



San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT



JUL 17 2015

Lisa Kao
Calif State Univ Fresno
2351 E. Barstow Ave
Mail Stop # PO-140
Fresno, CA 93740

Re: Notice of Preliminary Decision - Authority to Construct
Facility Number: C-392
Project Number: C-1151976

Dear Ms. Kao:

Enclosed for your review and comment is the District's analysis of Calif State Univ Fresno's application for an Authority to Construct for the installation of a 755 bhp diesel-fired emergency internal combustion (IC) engine powering an electrical generator, at 2703 E. Barstow Ave in Fresno, CA.

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 Mr. John Yoshimura of Permit Services at (559) 230-5887.

Sincerely,



Arnaud Marjollét
Director of Permit Services

AM:jy

Enclosures

cc: Mike Tollstrup, CARB (w/ enclosure) via email

Sayed Sadredin
Executive Director/Air Pollution Control Officer

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San Joaquin Valley Air Pollution Control District

Authority to Construct

Application Review

Diesel-Fired Emergency Standby IC Engine

| | | | |
|------------------|-------------------------|----------------|----------------|
| Facility Name: | Calif State Univ Fresno | Date: | June 25, 2015 |
| Mailing Address: | 2351 E. Barstow Ave | Engineer: | John Yoshimura |
| | Mail Stop # PO-140 | Lead Engineer: | Brian Clements |
| | Fresno, CA 93740 | | |
| Contact Person: | Lisa Kao | | |
| Telephone: | (559) 278-6910 | | |
| Application #: | C-392-39-0 | | |
| Project #: | C-1151976 | | |
| Complete: | June 24, 2015 | | |

I. Proposal

Calif State Univ Fresno (CSUF) is proposing to install a 755 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 (4/21/11)
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 Stationary Internal Combustion Engines - Phase 1 (8/21/03)
Rule 4702 Stationary Internal Combustion Engines (8/18/11)
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
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

The equipment is located at 2703 E. Barstow Avenue in Fresno, 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-392-39-0: 755 BHP (INTERMITTENT) CUMMINS MODEL QSX15-G9 NR2
SERIAL # XX TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY
STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR

VI. Emission Control Technology Evaluation

The applicant has proposed to install a Tier 2 certified diesel-fired IC engine that is fired on very low-sulfur diesel fuel.

The proposed engine meets the latest Tier Certification requirements; 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 and/or the ARB/EPA executive order).

The use of very low-sulfur 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) |

The engine has certified NO_x + VOC emissions of 3.9 g/bhp-hr. It will be assumed the NO_x + VOC emission factor is split 95% NO_x and 5% VOC (per the Carl Moyer program).

B. Emission Factors

| Emission Factors | | |
|------------------|----------------------------|-----------------------------|
| Pollutant | Emission Factor (g/bhp-hr) | Source |
| NO _x | 3.71 | Engine Manufacturer |
| SO _x | 0.0051 | Mass Balance Equation Below |
| PM ₁₀ | 0.08 | Engine Manufacturer |
| CO | 0.40 | Engine Manufacturer |
| VOC | 0.20 | Engine Manufacturer |

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

C. Calculations

1. Pre-Project Emissions (PE1)

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

2. Post-Project PE (PE2)

The daily and annual PE are calculated as follows:

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

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

| Project Emissions (PE2) | | | | | | |
|-------------------------|-----------------------------|--------------|------------------------------------|------------------------------------|--------------------|--------------------|
| Pollutant | Emissions Factor (g/bhp-hr) | Rating (bhp) | Daily Hours of Operation (hrs/day) | Annual Hours of Operation (hrs/yr) | Daily PE2 (lb/day) | Annual PE2 (lb/yr) |
| NO _x | 3.71 | 755 | 24 | 50 | 148.2 | 309 |
| SO _x | 0.0051 | 755 | 24 | 50 | 0.2 | 0 |
| PM ₁₀ | 0.08 | 755 | 24 | 50 | 3.2 | 7 |
| CO | 0.40 | 755 | 24 | 50 | 16.0 | 33 |
| VOC | 0.02 | 755 | 24 | 50 | 0.8 | 2 |

