



# San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT

JAN 29 2014

Mr. Brent Winn  
Aera Energy, LLC  
P.O. Box 11164  
Bakersfield, CA 93389



**Re: Proposed ATC / Certificate of Conformity (Significant Mod)  
District Facility # S-1547 and S-1548  
Project # 1121401 and 1121402**

Dear Mr. Winn:

Enclosed for your review is the District's analysis of an application for Authorities to Construct for the facility identified above. You requested that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. Aera has requested Authority to Construct (ATC) a new 100.0 MMBtu/hr natural gas-fired steam generator. The oil gravity at the proposed location is very close to heavy and light oil API gravity boundary; therefore, Aera has requested that the unit be permitted in both their Western Kern County Fields light oil and heavy oil stationary sources.

After addressing all comments made during the 30-day public notice and the 45-day EPA comment periods, the District intends to issue the Authorities to Construct with Certificates of Conformity. Please submit your comments within the 30-day public comment period, as specified in the enclosed public notice. Prior to operating with modifications authorized by the Authorities to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

If you have any questions, please contact Mr. Leonard Scandura, Permit Services Manager, at (661) 392-5500.

Thank you for your cooperation in this matter.

Sincerely,

David Warner  
Director of Permit Services

DW:DT/st

Enclosures

cc: Mike Tollstrup, CARB (w/enclosure) via email  
cc: Gerardo C. Rios, EPA (w/enclosure) via email

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**San Joaquin Valley Air Pollution Control District**  
**Authority to Construct Application Review**  
New 100 MMBtu/hr Steam Generator

|                                                                          |                               |
|--------------------------------------------------------------------------|-------------------------------|
| Facility Name: Aera Energy, LLC                                          | Date: 1/2/14                  |
| Mailing Address: P.O. Box 11164                                          | Engineer: David Torii         |
| Bakersfield, CA 93389                                                    | Lead Engineer: Allan Phillips |
| Contact Person: Brent Winn                                               |                               |
| Telephone: 661-665-4363                                                  |                               |
| Fax: 661-665-7437                                                        |                               |
| E-Mail: <a href="mailto:btwinn@Aeraenergy.com">btwinn@Aeraenergy.com</a> |                               |
| Application #(s): S-1547-1261-0 and S-1548-554-0                         |                               |
| Project #: S-1121401 and S-1121402                                       |                               |
| Deemed Complete: May 17, 2012                                            |                               |

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**I. Proposal**

Aera Energy, LLC (Aera) operates oil and gas production facilities as part of its Heavy (S-1547) and Light (S-1548) Oil Western stationary sources. Aera has requested Authority to Construct (ATC) permits for a new 100.0 MMBtu/hr natural gas-fired steam generator. The oil gravity at the proposed location is very close to heavy and light oil API gravity boundary; therefore, Aera has requested that the unit be permitted in both their light oil western and heavy oil western stationary sources. This steam generator serves as a pilot unit to investigate the viability of using a 100 MMBtu/hr unit.

In separate projects S-1113576 (S-1547) and S-1113577 (S-1548) Aera has requested ATCs for twenty nine 85 MMBtu/hr steam generators or twenty six 100 MMBtu/hr steam generators to be used in either their light oil western or heavy oil western stationary sources. If the 100 MMBtu/hr pilot steam generator proves non-viable only the twenty nine 85 MMBtu/hr units authorized by projects S-1113576 and S-1113577 will be installed.

All of these steam generators are located in the Belridge oilfield on contiguous Aera property within a few miles of each other. For Aera Energy, the Belridge oilfield is one "federal" stationary source.

For purposes of PSD permitting, if the different actions are technically or economically dependent, they must be considered as part of the same project for determining PSD applicability.

The installation of the single 100 MMBtu/hr unit and the 29 other new SGs are technically independent. Both projects will proceed irrespective of the other, even though the type of steam generators installed for the larger project will be different if the 100 MMBtu/hr steam generator is not successful.

Aera has indicated that the funding for the two projects is not related. Additionally, the construction schedule of the two projects is separated by approximately 2 years. Therefore, the two projects are not economically dependent.

Therefore, for PSD purposes, the single pilot test 100 MMBtu/hr unit and the twenty nine 85 MMBtu/hr or twenty six 100 MMBtu/hr units are separate projects for determining PSD applicability.

For CEQA purposes the District has established that the two projects are a single project.

Aera's S-1547 source received their Title V Permit on January 31, 2003. Their S-1548 source received their Title V Permit on October 31, 2001. This project is a Federal Major Modification; therefore, it is classified as a Title V significant modification pursuant to Rule 2520, Section 3.29, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the Authority to Construct. Aera must apply to administratively amend their Title V permit.

## **II. Applicable Rules**

|                                                                                                        |                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rule 2201                                                                                              | New and Modified Stationary Source Review Rule (4/21/11)                                                                                                |
| 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 4101                                                                                              | Visible Emissions (2/17/05)                                                                                                                             |
| Rule 4102                                                                                              | Nuisance (12/17/92)                                                                                                                                     |
| Rule 4201                                                                                              | Particulate Matter Concentration (12/17/92)                                                                                                             |
| Rule 4301                                                                                              | Fuel Burning Equipment (12/17/92)                                                                                                                       |
| Rule 4304                                                                                              | Equipment Tuning Procedure for Boilers, Steam Generators and Process Heaters (10/19/95)                                                                 |
| Rule 4305                                                                                              | Boilers, Steam Generators and Process Heaters – Phase II (8/21/03)                                                                                      |
| Rule 4306                                                                                              | Boilers, Steam Generators and Process Heaters – Phase III (10/16/08)                                                                                    |
| Rule 4320                                                                                              | Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr (10/16/08)                             |
| Rule 4401                                                                                              | Steam Enhanced Crude Oil Production Well Vents (12/14/06)                                                                                               |
| Rule 4405                                                                                              | Oxides Of Nitrogen Emissions From Existing Steam Generators Used In Thermally Enhanced Oil Recovery - Central And Western Kern County Fields (12/17/92) |
| Rule 4406                                                                                              | Sulfur Compounds From Oil-Field Steam Generators – Kern County (12/17/92)                                                                               |
| Rule 4801                                                                                              | Sulfur Compounds (12/17/92)                                                                                                                             |
| CH&SC 41700                                                                                            | Health Risk Assessment                                                                                                                                  |
| CH&SC 42301.6                                                                                          | School Notice                                                                                                                                           |
| 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 steam generator will be operated at the 2972 Setting in the NE/4 section 29, T28S, R21E within either Aera's Heavy or Light Oil Western Stationary Source, depending on the oil's API gravity, at the Belridge Oil Field. The equipment will not be 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**

Aera operates permitted equipment within their Heavy and Light Oil Western Stationary Sources, utilized for the thermally enhanced production of crude oil and natural gas. In thermally enhanced oil recovery (TEOR), natural gas is combusted in steam generators to produce steam for injection into heavy crude oil bearing strata via injection wells to reduce viscosity of the crude oil, thereby facilitating thermally enhanced oil production.

The steam generator will be fired on PUC or FERC regulated natural gas, produced gas or treated produced gas from Aera's Section 32 gas plant (S-1543).

## **V. Equipment Listing**

S-1547-1261-0: 100 MMBTU/HR NATURAL/PRODUCED GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MAGNA-FLAME GLE ULTRA LOW NOX BURNER, OR EQUIVALENT (2972 SETTING)

S-1548-554-0: 100 MMBTU/HR NATURAL/PRODUCED GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MAGNA-FLAME GLE ULTRA LOW NOX BURNER, OR EQUIVALENT (2972 SETTING)

## **VI. Emission Control Technology Evaluation**

Emissions from natural gas-fired steam generators include  $\text{NO}_x$ , CO, VOC,  $\text{PM}_{10}$ , and  $\text{SO}_x$ .

$\text{NO}_x$  is the major pollutant of concern when burning natural gas.  $\text{NO}_x$  formation is either due to thermal fixation of atmospheric nitrogen in the combustion air (thermal  $\text{NO}_x$ ) or due to conversion of chemically bound nitrogen in the fuel (fuel  $\text{NO}_x$ ). Due to the low fuel nitrogen content of natural gas, nearly all  $\text{NO}_x$  emissions are thermal  $\text{NO}_x$ . Formation of thermal  $\text{NO}_x$  is affected by four furnace zone factors: (1) nitrogen concentration, (2) oxygen concentration, (3) peak temperature, and (4) time of exposure at peak temperature.

The steam generator will be equipped with an ultra-low  $\text{NO}_x$  burner capable of achieving sub 7 ppm  $\text{NO}_x$  @ 3%  $\text{O}_2$ . Low  $\text{NO}_x$  burners reduce  $\text{NO}_x$  formation by producing lower flame temperatures (and longer flames) than conventional burners. Conventional burners thoroughly mix all the fuel and air in a single stage just prior to combustion, whereas low  $\text{NO}_x$  burners delay the mixing of fuel and air by introducing the fuel or air in multiple stages. Generally, in the first combustion stage, the air-fuel mixture is fuel rich. In a fuel rich environment, all the oxygen will be consumed in reactions with the fuel, leaving no excess oxygen available to react with nitrogen to produce thermal  $\text{NO}_x$ . In the secondary and tertiary stages, the combustion zone is maintained in a fuel-lean environment. The excess air in these stages helps to reduce the flame temperature so that the reaction between the excess oxygen with nitrogen is minimized.

## **VII. General Calculations**

### **A. Assumptions**

- The maximum operating schedule is 24 hours per day (per applicant)
- Steam generator is fired solely on natural gas (limited to 0.75 gr-S/100 dscf, per applicant)
- Maximum Heat Input: 100.0 MMBtu/hr (per applicant)
- Annual potential to emit is calculated based on 8,760 hours of operation per year
- EPA F-factor for natural gas is 8,578 dscf/MMBtu (40 CFR 60, Appendix B)
- Molar Specific Volume of a gas @ 60 °F is 379.5  $\text{ft}^3/\text{lb-mol}$
- Natural Gas Heating Value: 1,000 Btu/scf (District Practice)

## B. Emission Factors

| Pollutant         | Emission Factors (EF)                         |                                                  | Source                                                 |
|-------------------|-----------------------------------------------|--------------------------------------------------|--------------------------------------------------------|
| NO <sub>x</sub>   | 0.008 lb-NO <sub>x</sub> /MMBtu               | 7 ppmv NO <sub>x</sub><br>(@ 3% O <sub>2</sub> ) | Rule 4320, Table 1<br>Category C.2.a (proposed)        |
| SO <sub>x</sub>   | 0.0021 lb SO <sub>x</sub> /MMBtu <sup>1</sup> | 0.75 gr-S/100 dscf                               | Proposed by Applicant                                  |
| PM <sub>10</sub>  | 0.005 lb-PM <sub>10</sub> /MMBtu              | --                                               | Proposed by Applicant <sup>2</sup>                     |
| PM <sub>2.5</sub> | 0.005 lb-PM <sub>10</sub> /MMBtu              |                                                  | District Assumption for<br>natural gas firing and AP42 |
| CO                | 0.0185 lb-CO/MMBtu                            | 25 ppmv CO<br>(@ 3% O <sub>2</sub> )             | Proposed by Applicant                                  |
| VOC               | 0.003 lb-VOC/MMBtu                            | 7 ppmv VOC<br>(@ 3% O <sub>2</sub> )             | Proposed by Applicant <sup>3</sup>                     |

## C. Calculations

### 1. Pre-Project Potential to Emit (PE1)

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

### 2. Post Project Potential to Emit (PE2)

Emissions are calculated with the following equation and summarized on the following table (emissions are identical for each steam generator):

$$PE2 = EF \text{ (lb/MMBtu)} \times \text{Heat Input (MMBtu)} \times \text{Operating Schedule (hours)}$$

| PE2               |                 |                        |                                   |        |
|-------------------|-----------------|------------------------|-----------------------------------|--------|
|                   | EF2<br>lb/MMBtu | Heat Input<br>MMBtu/hr | Operating<br>Schedule<br>(hr/day) | lb/day |
| NO <sub>x</sub>   | 0.008           | 100                    | 24                                | 19.2   |
| SO <sub>x</sub>   | 0.0021          | 100                    | 24                                | 5.0    |
| PM <sub>10</sub>  | 0.005           | 100                    | 24                                | 12.0   |
| PM <sub>2.5</sub> | 0.005           | 100                    | 24                                | 12.0   |
| CO                | 0.0185          | 100                    | 24                                | 44.4   |
| VOC               | 0.003           | 100                    | 24                                | 7.2    |

<sup>1</sup>  $\frac{0.75 \text{ gr} \cdot S}{100 \text{ dscf}} \left( \frac{\text{dscf}}{1,000 \text{ Btu}} \right) \frac{10^6 \text{ Btu}}{\text{MMBtu}} \left( \frac{1 \text{ lb}}{7,000 \text{ gr}} \right) \frac{64 \text{ lb} \cdot \text{SO}_2}{32 \text{ lb} \cdot S} = 0.0021 \frac{\text{lb} \cdot \text{SO}_2}{\text{MMBtu}}$

<sup>2</sup> AP-42 (07/98) Table 1.4-2 lists a value of 0.0076 lb/MMBtu; however, source testing has shown gaseous fuel fired steam generators consistently at or below 0.001 lb/MMBtu.

