Rule 2201.

### **2. Monitoring**

No monitoring is required to demonstrate compliance with Rule 2201.

### **3. Recordkeeping**

Recordkeeping requirements, in accordance with District Rule 4702, will be discussed in Section VIII, *District Rule 4702*, of this evaluation.

### **4. Reporting**

No reporting is required to ensure compliance with Rule 2201.

## **F. Ambient Air Quality Analysis (AAQA)**

Section 4.14.1 of this rule requires that an ambient air quality analysis (AAQA) be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The Technical Services Division of the SJVAPCD conducted the required analysis.

As shown by the AAQA summary sheet in Appendix D, the proposed equipment will not cause or make worse a violation of an air quality standard for NO<sub>x</sub>, CO, PM<sub>10</sub>, or SO<sub>x</sub>.

## **Rule 2520 Federally Mandated Operating Permits**

Since this facility's potential to emit does not exceed any major source thresholds of Rule 2201, this facility is not a major source, and Rule 2520 does not apply.

**Rule 4001 New Source Performance Standards (NSPS)**

**40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines**

The following table demonstrates how the proposed engine(s) will comply with the requirements of 40 CFR Part 60 Subpart IIII.

<b>40 CFR 60 Subpart IIII Requirements for New Emergency IC Engines Powering Generators (2007 and Later Model Year)</b>	<b>Proposed Method of Compliance with 40 CFR 60 Subpart IIII Requirements</b>
Engine(s) must meet the appropriate Subpart IIII emission standards for new engines, based on the model year, size, and number of liters per cylinder.	The applicant has proposed the use of engine(s) that are certified to the latest EPA Tier Certification level for the applicable horsepower range, guaranteeing compliance with the emission standards of Subpart IIII.
Engine(s) must be fired on 500 ppm sulfur content fuel or less, and fuel with a minimum centane index of 40 or a maximum aromatic content of 35 percent by volume. Starting in October 1, 2010, the maximum allowable sulfur fuel content will be lowered to 15 ppm.	The applicant has proposed the use of CARB certified diesel fuel, which meets all of the fuel requirements listed in Subpart IIII. A permit condition enforcing this requirement was included earlier in this evaluation.
The operator/owner must install a non-resettable hour meter prior to startup of the engine(s).	The applicant has proposed to install a non-resettable hour meter. The following condition will be included on the permit: <ul style="list-style-type: none"> <li>This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702, 17 CCR 93115, and 40 CFR 60 Subpart IIII]</li> </ul>
Emergency engine(s) may be operated for the purpose of maintenance and testing up to 100 hours per year. There is no limit on emergency use.	The Air Toxic Control Measure for Stationary Compression Ignition Engines (Stationary ATCM) limits this engine maintenance and testing to 50 hours/year. Thus, compliance is expected.
The owner/operator must operate and maintain the engine(s) and any installed control devices according to the manufacturers written instructions.	The following condition will be included on the permit: <ul style="list-style-type: none"> <li>This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702 and 40 CFR 60 Subpart IIII]</li> </ul>

## **Rule 4002 National Emission Standards for Hazardous Air Pollutants**

### **40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Emissions (RICE)**

Emergency engines are subject to this subpart if they are operated at a major or area source of Hazardous Air Pollutant (HAP) emissions. A major source of HAP emissions is a facility that has the potential to emit any single HAP at a rate of 10 tons/year or greater or any combinations of HAPs at a rate of 25 tons/year or greater. An area source of HAPs is a facility is not a major source of HAPs. The proposed engine(s) are new stationary RICE located at an area source of HAP emissions; therefore, these engines are subject to this Subpart.

40 CFR 63 Subpart ZZZZ requires the following engines to comply with 40 CFR 60 Subpart IIII:

1. New emergency engines located at area sources of HAPs
2. Emergency engines rated less than or equal to 500 bhp and located at major sources of HAPs

The proposed engine(s) will be in compliance with 40 CFR 60 Subpart IIII.

Additionally, 40 CFR 63 Subpart ZZZZ requires engines rated greater 500 bhp and located at major sources of HAPs to meet the notification requirements of §63.6645(h); however, that section only applies if an initial performance test is required. Since an initial performance test is not required for emergency engines, the notification requirement is not applicable.

The proposed engines are expected to be in compliance with 40 CFR 63 Subpart ZZZZ.

