

## DOCKETED

<b>Docket Number:</b>	12-AFC-02
<b>Project Title:</b>	Huntington Beach Energy Project
<b>TN #:</b>	201761
<b>Document Title:</b>	Letter re: Comments on SCAQMD Preliminary Determination of Compliance, SCAQMD Facility Permit #115389, dated January 24, 2014
<b>Description:</b>	N/A
<b>Filer:</b>	Alicia Campos
<b>Organization:</b>	California Energy Commission
<b>Submitter Role:</b>	Commission Staff
<b>Submission Date:</b>	2/19/2014 12:15:14 PM
<b>Docketed Date:</b>	2/19/2014

## CALIFORNIA ENERGY COMMISSION

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February 21, 2014

Mr. Mohsen Nazemi, Deputy Executive Officer  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765

**Re: Comments on SCAQMD Preliminary Determination of Compliance for the  
Huntington Beach Energy Project (12-AFC-02), SCAQMD Facility Permit  
#115389, dated 01/24/2014**

Dear Mr. Nazemi:

Energy Commission staff appreciate the effort your staff made to prepare the South Coast Air Quality Management District (District) Preliminary Determination of Compliance (PDOC) for the Huntington Beach Energy Project (12-AFC-02), dated January 24, 2014. We have included several comments here in our review of the PDOC, which have also been shared with your staff in draft form. We hope that these comments assist the District's preparation of the Final Determination of Compliance (FDOC).

1. Timing:

Page 58 of PDOC says "*Based on the forgoing analysis, it is recommended that a Permit to Construct be issued following completion of the 30 day public and 45 day EPA review and comment period and securing all necessary emission offsets.*" The text should indicate that a Final Determination of Compliance would be issued after the comment periods expire, not a Permit to Construct. Emission offsets should be provided at the timing required by applicable permit conditions.

2. Condition E193.2:

This condition number appears at the bottom of page 67 and at the top of page 68 with different wording. It appears that both conditions are applicable and one condition should be renumbered and the tables on page 2 to 12 should be updated. In addition, the condition numbered E193.2 on page 67 requires construction to commence within 12 months of the Permit to Construct being issued, which can be extended only by an additional 6 months. This may not be sufficient time for all construction to begin given the expected 6-year construction period. If the term "continuous construction" is applied to the project site, then the timing of construction is not a problem. However, since this condition is applied to each of the six turbines, if the term "continuous construction" is applied to each turbine then there could be a problem with this condition's wording. This is because there is expected to be a 36 month delay between construction of the first three turbines and the second three turbines.

3. SOx Emission Factor:

PDOC condition B61.1 (page 61) limits the H<sub>2</sub>S content to 0.25 grains/100 standard cubic feet (scf). The PDOC on page 78 includes a calculation converting fuel with a grain loading of 0.75 grains of H<sub>2</sub>S to an equivalent emission factor of 1.41 lbs SO<sub>2</sub> per million cubic feet of fuel (lbs/mmcf). However, the facility owner used a sulfur content of 0.25 grains/100 scf for long-term impacts and 0.75 grains/100 scf for short-term emission impacts. This assumes that 30 percent of the SO<sub>2</sub> converts to SO<sub>3</sub>. The equation used is:  $(0.75 \text{ grains}/100 \text{ scf}) / (1 \text{ lb}/7000 \text{ grains}) * (64 \text{ lbs}/\text{lb-mole SO}_2 / 34 \text{ lbs}/\text{lb-mole H}_2\text{S}) * (1 \text{ E}^6 \text{ cubic feet}/\text{million cubic feet}) * 0.7 = 1.41 \text{ lbs SO}_2/\text{mmcf}$ . The equivalent emission factor for 0.25 grains/100 scf is:  $(0.25/0.75) * (1.41) = 0.47 \text{ lbs SO}_2/\text{mmcf}$ .

Annual emissions per turbine are calculated on page 96 of the PDOC and emissions are noted to be from Table A.4 on page 79. Table A.4 notes that SOx emissions are based upon 1.41 lbs/mmcf, which corresponds to 0.75 grains/scf as shown above and on page 78. However, condition B61.1 on page 61 limits annual average natural gas to no more than 0.25 grains H<sub>2</sub>S per 100 scf. These need to be reconciled.

4. Highest Single Hour Emissions:

Energy Commission staff found inconsistencies in the NOx, SOx and VOC maximum hourly emissions of the combustion turbines. The emissions have been shown in several tables in the PDOC. For NOx, the maximum hourly emission is based on a turbine cold startup, which has been shown as 21.9 lbs/event (Table A.5), 28.7 lbs/event (Table A.7 and Table 3.3), 28.7 lbs/hr (Table 3.4) and 25.5 lbs/hr (Table E.2). For CO, the maximum hourly emission is also based on a turbine cold startup, which has been shown as 152.81 lbs/event (Table A.5), 115.9 lbs/event (Table A.7 and Table 3.3), 115.9 lbs/hr (Table 3.4) and 115 lbs/hr (Table E.2). For VOC, the maximum hourly emission is based on a turbine shutdown, which has been shown as 39.4 lbs/event (Table A.9), 31.0 lbs/event (Table A.10 and Table 3.3) and 31.0 lbs/hr (Table 3.4). The numbers should be corrected for consistency.