<sup>3</sup> AP-42 (07/98) Table 1.4-2 lists a value of 0.0055 lb/MMBtu; however, source testing has shown gaseous fuel fired steam generators consistently with negligible VOC emissions.

| PE2               |                 |                        |                                  |         |
|-------------------|-----------------|------------------------|----------------------------------|---------|
|                   | EF2<br>lb/MMBtu | Heat Input<br>MMBtu/hr | Operating<br>Schedule<br>(hr/yr) | Lb/year |
| NO <sub>x</sub>   | 0.08            | 100                    | 8760                             | 7008    |
| SO <sub>x</sub>   | 0.0021          | 100                    | 8760                             | 1840    |
| PM <sub>10</sub>  | 0.005           | 100                    | 8760                             | 4380    |
| PM <sub>2.5</sub> | 0.005           | 100                    | 8760                             | 4380    |
| CO                | 0.0185          | 100                    | 8760                             | 16,206  |
| VOC               | 0.003           | 100                    | 8760                             | 2628    |

### **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 Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

Facility emissions for S-1547 and S-1548 are already above the Offset and Major Source Thresholds for NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, CO, and VOC emissions; therefore, SSPE1 calculations are not necessary.

### **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 Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

Facility emissions for S-1547 and S-1548 are already above the Offset and Major Source Thresholds for NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, CO, and VOC emissions; therefore, SSPE2 calculations are not necessary.

### **5. Major Source Determination**

#### **Rule 2201 Major Source Determination:**

Pursuant to Section 3.23 of District Rule 2201, a Major Source is a stationary source with post-project emissions or a Post Project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the following threshold values. However, Section 3.23.2 states, "for the purposes of determining major source status, the SSPE2 shall not include the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site."

These sources are existing Major Sources for NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, CO, and VOC emissions and will remain a Major Source for NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, CO, and VOC. No change in other pollutants are proposed or expected as a result of this project.

**Rule 2410 Major Source Determination:**

The facility or the equipment evaluated under this project is listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). Therefore the following PSD Major Source thresholds are applicable.

| PSD Major Source Determination<br>(tons/year) |     |     |     |     |     |      |          |
|-----------------------------------------------|-----|-----|-----|-----|-----|------|----------|
|                                               | NO2 | VOC | SO2 | CO  | PM  | PM10 | CO2e     |
| Estimated Facility PE before Project Increase |     |     |     |     |     |      | >100,000 |
| PSD Major Source Thresholds                   | 100 | 100 | 100 | 100 | 100 | 100  | 100,000  |
| PSD Major Source ? (Y/N)                      |     |     |     |     |     |      | y        |

As shown above, the facility is an existing major source for PSD for at least one pollutant. Therefore the facility is an existing major source for PSD.

**6. Baseline Emissions (BE)**

The BE calculation (in lbs/year) is performed pollutant-by-pollutant for each unit within the project, to calculate the QNEC and if applicable, to determine the amount of offsets required.

Pursuant to Section 3.7 of District Rule 2201, BE = Pre-project Potential to Emit for:

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

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to Section 3.22 of District Rule 2201.

The steam generator is a new emissions unit; therefore, Baseline Emissions (BE) are equal to zero 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 facilities S-1547 and S-1548 are major sources for NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub> and VOC, the project's PE2 is compared to the SB 288 Major Modification thresholds in the following table in order to determine if the SB 288 Major Modification calculation is required.

| SB 288 Major Modification Thresholds |                       |                     |                                                 |
|--------------------------------------|-----------------------|---------------------|-------------------------------------------------|
| Pollutant                            | Project PE2 (lb/year) | Threshold (lb/year) | SB 288 Major Modification Calculation Required? |
| NO <sub>x</sub>                      | 7,008                 | 50,000              | No                                              |
| SO <sub>x</sub>                      | 1,840                 | 80,000              | No                                              |
| PM <sub>10</sub>                     | 4,380                 | 30,000              | No                                              |
| VOC                                  | 2,628                 | 50,000              | No                                              |

Since none of the SB 288 Major Modification Thresholds are surpassed with this project, this project does not constitute an SB 288 Major Modification.

### 8. Federal Major Modification

District Rule 2201, Section 3.17 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.

The determination of Federal Major Modification is based on a two-step test. For the first step, only the emission *increases* are counted. Emission decreases may not cancel out the increases for this determination.

#### Step 1

For new emissions units, the increase in emissions is equal to the PE2 for each new unit included in this project.

All PM<sub>10</sub> for natural gas combustion is equal to PM<sub>1</sub> (AP-42, Table 1.4-2, Footnote c). Therefore, PM<sub>10</sub> = PM<sub>2.5</sub>.

| Federal Major Modification Thresholds for Emission Increases |                                   |                    |                             |
|--------------------------------------------------------------|-----------------------------------|--------------------|-----------------------------|
| Pollutant                                                    | Total Emissions Increases (lb/yr) | Thresholds (lb/yr) | Federal Major Modification? |
| NO <sub>x</sub> *                                            | 7,008                             | 0                  | Yes                         |
| VOC*                                                         | 2,628                             | 0                  | Yes                         |
| PM <sub>10</sub>                                             | 4,380                             | 30,000             | No                          |
| PM <sub>2.5</sub>                                            | 4,380                             | 20,000             | No                          |
| SO <sub>x</sub>                                              | 1840                              | 80,000             | No                          |

\*If there is any emission increases in NO<sub>x</sub> or VOC, this project is a Federal Major Modification and no further analysis is required.

Since there is an increase in NO<sub>x</sub> and VOC emissions, this project constitutes a Federal Major Modification, and no further analysis is required.

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

Rule 2410 applies to pollutants for which the District is in attainment or for unclassified pollutants. The pollutants addressed in the PSD applicability determination are listed as follows:

- NO<sub>2</sub> (as a primary pollutant)
- SO<sub>2</sub> (as a primary pollutant)

- CO
- PM
- PM10
- Greenhouse gases (GHG): CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, HFCs, PFCs, and SF<sub>6</sub>

The first step of this PSD evaluation consists of determining whether the facility is an existing PSD Major Source or not (See Section VII.C.5 of this document).

In the case the facility is an existing PSD Major Source, the second step of the PSD evaluation is to determine if the project results in a PSD significant increase.

In the case the facility is NOT an existing PSD Major Source but is an existing source, the second step of the PSD evaluation is to determine if the project, by itself, would be a PSD major source.

In the case the facility is new source, the second step of the PSD evaluation is to determine if this new facility will become a new PSD major Source as a result of the project and if so, to determine which pollutant will result in a PSD significant increase.

As demonstrated in the "PSD Major Source Determination" Section above, the facility was determined to be a existing major source for PSD. Because the project is not located within 10 km of a Class 1 area – modeling of the emission increase is not required to determine if the project is subject to the requirements of Rule 2410.

#### **I. Significance of Project Emission Increase Determination**

##### **a. Potential to Emit of attainment/unclassified pollutant for New or Modified Emission Units vs PSD Significant Emission Increase Thresholds**

As a screening tool, the potential to emit from all new and modified units is compared to the PSD significant emission increase thresholds, and if total potential to emit from all new and modified units is below this threshold, no further analysis will be needed.

| <b>PSD Significant Emission Increase Determination: Potential to Emit<br/>(tons/year)</b> |                 |                 |     |     |                  |                   |
|-------------------------------------------------------------------------------------------|-----------------|-----------------|-----|-----|------------------|-------------------|
|                                                                                           | NO <sub>2</sub> | SO <sub>2</sub> | CO  | PM  | PM <sub>10</sub> | CO <sub>2</sub> e |
| Total PE from New and Modified Units                                                      | 3.5             | 0.9             | 8.1 | 2.2 | 2.2              | 51,246*           |
| PSD Significant Emission Increase Thresholds                                              | 40              | 40              | 100 | 25  | 15               | 75,000            |
| PSD Significant Emission Increase?                                                        | n               | n               | n   | n   | n                | n                 |

\*CO<sub>2</sub>e = 100 MMBtu/hr x 117 lb CO<sub>2</sub>/MMBtu<sub>in</sub> x 8760 hr/yr x ton/2000 lb = 51,246

As demonstrated above, because the project has a total potential to emit from all new and modified emission units below the PSD significant emission increase thresholds, this project is not subject to the requirements of Rule 2410 due to a significant emission increase 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 A.

## **VIII. Compliance**

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

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

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

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

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

\*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.

##### **New emissions units – PE > 2 lb/day**

As seen in Section VII.C.2 of this evaluation, Aera is proposing to install a new steam generator with a PE greater than 2 lb/day for NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, CO, and VOC.

BACT is triggered for NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, CO and VOC because the PEs are greater than 2 lbs/day and the SSPEs for CO are greater than 200,000 lb/year.

##### **2. BACT Guideline**

Please note that BACT Guideline 1.2.1 [Steam Generator ( $\geq$  5 MMBtu/hr, Oilfield)] has been rescinded. The NO<sub>x</sub> emission limit requirement of District Rule 4320 is lower than the Achieved-in-Practice requirement of BACT Guideline 1.2.1 (14 ppmv @ 3% O<sub>2</sub>); therefore a project specific BACT analysis will be performed to determine BACT for this project. More details regarding this are provided in Appendix B.

##### **3. Top-Down BACT Analysis**

Per Permit Services Policies and Procedures for BACT, 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.

Pursuant to the attached Top-Down BACT Analysis (see Appendix B), BACT has been satisfied with the following:

NO<sub>x</sub>: 7 ppmvd @ 3% O<sub>2</sub>

SO<sub>x</sub>: Natural gas treated such that the sulfur content does not exceed 0.75 gr of sulfur compounds (as S) per 100 scf

PM<sub>10</sub>: Natural gas treated such that the sulfur content does not exceed 0.75 gr of sulfur compounds (as S) per 100 scf

CO: 25 ppmvd or less @ 3% O<sub>2</sub>

VOC: Gaseous fuel

## **B. Offsets**

### **1. Offset Applicability**

Pursuant to Section 4.5.3, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the Post Project Stationary Source Potential to Emit (SSPE2) equals to or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The following table compares the post-project facility-wide annual emissions in order to determine if offsets will be required for this project.

| <b>Offset Determination (lb/year)</b> |                       |                       |                        |           |            |
|---------------------------------------|-----------------------|-----------------------|------------------------|-----------|------------|
|                                       | <b>NO<sub>x</sub></b> | <b>SO<sub>x</sub></b> | <b>PM<sub>10</sub></b> | <b>CO</b> | <b>VOC</b> |
| Post Project SSPE (SSPE2)             | >20,000               | >54,750               | >29,200                | >200,000  | >20,000    |
| Offset Threshold                      | 20,000                | 54,750                | 29,200                 | 200,000   | 20,000     |
| Offsets triggered?                    | Yes                   | Yes                   | Yes                    | Yes       | Yes        |

### **2. Quantity of Offsets Required**

As seen above, the facility is an existing Major Source for NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, CO, VOC, and the SSPE2 is greater than the offset thresholds for these pollutants; therefore offset calculations will be required for this project.