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

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

| SSPE1 | | | | | |
|--------------------|----------------------------|----------------------------|-----------------------------|---------------|----------------|
| Permit Unit | NO _x (lb/yr) | SO _x (lb/yr) | PM ₁₀ (lb/yr) | CO (lb/yr) | VOC (lb/yr) |
| C-392-9-1* | 726 | 16 | 39 | 220 | 18 |
| C-392-11-2* | 112 | 0 | 4 | 28 | 6 |
| C-392-12-3** | 0 | 0 | 0 | 0 | 698 |
| C-392-19-0* | 2,000 | 53 | 293 | 112 | 32 |
| C-392-20-0* | 403 | 53 | 58 | 173 | 64 |
| C-392-21-0* | 268 | 8 | 11 | 27 | 3 |
| C-392-25-3** | 1,606 | 388 | 233 | 1,485 | 130 |
| C-392-26-3** | 1,606 | 388 | 233 | 1,485 | 130 |
| C-392-27-4** | 1,606 | 388 | 233 | 1,485 | 130 |
| C-392-28-1** | 107 | 0 | 1 | 176 | 1 |
| C-392-29-0* | 312 | 0 | 3 | 812 | 16 |
| C-392-30-0* | 578 | 0 | 20 | 44 | 52 |
| C-392-31-0* | 138 | 0 | 6 | 122 | 11 |
| C-392-34-0* | 3 | 0 | 1 | 28 | 0 |
| C-392-35-0*** | 0 | 0 | 1 | 8 | 5 |
| C-392-37-0* | 9 | 1 | 4 | 36 | 36 |
| SSPE1 Total | 9,474 | 1,295 | 1,140 | 6,241 | 1,332 |

*Referenced from Project C-1141852.

**Referenced from Project C-1140373.

***Referenced from Project C-1141851.

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

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

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

| SSPE2 | | | | | |
|--------------------|----------------------------|----------------------------|-----------------------------|---------------|----------------|
| Permit Unit | NO _x (lb/yr) | SO _x (lb/yr) | PM ₁₀ (lb/yr) | CO (lb/yr) | VOC (lb/yr) |
| C-392-9-1 | 726 | 16 | 39 | 220 | 18 |
| C-392-11-2 | 112 | 0 | 4 | 28 | 6 |
| C-392-12-3 | 0 | 0 | 0 | 0 | 698 |
| C-392-19-0 | 2,000 | 53 | 293 | 112 | 32 |
| C-392-20-0 | 403 | 53 | 58 | 173 | 64 |
| C-392-21-0 | 268 | 8 | 11 | 27 | 3 |
| C-392-25-3 | 1,606 | 388 | 233 | 1,485 | 130 |
| C-392-26-3 | 1,606 | 388 | 233 | 1,485 | 130 |
| C-392-27-4 | 1,606 | 388 | 233 | 1,485 | 130 |
| C-392-28-1 | 107 | 0 | 1 | 176 | 1 |
| C-392-29-0 | 312 | 0 | 3 | 812 | 16 |
| C-392-30-0 | 578 | 0 | 20 | 44 | 52 |
| C-392-31-0 | 138 | 0 | 6 | 122 | 11 |
| C-392-34-0 | 3 | 0 | 1 | 28 | 0 |
| C-392-35-0 | 0 | 0 | 1 | 8 | 5 |
| C-392-37-0 | 9 | 1 | 4 | 36 | 36 |
| C-392-39-0 | 309 | 0 | 7 | 33 | 2 |
| SSPE2 Total | 9,783 | 1,295 | 1,147 | 6,274 | 1,334 |

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 | PM ₁₀ | CO | VOC |
| Facility emissions pre-project | 9,474 | 1,295 | 1,140 | 6,241 | 1,332 |
| Facility emissions post-project | 9,783 | 1,295 | 1,147 | 6,274 | 1,334 |
| Major Source Threshold | 20,000 | 140,000 | 140,000 | 200,000 | 20,000 |
| Major Source? | No | No | No | No | No |

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 Section 3.23

Since this is a new emissions unit, BE = PE1 = 0 for all criteria 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, Section 3.18 states that Federal Major Modifications are the same as "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. Additionally, since the facility is not a major source for PM₁₀ (140,000 lb/year), it is not a major source for PM_{2.5} (200,000 lb/year).