## **Rule 4101 Visible Emissions**

Rule 4101 states that no air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. Therefore, the following condition will be listed on the ATC to ensure compliance:

- {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

## **Rule 4102 Nuisance**

Rule 4102 states that no air contaminant shall be released into the atmosphere which causes a public nuisance. Public nuisance conditions are not expected as a result of

these operations, provided the equipment is well maintained. Therefore, the following condition will be listed on the ATC to ensure compliance:

- {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

**California Health & Safety Code 41700 (Health Risk Assessment)**

District Policy APR 1905 - Risk Management Policy for Permitting New and Modified Sources (dated 3/2/01) specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite. Therefore, a risk management review (RMR) was performed for this project. The RMR results are summarized in the following table, and can be seen in detail in Appendix D.

RMR Results				
Unit	Acute Hazard Index	Chronic Hazard Index	Cancer Risk	T-BACT Required?
C-8176-1-0	N/A	N/A	1.76 in a million	Yes

The following conditions will be listed on the ATC to ensure compliance with the RMR:

- {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
- The PM10 emissions rate shall not exceed 0.12 g/bhp-hr based on US EPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, 17 CCR 93115, 40 CFR Part 60 Subpart IIII]
- The engine shall be operated only for maintenance, testing, and required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 50 hours per year. [District NSR Rule and District Rule 4701]

**Rule 4201 Particulate Matter Concentration**

Rule 4201 limits particulate matter emissions from any single source operation to 0.1 g/dscf, which, as calculated below, is equivalent to a PM<sub>10</sub> emission factor of 0.4 g-PM<sub>10</sub>/bhp-hr.

$$0.1 \frac{\text{grain-PM}}{\text{dscf}} \times \frac{\text{g}}{15.43\text{grain}} \times \frac{1 \text{ Btu}_{in}}{0.35 \text{ Btu}_{out}} \times \frac{9,051\text{dscf}}{10^6 \text{ Btu}} \times \frac{2,542.5 \text{ Btu}}{1 \text{ bhp-hr}} \times \frac{0.96 \text{ g-PM}_{10}}{1 \text{ g-PM}} = 0.4 \frac{\text{g-PM}_{10}}{\text{bhp-hr}}$$

The new engine has a PM<sub>10</sub> emission factor less than 0.4 g/bhp-hr. Therefore, compliance is expected and the following condition will be listed on the ATC:



- {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

**Rule 4701 Internal Combustion Engines – Phase 1**

Pursuant to Section 7.5.2.3 of District Rule 4702, as of June 1, 2006 District Rule 4701 is no longer applicable to diesel-fired emergency standby or emergency IC engines. Therefore, the proposed emergency internal combustion engine(s) will comply with the requirements of District Rule 4702 and no further discussion is required.

**Rule 4702 Internal Combustion Engines – Phase 2**

The following table demonstrates how the proposed engine will comply with the requirements of District Rule 4702.

<b>District Rule 4702 Requirements Emergency Standby IC Engines</b>	<b>Proposed Method of Compliance with District Rule 4702 Requirements</b>
Operation of emergency standby engines is limited to 100 hours or less per calendar year for non-emergency purposes, verified through the use of a non-resettable elapsed operating time meter.	The Air Toxic Control Measure for Stationary Compression Ignition Engines (Stationary ATCM) limits this engine maintenance and testing to 50 hours/year. Thus, compliance is expected.
Emergency standby engines cannot be used to reduce the demand for electrical power when normal electrical power line service has not failed, or to produce power for the electrical distribution system, or in conjunction with a voluntary utility demand reduction program or interruptible power contract.	The following conditions will be included on the permit: <ul style="list-style-type: none"> <li>• {3807} An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702]</li> <li>• {3808} This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rule 4702]</li> </ul>
The owner/operator must operate and maintain the engine(s) and any installed control devices according to the manufacturers written instructions.	A permit condition enforcing this requirement was shown earlier in the evaluation.
The owner/operator must monitor the operational characteristics of each engine as recommended by the engine manufacturer or emission control system supplier.	The following condition will be included on the permit: <ul style="list-style-type: none"> <li>• {3478} During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and</li> </ul>

	<p>connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702]</p>
<p>Records of the total hours of operation of the emergency standby engine, type of fuel used, purpose for operating the engine, all hours of non-emergency and emergency operation, and support documentation must be maintained. All records shall be retained for a period of at least five years, shall be readily available, and be made available to the APCO upon request.</p>	<p>The following conditions will be included on the permit:</p> <ul style="list-style-type: none"> <li>• {3496} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]</li> <li>• The permittee shall maintain monthly records of the type of fuel purchased. [District Rule 4702 and 17 CCR 93115]</li> <li>• {3475} All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]</li> </ul>

