

NOV 17 2017

Eric Loken
Central California Women's Facility
23370 Road 22
Chowchilla, CA 93610

Re: Notice of Preliminary Decision - Authority to Construct
Facility Number: C-252
Project Number: C-1172629

Dear Mr. Loken:

Enclosed for your review and comment is the District's analysis of Central California Women's Facility's application for an Authority to Construct for a 601 bhp Tier 3 certified diesel engine to provide emergency power in the event of an electrical outage, at 23370 Road 22, Chowchilla.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. After addressing all comments made during the 30-day public notice period, the District intends to issue the Authority to Construct. Please submit your written comments on this project within the 30-day public comment period, as specified in the enclosed public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Ms. Mahsa Hooshmandi of Permit Services at (559) 230-5865.

Sincerely,



Arnaud Marjollet
Director of Permit Services

AM:MH

Enclosures

cc: Tung Le, CARB (w/ enclosure) via email

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-8400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

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

San Joaquin Valley Air Pollution Control District
Authority to Construct
Application Review

Diesel-Fired Emergency Standby IC Engine

Facility Name: Central California Women's Facility Date: 11/15/2017
Mailing Address: 23370 Road 22 Engineer: Mahsa Hooshmandi
 Chowchilla, CA 93610 Lead Engineer: Joven Refuerzo
Contact Person: Eric Loken
 Telephone: (916) 255-6456
 E-mail: Eric.Loken@cdcr.ca.gov
Application #: C-252-27-0
 Project #: C-1172629
Deemed Complete: 09/14/2017

I. Proposal

Central California Women's Facility is proposing to install a 601 bhp (intermittent) diesel-fired emergency standby internal combustion (IC) engine powering an electrical generator.

II. Applicable Rules

Rule 2201 New and Modified Stationary Source Review Rule (2/18/16)
Rule 2410 Prevention of Significant Deterioration (6/16/11)
Rule 2520 Federally Mandated Operating Permits (6/21/01)
Rule 4001 New Source Performance Standards (4/14/99)
Rule 4002 National Emission Standards for Hazardous Air Pollutants (5/20/04)
Rule 4101 Visible Emissions (2/17/05)
Rule 4102 Nuisance (12/17/92)
Rule 4201 Particulate Matter Concentration (12/17/92)
Rule 4701 Internal Combustion Engines - Phase 1 (8/21/03)
Rule 4702 Internal Combustion Engines (11/14/13)
Rule 4801 Sulfur Compounds (12/17/92)
CH&SC 41700 Health Risk Assessment
CH&SC 42301.6 School Notice
Title 17 CCR, Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines
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

The equipment will be located at 23370 Road 22 in Chowchilla, CA.

The District has verified that the equipment is not located within 1,000 feet of the outer boundary of a 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

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

V. Equipment Listing

C-252-27-0: 601 BHP (INTERMITTENT) CATERPILLAR MODEL C13 TIER 3 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR

VI. Emission Control Technology Evaluation

The applicant has proposed to install a Tier 3 certified diesel-fired IC engine that is fired on very low-sulfur diesel fuel.

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

The use of CARB certified diesel fuel (0.0015% by weight sulfur maximum) reduces SO_x emissions by over 99% from standard diesel fuel.

VII. General Calculations

A. Assumptions

Emergency operating schedule:	24 hours/day
Non-emergency operating schedule:	50 hours/year
Density of diesel fuel:	7.1 lb/gal
EPA F-factor (adjusted to 60 °F):	9,051 dscf/MMBtu
Fuel heating value:	137,000 Btu/gal
BHP to Btu/hr conversion:	2,542.5 Btu/bhp-hr
Thermal efficiency of engine:	commonly ≈ 35%
PM ₁₀ fraction of diesel exhaust:	0.96 (CARB, 1988)
Conversion factor:	1.34 bhp/kw

B. Emission Factors

Emission Factors		
Pollutant	Emission Factor (g/bhp-hr)	Source
NO _x	4.63	Engine Manufacturer
SO _x	0.0051	Mass Balance Equation Below
PM ₁₀	0.05	Engine Manufacturer
CO	1.24	Engine Manufacturer
VOC	0.01	Engine Manufacturer

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

C. Calculations

1. Pre-Project Potential to Emit (PE1)

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

2. Post-Project Potential to Emit (PE2)

The daily and annual PE2 are calculated as follows:

$$\text{Daily PE2 (lb-pollutant/day)} = \text{EF (g-pollutant/bhp-hr)} \times \text{rating (bhp)} \times \text{operation (hr/day)} / 453.6 \text{ g/lb}$$

$$\text{Annual PE2 (lb-pollutant/yr)} = \text{EF (g-pollutant/bhp-hr)} \times \text{rating (bhp)} \times \text{operation (hr/year)} / 453.6 \text{ g/lb}$$

Post Project Emissions (PE2)						
Pollutant	Emissions Factor (g/bhp-hr)	Rating (bhp)	Daily Hours of Operation (hr/day)	Annual Hours of Operation (hr/year)	Daily PE2 (lb/day)	Annual PE2 (lb/year)
NO _x	4.63	601	24	50	147.2	307
SO _x	0.0051	601	24	50	0.2	0
PM ₁₀	0.05	601	24	50	1.6	3
CO	1.24	601	24	50	39.4	82
VOC	0.01	601	24	50	0.3	1

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

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

SSPE1 is summarized in the following table. See Appendix F for detailed SSPE calculations.

SSPE1 (lb/year)					
	NO_x	SO_x	PM₁₀	CO	VOC
SSPE1	821	31	5,624	470	9,409

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

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

For this project the change in emissions for the facility is due to the installation of the new emergency standby IC engine. Thus:

SSPE2 (lb/year)					
Permit Unit	NO_x	SO_x	PM₁₀	CO	VOC
SSPE1	821	31	5,624	470	9,409
C-252-27-0	307	0	3	82	1
SSPE2	1,128	31	5,627	552	9,410

5. Major Source Determination

Rule 2201 Major Source Determination:

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values. For the purposes of determining major source status the following shall not be included:

- Any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 51.165

Rule 2201 Major Source Determination (lb/year)						
	NO_x	SO_x	PM₁₀	PM_{2.5}*	CO	VOC
SSPE1	821	31	5,624	5,624	470	9,409
SSPE2	1,128	31	5,627	5,627	552	9,410
Major Source Threshold	20,000	140,000	140,000	140,000	200,000	20,000
Major Source?	No	No	No	No	No	No

* PM_{2.5} emissions are assumed to be equal to PM₁₀ emissions.

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

Rule 2410 Major Source Determination:

The facility is not an existing Major Source for PSD for at least one pollutant. Therefore the facility is not an existing Major Source for PSD.

6. Baseline Emissions (BE)

BE = Pre Project Potential to Emit for:

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

Otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to District Rule 2201
Since this is a new emissions unit, BE = PE1 = 0 for all pollutants.

7. SB 288 Major Modification

SB 288 Major Modification is defined in 40 CFR Part 51.165 as "any physical change in or change in the method of operation of a major stationary source that

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

Since this facility is not a major source for any of the pollutants addressed in this project, this project does not constitute an SB 288 major modification.

8. Federal Major Modification

District Rule 2201 states that a Federal Major Modification is the same as a "Major Modification" as defined in 40 CFR 51.165 and part D of Title I of the CAA.

Since this facility is not a Major Source for any pollutants, this project does not constitute a Federal Major Modification.