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 following*:

- Any new emissions unit with a potential to emit exceeding two pounds per day,
- The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
- Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
- 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.

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

As discussed in Section I, the facility is proposing to install a new emergency standby IC engine. Additionally, as determined in 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 unit '-1-0 (lb/day) | BACT Threshold (lb/day) | SSPE2 (lb/yr) | BACT Triggered? |
| NO _x | 148.2 | > 2.0 | n/a | Yes |
| SO _x | 0.2 | > 2.0 | n/a | No |
| PM ₁₀ | 3.2 | > 2.0 | n/a | Yes |
| CO | 16.0 | > 2.0 and SSPE2 ≥ 200,000 lb/yr | 6,274 | No |
| VOC | 0.8 | > 2.0 | n/a | No |

As shown above, BACT will be triggered for NO_x and PM₁₀ emissions from the engine for this project.

2. BACT Guideline

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

3. Top Down BACT Analysis

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

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

NO_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.

B. Offsets

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

C. Public Notification

1. Applicability

Public noticing is required for:

a. 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.

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

The PE2 for this new unit is compared to the daily PE Public Notice thresholds in the following table:

| PE > 100 lb/day Public Notice Thresholds | | | |
|--|-----------------|----------------------------|-----------------------------|
| Pollutant | PE2 (lb/day) | Public Notice Threshold | Public Notice Triggered? |
| NO _x | 148.2 | 100 lb/day | Yes |
| SO _x | 0.2 | 100 lb/day | No |
| PM ₁₀ | 3.2 | 100 lb/day | No |
| CO | 16.0 | 100 lb/day | No |
| VOC | 0.8 | 100 lb/day | No |

Therefore, public noticing for PE > 100 lb/day purposes is required.

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

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

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

- e. Title V Significant Permit Modification

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

2. Public Notice Action

As discussed above, public noticing is required for this project for NO_x emissions in excess of 100 lb/day. 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 Section 3.16 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. Per Sections 3.16.1 and 3.16.2, the DEL must be contained in the latest ATC and contained in or enforced by

the latest PTO and enforceable, in a practicable manner, on a daily basis. Therefore, the following conditions will be listed on the ATC to ensure compliance:

- {4771} Emissions from this IC engine shall not exceed any of the following limits: 3.71 g-NO_x/bhp-hr, 0.40 g-CO/bhp-hr, or 0.20 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]
- {4772} Emissions from this IC engine shall not exceed 0.08 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 Rule 2201.

2. Monitoring

No monitoring is required to demonstrate compliance with Rule 2201.

3. Recordkeeping

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

4. Reporting

No reporting is required to ensure compliance with Rule 2201.

F. Ambient Air Quality Analysis (AAQA)

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 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 to ensure compliance:

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

Rule 4102 Nuisance

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

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

California Health & Safety Code 41700 (Health Risk Assessment)

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

| RMR Results | | | | |
|-------------|--------------------|----------------------|-------------------|------------------|
| Unit | Acute Hazard Index | Chronic Hazard Index | Cancer Risk | T-BACT Required? |
| C-393-39-0 | N/A* | N/A* | 1.78 in a million | No |

*Acute Hazard Index was 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 this type of unit.

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

- {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
- {4772} Emissions from this IC engine shall not exceed 0.08 g-PM₁₀/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115]
- {4777} 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.