Per Sections 4.7.1 and 4.7.3, the quantity of offsets in pounds per year is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) =  $(\Sigma[PE2 - BE] + ICCE) \times DOR$ , for all new or modified emissions units in the project,

Where,

PE2 = Post Project Potential to Emit, (lb/year)

BE = Baseline Emissions, (lb/year)

ICCE = Increase in Cargo Carrier Emissions, (lb/year)

DOR = Distance Offset Ratio, determined pursuant to Section 4.8

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)

There are no increases in cargo carrier emissions; therefore offsets can be determined as follows: Offsets required (lb/year) = [(PE2 – BE) + ICCE) x DOR

| Permit No.    | Post Project Potential to Emit [PE2]<br>(lb/ yr) |                 |                  |        |       |
|---------------|--------------------------------------------------|-----------------|------------------|--------|-------|
|               | NO <sub>x</sub>                                  | SO <sub>x</sub> | PM <sub>10</sub> | CO     | VOC   |
| S-1547-1261-0 | 7,008                                            | 1,840           | 4,380            | 16,206 | 2,628 |
| S-1548-554-0  |                                                  |                 |                  |        |       |

| Baseline Emissions [BE]<br>(lb/yr) |                 |                  |    |     |
|------------------------------------|-----------------|------------------|----|-----|
| NO <sub>x</sub>                    | SO <sub>x</sub> | PM <sub>10</sub> | CO | VOC |
| 0                                  | 0               | 0                | 0  | 0   |

| Permit No.    | PE2 – BE (lb/yr) |                 |                  |    |       |
|---------------|------------------|-----------------|------------------|----|-------|
|               | NO <sub>x</sub>  | SO <sub>x</sub> | PM <sub>10</sub> | CO | VOC   |
| S-1547-1261-0 | 7,008            | 1,840           | 4,380            | 0* | 2,628 |
| S-1548-554-0  |                  |                 |                  |    |       |

\*Section 4.6.1 of Rule 2201 states that emissions offsets are not required for increases in carbon monoxide in attainment areas provided the applicant demonstrates to the satisfaction of the APCO that the Ambient Air Quality (AAQ) Standards are not violated in the areas to be affected, such emissions will be consistent with Reasonable Further Progress, and will not cause or contribute to a violation of AAQ Standards. The District performed an AAQ Analysis and determined that this project will not result in or contribute to a violation of an AAQ Standard for CO (see Appendix C). Therefore, CO offsets are not required for this project.

As demonstrated in the preceding calculation:

- NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub> and VOC offsets are required
- CO offsets are not required (no violation of an Ambient Air Quality Standard)

Since offsets will only be provided for the one steam generator, though two permits are being issued, offset reservations will be entered under project number S-1121401

### NO<sub>x</sub>:

Since this project results in a Federal Major Modification for NO<sub>x</sub> the distance offset ratio (DOR) for this pollutant will be equal to 1.5 (per Rule 2201, Section 4.8.1). Aera has proposed the following ERCs:

|                                  |                                         |                         |                         |                         |
|----------------------------------|-----------------------------------------|-------------------------|-------------------------|-------------------------|
|                                  | 1 <sup>st</sup> Quarter                 | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
| ERC #S-1030-2                    | 93,295                                  | 83,665                  | 32,600                  | 77,083                  |
| Generated at:                    | Facility S-1547; Section 34, T28S, R21E |                         |                         |                         |
| DOR                              | 1.5 (Federal Major Modification)        |                         |                         |                         |
| With the following reservations: |                                         |                         |                         |                         |
|                                  | 1 <sup>st</sup> Quarter                 | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
| S-1054675                        | 1,218                                   | 1,218                   | 1,218                   | 1,218                   |
| S-1104195                        | 18,156                                  | 18,390                  | 25,341                  | 24,079                  |
| S-1121534                        | 37,620                                  | 61,302                  | 3,255                   | 48,303                  |
| Total:                           | 56,994                                  | 80,910                  | 29,814                  | 73,600                  |

Aera Energy, LLC S1547, 1121401 and S1548, 1121402

Total Offsets Required (at 1.5:1 distance offset ratio):

| Permit No.                | NO <sub>x</sub> Offsets Required (lb/qtr) |                         |                         |                         |
|---------------------------|-------------------------------------------|-------------------------|-------------------------|-------------------------|
|                           | 1 <sup>st</sup> Quarter                   | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
| S-1547-1261<br>S-1548-554 | 2,628                                     | 2,628                   | 2,628                   | 2,628                   |

Offsets Reserved in PAS (at discussed offset ratios):

|               | 1 <sup>st</sup> Quarter | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
|---------------|-------------------------|-------------------------|-------------------------|-------------------------|
| ERC #S-2905-2 | 2,628                   | 2,628                   | 2,628                   | 2,628                   |

As seen above, Aera has sufficient NO<sub>x</sub> credits to fully offset the quarterly NO<sub>x</sub> emissions increases associated with this project.

SO<sub>x</sub>:

Aera has proposed the following ERCs:

|                                  |                                         |                         |                         |                         |
|----------------------------------|-----------------------------------------|-------------------------|-------------------------|-------------------------|
|                                  | 1 <sup>st</sup> Quarter                 | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
| ERC #S-260-5                     | 19,004                                  | 28,541                  | 13,717                  | 8,240                   |
| Generated at:                    | Facility S-1109; Section 19, T28S, R28E |                         |                         |                         |
| DOR                              | 1.5 (>15 miles)                         |                         |                         |                         |
|                                  |                                         |                         |                         |                         |
| With the following reservations: |                                         |                         |                         |                         |
|                                  |                                         |                         |                         |                         |
|                                  | 1 <sup>st</sup> Quarter                 | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
| S-1112405                        | 1,505                                   | 1,505                   | 1,505                   | 1,505                   |

Total Offsets Required (at 1.5:1 distance offset ratio):

| Permit No.                | SO <sub>x</sub> Offsets Required (lb/qtr) |                         |                         |                         |
|---------------------------|-------------------------------------------|-------------------------|-------------------------|-------------------------|
|                           | 1 <sup>st</sup> Quarter                   | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
| S-1547-1261<br>S-1548-554 | 690                                       | 690                     | 690                     | 690                     |

Offsets Reserved in PAS (at discussed offset ratios):

|              | 1 <sup>st</sup> Quarter | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
|--------------|-------------------------|-------------------------|-------------------------|-------------------------|
| ERC #S-260-5 | 690                     | 690                     | 690                     | 690                     |

As seen above, Aera has sufficient SO<sub>x</sub> credits to fully offset the quarterly SO<sub>x</sub> emissions increases associated with this project (these offset reservations are combined with reservations for PM<sub>10</sub> that are discussed in the following section).

PM<sub>10</sub>:

Aera has proposed using SO<sub>x</sub> ERCs to offset the increases in PM<sub>10</sub>.

Interpollutant offset ratios for trades between SO<sub>x</sub> and PM<sub>10</sub> are allowed pursuant to Rule 2201, Section 4.13.3.1.2. Pursuant to draft District policy APR 1430, SO<sub>x</sub> ERCs may be used to offset PM<sub>10</sub> at an interpollutant ratio of 1.0 : 1.0. An interpollutant ratio of 1.0 : 1.0 for SO<sub>x</sub> to PM<sub>10</sub> will be applied.

Aera Energy, LLC S1547, 1121401 and S1548, 1121402

Aera has proposed the following ERCs:

|                                  |                                         |                         |                         |                         |
|----------------------------------|-----------------------------------------|-------------------------|-------------------------|-------------------------|
|                                  | 1 <sup>st</sup> Quarter                 | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
| ERC #S-260-5                     | 19,004                                  | 28,541                  | 13,717                  | 8,240                   |
| Generated at:                    | Facility S-1109; Section 19, T28S, R28E |                         |                         |                         |
| DOR                              | 1.5 (Federal Major Modification)        |                         |                         |                         |
| With the following reservations: |                                         |                         |                         |                         |
|                                  | 1 <sup>st</sup> Quarter                 | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
| S-1112405                        | 1,505                                   | 1,505                   | 1,505                   | 1,505                   |
| SO <sub>x</sub> for this project | 683                                     | 683                     | 683                     | 683                     |
| <b>Total:</b>                    | <b>2,188</b>                            | <b>2,188</b>            | <b>2,188</b>            | <b>2,188</b>            |

Total Offsets Required (at 1.5:1 distance offset ratio):

| Permit No.  | PM <sub>10</sub> Offsets Required (lb/qtr) |                         |                         |                         |
|-------------|--------------------------------------------|-------------------------|-------------------------|-------------------------|
|             | 1 <sup>st</sup> Quarter                    | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
| S-1547-1261 | 1,643                                      | 1,643                   | 1,643                   | 1,643                   |
| S-1548-554  |                                            |                         |                         |                         |

Offsets Reserved in PAS (at discussed offset ratios):

|              | 1 <sup>st</sup> Quarter | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
|--------------|-------------------------|-------------------------|-------------------------|-------------------------|
| ERC #S-260-5 | 1,643                   | 1,643                   | 1,643                   | 1,643                   |

As seen above, Aera has sufficient SO<sub>x</sub> credits to fully offset the quarterly PM<sub>10</sub> emissions increases associated with this project.

**VOC:**

Since this project results in a Federal Major Modification for VOC the distance offset ratio (DOR) for this pollutant will be equal to 1.5 (per Rule 2201, Section 4.8.1). Aera has proposed the following ERCs:

|                       | 1 <sup>st</sup> Quarter                 | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
|-----------------------|-----------------------------------------|-------------------------|-------------------------|-------------------------|
| ERC #S-3434-1         | 10,466                                  | 11,528                  | 13,111                  | 10,396                  |
| Generated at:         | Facility S-1135; Section 21, T31S, R22E |                         |                         |                         |
| DOR                   | 1.5 (Federal Major Modification)        |                         |                         |                         |
| No prior reservations |                                         |                         |                         |                         |

Total Offsets Required (at 1.5:1 distance offset ratio):

| Permit No.  | VOC Offsets Required (lb/qtr) |                         |                         |                         |
|-------------|-------------------------------|-------------------------|-------------------------|-------------------------|
|             | 1 <sup>st</sup> Quarter       | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
| S-1547-1261 | 986                           | 986                     | 986                     | 986                     |
| S-1548-554  |                               |                         |                         |                         |

Offsets Reserved in PAS (at discussed offset ratios):

|               | 1 <sup>st</sup> Quarter | 2 <sup>nd</sup> Quarter | 3 <sup>rd</sup> Quarter | 4 <sup>th</sup> Quarter |
|---------------|-------------------------|-------------------------|-------------------------|-------------------------|
| ERC #S-3434-1 | 986                     | 986                     | 986                     | 986                     |

As seen above, Aera has sufficient VOC credits to fully offset the quarterly VOC emissions increases associated with this project.

**Proposed Rule 2201 (offset) Conditions:**

- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender NO<sub>x</sub> emission reduction credits for the following quantity of emissions: 1st quarter – 2,628 lb, 2nd quarter - 2,628 lb, 3rd quarter - 2,628 lb, and fourth quarter - 2,628 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201]
- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender SO<sub>x</sub> emission reduction credits for the following quantity of emissions: 1st quarter – 2,333 lb, 2nd quarter – 2,333 lb, 3rd quarter – 2,333 lb, and fourth quarter – 2,333 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201]
- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter – 986 lb, 2nd quarter - 986 lb, 3rd quarter - 986 lb, and fourth quarter - 986 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201]
- {GC# 1983} ERC Certificate Numbers S-1030-2, S-260-5 and S-3434-1 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

**C. Public Notification**

**1. Applicability**

Public noticing is required for:

- a. New Major Sources, Federal Major Modifications, and SB288 Major Modifications,
- b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- c. Any project which results in the offset thresholds being surpassed, and/or
- d. Any project with an SSIP of greater than 20,000 lb/year for any pollutant.

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

New Major Sources are new facilities, which are also Major Sources. Since this is not a new facility, public noticing is not required for this project for New Major Source purposes.

As demonstrated in VII.C.8, this project is a Federal Major Modification; therefore, public noticing for Federal Major Modification purposes is required.

**b. PE > 100 lb/day**

Applications which include a new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. As seen in Section VII.C.2 above, this project does not include a new emissions unit which has daily emissions greater than 100 lb/day for any pollutant; therefore public noticing for PE > 100 lb/day purposes is not required.

**c. Offset Threshold**

The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

| Offset Threshold |                    |                    |                     |                            |
|------------------|--------------------|--------------------|---------------------|----------------------------|
| Pollutant        | SSPE1<br>(lb/year) | SSPE2<br>(lb/year) | Offset<br>Threshold | Public Notice<br>Required? |
| NO <sub>x</sub>  | >20,000            | >20,000            | 20,000 lb/year      | No                         |
| SO <sub>x</sub>  | >54,750            | >54,750            | 54,750 lb/year      | No                         |
| PM <sub>10</sub> | >29,200            | >29,200            | 29,200 lb/year      | No                         |
| CO               | >200,000           | >200,000           | 200,000 lb/year     | No                         |
| VOC              | >20,000            | >20,000            | 20,000 lb/year      | No                         |

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

**d. SSIPE > 20,000 lb/year**

Public notification is required for any permitting action that results in a Stationary Source Increase in Permitted Emissions (SSIPE) of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE is calculated as the Post Project Stationary Source Potential to Emit (SSPE2) minus the Pre-Project Stationary Source Potential to Emit (SSPE1), i.e.  $SSIPE = SSPE2 - SSPE1$ . The values for SSPE2 and SSPE1 are calculated according to Rule 2201, Sections 4.9 and 4.10, respectively.

