



**San Joaquin Valley**  
**AIR POLLUTION CONTROL DISTRICT**

FEB 03 2010

Joel Feaver  
University of the Pacific  
3601 Pacific Avenue  
Stockton, CA 95211

**Re: Notice of Preliminary Decision - Authorities to Construct**  
**Project Number: N-1094524**

Dear Mr. Feaver:

Enclosed for your review and comment is the District's analysis of University of the Pacific's application for Authorities to Construct for the installation of two identical 757 bhp diesel-fired emergency standby internal combustion (IC) engines, at 3441 Kensington Way, Stockton in California.

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. Wai-Man So of Permit Services at (209) 557-6449.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Warner", with a long horizontal flourish extending to the right.

David Warner  
Director of Permit Services

DW: WMS/cm

Enclosures

**Seyed Sadredin**

Executive Director/Air Pollution Control Officer

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**Northern Region**

4800 Enterprise Way  
Modesto, CA 95356-8718  
Tel: (209) 557-6400 FAX: (209) 557-6475

**Central Region (Main Office)**

1990 E. Gettysburg Avenue  
Fresno, CA 93726-0244  
Tel: (559) 230-6000 FAX: (559) 230-6061  
[www.valleyair.org](http://www.valleyair.org)

**Southern Region**

34946 Flyover Court  
Bakersfield, CA 93308-9725  
Tel: (661) 392-5500 FAX: (661) 392-5585



**San Joaquin Valley**  
**AIR POLLUTION CONTROL DISTRICT**

**FEB 03 2010**

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 - Authorities to Construct**  
**Project Number: N-1094524**

Dear Mr. Tollstrup:

Enclosed for your review and comment is the District's analysis of University of the Pacific's application for Authorities to Construct for the installation of two identical 757 bhp diesel-fired emergency standby internal combustion (IC) engines, at 3441 Kensington Way, Stockton in California.

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Director of Permit Services

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**NOTICE OF PRELIMINARY DECISION  
FOR THE PROPOSED ISSUANCE OF  
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 University of the Pacific for the installation of two identical 757 bhp diesel-fired emergency standby internal combustion (IC) engines, at 3441 Kensington Way, Stockton in California.

The analysis of the regulatory basis for this proposed action, Project #N-1094524, 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, 4800 ENTERPRISE WAY, MODESTO, CA 95356-8718.**

# San Joaquin Valley Air Pollution Control District Authority to Construct

## *Emergency standby diesel-fired IC engine powers electrical generator*

Facility Name: University of the Pacific  
Mailing Address: 3601 Pacific Avenue  
Stockton, CA 95211  
Contact Person: Joel Feaver  
Telephone: (209) 946 – 2541  
Fax: (209) 946 – 3109  
Application #(s): N-3744-13-0 and N-3744-14-0  
Project #: N-1094524  
Deemed Complete: December 15, 2009

Date: January 11, 2010  
Engineer: Wai-Man, So  
Lead Engineer: Nick Peirce

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### **I. PROPOSAL**

The University of the Pacific (UOP) requests Authority to Construct (ATC) permits for the installation of two identical 757 bhp Volvo model TAD1641GE (Tier 2) diesel-fired emergency standby internal combustion (IC) engines powering electrical generators.

### **II. APPLICABLE RULES**

District Rule 2201 New and Modified Stationary Source Review Rule (09/21/06)  
District Rule 2520 Federally Mandated Operating Permit (06/21/2001)  
District Rule 4001 New Source Performance Standard (NSPS) (04/14/1999)  
District Rule 4101 Visible Emissions (2/17/05)  
District Rule 4102 Nuisance (12/17/92)  
District Rule 4201 Particulate Matter Concentration (12/17/92)  
District Rule 4701 Stationary Internal Combustion Engines – Phase 1 (8/21/2003)  
District Rule 4702 Stationary Internal Combustion Engines – Phase 2 (1/18/2007)  
District Rule 4801 Sulfur Compounds (12/17/92)  
CH&SC 41700 Health Risk Assessment  
CH&SC 42301.6 School Notice  
Title 13 California Code of Regulations (CCR), Section 2423  
– Exhaust Emission Standards and Test Procedures, Off-Road Compression-Ignition Engines and Equipment  
Title 17 California Code of Regulations (CCR), Section 93115  
– Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines  
California Environmental Quality Act (CEQA)  
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)  
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

### III. PROJECT LOCATION

This facility is located at 3441 Kensington Way, Stockton, California. The District has verified that the facility is not located within 1,000 feet of the outer boundary of any K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

### IV. PROCESS DESCRIPTION

These diesel-fired emergency IC engines power electrical generators. Other than emergency operation, each engine may be operated up to 50 hours per calendar year for maintenance and testing purposes.

### V. EQUIPMENT LISTING

#### N-3744-13-0

757 BHP VOLVO MODEL TAD1641GE TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR #1 (LOCATED AT SCHOOL OF EDUCATION BUILDING)

#### N-3744-14-0

757 BHP VOLVO MODEL TAD1641GE TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR #2 (LOCATED AT SCHOOL OF EDUCATION BUILDING)

### VI. EMISSION CONTROL TECHNOLOGY EVALUATION

Each engine is equipped with:

- Turbocharger
- Intercooler/aftercooler
- Injection timing retard (or equivalent per District Policy SSP-1805, dated 8/14/1996)
- Positive Crankcase Ventilation (PCV) or 90% efficient control device
- This engine is required to be, and is UL certified
- Catalytic particulate filter
- Very Low (0.0015%) sulfur diesel

The emission control devices/technologies and their effect on diesel engine emissions detailed below are from *Non-catalytic NO<sub>x</sub> Control of Stationary Diesel Engines*, by Don Koeberlein, CARB.

The turbocharger reduces the NO<sub>x</sub> emission rate from the engine by approximately 10% by increasing the efficiency and promoting more complete burning of the fuel.

The intercooler/aftercooler functions in conjunction with the turbocharger to reduce the inlet air temperature. By reducing the inlet air temperature, the peak combustion temperature is

lowered, which reduces the formation of thermal NO<sub>x</sub>. NO<sub>x</sub> emissions are reduced by approximately 15% with this control technology.

The PCV system reduces crankcase VOC and PM<sub>10</sub> emissions by at least 90% over an uncontrolled crankcase vent.

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

These two diesel-fired emergency standby IC engines are identical engines. Therefore, only single emissions calculation will be performed.

### 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

### B. Emission Factors

N-3744-13-0 and N-3744-14-0

#### ***Pre-Project Emission Factors (EF1)***

These are new emissions units, therefore, EF1 is equal to zero for each criteria pollutant.

#### ***Post-Project Emission Factors (EF2)***

The engine manufacturer provided the emission factors for NO<sub>x</sub> + VOC, CO and PM<sub>10</sub> based on their performance data sheet as follow:

NO <sub>x</sub> + VOC:	5.43 g/kW-hr (with 1.341 bhp/kW-hr, is equivalent to 4.05 g/bhp-hr)
CO:	0.7 g/kW-hr (with 1.341 bhp/kW-hr, is equivalent to 0.52 g/bhp-hr)
PM <sub>10</sub> :	0.1 g/kW-hr (with 1.341 bhp/kW-hr, is equivalent to 0.07 g/bhp-hr)

The applicant has only supplied an emissions factor for NO<sub>x</sub> and VOC emissions combined. Therefore the District will use data from the EPA document "*Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compressions Ignition*", dated November 2002, as presented in the following table to estimate NO<sub>x</sub> and VOC emissions (District assumption).