9. Rule 2410 - Prevention of Significant Deterioration (PSD) Applicability Determination

The project potential to emit, by itself, will not exceed any PSD major source thresholds. Therefore Rule 2410 is not applicable and no further discussion is required.

10. Quarterly Net Emissions Change (QNEC)

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

VIII. Compliance

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following¹:

- a. Any new emissions unit with a potential to emit exceeding two pounds per day,
- b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,

¹ Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

- c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
- d. Any new or modified emissions unit, in a stationary source project, which results in an SB288 Major Modification or a Federal Major Modification, as defined by the rule.

As discussed in Section I, the facility is proposing to install a new emergency standby IC engine. Additionally, as determined in Sections VII.C.7 and VII.C.8, this project does not result in an SB288 Major Modification or a Federal Major Modification, respectively. Therefore, BACT can only be triggered if the daily emissions exceed 2.0 lb/day for any pollutant.

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

New Emissions Unit BACT Applicability				
Pollutant	Daily Emissions for the new unit (lb/day)	BACT Threshold (lb/day)	SSPE2 (lb/yr)	BACT Triggered?
NO_x	147.2	> 2.0	n/a	Yes
SO_x	0.2	> 2.0	n/a	No
PM₁₀	1.6	> 2.0	n/a	No
CO	39.4	> 2.0 and SSPE2 ≥ 200,000 lb/yr	552	No
VOC	0.3	> 2.0	n/a	No

As shown above, BACT will be triggered for NO_x from the engine for this project.

2. BACT Guideline

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

3. Top Down BACT Analysis

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

For this project as demonstrated above BACT is triggered only for NO_x PE > 2.0 lb/day purposes. However as discussed later in this document under Rule 4102,

BACT for toxic emission control (T-BACT) is triggered for PM₁₀; therefore, this project includes top down BACT analyses for NO_x and PM₁₀ emissions.

Pursuant to the attached top down BACT analyses, which appear in Appendix B of this report, BACT and T-BACT are satisfied with:

NO_x: Latest Available Tier Certification level for applicable horsepower*
PM₁₀: 0.15 g/bhp-hr

*Note: The certification requirements for emergency engines are as follows:
50 ≤ bhp < 75 – Tier 4I; 75 ≤ bhp < 750 – Tier 3; ≥ 750 bhp – Tier 2.

The facility has proposed to install a 601 bhp Tier 3 certified IC engine with a PM₁₀ emissions rate of 0.05 g/bhp-hr. Therefore, BACT is satisfied for NO_x and T-BACT is satisfied for PM₁₀.

B. Offsets

1. Offset Applicability

Pursuant to Section 4.6.2 of this rule, offsets are not required for emergency IC engines. The engine in this project is an emergency IC engine; therefore, this exemption is applicable to this project.

However, even when there is an applicable exemption, the SSPE2 values are compared to the offset threshold to determine if offsets are triggered. In its PAS database, the District keeps track of facilities where offsets are triggered but an exemption applies. The SSPE2 values are compared to the offset trigger thresholds in the following table:

Offset Determination (lb/year)					
	NO_x	SO_x	PM₁₀	CO	VOC
SSPE2	1,128	31	5,627	552	9,410
Offset Thresholds	20,000	54,750	29,200	200,000	20,000
Offsets Triggered?	No	No	No	No	No

2. Quantity of Offsets Required

As shown in the table above, no offset thresholds are exceeded with this project. Further, as previously stated, the offset exemption from Section 4.6.2 of District Rule 2201 is applicable to this project; therefore, offset calculations are not necessary and offsets are not required.

C. Public Notification

1. Applicability

Public noticing is required for:

- a. New Major Sources, SB288 Major Modifications, and Federal Major Modifications

As shown in Sections VII.C.5, VII.C.7, and VII.C.8, this facility is not a new Major Source, not an SB 288 Major Modification, and not a Federal Major Modification, respectively. Therefore, public noticing is not required for these purposes.

- b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any pollutant

As calculated in Section VII.C.2, daily emissions for NO_x are greater than 100 lb/day. Therefore, public noticing is required for this purpose.

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

The SSPE1 and SSPE2 are compared to the offset thresholds in the following table.

Offset Thresholds				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO _x	821	1,128	20,000 lb/year	No
SO _x	31	31	54,750 lb/year	No
PM ₁₀	5,624	5,627	29,200 lb/year	No
CO	470	552	200,000 lb/year	No
VOC	9,409	9,410	20,000 lb/year	No

As detailed in the table above, there were no thresholds surpassed with this project; therefore public noticing is not required for offset purposes.

- d. Any project with a Stationary Source Project Increase in Permitted Emissions (SSIPE) greater than 20,000 lb/year for any pollutant

For this project, the proposed engine is the only emissions unit that will generate an increase in Potential to Emit. Since the proposed engine

emissions are well below 20,000 lb/year for all pollutants (See Section VII.C.2), the SSIPE for this project will be below the public notice threshold. Therefore, public noticing is not required for this purpose.

e. Any project which results in a Title V significant permit modification

Since this facility does not have a Title V operating permit, this change is not a Title V significant modification, and therefore public noticing is not required for this purpose.

2. Public Notice Action

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

D. Daily Emissions Limits

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. The DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. Therefore, the following conditions will be listed on the ATC as a mechanism to ensure compliance:

- {4771} Emissions from this IC engine shall not exceed any of the following limits: 4.63 g-NO_x/bhp-hr, 1.24 g-CO/bhp-hr, or 0.01 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]
- {4772} Emissions from this IC engine shall not exceed 0.05 g-PM₁₀/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115]
- {4258} 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]

E. Compliance Assurance

1. Source Testing

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

2. Monitoring

No monitoring is required to demonstrate compliance with District Rule 2201.

3. Recordkeeping

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

4. Reporting

No reporting is required to ensure compliance with District Rule 2201.

F. Ambient Air Quality Analysis (AAQA)

An AAQA shall be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The District's Technical Services Division conducted the required analysis. Refer to Appendix D of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO_x, CO, and SO_x. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO_x, CO, or SO_x.

The proposed location is in a non-attainment area for the state's PM₁₀ as well as federal and state PM_{2.5} thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for PM₁₀ and PM_{2.5}.

Rule 2410 Prevention of Significant Deterioration

As shown in Section VII.C.9 above, this project does not result in a new PSD major source or PSD major modification. No further discussion is required.

Rule 2520 Federally Mandated Operating Permits

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

Rule 4001 New Source Performance Standards (NSPS)

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

The District has not been delegated the authority to implement Subpart IIII requirements for non-Major Sources; therefore, no requirements shall be included on the permit.

Rule 4002 National Emission Standards for Hazardous Air Pollutants

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

The District has not been delegated the authority to implement NESHAP regulations for Area Source requirements for non-Major Sources; therefore, no requirements shall be included on the permit.

Rule 4101 Visible Emissions

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

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

Rule 4102 Nuisance

Rule 4102 states that no air contaminant shall be released into the atmosphere which causes a public nuisance. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, the following condition will be listed on the ATC as a mechanism to ensure compliance:

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

California Health & Safety Code 41700 (Health Risk Assessment)

District Policy APR 1905 – *Risk Management Policy for Permitting New and Modified Sources* 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.

An HRA is not required for a project with a total facility prioritization score of less than one. According to the Technical Services Memo for this project (Appendix D), the total facility prioritization score including this project was greater than one. Therefore, an HRA was required to determine the short-term acute and long-term chronic exposure from this project.