Since the difference in SSPE1 and SSPE2 is due solely to the addition of the steam generator, the SSIPE will be equal to the PE2 of the new steam generator. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table:

| Stationary Source Increase in Permitted Emissions [SSIPE] – Public Notice |                  |                  |                    |                                  |                            |
|---------------------------------------------------------------------------|------------------|------------------|--------------------|----------------------------------|----------------------------|
| Pollutant                                                                 | PE2<br>(lb/year) | PE1<br>(lb/year) | SSIPE<br>(lb/year) | SSIPE Public<br>Notice Threshold | Public Notice<br>Required? |
| NO <sub>x</sub>                                                           | 7,008            | 0                | 7,008              | 20,000 lb/year                   | No                         |
| SO <sub>x</sub>                                                           | 1,840            | 0                | 1,840              | 20,000 lb/year                   | No                         |
| PM <sub>10</sub>                                                          | 4,380            | 0                | 4,380              | 20,000 lb/year                   | No                         |
| CO                                                                        | 16,206           | 0                | 16,206             | 20,000 lb/year                   | No                         |
| VOC                                                                       | 2,628            | 0                | 2,628              | 20,000 lb/year                   | No                         |

As demonstrated above, the SSIPEs were not greater than 20,000 lb/year for any pollutant; therefore public noticing for SSIPE purposes isn't required.

**2. Public Notice Action**

As discussed above, public noticing is required for Federal Major Modification purposes. 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 Emission Limits (DELs)**

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

- The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320]
- Except for periods of startup and shutdown, emissions shall not exceed any of the following limits: NOx: 7 ppmvd @ 3% O<sub>2</sub> or 0.008 lb-NOx/MMBtu; PM<sub>10</sub>: 0.005 lb-PM<sub>10</sub>/MMBtu; CO: 25 ppmvd @ 3% O<sub>2</sub> or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306 and 4320]
- Maximum emissions from the steam generator, including start-up, shutdown and refractory curing periods shall not exceed any of the following limits: 7,008 lb-NOx/yr, 1,840 lb-SOx/yr, 4,380 lb-PM<sub>10</sub>/yr, 16,206 lb-CO/yr, and 2,628 lb-VOC/yr. [District Rule 2201]

#### **E. Compliance Assurance**

##### **1. Source Testing**

The steam generator is subject to District Rule 4305, *Boilers, Steam Generators and Process Heaters, Phase 2*, District Rule 4306, *Boilers, Steam Generators and Process Heaters, Phase 3*, and District Rule 4320, *Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5 MMBtu/hr*. Source testing requirements, in accordance with these rules will be discussed in Section VIII of this evaluation.

##### **2. Monitoring**

The steam generator is subject to District Rule 4305, *Boilers, Steam Generators and Process Heaters, Phase 2*, District Rule 4306, *Boilers, Steam Generators and Process Heaters, Phase 3*, and District Rule 4320, *Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5 MMBtu/hr*. Monitoring requirements, in accordance with these rules will be discussed in Section VIII of this evaluation.

##### **3. Recordkeeping**

The steam generator is subject to District Rule 4305, *Boilers, Steam Generators and Process Heaters, Phase 2*, District Rule 4306, *Boilers, Steam Generators and Process Heaters, Phase 3*, and District Rule 4320, *Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5 MMBtu/hr*.

Recordkeeping, in accordance with these rules will be discussed in Section VIII of this evaluation.

#### 4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

#### F. Ambient Air Quality Analysis

Section 4.6.1 of this rule states that emissions offsets are not required for increases in carbon monoxide in attainment areas provided the applicant demonstrates to the satisfaction of the APCO that the Ambient Air Quality Standards are not violated in the areas to be affected, such emissions will be consistent with Reasonable Further Progress, and will not cause or contribute to a violation of Ambient Air Quality Standards.

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

The proposed location is in an attainment area for NO<sub>x</sub>, CO, and SO<sub>x</sub>. The proposed location is in a non-attainment area for PM<sub>10</sub>. The increase in criteria pollutants due to the proposed equipment will not cause a violation as shown on the table below titled "Criteria pollutant Modeling Results".

**Criteria Pollutant Modeling Results\***

| Diesel ICE        | 1 Hour | 3 Hours | 8 Hours | 24 Hours | Annual |
|-------------------|--------|---------|---------|----------|--------|
| CO                | Pass   | X       | Pass    | X        | X      |
| NO <sub>x</sub>   | Pass   | X       | X       | X        | Pass   |
| SO <sub>x</sub>   | Pass   | Pass    | X       | Pass     | Pass   |
| PM <sub>10</sub>  | X      | X       | X       | Pass     | Pass   |
| PM <sub>2.5</sub> | X      | X       | X       | Pass     | Pass   |

\*Results were taken from the attached PSD spreadsheet.

<sup>1</sup>The project was compared to the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard that became effective on April 12, 2010 using the District's approved procedures.

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

As shown, the calculated contribution of CO, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>, will not exceed the EPA significance level. This project is not expected to cause or make worse a violation of an air quality standard. See Appendix C of this document for the AAQA summary sheet.

#### G. Compliance Certification

Section 4.15.2 of this Rule requires the owner of a new Major Source or a source undergoing a Title I Modification to demonstrate to the satisfaction of the District that all other Major Sources owned by such person and operating in California are in compliance or are on a schedule for compliance with all applicable emission limitations and standards. As discussed in Sections VIII-Rule 2201-C.1.a and VIII-Rule 2201-C.1.b, this project does constitute a Title I modification, therefore this requirement is applicable. Included in Appendix D is Aera's Statewide Compliance Statement.

#### H. Alternate Siting Analysis

The current project occurs at an existing facility. The applicant proposes to install a new steam generator.

Since the project will provide steam for injection into wells at a nearby location, the existing site will result in the least possible impact from the project. Alternative sites would involve the relocation and/or construction of various support structures on a much greater scale, and would therefore result in a much greater impact.

#### **Rule 2410 Prevention of Significant Deterioration (6/16/11)**

As shown above in section VII.9 this project does not result in a PSD significant emission increase and is therefore not subject to the requirements of Rule 2410. No further discussion is required.

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

This facility is subject to this Rule, and has received their Title V Operating Permit. Section 3.29 defines a significant permit modification as a "permit amendment that does not qualify as a minor permit modification or administrative amendment."

As discussed above, the facility has applied for a Certificate of Conformity (COC); therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications. Continued compliance with this rule is expected. The facility may construct/operate under the ATC upon submittal of the Title V administrative amendment/minor modification application.

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

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60.

40 CFR Part 60, Subpart Dc applies to Small Industrial-Commercial-Industrial Steam Generators between 10 MMBtu/hr and 100 MMBtu/hr (post-6/9/89 construction, modification or, reconstruction)

This steam generator has a rating of 100 MMBtu/hr and is fired on natural gas. Subpart Dc has no standards for gas-fired steam generators. Therefore subpart Dc does not apply.

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

Per Section 5.0, no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity). As the steam generators are fired solely on natural gas and the TEOR system will result in fugitive emissions only, visible emissions are not expected to exceed Ringelmann 1 or 20% opacity. The following condition will remain listed on the facility-wide permit to ensure compliance:

- No air contaminants shall be discharged into the atmosphere for a period or periods aggregating more than 3 minutes in any one hour which is as dark or darker than Ringelmann #1 or equivalent to 20% opacity and greater, unless specifically exempted by District Rule 4101, by using EPA method 9. If the equipment or operation is subject to a more stringent visible emission standard as

prescribed in a permit condition, the more stringent visible emission limit shall supersede this condition. [District Rule 4101]

## **Rule 4102 Nuisance**

Section 4.0 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected. The facility-wide permit for Aera contains the following condition:

- 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 C), the total facility prioritization score including this project was greater than one. Therefore, a health risk assessment was required to determine the short-term acute and long-term chronic exposure from this project.

The cancer risk for this project is shown below:

| <b>RMR Summary</b>                                      |                                                                      |                           |                            |
|---------------------------------------------------------|----------------------------------------------------------------------|---------------------------|----------------------------|
| <b>Categories</b>                                       | <b>Steam Generator<br/>(Unit S-1547-1261-0 and<br/>S-1548-554-0)</b> | <b>Project<br/>Totals</b> | <b>Facility<br/>Totals</b> |
| <b>Prioritization Score</b>                             | 0.00                                                                 | 0.00                      | >1                         |
| <b>Acute Hazard Index</b>                               | 0.00                                                                 | 0.00                      | 0.00                       |
| <b>Chronic Hazard Index</b>                             | 0.00                                                                 | 0.00                      | 0.01                       |
| <b>Maximum Individual Cancer Risk (10<sup>-6</sup>)</b> | 0.00                                                                 | 0.00                      | 3.79                       |
| <b>T-BACT Required?</b>                                 | No                                                                   |                           |                            |
| <b>Special Permit Conditions?</b>                       | Yes                                                                  |                           |                            |

## **Discussion of T-BACT**

BACT for toxic emission control (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 VOC for the TEOR modification. T-BACT is satisfied with BACT for VOC (see Appendix C), which is a vapor control system and inspection and maintenance program with noncondensables incinerated in fuel burning

equipment or re-injection to formation; 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 10 in a million). As outlined by the HRA Summary in Appendix C of this report, the emissions increases for this project was determined to be less than significant.

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

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot.

|                                                 |                           |
|-------------------------------------------------|---------------------------|
| F-Factor for NG:                                | 8,578 dscf/MMBtu at 60 °F |
| PM10 Emission Factor:                           | 0.005 lb-PM10/MMBtu       |
| Percentage of PM as PM10 in Exhaust:            | 100%                      |
| Exhaust Oxygen (O <sub>2</sub> ) Concentration: | 3%                        |
| Excess Air Correction to F Factor =             | 20.9/(20.9 - 3) = 1.17    |

$$GL = \left( \frac{0.005 \text{ lb} - \text{PM}}{\text{MMBtu}} \right) * \left( \frac{7,000 \text{ grain}}{\text{lb} - \text{PM}} \right) / \left( \frac{8,578 \text{ ft}^3}{\text{MMBtu}} * 1.17 \right)$$

$$GL = 0.003 \text{ grain/dscf} < 0.1 \text{ grain/dscf}$$

Therefore, compliance with District Rule 4201 requirements is expected. Additionally, particulate matter emissions from the steam generator is already limited by Rule 2201 to a value less than or equal to the rule limit of 0.1 grain per cubic foot of gas at dry standard conditions. Therefore the following condition, previously discussed, will ensure compliance with this rule:

- Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO<sub>2</sub>; sulfur - 200 pounds of SO<sub>2</sub> per hour, or 2000 ppmv as SO<sub>2</sub>; NO<sub>2</sub> - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4201, 4301, 4405 and 4801]

#### **Rule 4301 Fuel Burning Equipment**

This rule specifies maximum emission rates in lb/hr for SO<sub>2</sub>, NO<sub>2</sub>, and combustion contaminants (defined as total PM in Rule 1020). This rule also limits combustion contaminants to ≤ 0.1 gr/scf. According to AP 42 (Table 1.4-2, footnote c), all PM emissions from natural gas combustion are less than 1 μm in diameter.

| District Rule 4301 Limits (lb/hr) |                 |          |                 |
|-----------------------------------|-----------------|----------|-----------------|
| Pollutant                         | NO <sub>2</sub> | Total PM | SO <sub>2</sub> |
| Steam Generator                   | 0.80            | 0.50     | 0.21            |
| Rule Limit (lb/hr)                | 140             | 10       | 200             |

The preceding table indicates compliance with the maximum lb/hr emissions in this rule; therefore, the following condition, previously discussed, will ensure compliance with this rule:

- Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO<sub>2</sub>; sulfur - 200 pounds of SO<sub>2</sub> per hour, or 2000 ppmv as SO<sub>2</sub>; NO<sub>2</sub> - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4201, 4301, 4405 and 4801]

#### **Rule 4304 Equipment Tuning Procedure for Boilers, Steam Generators and Process Heaters**

This rule provides equipment tuning procedures for boilers, steam generators and process heaters to control visible emissions and emissions of both nitrogen oxides (NO<sub>x</sub>) and carbon monoxide (CO).

These units follow District approved Alternate Monitoring scheme A, where the applicable emission limits will be periodically monitored for compliance with Rule 4320; therefore, Aera will not be required to perform tuning in accordance with the procedures of this Rule.