Tier 2 and Tier 3 Diesel-Fired IC Engines NO <sub>x</sub> and VOC Estimated Emissions						
Horsepower Range (bhp)	Combined Standard, NO <sub>x</sub> + VOC (g/bhp-hr)		Estimated NO <sub>x</sub> Emissions (g/bhp-hr)		Estimated VOC Emissions (g/bhp-hr)	
	Tier 2	Tier 3	Tier 2	Tier 3	Tier 2	Tier 3
≥ 50 to < 100	5.6	3.5	5.2	3.3	0.4	0.2
≥ 100 to < 175	4.9	3.0	4.5	2.8	0.4	0.2
≥ 175 to < 300	4.9	3.0	4.5	2.8	0.4	0.2
≥ 300 to < 600	4.8	3.0	4.5	2.8	0.3	0.2
≥ 600 to < 750	4.8	3.0	4.5	2.8	0.3	0.2
≥ 750	4.8	N/A	4.5	N/A	0.3	N/A

For this application for the installation of two 757 bhp Tier 2 certified IC engines the applicant supplied NO<sub>x</sub> + VOC emissions factor for each unit is 4.05 g/bhp-hr. Therefore, the NO<sub>x</sub> and VOC emissions factors for these engines are calculated as follows:

$$\begin{aligned} \text{NO}_x \text{ (g/bhp-hr)} &= \text{NO}_x + \text{VOC (g/bhp-hr)} \times (4.5 \text{ g/bhp-hr} \div 4.8 \text{ g/bhp-hr}) \\ \text{NO}_x \text{ g/bhp-hr} &= 4.05 \text{ g/bhp-hr} \times (4.5 \text{ g/bhp-hr} \div 4.8 \text{ g/bhp-hr}) \\ \text{NO}_x &= 3.8 \text{ g/bhp-hr} \end{aligned}$$

$$\begin{aligned} \text{VOC (g/bhp-hr)} &= \text{NO}_x + \text{VOC (g/bhp-hr)} \times (0.3 \text{ g/bhp-hr} \div 4.8 \text{ g/bhp-hr}) \\ \text{VOC g/bhp-hr} &= 4.05 \text{ g/bhp-hr} \times (0.3 \text{ g/bhp-hr} \div 4.8 \text{ g/bhp-hr}) \\ \text{VOC} &= 0.25 \text{ g/bhp-hr} \end{aligned}$$

Only California Air Resources Board (CARB) certified diesel fuel containing no more than 0.0015% sulfur by weight could be used. The emission factor for SO<sub>x</sub> is calculated by following equation:

$$\begin{aligned} &\frac{0.000015 \text{ lb - S}}{\text{lb - fuel}} \times \frac{7.1 \text{ lb - fuel}}{\text{gallon}} \times \frac{2 \text{ lb - SO}_2}{1 \text{ lb - S}} \times \frac{1 \text{ gal}}{137,000 \text{ Btu}} \times \frac{1 \text{ bhp input}}{0.35 \text{ bhp out}} \times \frac{2,542.5 \text{ Btu}}{\text{bhp - hr}} \times \frac{453.6 \text{ g}}{\text{lb}} \\ &= 0.0051 \frac{\text{g - SO}_x}{\text{bhp - hr}} \end{aligned}$$

For these units, post-project emission factors (EF2) for all the criteria pollutants are listed in the table below.

Pollutant	Post-Project Emission Factors (EF1)	Source
NO <sub>x</sub>	3.8 g/hp-hr	Manufacturer Data Sheet
SO <sub>x</sub>	0.0051 g/hp-hr	Mass balance equation above
PM <sub>10</sub>	0.07 g/hp-hr	Manufacturer Data Sheet
CO	0.52 g/hp-hr	Manufacturer Data Sheet
VOC	0.25 g/hp-hr	Manufacturer Data Sheet

**C. Potential to Emit (PE) Calculations**

**1. Daily and Annual PE**

**Pre-Project Potential to Emit (PE1)**

These are new emissions units, therefore, PE1 is equal to zero for each criteria pollutant.

**Post-Project Potential to Emit (PE2)**

The PE2 for each pollutant is calculated as follow:

$$PE2 = EF2 \text{ (g/hp-hr)} \times \text{Power Rating (hp)} \times \text{Operating Schedule (hr/day or hr/year)} \div \text{Conversion (g/lb)}$$

$$\text{Daily PE2} = EF2 \text{ (g/hp-hr)} \times 757 \text{ (hp)} \times 24 \text{ (hr/day)} \div 453.6 \text{ (g/lb)}$$

$$\text{Annual PE2} = EF2 \text{ (g/hp-hr)} \times 757 \text{ (hp)} \times 50^1 \text{ (hr/yr)} \div 453.6 \text{ (g/lb)}$$

For these units, both daily and annual post-project potential to emit (PE2) for all criteria pollutants are listed in the tables below.

N-3744-13-0:

Pollutant	Post-Project Potential to Emit (PE2)					
	EF2 (g/hp-hr)	Power Rating (hp)	Operating Schedule (hr/day)	Conversion (g/lb)	Daily PE2 (lb/day)	Annual PE2 (lb/yr)
NO <sub>x</sub>	3.8	757	24	453.6	152.2	317
SO <sub>x</sub>	0.0051	757	24	453.6	0.2	0
PM <sub>10</sub>	0.07	757	24	453.6	2.8	6
CO	0.52	757	24	453.6	20.8	43
VOC	0.25	757	24	453.6	10.0	21

N-3744-14-0:

Pollutant	Post-Project Potential to Emit (PE2)					
	EF2 (g/hp-hr)	Power Rating (hp)	Operating Schedule (hr/day)	Conversion (g/lb)	Daily PE2 (lb/day)	Annual PE2 (lb/yr)
NO <sub>x</sub>	3.8	757	24	453.6	152.2	317
SO <sub>x</sub>	0.0051	757	24	453.6	0.2	0
PM <sub>10</sub>	0.07	757	24	453.6	2.8	6
CO	0.52	757	24	453.6	20.8	43
VOC	0.25	757	24	453.6	10.0	21

<sup>1</sup> The maximum annual operating hours of this diesel-fired IC engine is limited to 50 hr/yr (per Title 17 CCR, Section 93115).



**2. Quarterly Net Emissions Change**

The Quarterly Net Emissions Changes (QNEC) is calculated for each pollutant, for each unit, as the difference between the quarterly PE2 and the quarterly baseline emissions (BE). The annual emissions are evenly distributed throughout each quarter using the following equation:

$$\text{QNEC (lb/quarter)} = [\text{Annual PE2} - \text{Annual PE1}] \text{ (lb/year)} / 4 \text{ (quarter/year)}$$

The QNEC for all criteria pollutants are shown in the tables below:

**N-3744-13-0:**

Pollutant	Quarterly Net Emissions Change (QNEC)			
	1 <sup>st</sup> Quarter (lb/quarter)	2 <sup>nd</sup> Quarter (lb/quarter)	3 <sup>rd</sup> Quarter (lb/quarter)	4 <sup>th</sup> Quarter (lb/quarter)
NO <sub>x</sub>	79	79	79	80
SO <sub>x</sub>	0	0	0	0
PM <sub>10</sub>	1	1	2	2
CO	10	11	11	11
VOC	5	5	5	6

**N-3744-14-0:**

Pollutant	Quarterly Net Emissions Change (QNEC)			
	1 <sup>st</sup> Quarter (lb/quarter)	2 <sup>nd</sup> Quarter (lb/quarter)	3 <sup>rd</sup> Quarter (lb/quarter)	4 <sup>th</sup> Quarter (lb/quarter)
NO <sub>x</sub>	79	79	79	80
SO <sub>x</sub>	0	0	0	0
PM <sub>10</sub>	1	1	2	2
CO	10	11	11	11
VOC	5	5	5	6

**3. Adjusted increase in Permitted Emissions (AIPE)**

AIPE is used to determine if Best Available Control Technology (BACT) is required for emission units that are being modified.

These are new emission units. Therefore, AIPE calculations are not required.

**D. Facility Emissions**

**1. Pre-Project Stationary Source Potential to Emit (SSPE1)**

Pursuant to District Rule 2201, § 4.9, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and 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.

There is no ERC banked in the facility. See detail SSPE1 calculation in the Appendix III of this document.

Permit Number	Pollutants (lb/yr)				
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
N-3744-3-0	241	0	5	24	60
N-3744-4-1	18	0	1	30	1
N-3744-5-1	18	0	1	30	1
N-3744-6-1	18	0	1	30	1
N-3744-7-0	32	0	1	11	6
N-3744-8-0	0	0	0	0	876
N-3744-9-0	0	0	840	0	0
N-3744-10-0	107	0	4	16	8
N-3744-11-0	50	0	1	8	3
N-3744-12-0	52	0	1	8	4
SSPE1	536	0	855	157	960
Major Source Threshold Level	50,000	140,000	140,000	200,000	50,000
Major Source?	No	No	No	No	No
Offset Threshold Level	20,000	54,750	29,200	200,000	20,000
Offset Triggered?	No	No	No	No	No

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

Pursuant to District Rule 2201, § 4.10, the Post-Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and 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.