RMR Summary						
Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required ?	Special Permit Requirements ?
Unit 27-0 (601 BHP DICE)	N/A ¹	N/A ²	0.0	1.40E-06	Yes	Yes
Project Totals	N/A ¹	N/A ²	0.0	1.40E-06		
Facility Totals	>1	0.00	0.0	1.79E-06		

¹Prioritization 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.

²Acute 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 this type of unit.

Discussion of T-BACT

T-BACT is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is required for this project because the HRA indicates that the risk is above the District's thresholds for triggering T-BACT requirements.

For this project T-BACT is triggered for PM₁₀. T-BACT is satisfied with BACT (see Appendix B), which is:

PM₁₀: 0.15 g/bhp-hr

Therefore, compliance with the District's Risk Management Policy is expected.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification not have acute or chronic indices, or a cancer risk greater than the District's significance levels (i.e. acute and/or chronic indices greater than 1 and a cancer risk greater than 20 in a million). As outlined by the Technical Services Memo in Appendix D of this report, the emissions increases for this project were determined to be less than significant.

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

- {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

- {4772} Emissions from this IC engine shall not exceed 0.05 g-PM₁₀/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115]
- {4920} 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 Rules 2201, 4102, and 4702, and 17 CCR 93115]

Rule 4201 Particulate Matter Concentration

Rule 4201 limits particulate matter emissions from any single source operation to 0.1 g/dscf, which, as calculated below, is equivalent to a PM₁₀ emission factor of 0.4 g-PM₁₀/bhp-hr.

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

The new engine has a PM₁₀ emission factor less than 0.4 g/bhp-hr. Therefore, compliance is expected and the following condition will be listed on the ATC as a mechanism to ensure compliance:

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

Rule 4701 Internal Combustion Engines - Phase 1

The purpose of this rule is to limit the emissions of nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC) from internal combustion engines. Except as provided in Section 4.0, the provisions of this rule apply to any internal combustion engine, rated greater than 50 bhp, that requires a PTO.

The proposed engine is also subject to District Rule 4702, Internal Combustion Engines. Since emissions limits of District Rule 4702 and all other requirements are equivalent or more stringent than District Rule 4701 requirements for emergency engines, compliance with District Rule 4702 requirements will satisfy requirements of District Rule 4701.

Rule 4702 Internal Combustion Engines

Emergency standby engines are subject to District Rule 4702 requirements. Emergency standby engines are defined in Section 3.0 of District Rule 4702 as follows:

3.15 Emergency Standby Engine: 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.

Emergency standby engines cannot be used to reduce the demand for electrical power when normal electrical power line service has not failed, or to produce power for the electrical distribution system, or in conjunction with a voluntary utility demand reduction program or interruptible power contract. The following conditions will be included on the permit:

- {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 and 17 CCR 93115]
- {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 and 17 CCR 93115]

The 100 hour requirement is less stringent than the Air Toxic Control Measure operating limitations for emergency standby engines. Therefore, compliance with the applicable Air Toxic Control Measure requirements ensures compliance with the 100 hour requirement.

Operation of emergency standby engines are limited to 100 hours or less per calendar year for non-emergency purposes. The Air Toxic Control Measure for Stationary Compression Ignition Engines (Stationary ATCM) limits this engine's maintenance and testing to 50 hours/year; therefore, compliance is expected. The following condition will be included on the permit:

- {4920} 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 Rules 2201, 4102, and 4702, and 17 CCR 93115]

The following exemption in Section 4.2 of District Rule 4702 applies to emergency standby engines:

4.2 Except for the requirements of Section 5.9 and Section 6.2.3, the requirements of this rule shall not apply to:

4.2.1 An emergency standby engine as defined in Section 3.0 of this rule, and provided that it is operated with a nonresettable elapsed operating time meter. In lieu of a nonresettable 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.

Pursuant to the exemption in Section 4.2, the following requirements of Section 5.9 are applicable to emergency standby engines.

Section 5.9 requires the owner to:

5.9.2 Properly operate and maintain each engine as recommended by the engine manufacturer or emission control system supplier.

5.9.3 Monitor the operational characteristics of each engine as recommended by the engine manufacturer or emission control system supplier.

5.9.4 Install and operate a nonresettable elapsed operating time meter. In lieu of installing a nonresettable 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.

Properly operate and maintain each engine as recommended by the engine manufacturer or emission control system supplier. The following condition will be included on the permit:

- {4261} 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]

Monitor the operational characteristics of each engine as recommended by the engine manufacturer or emission control system supplier. The following condition will be included on the permit:

- {3478} During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702]

Install and operate a nonresettable elapsed time meter. In lieu of installing a nonresettable elapsed time meter, the operator may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO and EPA and is allowed by Permit-to-Operate condition. The operator shall properly maintain and operate the nonresettable elapsed time meter or alternative device in accordance with the manufacturer's instructions. The following condition will be included on the permit:

- {4749} This engine shall be equipped with a non-resettable hour meter with a minimum display capability of 9,999 hours, unless the District determines that a non-resettable hour meter with a different minimum display capability is appropriate in consideration of the historical use of the engine and the owner or operator's compliance history. [District Rule 4702 and 17 CCR 93115]

The exemption in Rule 4702 Section 4.2 for emergency standby engines requires the engines to comply with Section 6.2.3, shown below.

6.2.3 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 provided to the APCO upon request. The records shall include, but are not limited to, the following:

6.2.3.1 Total hours of operation,

6.2.3.2 The type of fuel used,

6.2.3.3 The purpose for operating the engine,

6.2.3.4 For emergency standby engines, all hours of non-emergency and emergency operation shall be reported, and

6.2.3.5 Other support documentation necessary to demonstrate claim to the exemption.

Records of the total hours of operation, type of fuel used, purpose for operating the engine, all hours of non-emergency and emergency operation, and other support documentation must be maintained. All records shall be retained for a period of at least five years, shall be readily available, and be made available to the APCO upon request. The following conditions will be included on the permit:

- {3496} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]
- {4263} The permittee shall maintain monthly records of the type of fuel purchased. [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]

Rule 4801 Sulfur Compounds

Rule 4801 requires that sulfur compound emissions (as SO₂) shall not exceed 0.2% by volume. Using the ideal gas equation, the sulfur compound emissions are calculated as follows:

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

n = moles SO₂

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

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

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

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

- {4258} 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]

California Health & Safety Code 42301.6 (School Notice)

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

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

The following requirements apply to new engines (those installed after 1/1/05):

<p>Title 17 CCR Section 93115 Requirements for New Emergency IC Engines Powering Electrical Generators</p>	<p>Proposed Method of Compliance with Title 17 CCR Section 93115 Requirements</p>
<p>Emergency engine(s) must be fired on CARB diesel fuel, or an approved alternative diesel fuel.</p>	<p>The applicant has proposed the use of CARB certified diesel fuel. The proposed permit condition, requiring the use of CARB certified diesel fuel, is included on the permit.</p> <ul style="list-style-type: none"> • {4258} 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]
<p>The engine(s) must meet the emission standards in Table 1 of the ATCM for the specific power rating and model year of the proposed engine.</p>	<p>The applicant has proposed the use of an engine that is certified to the latest EPA Tier Certification standards for the applicable horsepower range, guaranteeing compliance with the emission standards of the ATCM. Additionally, the proposed diesel PM emissions rate is less than or equal to 0.15 g/bhp-hr.</p>
<p>The engine may not be operated more than 50 hours per year for maintenance and testing purposes unless the PM emissions are \leq 0.01 g/bhp-hr, then the engine is allowed 100 hours per year. Emissions from this engine are certified at 0.10 g/bhp-hr, therefore the engine is allowed 50 hours.</p>	<p>The following conditions will be included on the permit:</p> <ul style="list-style-type: none"> • {4772} Emissions from this IC engine shall not exceed 0.05 g-PM₁₀/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115] • {4920} 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 Rules 2201, 4102, and 4702, and 17 CCR 93115]
<p>Engines, with a PM₁₀ emissions rate greater than 0.01 g/bhp-hr and located at schools, may not be operated for maintenance and testing whenever there is a school sponsored activity on the grounds. Additionally, engines located within 500 feet of school grounds may not be operated for maintenance and testing between 7:30 AM and 3:30 PM</p>	<p>The District has verified that this engine is not located within 500' of a school.</p>