#### **Rule 4305 Boilers, Steam Generators and Process Heaters – Phase II**

The steam generator is gas-fired with a maximum heat input of 100 MMBtu/hr. Pursuant to Section 2.0 of District Rule 4305, the unit is subject to District Rule 4305, *Boilers, Steam Generators and Process Heaters – Phase 2*.

In addition, the unit is also subject to District Rule 4306, *Boilers, Steam Generators and Process Heaters – Phase 3*.

Since the emissions limits of District Rule 4306 and all other requirements are equivalent or more stringent than District Rule 4305 requirements, compliance with District Rule 4306 requirements will satisfy the requirements of District Rule 4305.

#### **Rule 4306 Boilers, Steam Generators and Process Heaters – Phase III**

The steam generator is gas-fired with a maximum heat input of 100 MMBtu/hr. Pursuant to Section 2.0 of District Rule 4306, the unit is subject to District Rule 4306.

In addition, the unit is also subject to *District Rule 4320, Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5 MMBtu/hr*.

Since the emissions limits of District Rule 4320 and all other requirements are equivalent or more stringent than District Rule 4306 requirements, compliance with District Rule 4320 requirements will satisfy the requirements of District Rule 4306.

#### **Rule 4320 Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr**

This rule limits NO<sub>x</sub>, CO, SO<sub>2</sub> and PM<sub>10</sub> emissions from boilers, steam generators and process heaters rated greater than 5 MMBtu/hr. This rule also provides a compliance option of payment of fees in proportion to the actual amount of NO<sub>x</sub> emitted over the previous year.

The steam generator is rated at greater than 5 MMBtu/hr heat input. Therefore this rule applies.

## Section 5.1 NOx Emission Limits

Section 5.1 states that an operator of a unit(s) subject to this rule shall comply with all applicable requirements of the rule and one of the following, on a unit-by-unit basis:

- Operate the unit to comply with the emission limits specified in Sections 5.2 and 5.4; or
- Pay an annual emissions fee to the District as specified in Section 5.3 and comply with the control requirements specified in Section 5.4; or
- Comply with the applicable Low-use Unit requirements of Section 5.5.

Section 5.2.1 states that on and after the indicated Compliance Deadline units shall not be operated in a manner which exceeds the applicable NO<sub>x</sub> limit specified in Table 1 of this rule.

This unit is fired on >50% PUC quality gas and has a maximum heat input of 85.0 MMBtu/hr; therefore, the applicable emission limit category Section 5.2, Table 1, Category C.2.a from District Rule 4320 applies as follows:

| C. Oilfield Steam Generators                          |                                                                         |                        |                     |
|-------------------------------------------------------|-------------------------------------------------------------------------|------------------------|---------------------|
| Category                                              | NO <sub>x</sub> Limit                                                   | Authority to Construct | Compliance Deadline |
| 2. Units with a total rated heat input >20.0 MMBtu/hr | a) Standard Schedule<br>7 ppmv or 0.008 lb/MMBtu; or                    | July 1, 2009           | July 1, 2010        |
|                                                       | b) Staged Enhanced Schedule Initial Limit 9 ppmv or 0.011 lb/MMBtu; and | July 1, 2011           | July 1, 2012        |
|                                                       | Final Limit 5 ppmv or 0.0062 lb/MMBtu                                   | January 1, 2013        | January 1, 2014     |

Aera has proposed to comply with Rule 4320 by limiting the burner to 7 ppm-NO<sub>x</sub> @ 3% O<sub>2</sub> (or 0.008 lb-NO<sub>x</sub>/MMBtu). The following condition will be listed on the ATC to ensure compliance:

- Except for periods of startup and shutdown, emissions shall not exceed any of the following limits: NO<sub>x</sub>: 7 ppmvd @ 3% O<sub>2</sub> or 0.008 lb-NO<sub>x</sub>/MMBtu; PM<sub>10</sub>: 0.005 lb-PM<sub>10</sub>/MMBtu; CO: 25 ppmvd @ 3% O<sub>2</sub> or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306 and 4320]

## Section 5.4 Particulate Matter Control Requirements

5.4.1 To limit particulate matter emissions, an operator shall comply with one of the following requirements:

5.4.1.1 On and after the applicable NO<sub>x</sub> Compliance Deadline specified in Section 5.2 Table 1, operators shall fire units exclusively on PUC-quality natural gas, commercial propane, butane, or liquefied petroleum gas, or a combination of such gases;

5.4.1.2 On and after the applicable NO<sub>x</sub> Compliance Deadline specified in Section 5.2 Table 1, operators shall limit fuel sulfur content to no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet; or

5.4.1.3 On and after the applicable NOx Compliance Deadline specified in Section 5.2 Table 1, operators shall install and properly operate an emission control system that reduces SO<sub>2</sub> emissions by at least 95% by weight; or limit exhaust SO<sub>2</sub> to less than or equal to 9 ppmv corrected to 3.0% O<sub>2</sub>.

5.4.1.4 Notwithstanding the compliance deadlines indicated in Sections 5.4.1.1 through 5.4.1.3, refinery units, which require modification of refinery equipment to reduce sulfur emissions, shall be in compliance with the applicable requirement in Section 5.4.1 no later than July 1, 2013.

Aera will address the particulate matter by limiting the fuel sulfur content to 0.75 gr-S/100 dscf (previously proposed in the Rule 2201 compliance section VIII.D):

- The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320]

Compliance with section 5.4 is expected.

## **Section 5.6 Startup and Shutdown Provisions**

Section 5.6 states that on and after the full compliance deadline specified in Section 5.0, the applicable emission limits of Sections 5.2 Table 1 and 5.5.2 shall not apply during start-up or shutdown provided an operator complies with the requirements specified in Sections 5.6.1 through 5.6.5.

Emissions during start-up and shutdown will not be subject to the emission limits in Sections 5.2 and 5.2.2. The following conditions will be listed on the ATC:

- Duration of start-up or shutdown shall not exceed two hours each per occurrence. During start-up or shutdown, the emissions control system shall be in operation, and emissions shall be minimized insofar as technologically possible. The operator shall maintain daily records of the duration of start-up and shutdown periods. [District Rules 4305, 4306, and 4320]
- Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off. [District Rules 4305, 4306, and 4320]

## **Section 5.7 Monitoring Provisions**

Section 5.7.1 requires that permit units subject to District Rule 4320, Section 5.2 shall both install and maintain an operational APCO approved Continuous Emission Monitoring System (CEMS) for NO<sub>x</sub>, CO and O<sub>2</sub>, or implement an APCO-approved alternate monitoring.

Aera proposes to use Alternate Monitoring Scheme A (pursuant to District Policy SSP-1105), which requires that monitoring of NO<sub>x</sub>, CO, and O<sub>2</sub> exhaust concentrations shall be conducted at least once per month (in which a source test is not performed) using a portable analyzer. The following conditions will be incorporated into the ATCs to ensure compliance with the requirements of the proposed alternate monitoring plan:

- {4063} The permittee shall monitor and record the stack concentration of NO<sub>x</sub>, CO, and O<sub>2</sub> at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit

need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320]

- {4064} If either the NOX or CO concentrations corrected to 3% O<sub>2</sub>, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4305, 4306 and 4320]
- {4065} All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320]
- {4066} The permittee shall maintain records of: (1) the date and time of NOX, CO, and O<sub>2</sub> measurements, (2) the O<sub>2</sub> concentration in percent by volume and the measured NOX and CO concentrations corrected to 3% O<sub>2</sub>, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320]

Section 5.7.6 requires operators complying with Sections 5.4.1.1 or 5.4.1.2 to provide an annual fuel analysis to the District unless a more frequent sampling and reporting period is included in the Permit to Operate. Sulfur analysis shall be performed in accordance with the test methods in Section 6.2.

- When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320]

The following condition will be listed on the ATCs to ensure compliance with the reporting section of this requirement:

- 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 Rules 1070, 4305, 4306 and 4320]

## **Section 5.8 Compliance Determination**

Section 5.8.1 requires that the operator of any unit shall have the option of complying with either the applicable heat input (lb/MMBtu), emission limits or the concentration (ppmv) emission limits specified in Section 5.2. The emission limits selected to demonstrate compliance shall be specified in the source test proposal pursuant to Rule 1081 (Source Sampling).

Therefore, the following condition will be listed on the ATCs as follows:

- {2976} The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4320]

Section 5.8.2 requires that all emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0.

Therefore, the following permit condition will be listed on the ATCs as follows:

- {2972} All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306, and 4320]

Section 5.8.4 requires that for emissions monitoring pursuant to Sections 5.7.1 and 6.3.1 using a portable NO<sub>x</sub> analyzer as part of an APCO approved Alternate Emissions Monitoring System, emission readings shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15-consecutive-minute sample reading or by taking at least five (5) readings evenly spaced out over the 15-consecutive-minute period.

Therefore, the following previously listed permit condition will be on the ATCs as follows:

- {4065} All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320]

Section 5.8.5 requires that for emissions source testing performed pursuant to Section 6.3.1 for the purpose of determining compliance with an applicable standard or numerical limitation of this rule, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply. If two (2) of three (3) runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. Therefore, the following permit condition will be listed on the permit as follows:

- {2980} For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320]

## **Section 6.1 Recordkeeping**

Section 6.1 requires that the records required by Sections 6.1.1 through 6.1.5 shall be maintained for five calendar years and shall be made available to the APCO and EPA upon request. Failure to maintain records or information contained in the records that demonstrate noncompliance with the applicable requirements of this rule shall constitute a violation of this rule.

A permit condition will be listed on the permit as follows:

- 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 Rules 1070, 4305, 4306 and 4320]

### **Section 6.2, Test Methods**

Section 6.2 identifies the following test methods as District-approved source testing methods for the pollutants listed:

| Pollutant                                                   | Units    | Test Method Required                            |
|-------------------------------------------------------------|----------|-------------------------------------------------|
| NO <sub>x</sub>                                             | ppmv     | EPA Method 7E or ARB Method 100                 |
| NO <sub>x</sub>                                             | lb/MMBtu | EPA Method 19                                   |
| CO                                                          | ppmv     | EPA Method 10 or ARB Method 100                 |
| Stack Gas O <sub>2</sub>                                    | %        | EPA Method 3 or 3A, or ARB Method 100           |
| Stack Gas Velocities                                        | ft/min   | EPA Method 2                                    |
| Stack Gas Moisture Content                                  | %        | EPA Method 4                                    |
| Oxides of sulfur                                            |          | EPA Method 6C, EPA Method 8, or ARB Method 100  |
| Total Sulfur as Hydrogen Sulfide (H <sub>2</sub> S) Content |          | EPA Method 11 or EPA Method 15, as appropriate. |
| Sulfur Content of Liquid Fuel                               |          | ASTM D 6920-03 or ASTM D 5453-99                |

The following permit conditions will be listed on the permit as follows:

- The following test methods shall be used: NO<sub>x</sub> (ppmv) - EPA Method 7E or ARB Method 100, NO<sub>x</sub> (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O<sub>2</sub>) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SO<sub>x</sub> - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H<sub>2</sub>S content - EPA Method 11 or 15; and fuel hhv (MMBtu) -ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320]

### **Section 6.3, Compliance Testing**

Section 6.3.1 requires that this unit be tested to determine compliance with the applicable requirements of section 5.1 and 5.2.3 not less than once every 12 months. Upon demonstrating compliance on two consecutive compliance source tests, the following source test may be deferred for up to thirty-six months.

The following permit conditions will be listed on the ATC:

- A source test to demonstrate compliance with NO<sub>x</sub> and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 220, 4305, 4306 and 4320]
- Source testing to measure natural gas-combustion NO<sub>x</sub> and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual

source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320]

- The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

### **Section 7.0, Compliance Schedule**

Section 7.0 identifies the dates by which the operator shall submit an application for an ATC and the date by which the owner shall demonstrate compliance with this rule.

The unit will be in compliance with the emissions limits listed in Table 1, Section 5.2 of this rule, and periodic monitoring and source testing as required by District Rule 4320. Therefore, requirements of the compliance schedule, as listed in Section 7.0 of District Rule 4320, are satisfied. No further discussion is required.

### **Conclusion**

Conditions will be incorporated into the permit in order to ensure compliance with each section of this rule, see attached draft permit in Appendix E. Therefore, compliance with District Rule 4320 requirements is expected.

### **Rule 4406 Sulfur Compounds From Oil-Field Steam Generators – Kern County**

This rule limits sulfur compound emissions to 0.11 lb/MMBtu for existing steam generators located in Kern County. An existing steam generator is defined as one that had an ATC or PTO prior to September 12, 1979. This project involves a new steam generator only. Therefore, this rule is not applicable.