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

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

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

Rule 4701 Internal Combustion Engines - Phase 1

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

The following summarizes District Rule 4702 Requirements for emergency standby IC engines:

1. Operation of emergency standby engines is 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 maintenance and testing to 50 hours/year; therefore, compliance is expected. The following condition will be included on the permit:
 - {4777} 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]
2. 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]
3. 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]

4. 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 shall be used:

- {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]
5. 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]
 - {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]
 6. 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

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

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

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

- {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):

| Title 17 CCR Section 93115 Requirements for New Emergency IC Engines Powering Electrical Generators | Proposed Method of Compliance with Title 17 CCR Section 93115 Requirements |
|--|---|
| Emergency engine(s) must be fired on CARB diesel fuel, or an approved alternative diesel fuel. | The applicant has proposed the use of CARB certified diesel fuel. The proposed permit condition, requiring the use of CARB certified diesel fuel, was included earlier in this evaluation. |
| The engine(s) must meet the emission standards in Table 1 of the ATCM for the specific power rating and model year of the proposed engine. | The applicant has proposed the use of engine(s) that are 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>The engine may not be operated more than 50 hours per year for maintenance and testing purposes.</p> | <p>The following condition will be included on the permit:</p> <ul style="list-style-type: none"> • {4777} 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>Permit conditions enforcing these requirements were shown earlier in the evaluation.</p> |

California Environmental Quality Act (CEQA)

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

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

The 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.

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Issue Authority to Construct C-392-39-0 subject to the permit conditions on the attached draft Authority to Construct in Appendix A.

X. Billing Information

| Billing Schedule | | | |
|-------------------------|---------------------|------------------------|-------------------|
| Permit Number | Fee Schedule | Fee Description | Fee Amount |
| C-392-39-0 | 3020-10-D | 755 bhp IC engine | \$502.00 |

Appendixes

- A. Draft ATC and Emissions Profile
- B. BACT Guideline and BACT Analysis
- C. Emissions Data Sheet
- D. RMR/HRA Summary
- E. QNEC Calculations

Appendix A

Draft ATC and Emissions Profile

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: C-392-39-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: CALIF STATE UNIV FRESNO
MAILING ADDRESS: 2351 E. BARSTOW AVE, PO 140
FRESNO, CA 93740

LOCATION: 5241 N MAPLE AVE
FRESNO, CA 93740

EQUIPMENT DESCRIPTION:

755 BHP (INTERMITTENT) CUMMINS MODEL QSX15-G9 NR2 SERIAL # XX TIER 2 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: 3.71 g-NOx/bhp-hr, 0.40 g-CO/bhp-hr, or 0.20 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]
8. Emissions from this IC engine shall not exceed 0.08 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, 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-392-39-0 Jul 8 2015 11 35AM - YOSHIMUJ - Joint Inspection NOT Required

Central Regional Office • 1990 E. Gettysburg Ave. • Fresno, CA 93726 • (559) 230-5900 • Fax (559) 230-6061

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]
12. {3808} This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rule 4702]
13. {3496} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]
14. This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 50 hours per calendar year. [District 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

| | |
|--------------------------------------|---------------------|
| Permit #: C-392-39-0 | Last Updated |
| Facility: CALIF STATE UNIV FRESNO | 07/06/2015 YOSHIMUJ |

Equipment Pre-Baselined: NO

| | <u>NOX</u> | <u>SOX</u> | <u>PM10</u> | <u>CO</u> | <u>VOC</u> |
|--|------------|------------|-------------|-----------|------------|
| Potential to Emit (lb/Yr): | 309.0 | 0.0 | 7.0 | 33.0 | 2.0 |
| Daily Emis. Limit (lb/Day) | 148.2 | 0.2 | 3.2 | 16.0 | 0.8 |
| Quarterly Net Emissions Change (lb/Qtr) | | | | | |
| Q1: | 77.0 | 0.0 | 1.0 | 8.0 | 0.0 |
| Q2: | 77.0 | 0.0 | 2.0 | 8.0 | 0.0 |
| Q3: | 77.0 | 0.0 | 2.0 | 8.0 | 1.0 |
| Q4: | 78.0 | 0.0 | 2.0 | 9.0 | 1.0 |
| Check if offsets are triggered but exemption applies | N | N | N | N | N |
| Offset Ratio | | | | | |
| Quarterly Offset Amounts (lb/Qtr) | | | | | |
| Q1: | | | | | |
| Q2: | | | | | |
| Q3: | | | | | |
| Q4: | | | | | |

Appendix B

BACT Guideline and BACT Analysis

San Joaquin Valley Unified Air Pollution Control District

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

| Pollutant | Achieved in Practice or in the SIP | Technologically Feasible | Alternate Basic Equipment |
|-----------|--|--------------------------|---------------------------|
| CO | Latest EPA Tier Certification level for applicable horsepower range* | | |
| NOX | Latest EPA Tier Certification level for applicable horsepower range* | | |
| PM10 | 0.15 g/bhp-hr | | |
| 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(s)

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(s) do not meet the definition of a nonroad engine. Therefore, only Title 17 CCR, Section 93115 applies directly to the proposed emergency engine(s).