Permit Number	Pollutants (lb/yr)				
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
N-3744-3-0	241	0	5	24	60
N-3744-4-1	18	0	1	30	1
N-3744-5-1	18	0	1	30	1
N-3744-6-1	18	0	1	30	1
N-3744-7-0	32	0	1	11	6
N-3744-8-0	0	0	0	0	876
N-3744-9-0	0	0	840	0	0
N-3744-10-0	107	0	4	16	8
N-3744-11-0	50	0	1	8	3
N-3744-12-0	52	0	1	8	4
ATC N-3744-13-0	317	0	6	43	21
ATC N-3744-14-0	317	0	6	43	21

SSPE2	1,170	0	867	243	1,002
Major Source Threshold Level	50,000	140,000	140,000	200,000	50,000
Major Source?	No	No	No	No	No
Offset Threshold Level	20,000	54,750	29,200	200,000	20,000
Offset Triggered?	No	No	No	No	No

### 3. Stationary Source Increase in Permitted Emissions (SSIFE)

SSIFE calculations are used to determine if the project triggers public notice pursuant to District Rule 2201, § 5.4.5. If SSIFE results greater than 20,000 lb/yr for any one pollutant then project requires public notification. At this time, it is District Practice to define the SSIFE as the difference of SSPE2 to SSPE1, and calculated by the following equation:

$$\text{SSIFE (lb/yr)} = \text{SSPE2 (lb/yr)} - \text{SSPE1 (lb/yr)}$$

SSIFE	Pollutants (lb/yr)				
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
SSPE2	1,170	0	867	243	1,002
SSPE1	536	0	855	157	960
SSIFE	634	0	12	86	42

As shown above, SSIFE is less than 20,000 lb/yr for each pollutant. Therefore, public notification and publication requirement are not required for this purpose.

### 4. Major Source Determination

Pursuant to District Rule 2201, § 3.23, a major source is a stationary source a Post-Project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the Major Source threshold values (excluding ERCs banked on-site that have not been used on-site).

As shown in the table of section VII.D.2 in this document, the facility is not becoming a major source as a result of this project.

### 5. Baseline Emissions (BE)

The BE calculation (in lb/year) is performed on a pollutant-by-pollutant basis to determine the amount of offsets required, where necessary, when the SSPE1 is greater than the offset threshold. Pursuant to section 3.7, baseline emissions shall be equal to the sum of:

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.

As shown in section VII.D.2 of this document, this facility is not a major source. Therefore, the baseline emissions are equal to the pre-project potential to emit for each unit. BE = PE1.

## **6. Major Modification**

Major Modification calculation is to determine the following:

- 1) Pursuant to District Rule 2201, section 4.1.3, if Best Available Control Technology (BACT) is triggered for a new or modified emission unit that results in a Major Modification; and
- 2) Pursuant to District Rule 2201, section 5.4.1, if a public notification is triggered.

As shown in section VII.D.2 of this document, this facility is not a major source for any pollutant. Therefore, the proposed project cannot trigger a District Rule 2201 Major Modification.

## **7. Federal Major Modification**

Federal Major Modification is to determine the following:

- 1) Pursuant to Rule 2201, section 4.2.3.3, if a Rule-compliance project qualifies for District Rule 2201's Best Available Control Technology (BACT) and offset exemptions and
- 2) Pursuant to Rule 2201, section 4.15, if an Alternate Siting analysis must be performed; and if the applicant must provide certification that all California stationary sources owned, operated, or controlled by the applicant that are subject to emission limits are in compliance with those limits or are on a schedule for compliance with all applicable emission limits and standards; and
- 3) Pursuant to Rule 2201, section 5.4.1, if a public notification is triggered. Although the language in section 5.4.1 states "Major Modifications", the District is taking a conservative approach by assuming this applies to both District Rule 2201 Major Modifications and Federal Major Modifications.

As the project is not considered a Major Modification, it cannot be a Federal Major Modification.

**VIII.COMPLIANCE**

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

**1. Best Available Control Technology (BACT)**

Pursuant to District Rule 2201, section 4.1.2, BACT requirements are triggered in a pollutant-by-pollutant basis for any new emissions unit with a Potential to Emit exceeds 2.0 lb/day, unless the unit is otherwise exempt per section 4.2. Section 4.2.1 provides an exemption from BACT requirements for CO emissions if the facility is located in a CO attainment area and the SSPE<sub>2CO</sub> is less than 200,000 lb/yr. As well, BACT may be triggered if the modification is a major modification per section 4.1.3.

As shown in section VII.C.1 of this document, the emission will result in greater than 2.0 lb/day for NO<sub>x</sub>, PM<sub>10</sub>, CO, and VOC for each new emission unit. However, SSPE2 (per section VII.D.2) for CO is less than 200,000 lb/yr; therefore, BACT is not triggered for CO emissions. BACT analysis is required for NO<sub>x</sub>, PM<sub>10</sub>, and VOC emissions.

BACT Guideline 3.1.1, fourth quarter of 2009 lists NO<sub>x</sub>, PM<sub>10</sub>, and VOC emissions control requirements for emergency diesel IC engine. The requirement is listed in the following table:

Pollutant	Achieved in Practice or contained in the SIP	Technologically Feasible
NO <sub>x</sub>	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)	
VOC	Latest EPA Tier Certification level for applicable horsepower range	

The "Top-Down BACT Analysis" for NO<sub>x</sub>, PM<sub>10</sub> and VOC emissions is preformed in Appendix II of this document.

According to this analysis, the District BACT requirement of NO<sub>x</sub>, PM<sub>10</sub>, and VOC is satisfied by utilize the latest EPA certified Tier 2 diesel-fired engines with certified PM<sub>10</sub> emissions of 0.07 g/hp-hr.

**2. 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.

**3. Public Notification**

District Rule 2201, § 5.4, requires a public notification for the affected pollutants from the following types of projects:

**a. New Major Source**

There is no new major source as a result of this project. Therefore, public noticing for this purpose is not required.

**b. Major Modification**

This facility is not a major source, so it cannot trigger a major modification threshold. Therefore, public noticing for this purpose is not required.

**c. New emission unit with PE > 100 lb/day for any one pollutant**

Each new emissions unit with PE is greater than 100 lb/day for NO<sub>x</sub> emissions. Therefore public noticing for this purpose is required.

**d. Modifications with SSPE1 below an Offset threshold and SSPE2 above an Offset threshold on a pollutant-by-pollutant basis:**

As shown in section VII.D.2 of this document, SSPE2 is not exceeding any offset thresholds. Therefore, public noticing for this purpose is not required.

**e. New stationary sources with SSPE2 exceeding Offset thresholds:**

As shown in section VII.D.2 of this document, SSPE2 is not exceeding any offset thresholds. Therefore public noticing for this purpose is not required.

**f. Any permitting action with an SSIPE exceeding 20,000 lb/yr for any one pollutant:**

As shown in section VII.D.3 of this document, SSIPE for each criteria pollutant is less than 20,000 lb/yr. Therefore public noticing for this purpose is not required.

As discussed above, public noticing is required for this project for each new emissions unit daily NO<sub>x</sub> potential emissions (PE) greater than 100 pounds. 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 ATCs for these equipment. Public notice is required for this project.

**4. Daily Emission Limits (DELs)**

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Section 3.15 to restrict a unit's maximum daily emissions. Therefore, the following conditions will be listed on each permit to ensure compliance:

- *Emissions from this IC engine shall not exceed any of the following limits: 3.8 g-NO<sub>x</sub>/bhp-hr, 0.52 g-CO/bhp-hr, or 0.25 g-VOC/bhp-hr. [District Rule 2201 and 13 CCR 2423 and 17 CCR 93115]*

- *Emissions from this IC engine shall not exceed 0.07 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115]*

In addition, the DEL for SO<sub>x</sub> is established by the sulfur content of the fuel being combusted in the engine. Therefore, the following condition will be listed on the ATC to ensure compliance:

- *{3395} Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115]*

## **5. Compliance Assurance**

### **a. Source Testing**

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

### **b. Monitoring**

No monitoring is required to demonstrate compliance with Rule 2201.

### **c. Recordkeeping**

Recordkeeping is required to demonstrate compliance with the offset, public notification, and daily emission limit requirements of Rule 2201. As required by District Rule 4702, *Stationary Internal Combustion Engines - Phase 2*, this IC engine is subject to recordkeeping requirements. Recordkeeping requirements, in accordance with District Rule 4702, will be discussed in Section VIII, *District Rule 4702*, of this evaluation.

### **d. Reporting**

No reporting is required to ensure compliance with Rule 2201.

## **6. Ambient Air Quality Analysis**

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 a State or National ambient air quality standard. An AAQA is required to be performed for all New Source Review (NSR) public notice projects. As previously discussed in Section VIII.3.C this project requires that a public notice be performed before issuance of the ATCs for this project. Therefore, the District is required to perform an AAQA for this project.

The Technical Services Division of the SJVAPCD conducted the required AAQA, criteria pollutant modeling for this project. The results of the criteria pollutant modeling are

presented in the following table. See Appendix III of this document for the detail AAQA summary sheet.

Criteria Pollutant Modeling Results in ( $\mu\text{g}/\text{m}^3$ ):

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

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

### District Rule 2520 Federally Mandated Operating Permit

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

### District Rule 4001 New Source Performance Standards (NSPS)

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

This subpart is applicable to owners and operators of stationary compression ignited internal combustion engines that commence construction after July 11, 2005, where the engines are:

- 1) Manufactured after April 1, 2006, if not a fire pump engine.
- 2) Manufactured as a National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

Since the proposed engines will be installed after July 11 2005, and were manufactured after April 1, 2006, therefore, this subpart applies.