### **Rule 4801 Sulfur Compounds**

A person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: 0.2 % by volume calculated as SO<sub>2</sub>, on a dry basis averaged over 15 consecutive minutes.

In addition, the unit is also subject to District Rule 4320, *Advanced Emission Reduction Options for Boilers, Steam Generators, and Process heaters Greater than 5.0 MMBTU/hr*. Since emissions limits of District Rule 4320 and all other requirements are equivalent or more stringent than District Rule 4801 requirements, compliance with District Rule 4320 requirements will satisfy requirements of District Rule 4801. Therefore the following condition, previously discussed, will ensure compliance with this rule:

- The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201, 4320 and 4801]
- Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO<sub>2</sub>; sulfur - 200 pounds of SO<sub>2</sub> per hour, or 2000 ppmv as SO<sub>2</sub>; NO<sub>2</sub> - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4201, 4301, 4405 and 4801]

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

### **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.

### **Greenhouse Gas (GHG) Significance Determination**

Project specific impacts on global climate change were evaluated consistent with the adopted District policy – *Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*. The District's engineering evaluation (this document) demonstrates that the project includes Best Performance Standards (BPS) for each class and category of greenhouse gas emissions unit. The District therefore concludes that the project would have a less than cumulatively significant impact on global climate change.

To ensure the project achieves the required GHG emission reductions, the following permit condition will be made a condition of project approval for all steam generator units:

- *Steam generator shall be equipped with variable frequency drive electrical motors driving the blower and water pump and a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer) or a manufacturer's overall thermal efficiency rating of 88%. [Public Resources Code 21000-21177: California Environmental Quality Act]*

### **District CEQA Findings**

The District determined that no other agency has broader discretionary approval power over the project and that the District is the first agency to act on the project, therefore establishing the District as the Lead Agency for the project (CCR §15051(b)). The District's engineering evaluation of the project (this document) determined that compliance with District rules and permit conditions would reduce and mitigate the project's potential air quality impacts to less than significant.

To ensure compliance with District NSR requirements for offsetting operational emissions Aera must surrender ERCs sufficient to completely offset operational emissions as required by District NSR requirements. The following measure will be made a condition of project approval:

- *Aera must surrender ERCs sufficient to completely offset operational emissions as required by District NSR requirements. Offsets include the applicable offset ratio specified in Section 4.8 of Rule 2201.*

To enforce this requirement permit conditions identifying the specific necessary offsets for each pollutant will be included in the ATC for each emissions unit prior to the start of operations. The emissions units associated with each buildout option are presented below:

- Pilot OSG: Units S-1547-1261 and S-1548-554
- Option 1: Units S-1547-1303 through -1328 and S-1548-595 through -620
- Option 2: Units S-1547-1277 through -1302 and S-1548-569 through -594
- Option 3: Units S-1547-1245 through -1259, -1263 through -1276, -1326 through -1328, and S-1548-539 through -553, -555 through -568
- Option 4: Units S-1547-1216 through -1244 and S-1548-510 through -538

To ensure that the project will have a less than significant impact on all other environmental resources, the following permit conditions will be made a condition of project approval:

#### Biological Species

- *Permittee shall comply with all California Department of Fish and Wildlife mitigation measures identified in the Biological Resources discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of potential biological species impacts. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act]*

#### Cultural Resources

- *Permittee shall comply with all Native American Heritage Commission (NAHC) mitigation measures identified in the Cultural Resources discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of potential cultural, archaeological, and paleontological impacts. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act and Health and Safety Code 7050.5]*

#### Hazardous Materials

- *Permittee shall comply with all Department of Toxic Substances Control (DTSC) mitigation measures identified in the Hazards and Hazardous Material discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of the public and environment from hazards and hazardous materials. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act]*

Aera Energy, LLC S1547, 1121401 and S1548, 1121402

- Permittee shall comply with all Division of Oil, Gas, and Geothermal Resources (DOGGR) mitigation measures identified in the Hazards and Hazardous Material discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of the public from hazards and hazardous materials. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act]

Hydrology and Water Quality

- Permittee shall comply with all Division of Oil, Gas, and Geothermal Resources (DOGGR) mitigation measures identified in the Hydrology and Water Quality discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of potential water quality impacts. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act]

The District prepared an Initial Study which demonstrates that through a combination of project design elements, and permit conditions, project specific environmental impacts will be less than significant. A Mitigated Negative declaration and Notice of Intent to Adopt will be prepared and circulated for public review and comment pursuant to CCR §15072 et seq. The issuance of the Authority to Construct (ATC) constitutes the final decision to approve the project and will not be issued until the District has approved the final environmental document. Pursuant to CCR §15075 a Notice of Determination will be filed within five (5) days of the issuance of the ATC.

**IX. Recommendation**

Compliance with all applicable rules and regulations is expected. Issue Authority to Construct S-1547-1261-0 and S-1548-554-0 subject to the permit conditions on the attached draft Authority to Construct in Appendix E.

**X. Billing Information**

| Annual Permit Fees |              |                 |            |
|--------------------|--------------|-----------------|------------|
| Permit Number      | Fee Schedule | Fee Description | Annual Fee |
| S-1547-1261-0      | 3020-02-H    | 100.0 MMBtu/hr  | \$1,030.00 |
| S-1548-554-0       | 3020-02-H    | 100.0 MMBtu/hr  | \$1,030.00 |

## **APPENDIX A**

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

## 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.

Using the values in Sections VII.C.2 and VII.C.6 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

$$PE2_{\text{quarterly}} = PE2_{\text{annual}} \div 4 \text{ quarters/year}$$

$$PE1_{\text{quarterly}} = PE1_{\text{annual}} \div 4 \text{ quarters/year}$$

| Quarterly NEC [QNEC] |             |              |             |              |               |
|----------------------|-------------|--------------|-------------|--------------|---------------|
|                      | PE2 (lb/yr) | PE2 (lb/qtr) | PE1 (lb/yr) | PE1 (lb/qtr) | QNEC (lb/qtr) |
| NO <sub>x</sub>      | 7008        | 1752         | 0           | 0            | 1752          |
| SO <sub>x</sub>      | 1840        | 460          | 0           | 0            | 460           |
| PM <sub>10</sub>     | 4380        | 1095         | 0           | 0            | 1095          |
| CO                   | 16,206      | 4052         | 0           | 0            | 4052          |
| VOC                  | 2628        | 657          | 0           | 0            | 657           |

|                           |                  |
|---------------------------|------------------|
| Permit #: S-1547-1261-0   | Last Updated     |
| Facility: AERA ENERGY LLC | 09/04/2013 TORID |

Equipment Pre-Baselined: NO

|                                                      | <u>NOX</u> | <u>SOX</u> | <u>PM10</u> | <u>CO</u> | <u>VOC</u> |
|------------------------------------------------------|------------|------------|-------------|-----------|------------|
| Potential to Emit (lb/Yr):                           | 7008.0     | 1840.0     | 4380.0      | 16206.0   | 2628.0     |
| Daily Emis. Limit (lb/Day)                           | 19.2       | 5.0        | 12.0        | 44.4      | 7.2        |
| Quarterly Net Emissions Change (lb/Qtr)              |            |            |             |           |            |
| Q1:                                                  | 1752.0     | 460.0      | 1095.0      | 4052.0    | 657.0      |
| Q2:                                                  | 1752.0     | 460.0      | 1095.0      | 4052.0    | 657.0      |
| Q3:                                                  | 1752.0     | 460.0      | 1095.0      | 4052.0    | 657.0      |
| Q4:                                                  | 1752.0     | 460.0      | 1095.0      | 4052.0    | 657.0      |
| Check if offsets are triggered but exemption applies | N          | N          | N           | N         | N          |
| Offset Ratio                                         | 1.5        | 1.5        | 1.5         |           | 1.5        |
| Quarterly Offset Amounts (lb/Qtr)                    |            |            |             |           |            |
| Q1:                                                  | 2628.0     | 690.0      | 1643.0      |           | 986.0      |
| Q2:                                                  | 2628.0     | 690.0      | 1643.0      |           | 986.0      |
| Q3:                                                  | 2628.0     | 690.0      | 1643.0      |           | 986.0      |
| Q4:                                                  | 2628.0     | 690.0      | 1643.0      |           | 986.0      |

|                           |                  |
|---------------------------|------------------|
| Permit #: S-1548-554-0    | Last Updated     |
| Facility: AERA ENERGY LLC | 09/04/2013 TORID |

Equipment Pre-Baselined: NO

|                                                      | <u>NOX</u> | <u>SOX</u> | <u>PM10</u> | <u>CO</u> | <u>VOC</u> |
|------------------------------------------------------|------------|------------|-------------|-----------|------------|
| Potential to Emit (lb/Yr):                           | 7008.0     | 1840.0     | 4380.0      | 16206.0   | 2628.0     |
| Daily Emis. Limit (lb/Day)                           | 19.2       | 5.0        | 12.0        | 44.4      | 7.2        |
| Quarterly Net Emissions Change (lb/Qtr)              |            |            |             |           |            |
| Q1:                                                  | 1752.0     | 460.0      | 1095.0      | 4052.0    | 657.0      |
| Q2:                                                  | 1752.0     | 460.0      | 1095.0      | 4052.0    | 657.0      |
| Q3:                                                  | 1752.0     | 460.0      | 1095.0      | 4052.0    | 657.0      |
| Q4:                                                  | 1752.0     | 460.0      | 1095.0      | 4052.0    | 657.0      |
| Check if offsets are triggered but exemption applies | N          | N          | N           | N         | N          |
| Offset Ratio                                         | 1.5        | 1.5        | 1.5         |           | 1.5        |
| Quarterly Offset Amounts (lb/Qtr)                    |            |            |             |           |            |
| Q1:                                                  | 2628.0     | 690.0      | 1643.0      |           | 986.0      |
| Q2:                                                  | 2628.0     | 690.0      | 1643.0      |           | 986.0      |
| Q3:                                                  | 2628.0     | 690.0      | 1643.0      |           | 986.0      |
| Q4:                                                  | 2628.0     | 690.0      | 1643.0      |           | 986.0      |

# APPENDIX B

## BACT Analysis

## Top Down BACT Analysis

Oxides of nitrogen ( $\text{NO}_x$ ) are generated from the high temperature combustion of the natural gas fuel. A majority of the  $\text{NO}_x$  emissions are formed from the high temperature reaction of nitrogen and oxygen in the inlet air. The rest of the  $\text{NO}_x$  emissions are formed from the reaction of fuel-bound nitrogen with oxygen in the inlet air.

### 1. BACT Analysis for $\text{NO}_x$ Emissions:

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

The District adopted District Rule 4320 on October 16, 2008. The  $\text{NO}_x$  emission limit requirements in District Rule 4320 are lower than the current BACT limits; therefore a project specific BACT analysis will be performed to determine BACT for this project. District Rule 4320 includes a compliance option that limits oilfield steam generators with heat input ratings greater than 20 MMBtu/hr to 7 ppm @ 3%  $\text{O}_2$ . This emission limit is Achieved in Practice control technology for the BACT analysis. District Rule 4320 also contains an enhanced schedule option that allows applicants additional time to meet the requirements of the rule. The enhanced schedule  $\text{NO}_x$  emission limit requirement is 5 ppmv @ 3%  $\text{O}_2$ . Since this is an enhanced option in the rule, it will be considered the Technologically Feasible control technology for the BACT analysis.

The SJVAPCD BACT Clearinghouse guideline 1.2.1 has been rescinded. Therefore a new BACT analysis is required. The following are possible control technologies:

- 1) 5 ppmvd @ 3%  $\text{O}_2$  with SCR
- 2) 7 ppmvd @ 3%  $\text{O}_2$

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

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

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

- 1) 5 ppmvd @ 3%  $\text{O}_2$  with SCR
- 2) 7 ppmvd @ 3%  $\text{O}_2$

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

A cost effective analysis is required for technologically feasible control options that are not proposed. The applicant is proposing a  $\text{NO}_x$  limit of 7 ppmvd @ 3%  $\text{O}_2$ ; therefore, a cost effective analysis is required for the 5 ppmvd @ 3%  $\text{O}_2$  option (SCR).

## SCR Cost Effectiveness Analysis

### Assumptions:

Industry standard (IS) assumed to be a NO<sub>x</sub> emission rate of 15 ppmv @ 3% O<sub>2</sub> in accordance with District Rule 4306.

The unit's maximum emissions are defined by the burner size multiplied by the emissions factor and a maximum annual operating schedule of 8,760 hr/year.