<p>A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed upon engine installation, or by no later than January 1, 2005, on all engines subject to all or part of the requirements of sections 93115.6, 93115.7, or 93115.8(a) unless the District determines on a case-by-case basis that a non-resettable hour meter with a different minimum display capability is appropriate in consideration of the historical use of the engine and the owner or operator's compliance history.</p>	<p>The following condition will be included on the permit:</p> <ul style="list-style-type: none"> • {4749} This engine shall be equipped with a non-resettable hour meter with a minimum display capability of 9,999 hours, unless the District determines that a non-resettable hour meter with a different minimum display capability is appropriate in consideration of the historical use of the engine and the owner or operator's compliance history. [District Rule 4702 and 17 CCR 93115]
<p>An owner or operator shall maintain monthly records of the following: emergency use hours of operation; maintenance and testing hours of operation; hours of operation for emission testing; initial start-up testing hours; hours of operation for all other uses; and the type of fuel used. All records shall be retained for a minimum of 36 months.</p>	<p>The following condition will be included on the permit:</p> <ul style="list-style-type: none"> • {3496} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]

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 qualifies for ministerial approval under the District's Guideline for Expedited Application Review (GEAR). Section 21080 of the Public Resources Code exempts from the application of CEQA those projects over which a public agency exercises only ministerial approval. Therefore, the District finds that this project is exempt from the provisions of CEQA.

Indemnification Agreement/Letter of Credit Determination

According to District Policy APR 2010 (CEQA Implementation Policy), when the District is the Lead or Responsible Agency for CEQA purposes, an indemnification agreement and/or a letter of credit may be required. The decision to require an indemnity agreement and/or a letter of credit is based on a case-by-case analysis of a particular project's potential for litigation risk, which in turn may be based on a project's potential to generate public concern, its potential for significant impacts, and the project proponent's ability to pay for the costs of litigation without a letter of credit, among other factors.

As described above, the project requires only ministerial approval, and is exempt from the provisions of CEQA. As such, an Indemnification Agreement or a Letter of Credit will not be required for this project in the absence of expressed public concern.

IX. Recommendation

Pending a successful NSR public noticing period, issue Authority to Construct C-252-27-0 subject to the permit conditions on the attached draft ATC in Appendix A.

X. Billing Information

Billing Schedule			
Permit Number	Fee Schedule	Fee Description	Fee Amount
C-252-27-0	3020-10-D	601 bhp IC engine	\$525

Appendices

- A. Draft ATC
- B. BACT Guideline and BACT Analysis
- C. Emissions Data Sheet

- D. RMR and AAQA
- E. QNEC Calculations
- F. SSPE1 Calculations

Appendix A
Draft ATC

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: C-252-27-0

LEGAL OWNER OR OPERATOR: CENTRAL CAL WOMEN'S FACILITY
MAILING ADDRESS: ATTN: PLANT MANAGER
P O BOX 1501
CHOWCHILLA, CA 93610-1501

LOCATION: 23370 ROAD 22
CHOWCHILLA, CA 93610

EQUIPMENT DESCRIPTION:
601 BHP (INTERMITTENT) CATERPILLAR MODEL C13 TIER 3 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR

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. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
5. {4749} This engine shall be equipped with a non-resettable hour meter with a minimum display capability of 9,999 hours, unless the District determines that a non-resettable hour meter with a different minimum display capability is appropriate in consideration of the historical use of the engine and the owner or operator's compliance history. [District Rule 4702 and 17 CCR 93115]
6. {4258} 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]
7. Emissions from this IC engine shall not exceed any of the following limits: 4.63 g-NOx/bhp-hr, 1.24 g-CO/bhp-hr, or 0.01 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]

CONDITIONS CONTINUE ON NEXT PAGE

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

Seyed Sadredin, Executive Director, APCO

Arnaud Marjollet, Director of Permit Services
C-252-27-0 Oct 10 2017 1:15PM - HOOSHAMAM Joint Inspection NOT Required

8. Emissions from this IC engine shall not exceed 0.05 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115]
9. {4261} 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]
10. {3478} During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702]
11. {3807} An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702 and 17 CCR 93115]
12. {3808} This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rule 4702 and 17 CCR 93115]
13. {3496} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]
14. {4920} 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 Rules 2201, 4102, and 4702, and 17 CCR 93115]
15. {4263} The permittee shall maintain monthly records of the type of fuel purchased. [District Rule 4702 and 17 CCR 93115]
16. {3475} All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]

DRAFT

Appendix B
BACT Guideline and BACT Analysis

San Joaquin Valley Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline 3.1.1
Last Update: 9/10/2013
Emergency Diesel IC Engine

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
CO	Latest EPA Tier Certification level for applicable horsepower range*		
NOX	Latest EPA Tier Certification level for applicable horsepower range*		
PM ₁₀	0.15 g/bhp-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*		

*Note: The certification requirements are as follows: for emergency engines $50 \leq \text{bhp} < 75$ - Tier 4 Interim; for emergency engines $75 \leq \text{bhp} < 750$ - Tier 3; for emergency engines ≥ 750 bhp - Tier 2.

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

Top Down BACT Analysis for the Emergency IC Engine

BACT Guideline 3.1.1 (September 10, 2013) applies to emergency diesel IC engines. In accordance with the District BACT policy, information from that guideline will be utilized without further analysis.

1. BACT Analysis for NO_x Emissions:

a. Step 1 - Identify all control technologies

BACT Guideline 3.1.1 identifies only the following option:

- *Latest EPA Tier Certification level for applicable horsepower range*

To determine the latest applicable Tier level, the following EPA and state regulations were consulted:

- 40 CFR Part 89 – Control of Emissions from New and In-Use Nonroad Compression – Ignition Engines
- 40 CFR Part 1039 – Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines
- Title 17 CCR, Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines

40 CFR Parts 89 and 1039, which apply only to nonroad engines, do not directly apply because the proposed emergency engine does not meet the definition of a nonroad engine. Therefore, only Title 17 CCR, Section 93115 applies directly to the proposed emergency engine.

Title 17 CCR, Section 93115.6(a)(3)(A) (CARB stationary diesel engine ATCM) applies to emergency standby diesel-fired engines and requires that such engines be certified to the emission levels in Table 1 (below).

Table 1: Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines g/bhp-hr (g/kW-hr)					
Maximum Engine Power	Tier	Model Year(s)	PM	NMHC+NOx	CO
50 ≤ HP < 75 (37 ≤ kW < 56)	2	2007	0.15 (0.20)	5.6 (7.5) 3.5 (4.7)	3.7 (5.0)
	4i	2008+			
75 ≤ HP < 100 (56 ≤ kW < 75)	2	2007	0.15 (0.20)	5.6 (7.5) 3.5 (4.7)	3.7 (5.0)
	3	2008+			
100 ≤ HP < 175 (75 ≤ kW < 130)	3	2007	0.15 (0.20)	3.0 (4.0)	3.7 (5.0)
		2008+			
175 ≤ HP < 300 (130 ≤ kW < 225)	3	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
		2008+			
300 ≤ HP < 600 (225 ≤ kW < 450)	3	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
		2008+			
600 ≤ HP ≤ 750 (450 ≤ kW ≤ 560)	3	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
		2008+			
HP > 750 (kW > 560)	2	2007	0.15 (0.20)	4.8 (6.4)	2.6 (3.5)
		2008+			

Therefore, the most stringent applicable emission standards are those listed in the CARB ATCM (Table 1).