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+NO _x | 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 755 hp. Therefore, the applicable control technology option is EPA Tier 2 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 NO_x will be the use of an EPA Tier 2 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 2. 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, a PM/PM₁₀ emission standard of 0.15 g/hp-hr is required as BACT.

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 is 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



2014 EPA Tier 2 Exhaust Emission Compliance Statement 450DFEJ Stationary Emergency 60 Hz Diesel Generator Set

NOTE: BOXED/HIGHLIGHTED DATA
TO BE USED FOR AIR QUALITY
PERMIT APPLICATION

Compliance Information:

The engine used in this generator set complies with Tier 2 emissions limit of U.S. EPA New Source Performance Standards for stationary emergency engines under the provisions of 40 CFR 60 Subpart IIII when tested per ISO8178 D2.

| | |
|---|---------------------|
| Engine Manufacturer: | Cummins Inc |
| EPA Certificate Number: | ECEXL015.AAJ-018 |
| Effective Date: | 05/20/2013 |
| Date Issued: | 05/20/2013 |
| EPA Engine Family (Cummins Emissions Family): | ECEXL015.AAJ (J103) |

Engine Information:

| | | | |
|--------------------------|-------------------------------------|-------------------------|---------------------------|
| Model: | QSX / QSX15 / QSX15-G / QSX15-G9 | Bore: | 5.39 in. (137 mm) |
| Engine Nameplate HP: | 755 | Stroke: | 6.65 in. (169 mm) |
| Type: | 4 Cycle, In-line, 6 Cylinder Diesel | Displacement: | 912 cu. in. (15 liters) |
| Aspiration: | Turbocharged and CAC | Compression Ratio: | 17.0:1 |
| Emission Control Device: | Electronic Control | Exhaust Stack Diameter: | 8 in. |

Diesel Fuel Emission Limits

D2 Cycle Exhaust Emissions

| | Grams per BHP-hr | | | Grams per kWm-hr | | |
|--|-------------------|-----------|-----------|-------------------|-----------|-----------|
| | <u>NOx + NMHC</u> | <u>CO</u> | <u>PM</u> | <u>NOx + NMHC</u> | <u>CO</u> | <u>PM</u> |
| Test Results - Diesel Fuel (300-4000 ppm Sulfur) | 4.3 | 0.4 | 0.10 | 5.7 | 0.6 | 0.13 |
| EPA Emissions Limit | 4.8 | 2.6 | 0.15 | 6.4 | 3.5 | 0.20 |
| Test Results - CARB Diesel Fuel (<15 ppm Sulfur) | 3.9 | 0.4 | 0.08 | 5.2 | 0.6 | 0.11 |
| CARB Emissions Limit | 4.8 | 2.6 | 0.15 | 6.4 | 3.5 | 0.20 |

The CARB emission values are based on CARB approved calculations for converting EPA (500 ppm) fuel to CARB (15 ppm) fuel.

Test Methods: EPA/CARB Nonroad emissions recorded per 40CFR89 (ref. ISO8178-1) and weighted at load points prescribed in Subpart E, Appendix A for Constant Speed Engines (ref. ISO8178-4, D2)

Diesel Fuel Specifications: Cetane Number: 40-48. Reference: ASTM D975 No. 2-D.

Reference Conditions: Air Inlet Temperature: 25°C (77°F), Fuel Inlet Temperature: 40°C (104°F). Barometric Pressure: 100 kPa (29.53 in Hg), Humidity: 10.7 g/kg (75 grains H₂O/lb) of dry air; required for NO_x correction, Restrictions: Intake Restriction set to a maximum allowable limit for clean filter; Exhaust Back Pressure set to a maximum allowable limit.