5. Annual Emissions:

Energy Commission staff found inconsistencies in the annual emissions of the combustion turbines. More specifically, annual emissions during commissioning year reported in Table 3.12 and Table B.4 do not match. Annual emissions during normal operation year reported in Table 3.13 and Table B.5 do not match. We noticed that annual emissions reported in Table B.4 (commissioning year) and Table B.5 (non-commissioning year) were also used to calculate RECLAIM Trading Credit. We believe numbers in Table 3.12 and Table 3.13 should be corrected for consistency.

6. Condition E193.4 on pages 68 and 69:

This condition limits greenhouse gas emissions to no more than 1,053.7 lbs per net megawatt-hours on an average calendar year basis, or 1,138.0 lbs per year after degradation. However, the United States Environmental Protection Agency published a draft rule in the Federal Register that would limit the facility's emissions to no more than 1,000 lbs carbon dioxide per megawatt-hour. This requirement is effective as of the date of publication, January, 8, 2014.

7. Condition K67.5 on Page 70:

This condition requires the facility owner/operator to keep a record of several parameters or items, including one described as "total annual power output in MWs." This should either be restated as megawatt-hours, if that is what is intended, or as the highest MW produced in any one hour of the year if that is what is intended.

8. Greenhouse Gas Emissions:

On page 49 of the PDOC, the 3rd paragraph, line 5, it says "The GHG emissions will be 876.89 lbs/CO<sub>2</sub> per megawatt hour when the load factor improves to 100%". Energy commission staff did not find any data or calculations to support this result, including those submitted to Energy Commission. Also, on the bottom of page 52 the PDOC says "no offsets are required for CO because the pollutant is in attainment." Please verify that the pollutant is CO, since the previous sentences refer to greenhouse gases.

9. Inconsistencies in the Conditions and Equipment Description:

The conditions included in the table of equipment description for the gas turbines (pages 2 to 12) do not match those listed in the Conditions section (pages 60 to 70). More specially, A63.2 (page 60), C1.10 (page 63), D82.2 (page 67), I298.1 and I298.2 (page 69) should be added and I296.1 should be deleted from the table. Condition A991 is listed in the table but not included in pages 60 to 70, so it is unclear if this condition should be removed from the table or added to pages 60 to 70.

The conditions included in the table of equipment description for the ammonia storage tank (page 12) do not match those listed in the Conditions section (page 73). Specifically, E193.7 should be replaced by E193.2 in the table.

10. Operating Modes:

Page 23 lists operating modes as "commissioning, "start up," "normal operation," and shutdown." However, before large combustion turbines are returned to service following a major maintenance outage, they need to be re-tuned to achieve efficient, low pollution operating characteristics. We recommend defining major maintenance and allowing for a period of re-tuning after major maintenance outages.

11. EPA's Proposed New Source Performance Standard for Greenhouse Gases:

Page 49 states that the proposed new source performance standard had not been published at the time of the PDOC. While true, the notice was published on January 8, 2014 and the FDOC should reflect this change.

12. Modeled Reference Cases:

Table E.1 on page 105 states that annual NOx emissions were modeled using Reference Case #15, which is based on a temperature of 110 degrees C. Is this correct or a typographical error? We do not believe the annual average ambient temperature would be this high. Annual PM10 and PM2.5 were modeled using Reference Case #10, at 66 degrees Fahrenheit. Does the reference temperature relate to ambient temperatures or the temperature of the steam entering the heat recovery system (1,100 degree Fahrenheit, see page 19)?

13. Page 111 of Appendix F of the PDOC indicates that the carbon dioxide equivalent (CO<sub>2</sub>e) greenhouse gas emissions are based upon a fuel with a higher heating value of 1028 Btu/cf. However, pages 18 and 19 of the PDOC say that the combustion turbines are evaluated based on natural gas with a heating value of 1050 Btu/cf. Emissions should be based upon a consistent fuel heating value.

14. Page 127 includes data for historical power generation. The source and units should be identified.

15. Typographical Errors:

On page 23, at the bottom of Table 3.1, it says "...62.4 hrs per year", which should be "... 104 hrs per year".

On page 28, on the first line of the notes to Table 3.13, it says "... 164 shutdowns...", which should be "... 624 shutdowns...".

On page 101, the term "average" is defined as "based on 2 year." This should be described as "based upon the previous year and the current year" for clarity.

On page 113, the last row of Table F.4, 66,776,649 mmbtu should be total heat input of all six turbines. The total heat input per turbine should be 11,129,441.5 mmbtu.

Mr. Mohsen Nazemi  
February 21, 2014  
Page 5

We appreciate the opportunity to provide these comments, and we would be pleased to provide you any assistance in preparation and publication of the FDOC. If you have any questions, please contact Dr. Tao Jiang at (916) 654-3852 or [tjiang@energy.ca.gov](mailto:tjiang@energy.ca.gov), or please call me at (916)-654-3868.

Sincerely,



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