**Rule 4801 Sulfur Compounds**

Rule 4801 requires that sulfur compound emissions (as SO<sub>2</sub>) shall not exceed 0.2% by volume. Using the ideal gas equation, the sulfur compound emissions are calculated as follows:

$$\text{Volume SO}_2 = (n \times R \times T) \div P$$

n = moles SO<sub>2</sub>

T (standard temperature) = 60 °F or 520 °R

$$R \text{ (universal gas constant)} = \frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot \text{°R}}$$

$$\frac{0.000015 \text{ lb} - \text{S}}{\text{lb} - \text{fuel}} \times \frac{7.1 \text{ lb}}{\text{gal}} \times \frac{64 \text{ lb} - \text{SO}_2}{32 \text{ lb} - \text{S}} \times \frac{1 \text{ MMBtu}}{9,051 \text{ scf}} \times \frac{1 \text{ gal}}{0.137 \text{ MMBtu}} \times \frac{\text{lb} - \text{mol}}{64 \text{ lb} - \text{SO}_2} \times \frac{10.73 \text{ psi} - \text{ft}^3}{\text{lb} - \text{mol} - ^\circ\text{R}} \times \frac{520^\circ\text{R}}{14.7 \text{ psi}} \times 1,000,000 = 1.0 \text{ ppmv}$$

Since 1.0 ppmv is  $\leq$  2,000 ppmv, this engine is expected to comply with Rule 4801. Therefore, the following condition will be listed on the ATC to ensure compliance:

- Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801, 17 CCR 93115, and 40 CFR Part 60 Subpart III]

**California Health & Safety Code 42301.6 (School Notice)**

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

**Title 17 California Code of Regulations (CCR), Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines**

The following table demonstrates how the proposed engine(s) will comply with the requirements of Title 17 CCR Section 93115.

Title 17 CCR Section 93115 Requirements for New Emergency IC Engines Powering Electrical Generators	Proposed Method of Compliance with Title 17 CCR Section 93115 Requirements
Emergency engine(s) must be fired on CARB diesel fuel, or an approved alternative diesel fuel.	The applicant has proposed the use of CARB certified diesel fuel. The proposed permit condition, requiring the use of CARB certified diesel fuel, was included earlier in this evaluation.
The engine(s) must emit diesel PM at a rate less than or equal to 0.15 g/bhp-hr or must meet the diesel PM standard, as specified in the Off-road compression ignition standards for off-road engines with the same maximum rated power (Title 13 CCR, Section 2423).	The applicant has proposed the use of engine(s) that are certified to the latest EPA Tier Certification level for the applicable horsepower range, guaranteeing compliance with the emission standards of Subpart III. Additionally, the proposed diesel PM emissions rate is less than or equal to 0.15 g/bhp-hr.
The engine may not be operated more than 50 hours per year for maintenance and testing purposes.	<p>The following condition will be included on the permit:</p> <ul style="list-style-type: none"> <li>• This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 50 hours per calendar year. [District Rule 4702, 17 CCR 93115 and 40 CFR Part 60 Subpart III]</li> </ul>

<p>New stationary emergency standby diesel-fueled CI engines (&gt; 50 bhp) must meet the standards for off-road engines of the same model year and maximum rated power as specified in the Off-Road Compression Ignition Engine Standards (title 13, CCR, section 2423).</p>	<p>The applicant has proposed the use of engine(s) that are certified to the latest EPA Tier Certification level for the applicable horsepower range.</p>
<p>Engines, with a PM10 emissions rate greater than 0.01 g/bhp-hr and located at schools, may not be operated for maintenance and testing whenever there is a school sponsored activity on the grounds. Additionally, engines located within 500 feet of school grounds may not be operated for maintenance and testing between 7:30 AM and 3:30 PM</p>	<p>The District has verified that this engine is not located within 500' of a school.</p>
<p>An owner or operator shall maintain monthly records of the following: emergency use hours of operation; maintenance and testing hours of operation; hours of operation for emission testing; initial start-up testing hours; hours of operation for all other uses; and the type of fuel used. All records shall be retained for a minimum of 36 months.</p>	<p>Permit conditions enforcing these requirements were shown earlier in the evaluation.</p>

### California Environmental Quality ACT (CEQA)

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The San Joaquin Valley Unified Air Pollution Control District (District) adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The California Department of Veterans Affairs (CDVA) is the public agency having principal responsibility for approving the Project. As such, the CDVA served as the Lead Agency for the project. Consistent with CEQA Guidelines §15081, a Mitigated Negative Declaration was prepared and certified by the CDVA.

The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CEQA Guidelines §15381). As a Responsible Agency the District complies with CEQA by considering the Mitigated Negative Declaration prepared by the Lead Agency, and by reaching its own conclusion on whether and how to approve the project (CEQA Guidelines §15096). The District has considered the Mitigated Negative Declaration certified by the CDVA.