All of the applicable standards of this subpart are less restrictive than current District and/or State requirements. Since these engines are expected to comply with all District and State requirements, compliance with Subpart IIII requirements is also expected and no further discussion is necessary. The following conditions will be listed on each permit to ensure compliance:

- *This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702 and 17 CCR 93115 and 40 CFR 60 Subpart IIII]*

<sup>2</sup> Results determined by PVMRM.

<sup>3</sup> The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).



- *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]*
- *Emissions from this IC engine shall not exceed any of the following limits: 3.8 g-NOx/bhp-hr, 0.52 g-CO/bhp-hr, or 0.25 g-VOC/bhp-hr. [District Rule 2201 and 13 CCR 2423 and 17 CCR 93115 and 40 CFR 60 Subpart IIII]*
- *Emissions from this IC engine shall not exceed 0.07 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115 and 40 CFR 60 Subpart IIII]*
- *Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115 and 40 CFR 60 Subpart IIII]*
- *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 and 40 CFR 60 Subpart IIII]*
- *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 and 40 CFR 60 Subpart IIII]*

#### **District Rule 4101 Visible Emissions**

District Rule 4101, Section 5.0, indicates 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 dark or darker than Ringelmann 1 or equivalent to 20% opacity. The following condition will be listed on each permit 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]*

#### **District Rule 4102 Nuisance**

Section 4.0 prohibits discharge of air contaminants, which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a

result of these operations provided the equipment is well maintained. The following condition will be listed on each permit 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 1905-1 (March 2, 2001) - Risk Management Policy for Permitting New and Modified Sources 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. The health risk assessment results are as follow:

RMR Summary			
Categories	Two Emergency DICE (Unit 13-0 & 14-0)	Project Totals	Facility Totals
Prioritization Score	N/A <sup>4</sup>	N/A <sup>4</sup>	N/A <sup>4</sup>
Acute Hazard Index	N/A <sup>5</sup>	N/A <sup>5</sup>	N/A <sup>5</sup>
Chronic Hazard Index	N/A <sup>5</sup>	N/A <sup>5</sup>	N/A <sup>5</sup>
Maximum Individual Cancer Risk	4.31 E-09 (each)	8.62 E-09	8.62 E-09
T-BACT Required?	No		
Special Permit Conditions?	Yes		

The total cancer risk associated with the operation of the proposed emergency diesel IC engines is 8.62 E-09, which is less than the 1 in a million threshold. In accordance with the District's Risk Management Policy, the project is approved **without** Toxic Best Available Control Technology (T-BACT).

To ensure that human health risks will not exceed District allowable levels. The following conditions will be listed on each permit to ensure compliance with this Safety Code.

- *Modified {1901} The PM<sub>10</sub> emissions rate shall not exceed 0.07 g/hp-hr based on US EPA certification using ISO 8178 test procedure. [District Rule 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115]*
- *{1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102] N*
- *The engine shall be operated only for maintenance, testing, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance,*

<sup>4</sup> Prioritization for this unit was not conducted since it has been determined that all diesel-fired IC engines will result in a prioritization score greater than 1.0.

<sup>5</sup> Acute and Chronic Hazard Indices were not calculated since there is no risk factor, or the risk factor is so low that the risk has been determined to be insignificant for these type of units.

*testing, and required regulatory purposes shall not exceed 50 hours per year. [District Rule 2201 and 4702 and 17 CCR 93115] N*

### **District Rule 4201 Particulate Matter Concentration**

Section 3.0 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot.

N-3744-13-0 and N-3744-14-0:

$$\frac{0.07 \text{ g - PM}_{10}}{\text{bhp - hr}} \times \frac{1 \text{ g - PM}_{10}}{0.96 \text{ g - PM}_{10}} \times \frac{1 \text{ bhp - hr}}{2,542 .5 \text{ Btu}} \times \frac{10^6 \text{ Btu}}{9,051 \text{ dscf}} \times \frac{0.35 \text{ Btu out}}{1 \text{ Btu in}} \times \frac{15.43 \text{ grain}}{\text{g}} = 0.017 \frac{\text{grain - PM}}{\text{dscf}}$$

Particulate Matter concentration = 0.017 (grain/dscf) < 0.1 (grain/dscf)

Therefore, compliance with District Rule 4201 requirements is expected and a permit condition will be listed on each permit as follows:

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

### **District 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, this diesel-fired emergency IC engine will comply with the requirements of District Rule 4702 and no further discussion is required.

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

The purpose of this rule is to limit the emissions of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), and volatile organic compounds (VOC) from internal combustion engines. This rule applies to any internal combustion engine with a rated brake horsepower greater than 50 horsepower.

Pursuant to Section 4.2, except for the requirements of Sections 5.7 and 6.2.3, the requirements of this rule shall not apply to an internal combustion engine that meets the following: An emergency standby engine as defined in Section 3.0 of this rule, and provided that it is operated with a non-resettable elapsed operating time meter. In lieu of a non-resettable time meter, the owner of an emergency engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.

Section 3.15 defines an "Emergency Standby Engine" as an internal combustion engine which operates as a temporary replacement for primary mechanical or electrical power during an unscheduled outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the operator.

An engine shall be considered to be an emergency standby engine if it is used only for the following purposes: (1) periodic maintenance, periodic readiness testing, or readiness testing during and after repair work; (2) unscheduled outages, or to supply power while maintenance is performed or repairs are made to the primary power supply; and (3) if it is limited to operate 100 hours or less per calendar year for non-emergency purposes. An engine shall not be considered to be an emergency standby engine if it is used: (1) to reduce the demand for electrical power when normal electrical power line service has not failed, or (2) to produce power for the utility electrical distribution system, or (3) in conjunction with a voluntary utility demand reduction program or interruptible power contract.

Therefore, the emergency standby IC engines involved with this project will only have to meet the requirements of Sections 5.7 and 6.2.3 of this Rule.

Section 5.7 of this Rule requires that the owner of an emergency standby engine shall comply with the requirements specified in Section 5.7.2 through Section 5.7.5 below: 1) properly operate and maintain each engine as recommended by the engine manufacturer or emission control system supplier; 2) monitor the operational characteristics of each engine as recommended by the engine manufacturer or emission control system supplier; 3) install and operate a non-resettable elapsed operating time meter. In lieu of installing a non-resettable time meter, the owner of an engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO and is allowed by Permit-to-Operate or Permit-Exempt Equipment Registration condition. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions. Therefore, the following conditions will be listed on each permit to ensure compliance:

- *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 CFR 60 Subpart III]*
- *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 and CFR 60 Subpart III]*
- *This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702 and 17 CCR 93115 and CFR 60 Subpart III]*
- *{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]*

- {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]
- {3810} 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 and 17 CCR 93115]

Section 6.2.3 requires that an owner claiming an exemption under Section 4.2 or Section 4.3 shall maintain annual operating records. This information shall be retained for at least five years, shall be readily available, and submitted to the APCO upon request and at the end of each calendar year in a manner and form approved by the APCO. Therefore, the following conditions will be listed on each permit to ensure compliance:

- 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 and CFR 60 Subpart III]
- {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]

### District 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:

N-3744-13-0 and N-3744-14-0:

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

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

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

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

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

Since 1.0 ppmv is ≤ 2,000 ppmv, this engine is expected to comply with Rule 4801.

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

This facility is not located within 1,000 feet of a school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

**Title 13 California Code of Regulations (CCR), Section 2423**

**– Exhaust Emission Standards and Test Procedures, Off-Road Compression-Ignition Engines and Equipment (Required by Title 17 CCR, Section 93115 for New Emergency Standby Diesel IC Engines)**

Title 13 CCR, Section 2423 lists a diesel particulate emission standard of 0.15 g/bhp-hr (with 1.341 bhp/kW, equivalent to 0.20 g/kW-hr) for 2006 and later model year engines with maximum power ratings of  $\geq 751.1$  bhp (equivalent to  $\geq 50$  kW). The PM standards given in Title 13 CCR, Section 2423 are less stringent than the PM standards given in Title 17 CCR, Section 93115 (ATCM), thus the ATCM standards are the required standards and will be discussed in the following section.

Title 17 CCR, Section 93115, (e)(2)(A)(3)(b) stipulates that new stationary emergency standby diesel-fueled CI engines ( $> 50$  bhp) must meet the VOC + NO<sub>x</sub>, and CO 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) or the Tier 1 standards for an off-road engine if no standards have been established for an off-road engine of the same model year and maximum rated power.