### Calculations:

Industry Std. NO<sub>x</sub> Emissions = 100 MMBtu/hr x 0.018 lb/MMBtu x 8,760 hrs/yr  
= 15,768 lb/year

Tech. Feasible NO<sub>x</sub> Emissions = 100 MMBtu/hr x 0.0062 lb/MMBtu x 8,760 hrs/yr  
= 5,431 lb/year

### Selective Catalytic Reduction system (Detailed costs follow the BACT Analysis Section):

Capital Cost (provided by PCL Industrial Services, Inc. with project S-1111824): **\$745,000** (includes all purchased equipment, taxes, freight, and installation of SCR for an 85.0 MMBtu/hr unit).

Equivalent Annual Capital Cost (Capital Recovery):

$$A = P \frac{i(1+i)^n}{(1+i)^n - 1} \quad \text{where;}$$

A = Equivalent Annual Control Equipment Capital Cost

P = Present value of the control equipment, including installation cost

i = interest rate (use 10%, or demonstrate why alternate is more representative of the specific operation).

n = equipment life (assume 10 years or demonstrate why alternate is more representative of the specific operation)

Where:

P = \$745,000

i = 10%,

n = 10 years

A = \$121,212

Operating costs are estimated by PCL Industrial Services to be \$125,000/yr resulting in the following total annualized cost:

\$121,212 + \$125,000 = \$246,212

**NOx Reduction due to Selective Catalytic Reduction system:**

Total reduction = Emissions<sub>15 ppm</sub> – Emissions<sub>5 ppm</sub>

Total reduction = 15,768 lb/year – 5,431 lb/year

Total reduction = 10,337 lb/year = 5.17 ton NO<sub>x</sub> per year

**Cost effectiveness:**

Cost effectiveness = \$246,212/ 5.17 tpy

Cost effectiveness = \$47,623/ ton

The cost effectiveness is greater than the \$24,500/ton cost effectiveness threshold of the District BACT policy. Therefore the use of SCR with ammonia injection is not cost effective and is not required as BACT.

**e. Step 5 - Select BACT**

BACT for NO<sub>x</sub> emissions from this oil field steam generator is a NO<sub>x</sub> limit of 7 ppmvd @ 3% O<sub>2</sub>. The applicant has proposed to install an oil field steam generator with a NO<sub>x</sub> limit of 7 ppmvd @ 3% O<sub>2</sub>; therefore BACT for NO<sub>x</sub> emissions is satisfied.

## **2. BACT Analysis for SO<sub>x</sub> Emissions:**

Oxides of sulfur (SO<sub>x</sub>) emissions occur from the combustion of the sulfur, which is present in the fuel.

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

The SJVAPCD BACT Clearinghouse guideline 1.2.1, 1<sup>st</sup> quarter 2005, identifies for achieved in practice BACT for SO<sub>x</sub> emissions from oil field steam generators ≥5 MMBtu/hr as follows:

- 1) Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO<sub>2</sub> scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO<sub>2</sub> at stack O<sub>2</sub>

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

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

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

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

- 1) Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO<sub>2</sub> scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO<sub>2</sub> at stack O<sub>2</sub>

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

The only control technology in the ranking list from Step 3 has been achieved in practice. Therefore, per the District's BACT Policy (dated 11/9/99) Section IX.D.2, the cost effectiveness analysis is not required.

### **e. Step 5 - Select BACT**

The applicant has proposed to combust natural gas with fuel sulfur content not to exceed 0.75 gr-S/100 dscf; therefore BACT for SO<sub>x</sub> emissions is satisfied.

### **3. BACT Analysis for PM<sub>10</sub> Emissions:**

Particulate matter (PM<sub>10</sub>) emissions result from the incomplete combustion of various elements in the fuel.

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

The SJVAPCD BACT Clearinghouse guideline 1.2.1, 1<sup>st</sup> quarter 2005, identifies for achieved in practice BACT for PM<sub>10</sub> emissions from oil field steam generators ≥5 MMBtu/hr as follows:

- 1) Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO<sub>2</sub> scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO<sub>2</sub> at stack O<sub>2</sub>

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

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

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

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

- 1) Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO<sub>2</sub> scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO<sub>2</sub> at stack O<sub>2</sub>

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

The only control technology in the ranking list from Step 3 has been achieved in practice. Therefore, per the District's BACT Policy (dated 11/9/99) Section IX.D.2, the cost effectiveness analysis is not required.

#### **e. Step 5 - Select BACT**

The applicant has proposed to combust natural gas with fuel sulfur content not to exceed 0.75 gr-S/100 dscf; therefore BACT for PM<sub>10</sub> emissions is satisfied.

#### **4. BACT Analysis for CO Emissions:**

Carbon monoxide (CO) emissions are generated from the incomplete combustion of air and fuel.

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

The SJVAPCD BACT Clearinghouse guideline 1.2.1, 1<sup>st</sup> quarter 2005, identifies for achieved in practice BACT for CO emissions from oil field steam generators  $\geq 5$  MMBtu/hr as follows:

- 1) 50 ppmvd @ 3% O<sub>2</sub>

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

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

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

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

- 1) 50 ppmvd @ 3% O<sub>2</sub>

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

The only control technology in the ranking list from Step 3 has been achieved in practice. Therefore, per the District's BACT Policy (dated 11/9/99) Section IX.D.2, the cost effectiveness analysis is not required.

##### **e. Step 5 - Select BACT**

BACT for CO emissions from an oil field steam generator is a CO limit of 50 ppmvd @ 3% O<sub>2</sub>. The applicant has proposed to install oil field steam generators with a CO limit of 25 ppmvd @ 3% O<sub>2</sub>; therefore BACT for CO emissions is satisfied.

## **5. BACT Analysis for VOC Emissions:**

Volatile organic compounds (VOC) emissions are generated from the incomplete combustion of the fuel.

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

The SJVAPCD BACT Clearinghouse guideline 1.2.1, 1<sup>st</sup> quarter 2005, identifies for achieved in practice BACT for VOC emissions from oil field steam generators  $\geq 5$  MMBtu/hr as follows:

- 1) Gaseous fuel

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

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

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

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

- 1) Gaseous fuel

### **d. Step 4 - Cost effectiveness analysis**

The only control technology in the ranking list from Step 3 has been achieved in practice. Therefore, per the District's BACT Policy (dated 11/9/99) Section IX.D.2, the cost effectiveness analysis is not required.

### **e. Step 5 - Select BACT**

BACT for VOC emissions from an oil field steam generator is gaseous fuel. The applicant has proposed to install an oil field steam generator fired on gaseous fuel; therefore BACT for VOC emissions is satisfied.

# **APPENDIX C**

## **HRA and AAQA Summary**

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

To: David Torii – Permit Services  
 From: Yu Vu – Technical Services  
 Date: December 20, 2013  
 Facility Name: Aera Energy LLC  
 Location: Heavy Oil Western and Light Oil Western  
 Application #(s): S-1547-1261-0 and S-1548-554-0  
 Project #: S-1121401 and S-1121402

---

### A. RMR SUMMARY

| RMR Summary                                                  |                                                             |                   |                    |
|--------------------------------------------------------------|-------------------------------------------------------------|-------------------|--------------------|
| Categories                                                   | Steam Generator<br>(Unit S-1547-1261-0 and<br>S-1548-554-0) | Project<br>Totals | Facility<br>Totals |
| <b>Prioritization Score</b>                                  | 0.00                                                        | 0.00              | >1                 |
| <b>Acute Hazard Index</b>                                    | 0.00                                                        | 0.00              | 0.00               |
| <b>Chronic Hazard Index</b>                                  | 0.00                                                        | 0.00              | 0.01               |
| <b>Maximum Individual Cancer Risk (<math>10^{-6}</math>)</b> | 0.00                                                        | 0.00              | 3.79               |
| <b>T-BACT Required?</b>                                      | No                                                          |                   |                    |
| <b>Special Permit Conditions?</b>                            | Yes                                                         |                   |                    |

### Proposed Permit Conditions

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

#### Unit # S-1547-1261-0

1. 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]
2. This unit may only operate in the NE ¼ of Section 29, Township 28S, and Range 21E.

#### Unit # S-1548-554-0

1. 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]
2. This unit may only operate in the NE ¼ of Section 29, Township 28S, and Range 21E.

## B. RMR REPORT

### I. Project Description

Technical Services received a request on November 27, 2013, to perform an Ambient Air Quality Analysis and a Risk Management Review for a 100 MMBtu/hr natural/field-gas fired steam generator. The steam generator is a pilot unit that will operate as a stationary source at a specifically designated location. The unit will also be permitted to operate at both facility S-1547 (as unit S-1547-1261-0) and S-1548 (as unit S-1548-554-0).

### II. Analysis

Technical Services performed a prioritization using the District's HEARTs database. Since the total facility prioritization score was greater than one, a refined health risk assessment was required. Emissions calculated using District approved emission factors obtained from WSPA were input into the HEARTs database. The AERMOD model was used, with the parameters outlined below and meteorological data<sup>4</sup> for 2008-2012 from Bakersfield 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 Hot Spots Analysis and Reporting Program (HARP) risk assessment module 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<br>Unit 1261-0 |        |                      |              |
|------------------------------------|--------|----------------------|--------------|
| Source Type                        | Point  | Location Type        | Rural        |
| Stack Height (m)                   | 6.096  | Closest Receptor (m) | ~2,000       |
| Stack Diameter. (m)                | 1.359  | Type of Receptor     | Residential  |
| Stack Exit Velocity (m/s)          | 9.035  | Max Hours per Year   | 8760         |
| Stack Exit Temp. (°K)              | 394.26 | Fuel Type            | NG/Field Gas |
| Burner Rating (MMBtu/hr)           | 100    |                      |              |

Technical Services also performed modeling for criteria pollutants CO, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>. The emission rates used for criteria pollutant modeling may be seen in the following table.

| Project Emissions for AAQA<br>Modeling |        |        |
|----------------------------------------|--------|--------|
| Pollutant                              | lb/day | lb/yr  |
| NO <sub>x</sub>                        | 19.2   | 7,008  |
| SO <sub>x</sub>                        | 5.0    | 1,840  |
| PM <sub>10</sub>                       | 12.0   | 4,380  |
| PM <sub>2.5</sub>                      | 12.0   | 4,380  |
| CO                                     | 44.4   | 16,206 |

<sup>4</sup> Processed using AERMET v12345 while using 1-minute data and a 1-minute threshold wind speed of 0.5 m/s.

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                | Pass              | X       | Pass     | X                 | X                 |
| NO <sub>x</sub>   | Pass <sup>1</sup> | X       | X        | X                 | Pass              |
| SO <sub>x</sub>   | Pass              | Pass    | X        | Pass              | Pass              |
| PM <sub>10</sub>  | X                 | X       | X        | Pass <sup>2</sup> | Pass <sup>2</sup> |
| PM <sub>2.5</sub> | X                 | X       | X        | Pass <sup>2</sup> | Pass <sup>2</sup> |

\*Results were taken from the attached PSD spreadsheet.

<sup>1</sup>The project was compared to the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard that became effective on April 12, 2010 using the District's approved procedures.

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

### III. Conclusion

The acute and chronic indices are below 1.0 and the cancer risk factor associated with the project is less than 1.0 in a million. In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).

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

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

### IV. Attachments

- A. RMR request from the project engineer
- B. Additional information from the applicant/project engineer
- C. Toxic emissions summary
- D. Prioritization score
- E. Facility Summary

# **APPENDIX D**

## **Statewide Compliance Statement and Title V Compliance Certification Form**

# Title I Compliance Certification

## CERTIFICATION

Aera Energy LLC hereby certifies as follows:

1. Aera Energy LLC owns or operates certain major stationary sources in the State of California. Such sources are comprised of a large number of emission points. As used in this certification, the term "major stationary source" shall, with respect to Aera Energy LLC stationary sources in the SJVUAPCD, have the meaning ascribed thereto in SJVUAPCD Rule 2201.3.15, and shall, with respect to all of Aera Energy LLC's other stationary sources in the State of California, have the meaning ascribed thereto in section 302(J) of the Clean Air Act (42 U.S.C. Section 7602 (J)).

2. Subject to paragraphs 3 and 4 below, all major stationary sources owned or operated by Aera Energy LLC in the State of California are either in compliance, or on a schedule of compliance, with all applicable emission limitations and standards under the Clean Air Act and all of the State Implementation Plan approved by the Environmental Protection Agency.

3. This certification is made on information and belief and is based upon a review of Aera Energy LLC's major stationary sources in the State of California by those employees of Aera Energy LLC who have operational responsibility for compliance. In conducting such reviews, Aera Energy LLC and its employees have acted in good faith and have exercised reasonable best efforts to identify any exceedances of the emission limitations and standards referred to in paragraph 2 thereof.