The District's engineering evaluation of the project (this document) demonstrates that compliance with District rules and permit conditions would reduce Stationary Source emissions from the project to levels below the District's thresholds of significance for criteria pollutants. Thus, the District concludes that through a combination of project design elements and permit conditions, project specific stationary source emissions will be reduced and mitigated to less than significant levels. The District has determined that no additional findings are required (CEQA Guidelines §15096(h)).

**IX. Recommendation**

Pending a successful NSR Public Noticing period, issue Authority to Construct C-8176-1-0 subject to the permit conditions on the attached draft Authority to Construct in Appendix A.

**X. Billing Information**

<b>Billing Schedule</b>			
<b>Permit Number</b>	<b>Fee Schedule</b>	<b>Fee Description</b>	<b>Fee Amount</b>
C-8176-1-0	3020-10-F	2,220 bhp IC engine	\$749.00

**Appendixes**

- A. Draft ATC
- B. BACT Guideline and BACT Analysis
- C. Emissions Data
- D. HRA Summary and AAQA
- E. QNEC Calculations
- F. Transition Engine-Sell Through Provision

Appendix A  
Draft ATC

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

**ISSUANCE DATE: DRAFT**

**PERMIT NO:** C-8176-1-0

**LEGAL OWNER OR OPERATOR:** VETERANS HOME OF CALIFORNIA, FRESNO

**MAILING ADDRESS:** 4682 E. OLIVE AVE  
FRESNO, CA 93702-1636

**LOCATION:** 2811 W. CALIFORNIA  
FRESNO, CA

**EQUIPMENT DESCRIPTION:**

2220 BHP CUMMINS MODEL QSK50-G4 NR2 TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE  
POWERING AN ELECTRICAL GENERATOR

**CONDITIONS**

1. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
2. {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
3. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
5. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702, 17 CCR 93115, and 40 CFR 60 Subpart III]
6. Only CARB certified diesel fuel containing not more than 0.0015% sulfur weight is to be used. [District Rules 2201 and 4801, 17 CCR 93115, and 40.CFR 60 Subpart III]
7. Emissions from this IC engine shall not exceed any of the following limits: 3.81 g-NOx/bhp-hr, 0.77 g-CO/bhp-hr, or 0.10 g-VOC/bhp-hr. [District Rule 2201, 17 CCR 93115, and 40 CFR Part 60 Subpart III]
8. Emissions from this IC engine shall not exceed 0.12 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, 17 CCR 93115, and 40 CFR Part 60 Subpart III]
9. This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702 and 40 CFR 60 Subpart III]

CONDITIONS CONTINUE ON NEXT PAGE

**YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT.** This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

**DRAFT**

DAVID WARNER, Director of Permit Services

C-8176-1-0: Feb 23 2011 9:14AM - YOSHIMUJ : Joint Inspection NOT Required

10. {3478} During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702]
11. {3807} An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702]
12. {3808} This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rule 4702]
13. {3496} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702]
14. This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 50 hours per calendar year. [District Rule 4702, 17 CCR 93115 and 40 CFR Part 60 Subpart III]
15. The permittee shall maintain monthly records of the type of fuel purchased. [District Rule 4702 and 17 CCR 93115]
16. {3475} All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]

DRAFT



**Appendix B**  
**BACT Guideline and BACT Analysis**

# San Joaquin Valley Unified Air Pollution Control District

**Best Available Control Technology (BACT) Guideline 3.1.1**  
**Last Update: 7/10/2009**  
**Emergency Diesel IC Engine**

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
CO	Latest EPA Tier Certification level for applicable horsepower range		
NOX	Latest EPA Tier Certification level for applicable horsepower range		
PM10	0.15 g/hp-hr or the Latest EPA Tier Certification level for applicable horsepower range, whichever is more stringent. (ATCM)		
SOX	Very low sulfur diesel fuel (15 ppmw sulfur or less)		
VOC	Latest EPA Tier Certification level for applicable horsepower range		

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

## Top Down BACT Analysis for the Emergency IC Engine

### 1. BACT Analysis for NO<sub>x</sub>, VOC and PM<sub>10</sub> Emissions:

#### a. Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 3.1.1 identifies achieved in practice BACT for emissions from emergency diesel IC engines as follows:

Pollutant	Achieved in Practice
NO <sub>x</sub> , and VOC	Latest EPA Tier Certification level for applicable horsepower range
PM <sub>10</sub>	0.15 g/hp-hr or the Latest EPA Tier Certification level for applicable horsepower range, whichever is more stringent. (ATCM)

No technologically feasible alternatives or control alternatives identified as alternate basic equipment for this class and category of source are listed.

#### b. Step 2 - Eliminate technologically infeasible options

There are no technologically infeasible options to eliminate from Step 1.