The engines involved with this project are certified 2009 model (Tier 2) 757 bhp engines. The following table compares the requirements of Title 13 CCR, Section 2423 to the emissions factors for the 757 bhp Volvo model TAD1641GE diesel-fired emergency standby IC engine as given by the manufacturer (for NO<sub>x</sub> + VOC, PM, and CO emissions).

Requirements of Title 13 CCR Section 2423							
Source	Maximum Rated Power	Model Year	NO <sub>x</sub>	VOC	NO <sub>x</sub> + VOC	CO	PM
Title 13 CCR, §2423	$\geq 751.0$ bhp ( $\geq 560$ kW)	2000-2005 (Tier 1)	6.9 g/bhp-hr (9.2 g/kW-hr)	1.0 g/bhp-hr (1.3 g/kW-hr)	--	8.5 g/bhp-hr (11.4 g/kW-hr)	0.40 g/bhp-hr (0.54 g/kW-hr)
Title 13 CCR, §2423	$\geq 751.0$ bhp ( $\geq 560$ kW)	2006 and later (Tier 2)	--	--	4.8 g/bhp-hr (6.4 g/kW-hr)	2.6 g/bhp-hr (3.5 g/kW-hr)	0.15 g/bhp-hr (0.20 g/kW-hr)
Volvo, Model #TAD1641GE	757 bhp	2009	--	--	4.1 g/bhp-hr (5.4 g/kW-hr)	0.5 g/bhp-hr (0.7 g/kW-hr)	0.07 g/bhp-hr (0.1 g/kW-hr)
Meets Standard?			N/A	N/A	Yes	Yes	Yes

As presented in the table above, the proposed engines will satisfy the requirements of this section and compliance is expected.

Right of the District to Establish More Stringent Standards:

This regulation also stipulates that the District:

1. May establish more stringent diesel PM, NO<sub>x</sub> + VOC, VOC, NO<sub>x</sub>, and CO emission rate standards; and
2. May establish more stringent limits on hours of maintenance and testing on a site-specific basis; and
3. Shall determine an appropriate limit on the number of hours of operation for demonstrating compliance with other District rules and initial start-up testing

The District has not established more stringent standards at this time. Therefore, the standards previously established in this Section will be utilized.

#### **Title 17 California Code of Regulations (CCR), Section 93115**

##### **– Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines**

###### Emergency Operating Requirements:

This regulation stipulates that no owner or operator shall operate any new or in-use stationary diesel-fueled compression ignition (CI) emergency standby engine, in response to the notification of an impending rotating outage, unless specific criteria are met.

This section applies to emergency standby IC engines that are permitted to operate during non-emergency conditions for the purpose of providing electrical power. However, District Rule 4702 states that emergency standby IC engines may only be operated during non-emergency conditions for the purposes of maintenance and testing. Therefore, this section does not apply and no further discussion is required.

###### Fuel and Fuel Additive Requirements:

This regulation also stipulates that as of January 1, 2006 an owner or operator of a new or in-use stationary diesel-fueled CI emergency standby engine shall fuel the engine with CARB Diesel Fuel.

Since the engines for this project are new stationary diesel-fueled CI emergency standby engines, these fuel requirements are applicable. The following condition (previously stated in this engineering evaluation) will be listed on each permit to ensure compliance:

- *{3395} Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115]*

###### At-School and Near-School Provisions:

This regulation stipulates that no owner or operator shall operate a new stationary emergency standby diesel-fueled CI engine, with a PM<sub>10</sub> emissions factor > than 0.01 g/bhp-hr, for non-emergency use, including maintenance and testing, during the following periods:

1. Whenever there is a school sponsored activity, if the engine is located on school grounds, and

2. Between 7:30 a.m. and 3:30 p.m. on days when school is in session, if the engine is located within 500 feet of school grounds.

The District has verified that these engines will not be located within 500 feet of a K-12 school. Therefore, conditions prohibiting non-emergency use of the engine during school hours will not be placed on the permit.

Recordkeeping Requirements:

This regulation stipulates that as of January 1, 2005, each owner or operator of an emergency standby diesel-fueled CI engine shall keep a monthly log of usage that shall list and document the nature of use for each of the following:

- a. Emergency use hours of operation;
- b. Maintenance and testing hours of operation;
- c. Hours of operation for emission testing;
- d. Initial start-up hours; and
- e. If applicable, hours of operation to comply with the testing requirements of National Fire Protection Association (NFPA) 25 — "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 edition;
- f. Hours of operation for all uses other than those specified in sections 'a' through 'd' above; and
- g. For in-use emergency standby diesel-fueled engines, the fuel used. The owner or operator shall document fuel use through the retention of fuel purchase records that account for all fuel used in the engine and all fuel purchased for use in the engine, and, at a minimum, contain the following information for each individual fuel purchase transaction:
  - I. Identification of the fuel purchased as either CARB Diesel, or an alternative diesel fuel that meets the requirements of the Verification Procedure, or an alternative fuel, or CARB Diesel fuel used with additives that meet the requirements of the Verification Procedure, or any combination of the above;
  - II. Amount of fuel purchased;
  - III. Date when the fuel was purchased;
  - IV. Signature of owner or operator or representative of owner or operator who received the fuel; and
  - V. Signature of fuel provider indicating fuel was delivered.

The engines associated with this project are new emergency standby engines, each powering an electrical generator. Therefore, the following conditions (previously proposed in this engineering evaluation) will be listed on each permit to ensure compliance:

- *{3479} 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, emergency usage, 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]*



- {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]*

#### PM Emissions and Hours of Operation Requirements for New Diesel Engines:

This regulation stipulates that as of January 1, 2005, no person shall operate any new stationary emergency standby diesel-fueled CI engine that has a rated brake horsepower greater than 50, unless it meets all of the following applicable emission standards and operating requirements.

1. Emits diesel PM at a rate greater than 0.01 g/bhp-hr or less than or equal to 0.15 g/bhp-hr; and
2. Meets the current model year diesel PM standard specified in the Off-Road Compression Ignition Engine Standards for off-road engines with the same maximum rated power (Title 13 CCR, Section 2423), whichever is more stringent; and
3. Does not operate more than 50 hours per year for maintenance and testing purposes. Engine operation is not limited during emergency use and during emissions source testing to show compliance with the ATCM.

The proposed emergency diesel IC engines powering electrical generators. Therefore, the following conditions (previously proposed in this engineering evaluation) will be listed on each permit to ensure compliance:

- *Emissions from this IC engine shall not exceed 0.07 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115]*
- {3810} *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 and 17 CCR 93115]*

#### **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 District performed an Engineering Evaluation (this document) for the proposed project and determined that the project will occur at an existing facility; involves negligible expansion of the existing use; and would not have a significant effect on the environment. Furthermore, as discussed below, the District determined that project specific greenhouse gas emissions would have a less than cumulatively significant impact on global climate change.

On December 17, 2009, the District's Governing Board adopted the first comprehensive regional policy and guidance on addressing and mitigating GHG emission impacts caused by industrial, commercial, and residential development in the San Joaquin Valley. The adopted District policy – *Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency* relies on the use of performance based standards, otherwise known as Best Performance Standards (BPS) to assess significance of project specific greenhouse gas emissions on global climate change during the environmental review process.

The project was evaluated consistent with illustrative BPS presented on page 86 of the "Final Staff Report-Climate Change Action Plan: Addressing GHG Emissions Impacts under CEQA", dated December 17, 2009. As discussed in the Final Staff Report, the District considers generation of emergency standby power to be a less than significant source of GHG emissions and concludes that specific BPS is not required for this class and category.

Thus, the District finds that the project is categorically exempt from the provisions of CEQA pursuant to CEQA Guideline § 15031 (Existing Facilities); finds that the project would have a less than cumulative significant impact on global climate change; and finds that the project is exempt per the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061(b)(3)).

## IX. RECOMMENDATION

Pending a successful NSR Public Noticing period, issue Authorities to Construct N-3744-13-0 and N-374-14-0 subject to the permit conditions on the attached draft Authorities to Construct in Appendix I.