For IC engines rated greater than or equal to 50 hp and less than 75 hp, the highest Tier required is Tier 4i. For IC engines rated greater than or equal to 75 hp and less than 750 hp, the highest Tier required is Tier 3. For engines rated equal to or greater than 750 hp, the highest Tier required is Tier 2.

Also, please note that neither the state ATCM nor the Code of Federal Regulations require the installation of IC engines meeting a higher Tier standard than those listed above for emergency applications, due to concerns regarding the effectiveness of the exhaust emissions controls during periods of short-term operation (such as testing operational readiness of an emergency engine).

The proposed engine is rated at 601 hp. Therefore, the applicable control technology option is EPA Tier 3 certification.

b. Step 2 - Eliminate technologically infeasible options

The control option listed in Step 1 is not technologically infeasible.

c. Step 3 - Rank remaining options by control effectiveness

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

d. Step 4 - Cost Effectiveness Analysis

The applicant has proposed the only control option remaining under consideration. Therefore, a cost effectiveness analysis is not required.

e. Step 5 - Select BACT

BACT for NOx will be the use of an EPA Tier 3 certified engine. The applicant is proposing such a unit. Therefore, BACT will be satisfied.

2. BACT Analysis for PM₁₀ Emissions:

a. Step 1 - Identify all control technologies

BACT Guideline 3.1.1 identifies only the following option:

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

The latest EPA Tier Certification level for an engine of the proposed model year and horsepower rating is Tier 3. Refer to the Top-Down BACT analysis for NO_x for a discussion regarding the determination of the EPA Tier level to be considered.

Please note Tier 2, 3, or 4i IC engines do not have a PM emission standard that is more stringent than 0.15 g/hp-hr. Additionally, the ATCM requires a PM emission standard of 0.15 g/hp-hr for all new emergency diesel IC engines.

Therefore, the applicable control technology option is a PM/PM₁₀ emission standard of 0.15 g/hp-hr.

b. Step 2 - Eliminate technologically infeasible options

The control option listed in Step 1 is not technologically infeasible.

c. Step 3 - Rank remaining options by control effectiveness

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

d. Step 4 - Cost Effectiveness Analysis

The applicant has proposed the only control option remaining under consideration. Therefore, a cost effectiveness analysis is not required.

e. Step 5 - Select BACT

BACT for PM₁₀ emissions of 0.15 g/hp-hr or less. The applicant is proposing an engine that meets this requirement. Therefore, BACT will be satisfied.

Appendix C
Emissions Data Sheet

PERFORMANCE DATA[EM1694]

August 17, 2017

Performance Number: EM1694

Change Level: 01

SALES MODEL:	C13	COMBUSTION:	DI
BRAND:	CAT	ENGINE SPEED (RPM):	1,800
ENGINE POWER (BHP):	601	HERTZ:	60
GEN POWER WITH FAN (EKW):	400.0	FAN POWER (HP):	20.1
COMPRESSION RATIO:	16.3	ADDITIONAL PARASITICS (HP):	10.4
RATING LEVEL:	STANDBY	ASPIRATION:	TA
PUMP QUANTITY:	1	AFTERCOOLER TYPE:	ATAAC
FUEL TYPE:	DIESEL	AFTERCOOLER CIRCUIT TYPE:	JW+OC, ATAAC
MANIFOLD TYPE:	DRY	INLET MANIFOLD AIR TEMP (F):	120
GOVERNOR TYPE:	ELEC	JACKET WATER TEMP (F):	192.2
ELECTRONICS TYPE:	ADEM4	TURBO CONFIGURATION:	SINGLE
CAMSHAFT TYPE:	STANDARD	TURBO QUANTITY:	1
IGNITION TYPE:	CI	TURBOCHARGER MODEL:	GTA5002BS 1.60A/R
INJECTOR TYPE:	EUI	CERTIFICATION YEAR:	2015
REF EXH STACK DIAMETER (IN):	5	PISTON SPD @ RATED ENG SPD (FT/MIN):	1,854.3
MAX OPERATING ALTITUDE (FT):	1,640		

INDUSTRY	SUBINDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET

General Performance Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	IN-HG	DEG F
400.0	100	601	346	0.326	27.9	55.6	116.2	1,279.4	37.2	1,053.4
360.0	90	542	313	0.327	25.3	50.2	112.8	1,238.8	32.9	1,025.2
320.0	80	485	280	0.355	24.6	53.8	115.4	1,243.2	36.3	1,014.1
300.0	75	457	263	0.367	24.0	54.1	115.3	1,242.2	36.6	1,006.9
280.0	70	428	247	0.373	22.8	51.9	113.2	1,230.5	34.7	994.8
240.0	60	372	215	0.381	20.3	45.8	108.5	1,193.9	30.2	965.0
200.0	50	316	182	0.387	17.5	37.8	103.0	1,140.2	25.0	927.6
160.0	40	261	151	0.389	14.5	27.4	96.5	1,080.7	18.9	889.3
120.0	30	206	119	0.390	11.5	17.1	90.3	998.9	12.9	840.0
100.0	25	178	102	0.392	9.9	12.4	87.5	948.6	10.3	810.6
80.0	20	149	86	0.396	8.4	8.5	85.3	886.6	8.2	770.9
40.0	10	90.8	52	0.427	5.5	3.6	82.6	689.5	5.6	609.6

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
EKW	%	BHP	IN-HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
400.0	100	601	60	353.2	966.6	2,894.9	4,238.6	4,433.5	940.7	845.9
360.0	90	542	54	330.4	917.7	2,659.2	4,006.8	4,184.1	880.5	794.2
320.0	80	485	58	345.0	971.4	2,790.9	4,253.0	4,425.1	931.1	847.4
300.0	75	457	59	347.3	982.7	2,801.1	4,301.0	4,468.6	939.1	857.4
280.0	70	428	56	339.1	963.3	2,706.4	4,204.3	4,363.9	914.9	836.3
240.0	60	372	50	314.8	902.4	2,465.5	3,918.4	4,060.3	850.9	779.7
200.0	50	316	41	280.3	812.5	2,156.6	3,510.3	3,632.6	764.3	702.0
160.0	40	261	30	234.0	687.0	1,781.4	2,955.8	3,057.3	649.3	597.7
120.0	30	206	19	186.1	559.5	1,398.1	2,396.3	2,476.6	528.9	488.0
100.0	25	178	14	163.5	501.9	1,216.0	2,144.3	2,213.9	470.7	434.8
80.0	20	149	10	143.6	454.1	1,050.9	1,934.8	1,994.0	419.9	388.7
40.0	10	90.8	5	114.6	397.9	789.9	1,686.8	1,725.7	363.2	341.4

Heat Rejection Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
400.0	100	601									
360.0	90	542									
320.0	80	485									
300.0	75	457									
280.0	70	428									
240.0	60	372									
200.0	50	316									
160.0	40	261									
120.0	30	206									
100.0	25	178									
80.0	20	149									
40.0	10	90.8									