#### c. Step 3 - Rank remaining options by control effectiveness

No ranking needs to be done because only one control option is listed in Step 1.

#### d. Step 4 - Cost Effectiveness Analysis

The applicant has proposed the only control option listed for each pollutant. Therefore, a cost effectiveness analysis is not required.

#### e. Step 5 - Select BACT

The applicant has proposed to install a Tier 2 certified 2,220 bhp emergency standby diesel IC engine, which is the latest Tier Certification for an engine this size\*.

BACT for PM<sub>10</sub> is 0.15 g/hp-hr, or the latest EPA Tier Certification level for the applicable horsepower range, whichever is more stringent\*. The applicant is proposing an engine that meets this requirement.

\*Please see Appendix F – Transition Engine-Sell Through Provision.

**Title 13 CCR 2423**  
**(December 2005)**  
**Tier Certification & Exhaust Emission Standards**  
(grams per brake horsepower-hour)

Power Rating (hp)	Tier	Model Year	NO <sub>x</sub>	HC	NMHC + NO <sub>x</sub>	CO	PM
50 ≤ hp < 75	1	1998 – 2003	6.9	-	-	3.7	-
	2	2004 - 2007	-		5.6		0.3
	3	2008 - 2011			3.5		
	4*	2008 – 2012 (Interim)			3.5		
75 ≤ hp < 100	1	1998 – 2003	6.9	-	-	3.7	-
	2	2004 – 2007	-		5.6		0.3
	3	2008 – 2011			3.5		
100 ≤ hp < 175	1	1997 – 2002	6.9	-	-	3.7	-
	2	2003 – 2006	-		4.9		0.22
	3	2007 – 2011			3.0		
175 ≤ hp < 300	1	1996 – 2002	6.9	1.0	-	8.5	0.4
	2	2003 – 2005	-	-	4.9	2.6	0.15
	3	2006 - 2010			3.0		
300 ≤ hp < 600	1	1996 – 2000	6.9	1.0	-	8.5	0.4
	2	2001 – 2005	-	-	4.8	2.6	0.15
	3	2006 – 2010			3.0		
600 ≤ hp ≤ 750	1	1996 – 2001	6.9	1.0	-	8.5	0.4
	2	2002 – 2005	-	-	4.8	2.6	0.15
	3	2006 – 2010			3.0		
> 750	1	2000 – 2005	6.9	1.0	-	8.5	0.4
	2	2006 – 2010	-	-	4.8	2.6	0.15

\* Manufacturers may optionally certify engine families to the interim Tier 4 for this power category through 2012.

Appendix C  
Emissions Data Sheet

Permit #: C-8176-1-0	<b>Last Updated</b>
Facility: VETERANS HOME OF CALIFORNIA, FRESNO	02/23/2011 YOSHIMUJ

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	932.0	1.0	29.0	188.0	25.0
Daily Emis. Limit (lb/Day)	447.5	0.6	14.1	90.4	11.7
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	233.0	0.0	7.0	47.0	6.0
Q2:	233.0	0.0	7.0	47.0	6.0
Q3:	233.0	0.0	7.0	47.0	6.0
Q4:	233.0	1.0	8.0	47.0	7.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Appendix D  
HRA Summary and AAQA

# San Joaquin Valley Air Pollution Control District Risk Management Review

To: John Yoshimura – Permit Services  
 From: Cheryl Lawler – Technical Services  
 Date: February 16, 2011  
 Facility Name: Veterans Home of California – Fresno  
 Location: 2811 W. California Avenue, Fresno  
 Application #(s): C-8176-1-0  
 Project #: C-1110227

## A. RMR SUMMARY

RMR Summary			
Categories	Emergency Diesel ICE (Unit 1-0)	Project Totals	Facility Totals
Prioritization Score	N/A <sup>1</sup>	>1	>1
Acute Hazard Index	N/A <sup>2</sup>	N/A	N/A
Chronic Hazard Index	N/A <sup>2</sup>	N/A	N/A
Maximum Individual Cancer Risk	1.78E-06	1.78E-06	1.78E-06
T-BACT Required?	Yes		
Special Permit Conditions?	Yes		

- 1 Prioritization for this unit was not conducted since it has been determined that all diesel-fired IC engines will result in prioritization scores greater than 1.0.
- 2 Acute and Chronic Hazard Indices were not calculated since there is no risk factor or the risk factor is so low that it has been determined to be insignificant for these types of units.

### Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included for:

#### Unit # 1-0

1. Modified {1901} The PM10 emissions rate shall not exceed **0.12 g/hp-hr** based on US EPA certification using ISO 8178 test procedure. [District Rule 2201]
2. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102] N
3. Modified {1344} The engine shall be operated only for maintenance, testing, and required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed **50 hours** per year. [District NSR Rule and District Rule 4701] N



## B. RMR REPORT

### I. Project Description

Technical Services received a request on February 16, 2011, to perform a Risk Management Review (RMR) and Ambient Air Quality Analysis (AAQA) for a 2220 bhp emergency diesel IC engine.

### II. Analysis

Technical Services performed a screening level health risk assessment using the District's Diesel Exhaust Risk Screening spreadsheet.

The following parameters were used for the review:

Analysis Parameters						
Unit #	bhp-hr	PM <sub>10</sub> g/hp-hr	Receptor (m)	Quad	Hours/Year	Load%
1-0	2220	0.12	91.44	2	50	100
Location Type			Rural	Receptor Type		Residence

Technical Services also performed modeling for criteria pollutants CO, NO<sub>x</sub>, SO<sub>x</sub>, and PM<sub>10</sub>, as well as the RMR. Emission rates used for criteria pollutant modeling for the engine were 3.77 lb/hr CO, 18.65 lb/hr NO<sub>x</sub>, 0.03 lb/hr SO<sub>x</sub>, and 0.59 lb/hr PM<sub>10</sub>.

The results from the Criteria Pollutant Modeling are as follows:

#### Criteria Pollutant Modeling Results\*

Values are in µg/m<sup>3</sup>

Diesel ICE	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO <sub>x</sub>	Pass <sup>2</sup>	X	X	X	Pass
SO <sub>x</sub>	Pass	Pass	X	Pass	Pass
PM <sub>10</sub>	X	X	X	Pass <sup>1</sup>	Pass <sup>1</sup>

\*Results were taken from the attached PSD spreadsheets.

<sup>1</sup>The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

<sup>2</sup>The project was compared to the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard that became effective on April 12, 2010, using the District's approved procedures. The Ozone Limiting Method (OLM) was used in accordance with the District's *Assessment of Non-Regulatory Options in AERMOD – Specifically OLM*. A completed AERMOD Non-Regulatory Option checklist is attached.

### III. Conclusions

The criteria modeling runs indicate the emissions from the proposed equipment will not cause or significantly contribute to a violation of a State or National AAQS.

The cancer risk associated with the operation of the proposed emergency diesel IC engine is **1.78E-06**, which is greater than the 1 in a million threshold. In accordance with the District's Risk Management Policy, the engine is approved **with** Toxic Best Available Control Technology (T-BACT).

To ensure that human health risks will not exceed District allowable levels; the permit conditions listed on Page 1 of this report must be included for the proposed unit.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

# Appendix E

## QNEC Calculations

### Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

QNEC = PE2 - PE1, where:

- QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr
- PE2 = Post-Project Potential to Emit for each emissions unit, lb/qtr
- PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr

Since this is a new unit, PE1 = 0 for all pollutants. Thus, QNEC = PE2 (lb/qtr).

Using the PE2 (lb/yr) values calculated in Section VII.C.2, Quarterly PE2 is calculated as follows:

$$PE2_{\text{quarterly}} = PE2 \text{ (lb/yr)} \div 4 \text{ quarters/year} = QNEC$$

QNEC		
Pollutant	PE2 Total (lb/yr)	Quarterly PE2 (lb/qtr)
NO <sub>x</sub>	932	233.0
SO <sub>x</sub>	1	0.25
PM <sub>10</sub>	29	7.25
CO	188	47.0
VOC	25	6.25

**Appendix F**  
**Transition Engine-Sell Through Provision**

## **Introduction:**

It has come to the District's attention that in some cases EPA and CARB regulations allow the installation of compression ignition (CI) engines that do not meet the most current tier standards. Specifically, the regulations include provisions for allowing the use of previous tier engines by machinery manufacturers and they include sell-through provisions. Provided they meet certain requirements, such classes of engines can be certified for use by CARB and EPA. Therefore, the issue from the District's prospective is whether or not such engines meet BACT requirements. The research conducted focused only on non-agricultural engines, therefore, the information presented here is not intended to apply to agricultural units. It is known that BACT for non-emergency prime units is more stringent than the most current tier, therefore, the subsets of stationary engines to which this information applies are transportable CI engines and emergency stand-by CI engines.