Tests conducted using alternate test methods, instrumentation, fuel or reference conditions can yield different results.

Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

Appendix D

RMR/HRA Summary

San Joaquin Valley Air Pollution Control District

Risk Management Review

To: John Yoshimura - Permit Services
From: Kyle Melching - Permit Services
Date: July 1, 2015
Facility Name: California State University, Fresno
Location: 2703 E. Barstow Ave., Fresno
Application #(s): C-392-39-0
Project #: C-1151976

A. RMR SUMMARY

| RMR Summary | | | |
|--------------------------------|----------------------------------|------------------|-----------------|
| Categories | Emergency Diesel ICE (Unit 39-0) | Project Totals | Facility Totals |
| Prioritization Score | N/A ¹ | N/A ¹ | >1 |
| Acute Hazard Index | N/A ² | N/A ² | 0.09 |
| Chronic Hazard Index | N/A ² | N/A ² | 0.00 |
| Maximum Individual Cancer Risk | 1.78E-06 | 1.78E-06 | 6.56E-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 a prioritization score greater than 1.0.

2 Acute Hazard Index was 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 this type of unit.

Proposed Permit Conditions

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

Unit 39-0

1. The PM10 emissions rate shall not exceed **0.08 g/bhp-hr** based on US EPA certification using ISO 8178 test procedure. [District Rules 2201]
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. [District Rule 4102]
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. [District Rule 4702 and 17 CCR 93115]

B. RMR REPORT

I. Project Description

Technical Services received a request on June 29, 2015, to perform an Ambient Air Quality Analysis (AAQA) and a Risk Management Review (RMR) for one 755 bhp emergency diesel IC engine powering an electrical generator. Per the engineer, C-392 and C-4080 are considered separate stationary sources.

II. Analysis

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

The following parameters were used for the review:

| Analysis Parameters (Unit 39-0) | | | |
|---------------------------------|-------|----------------------------|----------|
| Source Type | Point | Nearest Receptor (m) | 25 |
| Stack Height (m) | 3 | Closest Receptor Type | Business |
| Stack Diameter (m) | 0.2 | Project Location | Urban |
| Stack Exit Velocity (m/s) | 45.3 | PM10 EF (g/bhp-hr) | 0.08 |
| Stack Exit Temperature (K) | 736 | Hours of Operation (hr/yr) | 50 |

Technical Services also performed modeling for criteria pollutants NO_x, CO, SO_x, and PM₁₀. For Unit 1-0, the emission rates used for criteria pollutant modeling were 309 lb/yr NO_x, 33 lb/yr CO, 0 lb/yr SO_x, and 7 lb/yr PM₁₀.

The results from the Criteria Pollutant Modeling are as follows:

Criteria Pollutant Modeling Results*

| Diesel ICE | 1 Hour | 3 Hours | 8 Hours | 24 Hours | Annual |
|-------------------|-----------------|-----------------|-----------------|-----------------|-------------------|
| CO | NA ¹ | X | NA ¹ | X | X |
| NO _x | NA ¹ | X | X | X | Pass |
| SO _x | NA ¹ | NA ¹ | X | NA ¹ | Pass |
| PM ₁₀ | X | X | X | NA ¹ | Pass ² |
| PM _{2.5} | X | X | X | NA ¹ | Pass ² |

*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).

III. Conclusions

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

The cancer risk associated with the operation of the proposed diesel IC engine is **1.78E-06**; which is greater than 1.0 in a million. In accordance with the District's Risk Management Policy, the project is approved with Toxic Best Available Control Technology (T-BACT) for PM₁₀.

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.

IV. Attachments

- A. RMR request from the project engineer
- B. Additional information from the applicant/project engineer
- C. Stack Parameter Worksheet
- D. DICE Screening Risk Tool
- E. Facility Summary
- F. AAQA Summary
- G. AAQA Parameter 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 | 309 | 77.25 |
| SO _x | 0 | 0.0 |
| PM ₁₀ | 7 | 1.75 |
| CO | 33 | 8.25 |
| VOC | 2 | 0.5 |