PERFORMANCE DATA[EM1694]

400.0	100	601	8,857	2,945	22,607	13,490	3,195	4,023	25,466	59,983	63,897
360.0	90	542	8,159	2,651	20,619	12,176	2,896	3,490	22,996	54,368	57,916
320.0	80	485	7,903	2,618	21,224	12,608	2,811	3,912	20,567	52,780	54,761
300.0	75	457	7,710	2,546	21,145	12,570	2,738	3,995	19,365	51,406	52,105
280.0	70	428	7,382	2,443	20,314	12,028	2,605	3,802	18,163	48,913	46,349
240.0	60	372	6,711	2,418	18,200	10,634	2,317	3,238	15,782	43,510	39,984
200.0	50	316	6,033	2,483	15,558	8,900	1,999	2,492	13,418	37,535	33,194
160.0	40	261	5,465	2,508	12,515	6,965	1,660	1,628	11,079	31,161	26,230
120.0	30	206	4,843	2,208	9,534	5,102	1,312	920	8,725	24,624	22,743
100.0	25	178	4,472	1,897	8,187	4,276	1,137	653	7,535	21,350	19,307
80.0	20	149	4,040	1,542	6,945	3,504	965	452	6,327	18,124	16,681
40.0	10	90.8	2,963	1,112	4,536	1,834	634	216	3,852	11,904	12,681

Emissions Data

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

	EKW	400.0	300.0	200.0	100.0	40.0
GENSET POWER WITH FAN	%	100	75	50	25	10
PERCENT LOAD	BHP	601	457	316	178	90.8
ENGINE POWER	G/HR	2,951	1,068	588	577	371
TOTAL NOX (AS NO2)	G/HR	1,366	852	1,107	1,159	773
TOTAL CO	G/HR	10	34	57	58	82
TOTAL HC	G/HR	60.9	65.7	37.7	32.1	44.3
PART MATTER	(CORR 5% O2) MG/NM3	2,499.0	1,040.3	779.4	1,396.4	1,483.0
TOTAL NOX (AS NO2)	(CORR 5% O2) MG/NM3	1,152.8	842.7	1,484.4	2,885.1	3,110.1
TOTAL CO	(CORR 5% O2) MG/NM3	7.6	28.5	66.0	127.6	338.9
TOTAL HC	(CORR 5% O2) MG/NM3	41.5	52.9	42.2	66.9	189.6
PART MATTER	(CORR 5% O2) PPM	1,217	507	380	680	722
TOTAL NOX (AS NO2)	(CORR 5% O2) PPM	922	674	1,188	2,308	2,488
TOTAL CO	(CORR 5% O2) PPM	14	53	123	238	633
TOTAL HC	(CORR 5% O2) PPM	14	53	123	238	633
TOTAL NOX (AS NO2)	G/HP-HR	5.00	2.36	1.87	3.26	4.10
TOTAL CO	G/HP-HR	2.32	1.88	3.52	6.55	8.55
TOTAL HC	G/HP-HR	0.02	0.08	0.18	0.33	0.90
PART MATTER	LB/HR	0.10	0.15	0.12	0.18	0.49
TOTAL NOX (AS NO2)	LB/HR	6.51	2.36	1.30	1.27	0.82
TOTAL CO	LB/HR	3.01	1.88	2.44	2.55	1.71
TOTAL HC	LB/HR	0.02	0.07	0.13	0.13	0.18
PART MATTER	LB/HR	0.13	0.14	0.08	0.07	0.10



RATED SPEED NOMINAL DATA: 1800 RPM

	EKW	400.0	300.0	200.0	100.0	40.0
GENSET POWER WITH FAN	%	100	75	50	25	10
PERCENT LOAD	BHP	601	457	316	178	90.8
ENGINE POWER	G/HR	2,732	989	544	534	343
TOTAL NOX (AS NO2)	G/HR	730	456	592	620	414
TOTAL CO	G/HR	6	18	30	30	43
TOTAL HC	G/HR	271	236	172	98	55
TOTAL CO2	G/HR	31.2	33.7	19.4	16.5	22.7
PART MATTER	(CORR 5% O2) MG/NM3	2,313.9	963.2	721.7	1,293.0	1,373.1
TOTAL NOX (AS NO2)	(CORR 5% O2) MG/NM3	616.5	450.6	793.8	1,542.8	1,663.2
TOTAL CO	(CORR 5% O2) MG/NM3	4.0	15.1	34.9	67.5	179.3
TOTAL HC	(CORR 5% O2) MG/NM3	21.3	27.1	21.7	34.3	97.2
PART MATTER	(CORR 5% O2) PPM	1,127	469	352	630	669
TOTAL NOX (AS NO2)	(CORR 5% O2) PPM	493	361	635	1,234	1,331
TOTAL CO	(CORR 5% O2) PPM	8	28	65	126	335
TOTAL HC	(CORR 5% O2) PPM	8	28	65	126	335
TOTAL NOX (AS NO2)	G/HP-HR	4.63	2.19	1.73	3.02	3.80
TOTAL CO	G/HP-HR	1.24	1.01	1.88	3.50	4.57
TOTAL HC	G/HP-HR	0.01	0.04	0.10	0.17	0.48
PART MATTER	G/HP-HR	0.05	0.07	0.06	0.09	0.25
TOTAL NOX (AS NO2)	LB/HR	6.02	2.18	1.20	1.18	0.76
TOTAL CO	LB/HR	1.61	1.00	1.31	1.37	0.91
TOTAL HC	LB/HR	0.01	0.04	0.07	0.07	0.10
TOTAL CO2	LB/HR	598	520	378	215	121
PART MATTER	LB/HR	0.07	0.07	0.04	0.04	0.05
OXYGEN IN EXH	%	7.5	9.6	10.8	11.8	14.4
DRY SMOKE OPACITY	%	1.7	1.1	1.0	2.9	2.0
BOSCH SMOKE NUMBER		1.12	0.75	0.70	1.72	1.27

Regulatory Information

EPA EMERGENCY STATIONARY		2011 - ---		
Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY	CO: 3.5 NOx + HC: 4.0 PM: 0.20

Altitude Derate Data

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	30	40	50	60	70	80	90	100	110	120	130	140	NORMAL
ALTITUDE (FT)													
0	601	601	601	601	601	601	601	601	601	601	601	601	601
1,000	601	601	601	601	601	601	601	601	601	601	601	598	601
2,000	601	601	601	601	601	601	601	601	601	597	578	574	601
3,000	601	601	601	601	601	601	601	601	595	581	564	560	601
4,000	601	601	601	601	601	601	600	590	578	565	551	547	601
5,000	601	601	601	601	601	601	592	578	562	548	537	533	601
6,000	601	601	601	601	601	598	583	566	545	532	521	517	601
7,000	590	590	590	590	590	585	568	548	526	511	499	495	600
8,000	582	582	582	582	582	576	556	533	509	492	480	476	596
9,000	578	578	578	578	578	571	548	522	492	476	464	460	593
10,000	574	574	574	574	574	566	541	510	477	459	449	445	589
11,000	566	566	566	566	566	558	530	496	459	441	430	427	586
12,000	561	561	561	561	561	552	521	484	442	423	414	410	582
13,000	555	555	555	555	555	545	511	471	425	406	397	393	578
14,000	549	549	549	549	549	538	502	458	409	389	380	376	576
15,000	544	544	544	544	544	533	494	448	395	375	366	362	574

Cross Reference

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
OK9333	PP7710	4343726	PG045	LS	PW300001	

Performance Parameter Reference

<p>Parameters Reference:DM9600-08</p> <p>PERFORMANCE DEFINITIONS</p>
--

PERFORMANCE DEFINITIONS DM9600

APPLICATION:

Engine performance tolerance values below are representative of a typical production engine tested in a calibrated dynamometer test cell at SAE J1995 standard reference conditions. Caterpillar maintains ISO9001:2000 certified quality management systems for engine test facilities to assure accurate calibration of test equipment. Engine test data is corrected in accordance with SAE J1995. Additional reference material SAE J1228, J1349, ISO 8665, 3046-1:2002E, 3046-3:1989, 1585, 2534, 2288, and 9249 may apply in part or are similar to SAE J1995. Special engine rating request (SERR) test data shall be noted.