## **A: Transition Engines**

### **I. General Transition Engine Information:**

When EPA established their Tier 2 and Tier 3 emission standards, they recognized that to comply with the more stringent emission limits, engine manufacturers may have to redesign their engines in ways that could necessitate dimension and mounting system changes. The dimension changes could be to the engines themselves or to the engine package due to the mounting of pollution control devices on either the engine itself or the exhaust system. They further recognized that Original Equipment Manufacturers (OEMs) that install these engines in their machinery may have to redesign their equipment to accommodate the redesigned engines. In recognition of this reality, EPA provided a relief provision in their rule. That provision is called the Transition Program for Engine Manufacturers (TPEM). It may also be referred to as a Flexibility Program or a Transition Program. This program allows engine manufacturers to produce and supply engines that are not certified to the most current tier level to machinery manufacturers for some time following the tier change. CARB has also recognized the need for such relief and participates in the program. Although they have undertaken their own rule making their program is essentially identical to EPA's.

### **II. Transportable Transition Engines:**

Article 4, Chapter 9, Division 3, Title 13 of the California Code of Regulations applies to transportable engines and section 2423(d)(5) requires labeling of such engines that identify them as transition program units.

### **III. Stationary Transition Engines (emergency stand-by engines):**

CARB has made available, a Frequently Asked Questions Document for its Stationary Compression Non-Ag Engine ATCM. The document is dated December 2008 and is identified as version 6.1. The document includes the following question and answer:

#### **Question 18:**

How are Not-to-Exceed (NTE) limits, Family Emission Limits (FEL's), Alternative NOx standards and other provisions in the off-road engine certification standards going to be addressed as far as determining compliance with the ATCM?

#### **Answer:**

The ATCM in a number of places requires engines to meet the emission standards for similar off-road engines. These referenced standards are defined in the off-Road Compression Ignition Engine Standards (Title 13, CCR, Section 2423). Our goal in referencing these standards was to ensure that stationary engines were "as clean" as equivalent off-road engines. To that end, certified off-road engines that comply with the alternative standards (NTEs, FELs, Alternative NOx standards, etc.) meet the Off-Road Compression Ignition Engine Standards and therefore meet the related referenced standards of the ATCM.

#### **CARB Interpretation:**

CARB staff advised the District that provided an engine meets the transition program requirements of Title 13, CCR, Section 2423 and meets the PM standard of the ATCM, it should be considered a certified unit.

## **B. Sell-Through Program Engines:**

Only units rated at greater than 50 hp (37 kW) require District permits, therefore, this analysis will be limited to units rated at greater than 50 hp.

EPA and CARB regulations include what are referred to as sell-through provisions, which are in place to ensure that dealers and wholesalers are not stuck with inventories of engines they cannot sell because a tier change made them obsolete. The CARB regulation [ATCM for Stationary Compression Ignition Engines - (Title 17 CCR Section 93115.3(s))] allows the sale of previous tier engines provided they were received in California no more than 12 months immediately preceding the new tier date and are sold no later than 6 months after the new tier standard becomes effective. To simplify matters, CARB is going to drop tier 4-interim and tier 4-final (tier 4i and tier 4f) standards for all but the 37 to 56 kW (50 to 75 hp) category in the near future.

As can be seen, all of the standards currently in place have been in place for longer than 6 months, therefore, the sell through provision cannot currently be utilized. However, if it remains unchanged, it may become useful for 50 – 75 hp units in 2013.

In the event that it becomes necessary to know whether a previously installed engine could have qualified for a sell-through provision, be advised that for emergency engines (except fire pumps), 40 CFR Part 60 Subpart IIII Section 60.4208(a) prohibits the installation of engines that do not meet the applicable requirements for 2007 model year units.

## **C: Conclusions:**

### **I. Transportable Transition Engines:**

According to the applicable BACT guideline (3.2.1.1), BACT would be satisfied by the use of an engine that meets the latest available CARB certification standard for the particular horsepower range.

Since BACT is a unit that meets the latest CARB certification, it seems clear that our intent when establishing BACT was to follow CARB's lead. And given EPA and CARB's reasoning for allowing TPEM engines, it seems almost certain that had the District been aware of the program, we would have included flex engines that were installed in accordance with the TPEM program requirements. It seems doubtful we would have required the use of engines that may not fit into a machinery manufacturer's mounting system. Therefore, it seems reasonable to accept flex engines that were installed in accordance with CARB's flex program rules as BACT.



## **II. Stationary Emergency Stand-by Engines:**

According to the applicable BACT guideline (3.1.1), BACT for NO<sub>x</sub>, CO, VOC and PM<sub>10</sub> would be satisfied by the use of an engine that meets the latest available EPA tier standard. However, if the PM standard specified in the ATCM for Stationary CI Engines is more stringent than that standard must be met instead. Since EPA and CARB emission standards are equivalent but CARB's program is more stringent (because it allows limits to be placed on the number of engines that could be received in California and the EPA does not), it is known that if a unit meets CARB standards it would meet EPA standards.