4. This certification shall speak as of the time and date of its execution.

### CERTIFICATION

By:

Frank B. Cummings

Date:

August 8, 2012

Title:

EHS Manager

Time:

2:40 PM

### 99 MMBTU/hr Multiple-Location Steam Generator

[ ] ADMINISTRATIVE  
AMENDMENT

TVFORM-009  
Rev: July 2005

# **APPENDIX E**

## **Draft Authorities to Construct**

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

PERMIT NO: S-1548-554-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: AERA ENERGY LLC  
MAILING ADDRESS: PO BOX 11164  
BAKERSFIELD, CA 93389-1164

LOCATION: LIGHT OIL WESTERN STATIONARY SOURCE  
CA

SECTION: NE 29 TOWNSHIP: 28S RANGE: 21E

**EQUIPMENT DESCRIPTION:**

100 MMBTU/HR NATURAL/PRODUCED GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MAGNA-FLAME GLE ULTRA LOW NOX BURNER, OR EQUIVALENT (2972 SETTING)

**CONDITIONS**

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201] Federally Enforceable Through Title V Permit
4. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2201] Federally Enforceable Through Title V Permit
5. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 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

DAVID WARNER, Director of Permit Services

S-1548-554-0 : Jan 27 2014 1:26PM -- TORID : Joint Inspection NOT Required

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6. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201] Federally Enforceable Through Title V Permit
7. The initial commissioning period is the time required to complete the necessary safety checks, curing of refractory material and the performance tuning of the burner and attendant systems to achieve compliance with the emission limits required by this permit. The commissioning period begins upon first firing of the unit and shall not extend beyond the first 135 hours of actual burner operation. [District Rule 2201] Federally Enforceable Through Title V Permit
8. The refractory curing period is the time required to gradually increase the firing rate and internal temperature of a unit to thermally temper and set the optimal properties of new refractory material that has been installed as part of a unit's initial commissioning or has been replaced as part of a subsequent maintenance or repair procedure. The refractory curing period following the replacement of material as part of a maintenance or repair procedure shall not exceed 30 hours total of actual burner operation per occurrence. [District Rule 2201] Federally Enforceable Through Title V Permit
9. During the initial commissioning period and any refractory curing period, operator shall limit emissions to the extent possible by optimizing the performance of the low NO<sub>x</sub> burner and flue gas recirculation system as can be accommodated by individual initial commissioning and refractory curing activities, by following good work practices and fuel conserving measures and by completing all work in an expeditious manner. Operator shall keep a record of the specific activities undertaken as part of the initial commissioning period and all refractory curing periods and the duration of each activity and shall make the records available for District inspection upon request. [District Rule 2201] Federally Enforceable Through Title V Permit
10. This unit may only operate in the NE ¼ of Section 29, Township 28S, and Range 21E. [District Rule 4102]
11. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]
12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201, 4320 and 4801] Federally Enforceable Through Title V Permit
13. Except for periods of startup and shutdown, emissions shall not exceed any of the following limits: NO<sub>x</sub>: 7 ppmvd @ 3% O<sub>2</sub> or 0.008 lb-NO<sub>x</sub>/MMBtu; PM<sub>10</sub>: 0.005 lb-PM<sub>10</sub>/MMBtu; CO: 25 ppmvd @ 3% O<sub>2</sub> or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO<sub>2</sub>; sulfur - 200 pounds of SO<sub>2</sub> per hour, or 2000 ppmv as SO<sub>2</sub>; NO<sub>2</sub> - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4201, 4301, 4405 and 4801] Federally Enforceable Through Title V Permit
15. Maximum emissions from the steam generator, including start-up, shutdown and refractory curing periods shall not exceed any of the following limits: 7,008 lb-NO<sub>x</sub>/yr, 1,840 lb-SO<sub>x</sub>/yr, 4,380 lb-PM<sub>10</sub>/yr, 16,206 lb-CO/yr, and 2,628 lb-VOC/yr. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Duration of start-up or shutdown shall not exceed two hours each per occurrence. During start-up or shutdown, the emissions control system shall be in operation, and emissions shall be minimized insofar as technologically possible. The operator shall maintain daily records of the duration of start-up and shutdown periods. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
17. Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rule 2080] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 220, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
28. If either the NOx or CO concentrations corrected to 3% O2, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
29. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

30. The permittee shall maintain records of: (1) the date and time of NOX, CO, and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOX and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
32. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit
33. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit
34. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit
35. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit
36. 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 Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
37. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOX emission reduction credits for the following quantity of emissions: 1st quarter - 2,628 lb, 2nd quarter - 2,628 lb, 3rd quarter - 2,628 lb, and fourth quarter - 2,628 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act] Federally Enforceable Through Title V Permit
38. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOX emission reduction credits for the following quantity of emissions: 1st quarter - 2,330 lb, 2nd quarter - 2,330 lb, 3rd quarter - 2,330 lb, and fourth quarter - 2,330 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act] Federally Enforceable Through Title V Permit
39. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 986 lb, 2nd quarter - 986 lb, 3rd quarter - 986 lb, and fourth quarter - 986 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

40. ERC Certificate Numbers S-1030-2, S-260-5 and S-3434-1 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act] Federally Enforceable Through Title V Permit
41. Steam generator shall be equipped with variable frequency drive electrical motors driving the blower and water pump and a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer) or a manufacturer's overall thermal efficiency rating of 88%. [District Rule Public Resources Code 21000-21177: California Environmental Quality Act]
42. Permittee shall comply with all California Department of Fish and Wildlife mitigation measures identified in the Biological Resources discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of potential biological species impacts. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act]
43. Permittee shall comply with all Native American Heritage Commission (NAHC) mitigation measures identified in the Cultural Resources discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of potential cultural, archaeological, and paleontological impacts. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act]
44. Permittee shall comply with all Department of Toxic Substances Control (DTSC) mitigation measures identified in the Hazards and Hazardous Material discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of the public and environment from hazards and hazardous materials. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act]
45. Permittee shall comply with all Division of Oil, Gas, and Geothermal Resources (DOGGR) mitigation measures identified in the Hazards and Hazardous Material discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of the public from hazards and hazardous materials. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act]
46. Permittee shall comply with all Division of Oil, Gas, and Geothermal Resources (DOGGR) mitigation measures identified in the Hydrology and Water Quality discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of potential water quality impacts. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act]

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San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

**PERMIT NO:** S-1547-1261-0

**ISSUANCE DATE:** DRAFT

**LEGAL OWNER OR OPERATOR:** AERA ENERGY LLC  
**MAILING ADDRESS:** PO BOX 11164  
BAKERSFIELD, CA 93389-1164

**LOCATION:** HEAVY OIL WESTERN STATIONARY SOURCE  
KERN COUNTY, CA

**SECTION:** NE 29 **TOWNSHIP:** 28S **RANGE:** 21E

**EQUIPMENT DESCRIPTION:**

100 MMBTU/HR NATURAL/PRODUCED GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MAGNA-FLAME GLE ULTRA LOW NOX BURNER, OR EQUIVALENT (2972 SETTING)

**CONDITIONS**

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201] Federally Enforceable Through Title V Permit
4. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2201] Federally Enforceable Through Title V Permit
5. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

**YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 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

DAVID WARNER, Director of Permit Services

S-1547-1261-0 : Jan 27 2014 1:29PM - TORID : Joint Inspection NOT Required

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6. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201] Federally Enforceable Through Title V Permit
7. The initial commissioning period is the time required to complete the necessary safety checks, curing of refractory material and the performance tuning of the burner and attendant systems to achieve compliance with the emission limits required by this permit. The commissioning period begins upon first firing of the unit and shall not extend beyond the first 135 hours of actual burner operation. [District Rule 2201] Federally Enforceable Through Title V Permit
8. The refractory curing period is the time required to gradually increase the firing rate and internal temperature of a unit to thermally temper and set the optimal properties of new refractory material that has been installed as part of a unit's initial commissioning or has been replaced as part of a subsequent maintenance or repair procedure. The refractory curing period following the replacement of material as part of a maintenance or repair procedure shall not exceed 30 hours total of actual burner operation per occurrence. [District Rule 2201] Federally Enforceable Through Title V Permit
9. During the initial commissioning period and any refractory curing period, operator shall limit emissions to the extent possible by optimizing the performance of the low NOx burner and flue gas recirculation system as can be accommodated by individual initial commissioning and refractory curing activities, by following good work practices and fuel conserving measures and by completing all work in an expeditious manner. Operator shall keep a record of the specific activities undertaken as part of the initial commissioning period and all refractory curing periods and the duration of each activity and shall make the records available for District inspection upon request. [District Rule 2201] Federally Enforceable Through Title V Permit
10. This unit may only operate in the NE ¼ of Section 29, Township 28S, and Range 21E. [District Rule 4102]
11. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]
12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201, 4320 and 4801] Federally Enforceable Through Title V Permit
13. Except for periods of startup and shutdown, emissions shall not exceed any of the following limits: NOx: 7 ppmvd @ 3% O<sub>2</sub> or 0.008 lb-NOx/MMBtu; PM<sub>10</sub>: 0.005 lb-PM<sub>10</sub>/MMBtu; CO: 25 ppmvd @ 3% O<sub>2</sub> or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO<sub>2</sub>; sulfur - 200 pounds of SO<sub>2</sub> per hour, or 2000 ppmv as SO<sub>2</sub>; NO<sub>2</sub> - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4201, 4301, 4405 and 4801] Federally Enforceable Through Title V Permit
15. Maximum emissions from the steam generator, including start-up, shutdown and refractory curing periods shall not exceed any of the following limits: 7,008 lb-NOx/yr, 1,840 lb-SOx/yr, 4,380 lb-PM<sub>10</sub>/yr, 16,206 lb-CO/yr, and 2,628 lb-VOC/yr. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Duration of start-up or shutdown shall not exceed two hours each per occurrence. During start-up or shutdown, the emissions control system shall be in operation, and emissions shall be minimized insofar as technologically possible. The operator shall maintain daily records of the duration of start-up and shutdown periods. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
17. Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rule 2080] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 220, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
28. If either the NOx or CO concentrations corrected to 3% O2, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
29. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

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30. The permittee shall maintain records of: (1) the date and time of NOX, CO, and O<sub>2</sub> measurements, (2) the O<sub>2</sub> concentration in percent by volume and the measured NOX and CO concentrations corrected to 3% O<sub>2</sub>, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
32. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit
33. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit
34. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit
35. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit
36. 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 Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
37. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOX emission reduction credits for the following quantity of emissions: 1st quarter - 2,628 lb, 2nd quarter - 2,628 lb, 3rd quarter - 2,628 lb, and fourth quarter - 2,628 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act] Federally Enforceable Through Title V Permit
38. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOX emission reduction credits for the following quantity of emissions: 1st quarter - 2,330 lb, 2nd quarter - 2,330 lb, 3rd quarter - 2,330 lb, and fourth quarter - 2,330 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act] Federally Enforceable Through Title V Permit
39. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 986 lb, 2nd quarter - 986 lb, 3rd quarter - 986 lb, and fourth quarter - 986 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

40. ERC Certificate Numbers S-1030-2, S-260-5 and S-3434-1 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act] Federally Enforceable Through Title V Permit
41. Steam generator shall be equipped with variable frequency drive electrical motors driving the blower and water pump and a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer) or a manufacturer's overall thermal efficiency rating of 88%. [District Rule Public Resources Code 21000-21177: California Environmental Quality Act]
42. Permittee shall comply with all California Department of Fish and Wildlife mitigation measures identified in the Biological Resources discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of potential biological species impacts. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act]
43. Permittee shall comply with all Native American Heritage Commission (NAHC) mitigation measures identified in the Cultural Resources discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of potential cultural, archaeological, and paleontological impacts. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act]
44. Permittee shall comply with all Department of Toxic Substances Control (DTSC) mitigation measures identified in the Hazards and Hazardous Material discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of the public and environment from hazards and hazardous materials. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act]
45. Permittee shall comply with all Division of Oil, Gas, and Geothermal Resources (DOGGR) mitigation measures identified in the Hazards and Hazardous Material discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of the public from hazards and hazardous materials. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act]
46. Permittee shall comply with all Division of Oil, Gas, and Geothermal Resources (DOGGR) mitigation measures identified in the Hydrology and Water Quality discussion in Mitigated Negative Declaration No. 20110323 to ensure the protection of potential water quality impacts. Permittee shall retain records on-site demonstrating compliance with these mitigation measures. [Public Resources Code 21000-21177: California Environmental Quality Act]

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