PERFORMANCE PARAMETER TOLERANCE FACTORS:

- Power +/- 3%
- Torque +/- 3%
- Exhaust stack temperature +/- 8%
- Inlet airflow +/- 5%
- Intake manifold pressure-gage +/- 10%
- Exhaust flow +/- 6%
- Specific fuel consumption +/- 3%
- Fuel rate +/- 5%
- Specific DEF consumption +/- 3%

Appendix D
Technical Services Memo and AAQA

San Joaquin Valley Air Pollution Control District Risk Management Review

To: Mahsa Hooshmandi – Permit Services
 From: Ye Vang – Technical Services
 Date: September 14, 2017
 Facility Name: Central California Women’s Facility
 Location: 23370 Road 22, Chowchilla
 Application #(s): C-252-27-0
 Project #: C-1172629

A. RMR SUMMARY

RMR Summary						
Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required ?	Special Permit Requirements?
Unit 27-0 (601 BHP DICE)	N/A ¹	N/A ²	0.0	3.27E-06	Yes	Yes
Project Totals	N/A ¹	N/A ²	0.0	3.27E-06		
Facility Totals	>1	0.00	0.0	3.66E-06		

¹Prioritization 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.

²Acute 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 this type of unit.

Proposed Permit Requirements

To ensure that human health risks will not exceed District allowable levels; the following shall be included as requirements for:

Unit # 27-0

1. The PM10 emissions rate shall not exceed 0.1 g/bhp-hr based on US EPA certification using ISO 8178 test procedure.
2. 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.
3. 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.

T-BACT is required for this unit because of emissions of Diesel Particulate Matter which is a PM-10.

B. RMR REPORT

I. Project Description

Technical Services received a request on September 14, 2017, to perform a Risk Management Review for a proposed installation of a 601 bhp diesel-fired emergency IC engine powering an electrical generator.

II. Analysis

Toxic emissions for this proposed unit were calculated and provided by the processing engineer, and input into the San Joaquin Valley APCD's Hazard Assessment and Reporting Program (SHARP). 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. The prioritization score for this proposed facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined health risk assessment was required. The AERMOD model was used, with the parameters outlined below and meteorological data for 2009-2011 from Madera to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the SHARP Program, which then used the Air Dispersion Modeling and Risk Tool (ADMRT) of the Hot Spots Analysis and Reporting Program Version 2 (HARP 2) to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Analysis Parameters Unit 27-0			
Source Type	Point	Location Type	Rural
Stack Height (m)	3.66	Closest Receptor (m)	544
Stack Diameter. (m)	0.20	Type of Receptor	Residential
Stack Exit Velocity (m/s)	18.07	Max Hours per Year	50
Stack Exit Temp. (°K)	840.22	Fuel Type	Diesel
PM10 Emissions (lb/hr)	0.113	PM10 Emissions (lb/yr)	7

Technical Services performed modeling for criteria pollutants CO, NO_x, SO_x, and PM10 with the emission rates below:

Unit #	NO_x (Lbs.)		SO_x (Lbs.)		CO (Lbs.)		PM₁₀ (Lbs.)	
	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.
27-0	0	307	0	0	0	82	0	7

The results from the Criteria Pollutant Modeling are as follows

Criteria Pollutant Modeling Results*

	Background Site	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Madera-Pump Yard (2016)	NA ¹	X	NA ¹	X	X
NO _x	Madera-Pump Yard (2016)	NA ¹	X	X	X	Pass
SO _x	Fresno – Garland (2016)	NA ¹	NA ¹	X	NA ¹	Pass
PM ₁₀	Madera-City (2016)	X	X	X	NA ¹	Pass ²
PM _{2.5}	Madera-City 2016)	X	X	X	NA ¹	Pass ³

*Results were taken from the attached PSD spreadsheet.

¹The project is an intermittent source as defined in APR-1920. In accordance with APR-1920, compliance with short-term (i.e., 1-hour, 3-hour, 8-hour and 24-hour) standards is not required.

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

³The court has vacated EPA's PM_{2.5} SILs. Until such time as new SIL values are approved, the District will use the corresponding PM₁₀ SILs for both PM₁₀ and PM_{2.5} analyses.

III. Conclusion

The chronic index is below 1.0 and the cancer risk associated with the project is greater than 1.0 in a million, but less than 20 in a million. **In accordance with the District's Risk Management Policy, the project is approved with Toxic Best Available Control Technology (T-BACT).**

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

IV. Attachments

- A. RMR request from the project engineer
- B. Additional information from the applicant/project engineer
- C. Facility Summary

Appendix E
QNEC Calculations

Quarterly Net Emissions Change (QNEC)

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

QNEC = PE2 - PE1, where:

QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr

PE2 = Post-Project Potential to Emit for each emissions unit, lb/qtr

PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr

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

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

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

QNEC		
Pollutant	PE2 Total (lb/yr)	Quarterly PE2 (lb/qtr)
NO _x	307	76.75
SO _x	0	0.00
PM ₁₀	3	0.75
CO	82	20.50
VOC	1	0.25

Appendix F

SSPE1 Calculations

Pre-Project Stationary Source Potential to Emit (SSPE1)

The annual PE values in the table below were taken from the sources listed below in the last column of the table.

SSPE1 (lb/year)						
Permit Unit	NOx	SOx	PM ₁₀	CO	VOC	Source
C-252-1-1	29	0	1	5	0	See the calculation below
C-252-2-1	3	0	0	214	80	See the calculation below
C-252-4-0	0	0	55	0	7,556	See the calculation below
C-252-8-1	29	0	1	5	0	See the calculation below
C-252-9-0	241	31	32	101	38	See the calculation below
C-252-12-0	377	0	4	42	12	See the calculation below
C-252-14-0	0	0	4,417	0	0	See the calculation below
C-252-15-1	0	0	0	0	1,716	C-1141985
C-252-22-0	0	0	1,108	0	0	C-1103729
C-252-24-0	102	0	5	93	5	C-1140536
C-252-26-0	40	0	2	11	2	C-1150201
SSPE1 Total	821	31	5,624	470	9,409	

C-252-1-1

Equipment Description:

1,490 BHP CUMMINS MODEL KTA-50-GL DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR

Assumptions:

- Daily PE for each pollutant is from the current PTO
- Maximum daily operation is 24 hrs (worst case)
- Maximum annual operation is 20 hrs (current PTO)

Calculations:

Annual emissions are calculated using the following equation and summarized in the table below:

$$\text{Annual PE} = (\text{Daily PE} \div 24 \text{ hrs/day}) \times (20 \text{ hrs/year})$$

Potential to Emit – C-252-1-1

Potential to Emit – C-252-1-1		
Pollutant	PE (lb/day)	PE (lb/year)
NO _x	34.84	29
SO _x	0.54	0
PM ₁₀	1.6	1
CO	5.79	5
VOC	0.31	0