## X. BILLING INFORMATION

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
N-3744-13-0	3020-10-D (400 or Greater but less Than 800 bhp)	757 bhp	\$ 479
N-3744-14-0	3020-10-D (400 or Greater but less Than 800 bhp)	757 bhp	\$ 479

## **APPENDICES**

- Appendix I: Draft Authorities to Construct (ATC)*
- Appendix II: BACT Guideline & Top-Down BACT Analysis*
- Appendix III: SSPE Calculation*
- Appendix IV: RMR Summary*

## **APPENDIX I**

Draft Authorities to Construct (ATC)

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

ISSUANCE DATE: DRAFT  
**DRAFT**

PERMIT NO: N-3744-13-0

LEGAL OWNER OR OPERATOR: UNIVERSITY OF THE PACIFIC  
MAILING ADDRESS: 3601 PACIFIC AVE  
STOCKTON, CA 95211

LOCATION: 3401 KENSINGTON WAY,  
STOCKTON, CA 95211

**EQUIPMENT DESCRIPTION:**

757 BHP VOLVO MODEL TAD1641GE TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE  
POWERING AN ELECTRICAL GENERATOR #1 (LOCATED AT SCHOOL OF EDUCATION BUILDING)

**CONDITIONS**

1. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
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. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
4. {1897} This engine shall be equipped with either a positive crankcase ventilation (PCV) system that recirculates crankcase emissions into the air intake system for combustion, or a crankcase emissions control device of at least 90% control efficiency. [District Rule 2201]
5. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702 and 17 CCR 93115 and 40 CFR 60 Subpart III]
6. {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]
7. 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]
8. Emissions from this IC engine shall not exceed any of the following limits: 3.8 g-NOx/bhp-hr, 0.52 g-CO/bhp-hr, or 0.25 g-VOC/bhp-hr. [District Rule 2201 and 13 CCR 2423 and 17 CCR 93115 and 40 CFR 60 Subpart III]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 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  
N-3744-13-0 : Jan 11 2010 11:44AM - SOV : Joint Inspection NOT Required

9. Emissions from this IC engine shall not exceed 0.07 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115 and 40 CFR 60 Subpart IIII]
10. Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115 and 40 CFR 60 Subpart IIII]
11. {3810} 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 and 17 CCR 93115]
12. {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]
13. {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]
14. 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 and 40 CFR 60 Subpart IIII]
15. 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 and 40 CFR 60 Subpart IIII]
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

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

ISSUANCE DATE: DRAFT  
**DRAFT**

PERMIT NO: N-3744-14-0

LEGAL OWNER OR OPERATOR: UNIVERSITY OF THE PACIFIC  
MAILING ADDRESS: 3601 PACIFIC AVE  
STOCKTON, CA 95211

LOCATION: 3401 KENSINGTON WAY,  
STOCKTON, CA 95211

**EQUIPMENT DESCRIPTION:**

757 BHP VOLVO MODEL TAD1641GE TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE  
POWERING AN ELECTRICAL GENERATOR #2 (LOCATED AT SCHOOL OF EDUCATION BUILDING)

**CONDITIONS**

1. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
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. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
4. {1897} This engine shall be equipped with either a positive crankcase ventilation (PCV) system that recirculates crankcase emissions into the air intake system for combustion, or a crankcase emissions control device of at least 90% control efficiency. [District Rule 2201]
5. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702 and 17 CCR 93115 and 40 CFR 60 Subpart IIII]
6. {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]
7. 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]
8. Emissions from this IC engine shall not exceed any of the following limits: 3.8 g-NOx/bhp-hr, 0.52 g-CO/bhp-hr, or 0.25 g-VOC/bhp-hr. [District Rule 2201 and 13 CCR 2423 and 17 CCR 93115 and 40 CFR 60 Subpart IIII]

CONDITIONS CONTINUE ON NEXT PAGE

YOU **MUST** NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 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  
N-3744-14-0, Jan 11 2010 11:44AM - SOV : Joint Inspection NOT Required

9. Emissions from this IC engine shall not exceed 0.07 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115 and 40 CFR 60 Subpart III]
10. Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115 and 40 CFR 60 Subpart III]
11. {3810} 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 and 17 CCR 93115]
12. {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]
13. {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]
14. 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 and 40 CFR 60 Subpart III]
15. 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 and 40 CFR 60 Subpart III]
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 II**

### **BACT Guideline & Top-Down 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 contained 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.

**\*This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Next Page(s)**

# Top-Down BACT Analysis for NO<sub>x</sub> emissions

Oxides of nitrogen (NO<sub>x</sub>) are generated from the high temperature combustion of the diesel fuel. A majority of the NO<sub>x</sub> emissions are formed from the high temperature reaction of nitrogen and oxygen in the inlet air. The remaining NO<sub>x</sub> emissions are formed from the reaction of fuel-bound nitrogen with oxygen in the inlet air.

The following NO<sub>x</sub> emission control technologies are listed in BACT guideline 3.1.1, 4<sup>th</sup> quarter of 2009 for emergency diesel IC engine as follows:

## **Step 1 - Identify all control technologies**

### Achieved in Practice or contained in the SIP:

Latest EPA Tier Certification level for applicable horsepower range

### Technologically Feasible:

There is no technologically feasible control technology listed on this guideline.

### Alternate Basic Equipment:

There is no alternate basic equipment listed on this guideline.

## **Step 2 - Eliminate technologically infeasible options**

There are no technologically infeasible options that can be eliminated from step 1.

## **Step 3 - Rank remaining options by control effectiveness**

Ranking of the control technologies is not required, since the applicant has proposed utilize the only control technology, achieved in practice control technology listed on this guideline.

## **Step 4 - Cost Effectiveness Analysis**

Pursuant to District BACT Policy APR 1305 IX.D.3 (11/99), a cost-effective analysis is not required since the applicant has proposed utilize the most stringent control technology option listed in Step 3. Therefore, the cost effectiveness analysis is not required.

## **Step 5 - Select BACT**

BACT for NO<sub>x</sub> emissions from the emergency diesel IC engine is the latest EPA Tier Certification level for the applicable horsepower range. The applicant has proposed to install a Tier 2 certified 757 bhp emergency diesel IC engine which is the latest Tier Certification for an engine this size as shown in the attached Tier Certification table at the end of this Appendix. Therefore, BACT for NO<sub>x</sub> emissions is satisfied.

# Top-Down T-BACT Analysis for PM<sub>10</sub> Emissions

Particulate matter (PM<sub>10</sub>) emissions occur from the reaction of various elements in the diesel fuel including fuel sulfur.

The following NO<sub>x</sub> emission control technologies are listed in BACT guideline 3.1.1, 4<sup>th</sup> quarter of 2009 for emergency diesel IC engine as follows:

## **Step 1 - Identify all control technologies**

### Achieved in Practice or contained in the SIP:

0.15 g/hp-hr or the Latest EPA Tier Certification level for applicable horsepower range, whichever is more stringent. (ATCM)

### Technologically Feasible:

There is no technologically feasible control technology listed on this guideline.

### Alternate Basic Equipment:

There is no alternate basic equipment listed on this guideline.

## **Step 2 - Eliminate technologically infeasible options**

There are no technologically infeasible options that can be eliminated from step 1.

## **Step 3 - Rank remaining options by control effectiveness**

Ranking of the control technologies is not required, since the applicant has proposed utilize the only control technology, achieved in practice control technology listed on this guideline.

## **Step 4 - Cost Effectiveness Analysis**

Pursuant to District BACT Policy APR 1305 IX.D.3 (11/99), a cost-effective analysis is not required since the applicant has proposed utilize the most stringent control technology option listed in Step 3. Therefore, the cost effectiveness analysis is not required.

## **Step 5 - Select BACT**

BACT for PM<sub>10</sub> emissions from this emergency diesel IC engine is 0.15 g/hp-hr or the latest EPA Tier Certification level for the applicable horsepower range, whichever is more stringent. The applicant has proposed to install a Tier 2 certified 757 bhp emergency standby diesel IC engine with certified PM<sub>10</sub> emissions of 0.07 g/hp-hr, which less than the latest Tier certification requirement for an engine this size as shown in the attached Tier certification table at the end of this Appendix. Therefore, BACT for PM<sub>10</sub> emissions is satisfied.

# Top-Down BACT Analysis for VOC emissions

Volatile organic compounds (VOC) are emitted from the crankcase of the engine as a result of piston ring blow-by.

The following NO<sub>x</sub> emission control technologies are listed in BACT guideline 3.1.1, 4<sup>th</sup> quarter of 2009 for emergency diesel IC engine as follows:

## **Step 1 - Identify all control technologies**

### Achieved in Practice or contained in the SIP:

Latest EPA Tier Certification level for applicable horsepower range

### Technologically Feasible:

There is no technologically feasible control technology listed on this guideline.

### Alternate Basic Equipment:

There is no alternate basic equipment listed on this guideline.

## **Step 2 - Eliminate technologically infeasible options**

There are no technologically infeasible options that can be eliminated from step 1.

## **Step 3 - Rank remaining options by control effectiveness**

Ranking of the control technologies is not required, since the applicant has proposed utilize the only control technology, achieved in practice control technology listed on this guideline.

## **Step 4 - Cost Effectiveness Analysis**

Pursuant to District BACT Policy APR 1305 IX.D.3 (11/99), a cost-effective analysis is not required since the applicant has proposed utilize the most stringent control technology option listed in Step 3. Therefore, the cost effectiveness analysis is not required.