Since BACT is a unit that meets the latest EPA certification, it seems clear that our intent when establishing BACT was to follow EPA's lead. And given EPA and CARB's reasoning for allowing TPEM engines, it seems almost certain that had the District been aware of the program, we would have included flex engines that were installed in accordance with the TPEM program requirements. It seems doubtful we would have required the use of engines that may not fit into a machinery manufacturer's mounting system. Therefore, it seems reasonable to accept flex engines that were installed in accordance with CARB's flex program rules as BACT.

## **III. Sell Through Provision Engines:**

It does not appear that any newly installed engines would currently be eligible to participate in the sell-through programs. Therefore, it is recommended that this subject be revisited after CARB revises the ATCM's to remove the Tier 4-interim and Tier 4-final standards for most rating ranges.

Off-Road Compression-Ignition (Diesel) Engine Standards (NMHC+NOx/CO/PM in g/kW-hr)

Maximum Power	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015+
< 8 kW	See Table 2 footnote (a)					10.5 / 8.0 / 1.0			7.5 / 8.0 / 0.80			7.5 / 8.0 / 0.40 <sup>a</sup>									
8 ≤ kW < 19						9.5 / 6.6 / 0.80			7.5 / 6.6 / 0.80			7.5 / 6.6 / 0.40									
19 ≤ kW < 37	-					9.5 / 5.5 / 0.80			7.5 / 5.5 / 0.60			7.5 / 5.5 / 0.30			4.7 / 5.5 / 0.03						
37 ≤ kW < 56						-						7.5 / 5.0 / 0.40			4.7 / 5.0 / 0.30 <sup>c</sup>			4.7 / 5.0 / 0.03 <sup>c</sup>			
56 ≤ kW < 75	-											- / 9.2 / - / - <sup>b</sup>			7.5 / 5.0 / 0.40			4.7 / 5.0 / 0.40			0.19 0.40 5.0 0.02 <sup>b</sup>
75 ≤ kW < 130						-			6.6 / 5.0 / 0.30			4.0 / 5.0 / 0.30			0.19 / 3.4 / 5.0 / 0.02 <sup>b,d</sup>			0.19 0.40 3.5 0.02 <sup>b</sup>			
130 ≤ kW < 225	-								6.6 / 3.5 / 0.20			4.0 / 3.5 / 0.20 <sup>e</sup>			0.19 / 2.0 / 3.5 / 0.02 <sup>b,d</sup>			0.19 0.40 3.5 0.02 <sup>b</sup>			
225 ≤ kW < 450						1.3 / 9.2 / 11.4 / 0.54 <sup>b</sup>			6.4 / 3.5 / 0.20			4.0 / 3.5 / 0.20 <sup>e</sup>			0.19 / 2.0 / 3.5 / 0.02 <sup>b,d</sup>			0.19 0.40 3.5 0.02 <sup>b</sup>			
450 ≤ kW < 560	-					1.3 / 9.2 / 11.4 / 0.54 <sup>b</sup>			6.4 / 3.5 / 0.20			0.40 / 3.5 / 3.5 / 0.10 <sup>b</sup>			0.19 3.5 3.5 0.04 <sup>b</sup>						
Mobile Machines > 560 kW						-					1.3 / 9.2 / 11.4 / 0.54 <sup>b</sup>			6.4 / 3.5 / 0.20			0.40 / 3.5 / 3.5 / 0.10 <sup>b</sup>			0.19 0.67 3.5 0.03 <sup>b</sup>	
560 kW < GEN ≤ 900 kW	-										1.3 / 9.2 / 11.4 / 0.54 <sup>b</sup>			6.4 / 3.5 / 0.20			0.40 / 3.5 / 3.5 / 0.10 <sup>b</sup>			0.19 0.67 3.5 0.03 <sup>b</sup>	
GEN > 900 kW						-					1.3 / 9.2 / 11.4 / 0.54 <sup>b</sup>			6.4 / 3.5 / 0.20			0.40 / 3.5 / 3.5 / 0.10 <sup>b</sup>			0.19 0.67 3.5 0.03 <sup>b</sup>	

- a) The PM standard for hand-start, air cooled, direct injection engines below 8 kW may be delayed until 2010 and be set at 0.60 g/kW-hr.
- b) Standards given are NMHC/NOx/CO/PM in g/kW-hr.
- c) Engine families in this power category may alternately meet Tier 3 PM standards (0.40 g/kW-hr) from 2008-2011 in exchange for introducing final PM standards in 2012.
- d) The implementation schedule shown is the three-year alternate NOx approach. Other schedules are available.
- e) Certain manufacturers have agreed to comply with these standards by 2005.