C-252-2-1

Equipment Description:

320 BHP CUMMINS MODEL NT-855-F4 DIESEL-FIRED EMERGENCY IC ENGINE
POWERING A FIREWATER PUMP

Assumptions:

- Non-emergency operating schedule: up to 100 hours/year
- Density of diesel fuel: 7.1 lb/gal
- EPA F-factor (adjusted to 60 °F): 9,051 dscf/MMBtu
- Fuel heating value: 137,000 Btu/gal
- BHP to Btu/hr conversion: 2,542.5 Btu/bhp-hr
- Thermal efficiency of engine: commonly ≈ 35%
- PM₁₀ fraction of diesel exhaust: 0.96 (CARB, 1988)

Emission Factors:

Emission Factors – C-252-2-1			
Pollutant	Emission Factor (lb/bhp-hr)	Emission Factor (g/bhp-hr)	Source
NO _x	0.031	0.039	AP-42 (10/96) Table 3.3-1
SO _x	---	0.0051	AP-42 (10/96) Table 3.3-1
PM ₁₀	0.0022	0.0029	AP-42 (10/96) Table 3.3-1
CO	---	3.03	AP-42 (10/96) Table 3.3-1
VOC	---	1.14	AP-42 (10/96) Table 3.3-1

Calculations:

Potential to Emit – C-252-2-1					
Pollutant	Emissions Factor (g/bhp-hr)	Rating (bhp)	Annual Hours of Operation (hrs/yr)	Conversion (g/lb)	PE1 Total (lb/yr)
NO _x	0.039	320	100	453.6	3
SO _x	0.0051	320	100	453.6	0
PM ₁₀	0.0029	320	100	453.6	0
CO	3.03	320	100	453.6	214
VOC	1.14	320	100	453.6	80

C-252-4-0

Equipment Description:

MOTOR VEHICLE AND MOBILE EQUIPMENT COATING OPERATION WITH A PAINT SPRAY BOOTH WITH DRY EXHAUST FILTERS

Assumptions:

- VOC emissions are limited to 20.7 lb/day (Current PTO)
- PM₁₀ emissions are limited to 0.15 lb/day (Current PTO)
- Maximum operation is 365 days/year (current PTO)

Calculations:

Annual PE – C-252-4-0			
Pollutant	PE (lb/day)	Operation (days/year)	PE (lb/year)
PM ₁₀	0.15	365	55
VOC	20.7	365	7,556

C-252-8-1

Equipment Description:

1,490 BHP CUMMINS MODEL KTA-50-GL DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR

Assumptions:

- Daily PE for each pollutant is from the current PTO
- Maximum daily operation is 24 hrs (worst case)
- Maximum annual operation is 20 hrs (current PTO)

Calculations:

Annual emissions are calculated using the following equation and summarized in the table below:

$$\text{Annual PE} = (\text{Daily PE} \div 24 \text{ hrs/day}) \times (20 \text{ hrs/year})$$

Potential to Emit – C-252-8-1		
Pollutant	PE (lb/day)	PE (lb/year)
NO _x	34.84	29
SO _x	0.54	0
PM ₁₀	1.6	1
CO	5.79	5
VOC	0.31	0

C-252-9-0**Equipment Description:**

380 BHP CUMMINS MODEL LTA10-G1 DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR (BUILDING 805 - HOSPITAL)

Assumptions:

- Daily PE for each pollutant is from the current PTO
- Maximum daily operation is 24 hrs (worst case)
- Maximum annual operation is 40 hrs (current PTO)

Calculations:

Annual emissions are calculated using the following equation and summarized in the table below:

$$\text{Annual PE} = (\text{Daily PE} \div 24 \text{ hrs/day}) \times (40 \text{ hrs/year})$$

Potential to Emit – C-252-9-0		
Pollutant	PE (lb/day)	PE (lb/year)
NO _x	144.5	241
SO _x	18.7	31
PM ₁₀	19.3	32
CO	60.8	101
VOC	22.5	38

C-252-12-0

Equipment Description:

750 BHP CUMMINS MODEL KTTA19-G2 DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR

Assumptions:

- Non-emergency operating schedule: 20 hours/year
- Density of diesel fuel: 7.1 lb/gal
- EPA F-factor (adjusted to 60 °F): 9,051 dscf/MMBtu
- Fuel heating value: 137,000 Btu/gal
- BHP to Btu/hr conversion: 2,542.5 Btu/bhp-hr
- Thermal efficiency of engine: commonly ≈ 35%

Emission Factors:

Emission Factors – C-252-12-0		
Pollutant	EF (g/bhp-hr)	Source
NO _x	11.39	C-940159
SO _x	0.0051	Mass Balance Equation Below
PM ₁₀	0.12	C-940159
CO	1.26	C-940159
VOC	0.36	C-940159

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

Calculations:

Potential to Emit – C-252-12-0					
Pollutant	Emissions Factor (g/bhp-hr)	Rating (bhp)	Annual Hours of Operation (hr/year)	Conversion (g/lb)	PE (lb/year)
NO _x	11.39	750	20	453.6	377
SO _x	0.0051	750	20	453.6	0
PM ₁₀	0.12	750	20	453.6	4
CO	1.26	750	20	453.6	42
VOC	0.36	750	20	453.6	12

C-252-14-0**Equipment Description:**

WOODWORKING OPERATION WITH TWO SAWS, TWO SANDERS, TWO SHAPERS, AND ONE PLANER; ALL SERVED BY AN ARRESTALL MODEL AAF CYCLONE DUST COLLECTION SYSTEM [VOCATIONAL]

Emission Factors and Assumptions:

- A grain loading factor of 2 to 5 grains/scf for uncontrolled wood working operations can be utilized (as recommended by the American Conference of Governmental Industrial Hygienists' Industrial Ventilation manual).
- Using the maximum value of 5.0 grains/scf and assuming all equipment is operated simultaneously and continuously should produce a very conservative estimate of PM emission potential.
- The airflow rating of the cyclone serving this line is 2,950 cfm. (C-980209)
- A worst case operation schedule of 24 hr/day will be utilized.
- Since this woodworking process primarily consists of sawing operations the fraction of PM₁₀ present in wood dust generated is 0.40 (as identified in CARB PM speciation manual, 12/87).
- Baghouse control efficiency is 99% (AP 42, Appendix B.2, Table B.2-3, p. B.2-21).
- Annual operation is 365 days/year (worst case).

Calculations:

Potential to Emit from the woodworking operation can be calculated as follows:

$$\begin{aligned}
 \text{PM}_{10, \text{controlled}} &= \text{Exhaust Flow (scfm)} \times \text{grain loading, controlled (gr/scf)} \times 1\text{lb}/7000 \text{ gr} \times 60 \\
 &\quad \text{min/hr} \times \text{Operating Hours} \\
 &= 2,950 \text{ scfm} \times [5 \text{ gr-PM}/\text{scf} \times 0.40 \text{ gr-PM}_{10}/\text{gr-PM} \times (1-0.99)] \text{ gr-PM}_{10}/\text{scf} \times 1 \\
 &\quad \text{lb}/7000 \text{ gr} \times 60 \text{ min/hr} \times 24 \text{ hr/day} \\
 &= 12.1 \text{ lb-PM}_{10}/\text{day} \times 365 \text{ day/year} \\
 &= 4,417 \text{ lb-PM}_{10}/\text{year}
 \end{aligned}$$