## **Step 5 - Select BACT**

BACT for VOC emissions from the emergency diesel IC engine is the latest EPA Tier Certification level for the applicable horsepower range. The applicant has proposed to install a Tier 2 certified 757 bhp emergency diesel IC engine which is the latest Tier Certification for an engine this size as shown in the attached Tier Certification table at the end of this Appendix. Therefore, BACT for VOC emissions is satisfied.

**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	-	-	-	-
	2	2004 - 2007	-		5.6		
	3	2008 - 2011			3.5		
	4*	2008 – 2012 (Interim)			3.5	3.7	0.22
75 ≤ hp < 100	1	1998 – 2003	6.9	-	-	-	-
	2	2004 – 2007	-		5.6		
	3	2008 – 2011			3.5		
100 ≤ hp < 175	1	1997 – 2002		6.9	-	-	-
	2	2003 – 2006	-	4.9		3.7	
	3	2007 – 2011		3.0			
175 ≤ hp < 300	1	1996 – 2002		6.9	1.0		-
	2	2003 – 2005	-	-	4.9	2.6	0.15
	3	2006 - 2010			3.0		
300 ≤ hp < 600	1	1996 – 2000			6.9	1.0	-
	2	2001 – 2005	-	-	4.8	2.6	0.15
	3	2006 – 2010			3.0		
600 ≤ hp ≤ 750	1	1996 – 2001			6.9	1.0	-
	2	2002 – 2005	-	-	4.8	2.6	0.15
	3	2006 – 2010			3.0		
> 750	1	2000 – 2005			6.9	1.0	-
	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 III**

### **SSPE Calculation**

SSPE1 Calculation:

For Diesel-Fired IC engine unit:

Emission factor for SOx is calculated by following mass balance equation:

$$\frac{0.000015 \text{ lb - S}}{\text{lb - fuel}} \times \frac{7.1 \text{ lb - fuel}}{\text{gallon}} \times \frac{2 \text{ lb - SO}_2}{1 \text{ lb - S}} \times \frac{1 \text{ gal}}{137,000 \text{ Btu}} \times \frac{1 \text{ bhp input}}{0.35 \text{ bhp out}} \times \frac{2,542.5 \text{ Btu}}{\text{bhp - hr}} \times \frac{453.6 \text{ g}}{\text{lb}} = 0.0051 \frac{\text{g - SO}_x}{\text{bhp - hr}}$$

The District will require the use of ultra-low sulfur (0.0015% by weight) diesel fuel since CARB will be requiring the use of ultra-low sulfur diesel fuel by September 2006.

PTO N-3744-3-0

490 bhp Detroit diesel model series 60, 12.7 diesel-fired emergency standby IC engine powering an electrical generator (Telecommunications Center)

The post-project emission factors (EF2):

Pollutant	Post-Project Emission Factors (EF2)	Source
NO <sub>x</sub>	4.47 g/hp-hr	Current Permit
SO <sub>x</sub>	0.0051 g/hp-hr	Mass balance equation above
PM <sub>10</sub>	0.09 g/hp-hr	Current Permit
CO	0.45 g/hp-hr	Per project N 1021666
VOC	1.12 g/hp-hr	AP 42, Table 3-3-1

Potential to Emit (PE2):

Pollutant	Post-Project Potential to Emit (PE2)					
	EF2 (g/hp-hr)	Power Rating (hp)	Operating Schedule (hr/day)	Conversion (g/lb)	Daily PE2 <sup>2</sup> (lb/day)	Annual PE2 <sup>3</sup> (lb/yr)
NO <sub>x</sub>	4.47	490	20	453.6	96.6	241
SO <sub>x</sub>	0.0051	490	20	453.6	0.11	0
PM <sub>10</sub>	0.09	490	20	453.6	1.94	5
CO	0.45	490	20	453.6	9.72	24
VOC	1.12	490	20	453.6	24.2	60

<sup>2</sup> The daily operating hours of this IC engine is limited to 20 hrs (per current permit).

<sup>3</sup> The annual operating hours of this IC engine is limited to 50 hrs (per current permit).

PTO N-3744-4-1

80 bhp Kohler White model G2300x230 natural gas-fired emergency standby IC engine powering an electrical generator (AG Spanos Center)

The post-project emission factors (EF2):

Pollutant	Post-Project Emission Factors (EF2)	Source
NO <sub>x</sub>	1.0 lb/hp-hr	Per project N 1030047
SO <sub>x</sub>	0.0094 g/hp-hr	NG Mass balance equation above
PM <sub>10</sub>	0.033 lb/hp-hr	Per project N 1030047
CO	1.72 lb/hp-hr	Per project N 1030047
VOC	0.068 lb/hp-hr	Per project N 1030047



Potential to Emit (PE2):

Pollutant	Post-Project Potential to Emit (PE2)					
	EF2 (g/hp-hr)	Power Rating (hp)	Operating Schedule (hr/day)	Conversion (g/lb)	Daily PE2 (lb/day)	Annual PE2 <sup>4</sup> (lb/yr)
NO <sub>x</sub>	1.0	80	24	453.6	4.2	18
SO <sub>x</sub>	0.0094	80	24	453.6	0.04	0
PM <sub>10</sub>	0.033	80	24	453.6	0.14	1
CO	1.72	80	24	453.6	7.3	30
VOC	0.068	80	24	453.6	0.29	1

<sup>4</sup> The annual operating hours of this IC engine is limited to 100 hrs (per current permit).

PTO N-3744-5-1

80 bhp Kohler White model G2300x193 natural gas-fired emergency standby IC engine powering an electrical generator (McCaffey Center)

The post-project emission factors (EF2):

Pollutant	Post-Project Emission Factors (EF2)	Source
NO <sub>x</sub>	1.0 lb/hp-hr	Per project N 1030047
SO <sub>x</sub>	0.0094 g/hp-hr	NG Mass balance equation above
PM <sub>10</sub>	0.033 lb/hp-hr	Per project N 1030047
CO	1.72 lb/hp-hr	Per project N 1030047
VOC	0.068 lb/hp-hr	Per project N 1030047

Potential to Emit (PE2):

Pollutant	Post-Project Potential to Emit (PE2)					
	EF2 (g/hp-hr)	Power Rating (hp)	Operating Schedule (hr/day)	Conversion (g/lb)	Daily PE2 (lb/day)	Annual PE2 <sup>5</sup> (lb/yr)
NO <sub>x</sub>	1.0	80	24	453.6	4.2	18
SO <sub>x</sub>	0.0094	80	24	453.6	0.04	0
PM <sub>10</sub>	0.033	80	24	453.6	0.14	1
CO	1.72	80	24	453.6	7.3	30
VOC	0.068	80	24	453.6	0.29	1

<sup>5</sup> The annual operating hours of this IC engine is limited to 100 hrs (per current permit).

PTO N-3744-6-1

80 bhp Ford model C5PF-60005A natural gas-fired emergency standby IC engine powering an electrical generator (Wood Library)

The post-project emission factors (EF2):

Pollutant	Post-Project Emission Factors (EF2)	Source
NO <sub>x</sub>	1.0 lb/hp-hr	Per project N 1030047
SO <sub>x</sub>	0.0094 g/hp-hr	NG Mass balance equation above
PM <sub>10</sub>	0.033 lb/hp-hr	Per project N 1030047
CO	1.72 lb/hp-hr	Per project N 1030047
VOC	0.068 lb/hp-hr	Per project N 1030047

Potential to Emit (PE2):

Pollutant	Post-Project Potential to Emit (PE2)					
	EF2 (g/hp-hr)	Power Rating (hp)	Operating Schedule (hr/day)	Conversion (g/lb)	Daily PE2 (lb/day)	Annual PE2 <sup>6</sup> (lb/yr)
NO <sub>x</sub>	1.0	80	24	453.6	4.2	18
SO <sub>x</sub>	0.0094	80	24	453.6	0.04	0
PM <sub>10</sub>	0.033	80	24	453.6	0.14	1
CO	1.72	80	24	453.6	7.3	30
VOC	0.068	80	24	453.6	0.29	1

<sup>6</sup> The annual operating hours of this IC engine is limited to 100 hrs (per current permit).

PTO N-3744-7-0

75 bhp Hercules model D2300 diesel-fired emergency standby IC engine powering an electrical generator (Cowell Student Health Center)

The post-project emission factors (EF2):

Pollutant	Post-Project Emission Factors (EF2)	Source
NO <sub>x</sub>	9.11 g/hp-hr	Current Permit
SO <sub>x</sub>	0.0051 g/hp-hr	Mass balance equation above
PM <sub>10</sub>	0.4 g/hp-hr	Current Permit
CO	3.03 g/hp-hr	Per project N 1021666
VOC	1.60 g/hp-hr	AP 42, Table 3-3-1

Potential to Emit (PE2):

Pollutant	Post-Project Potential to Emit (PE2)					
	EF2 (g/hp-hr)	Power Rating (hp)	Operating Schedule (hr/day)	Conversion (g/lb)	Daily PE2 <sup>7</sup> (lb/day)	Annual PE2 <sup>8</sup> (lb/yr)
NO <sub>x</sub>	9.11	75	7.5	453.6	11.3	32
SO <sub>x</sub>	0.0051	75	7.5	453.6	0.01	0
PM <sub>10</sub>	0.4	75	7.5	453.6	0.50	1
CO	3.03	75	7.5	453.6	3.76	11
VOC	1.60	75	7.5	453.6	1.98	6

<sup>7</sup> The daily operating hours of this IC engine is limited to 7.5 hrs (per current permit).

<sup>8</sup> The annual operating hours of this IC engine is limited to 21 hrs (per current permit).

PTO N-3744-8-0

Gasoline dispensing operation with one 2,000 gallon split (1,500 gallons gasoline/500 gallons diesel) aboveground storage tank served by two-point phase I vapor recovery system, and 1 fueling point with 1 gasoline dispensing nozzle served by a balance phase II vapor recovery system (G-70-116-F)

$$\text{Daily PE}_{\text{VOC}} = \text{EF} \times \text{number of FP} = 2.36 \text{ lb-VOC/FP-day} \times 1 = 2.4 \text{ lb-VOC/day}$$

$$\text{Annual PE}_{\text{VOC}} = 2.4 \text{ lb-VOC/day} \times 365 \text{ day/year} = 876 \text{ lb-VOC/year}$$

PTO N-3744-9-0

Woodworking operation consisting of six saws, one planer, an one sander all served by a 2,850 cfm Quinones model DURA-Q 7.5 dust collector

Daily PM<sub>10</sub> = EF x airflow rate x operating schedule x conversion factor  
= 0.004 gr/dscf x 2,850 dscf/min x 1,440 min/day x 1-lb/7,000-gr = 2.3 lb-PM<sub>10</sub>/day  
Annual PM<sub>10</sub> = 2.3 lb-PM<sub>10</sub>/day x 365 day/yr = 840 lb-PM<sub>10</sub>/yr

PTO N-3744-10-0

383.6 bhp John Deere model 6090HF485 Tier 3 certified diesel-fired emergency standby IC engine powering an electrical generator (located at Biology Building)

The post-project emission factors (EF2):

Pollutant	Post-Project Emission Factors (EF2)	Source
NO <sub>x</sub>	2.52 g/hp-hr	Current permit
SO <sub>x</sub>	0.0051 g/hp-hr	Mass balance equation above
PM <sub>10</sub>	0.09 g/hp-hr	Current permit
CO	0.37 g/hp-hr	Current permit
VOC	0.18 g/hp-hr	Current permit

Potential to Emit (PE2):

Pollutant	Post-Project Potential to Emit (PE2)					
	EF2 (g/hp-hr)	Power Rating (hp)	Operating Schedule (hr/day)	Conversion (g/lb)	Daily PE2 (lb/day)	Annual PE2 <sup>9</sup> (lb/yr)
NO <sub>x</sub>	2.52	383.6	24	453.6	51.1	107
SO <sub>x</sub>	0.0051	383.6	24	453.6	0.1	0
PM <sub>10</sub>	0.09	383.6	24	453.6	1.8	4
CO	0.37	383.6	24	453.6	7.5	16
VOC	0.18	383.6	24	453.6	3.7	8

<sup>9</sup> The annual operating hours of this IC engine is limited to 50 hrs (per current permit).

PTO N-3744-11-0

93 bhp John Deere model 5030HF270 Tier 2 certified diesel-fired emergency standby IC engine powering an electrical generator (located at Kelin Field)

The post-project emission factors (EF2):

Pollutant	Post-Project Emission Factors (EF2)	Source
NO <sub>x</sub>	4.92 g/hp-hr	Current permit
SO <sub>x</sub>	0.0051 g/hp-hr	Mass balance equation above
PM <sub>10</sub>	0.088 g/hp-hr	Current permit
CO	0.75 g/hp-hr	Current permit
VOC	0.34 g/hp-hr	Current permit

Potential to Emit (PE2):

Pollutant	Post-Project Potential to Emit (PE2)					
	EF2 (g/hp-hr)	Power Rating (hp)	Operating Schedule (hr/day)	Conversion (g/lb)	Daily PE2 (lb/day)	Annual PE2 <sup>10</sup> (lb/yr)
NO <sub>x</sub>	4.92	93	24	453.6	24.2	50
SO <sub>x</sub>	0.0051	93	24	453.6	0.03	0
PM <sub>10</sub>	0.088	93	24	453.6	0.4	1
CO	0.75	93	24	453.6	3.7	8
VOC	0.34	93	24	453.6	1.7	3

<sup>10</sup> The annual operating hours of this IC engine is limited to 50 hrs (per current permit).

PTO N-3744-12-0

96 bhp John Deere model 5030HF270 Tier 2 certified diesel-fired emergency standby IC engine powering an electrical generator

The post-project emission factors (EF2):

Pollutant	Post-Project Emission Factors (EF2)	Source
NO <sub>x</sub>	4.92 g/hp-hr	Current permit
SO <sub>x</sub>	0.0051 g/hp-hr	Mass balance equation above
PM <sub>10</sub>	0.09 g/hp-hr	Current permit
CO	0.75 g/hp-hr	Current permit
VOC	0.34 g/hp-hr	Current permit

Potential to Emit (PE2):

Pollutant	Post-Project Potential to Emit (PE2)					
	EF2 (g/hp-hr)	Power Rating (hp)	Operating Schedule (hr/day)	Conversion (g/lb)	Daily PE2 (lb/day)	Annual PE2 <sup>11</sup> (lb/yr)
NO <sub>x</sub>	4.92	96	24	453.6	25.0	52
SO <sub>x</sub>	0.0051	96	24	453.6	0.03	0
PM <sub>10</sub>	0.09	96	24	453.6	0.46	1
CO	0.75	96	24	453.6	3.81	8
VOC	0.34	96	24	453.6	1.73	4

<sup>11</sup> The annual operating hours of this IC engine is limited to 50 hrs (per current permit).

## **APPENDIX IV**

### RMR Summary

## San Joaquin Valley Air Pollution Control District Risk Management Review

To: Wai-Man So, AQE – Permit Services  
 From: Ester Davila, SAQS – Technical Services  
 Date: December 30, 2009  
 Facility Name: University of Pacific  
 Location: 3441 Kensington Way, Stockton CA 95204  
 Application #(s): N-3744-13-0 & 14-0  
 Project #: N-1094524

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### A. RMR SUMMARY

RMR Summary			
Categories	Two Emergency DICE (Units 13-0 & 14-0)	Project Totals	Facility Totals
Prioritization Score	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>
Acute Hazard Index	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>
Chronic Hazard Index	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>
Maximum Individual Cancer Risk	4.31E-09 (each)	8.62E-09	1.82E-06
T-BACT Required?	No		
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:

#### Units #13-0 & 14-0 (Identical)

1. Modified {1901} The PM10 emissions rate shall not exceed **0.07 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, 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 December 15, 2009, to perform an Ambient Air Quality Analysis and a Risk Management Review for two identical 757 bhp emergency diesel IC engines driving electrical generators.

### 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 (Identical)						
Units #	Hp-hr	PM <sub>10</sub> g/hp-hr	Receptor (m)	Quad	Hours/Year	Load%
13-0 & 14-0	757	0.07	9	2	50	100
Location Type		Urban	Receptor Type		Business	

Technical Services also performed modeling for criteria pollutants CO, NO<sub>x</sub>, SO<sub>x</sub>, and PM<sub>10</sub>. The emission rates used for criteria pollutant modeling were 0.87 lb/hr CO, 6.3 lb/hr NO<sub>x</sub>, 0.0083 lb/hr SO<sub>x</sub>, and 0.117 lb/hr PM<sub>10</sub>. The engineer supplied the maximum fuel rate for the IC engine used during the analysis.

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	X	X	X	Pass
SO <sub>x</sub>	Pass	Pass	X	Pass	Pass
PM <sub>10</sub>	X	X	X	Pass <sup>2</sup>	Pass <sup>2</sup>

\*Results were taken from the attached PSD spreadsheets.

<sup>1</sup>Results determined by PVMRM

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

### III. Conclusion

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 total cancer risk associated with the operation of the proposed emergency diesel IC engines is **8.62E-09**, which is less than the 1 in a million threshold. In accordance with the District's Risk Management Policy, the project is approved **without** 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.