

## DOCKETED

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**CALIFORNIA ENERGY COMMISSION**

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July 17, 2014

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

**Comments on SCAQMD Preliminary Determination of Compliance for the Redondo Beach Energy Project (12-AFC-03), SCAQMD Facility Permit #115536, dated 06/11/2014**

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 Redondo Beach Energy Project (12-AFC-03), dated June 11, 2014. We have included several comments from our review of the PDOC. Most of these comments have been discussed with your air engineer. We hope that these comments assist the District's preparation of the Final DOC (FDOC).

**PDOC Permit Package**

1. As discussed with District staff, pages 39 and 40 of the Facility Permit to Operate were missing from the docketed version of the SCAQMD PDOC (TN: 202457). Staff has docketed pages 39 and 40 as an attachment to the original filing (TN: 202705) to ensure a complete package is available in the Energy Commission docket log. We recommend checking the version of the PDOC that you provide to the public for its completeness.

**Grace Period for Commencing Construction**

2. Page 73 of the PDOC, Rule 205, states that a permit to construct shall expire one year from the date of its issuance unless an extension of time has been approved in writing by the Executive Officer. The District Rules and Regulations section states that this requirement is set forth in condition 1.b in Section E: Administrative Conditions of the facility permit. However, Section E: Administrative Conditions of the facility permit was not included in the version of the PDOC docketed at the Energy Commission. Conditions E193.8 and E193.9 state that the Permit to Construct shall become invalid if construction is not commenced within 18 months and 24 months, respectively. However, there is no condition requiring construction to commence within 12 months. Please clarify the limiting grace period to start construction before the Permits to Construct would expire.

**Rule 403**

3. Due to the approximate 5-year construction schedule and the potential for significant fugitive dust impacts during this period, compliance with Rule 403 – Fugitive Dust

requirements, should be described in the PDOC. Staff will be incorporating construction mitigation requirements to ensure compliance with Rule 403 and to mitigate construction impacts to a level of insignificance. This rule was included in the Huntington Beach PDOC.

### **Commissioning Impacts**

4. Condition E193.4 allows for all three turbines to be operated simultaneously during the commissioning period. The commissioning period modeling results in PDOC Table 32 (Permits to Construct p. 89) shows a 1-hour NO<sub>2</sub> maximum impact of 168.48 µg/m<sup>3</sup> and a background concentration of 169 µg/m<sup>3</sup>, for a total impact of 337.48 µg/m<sup>3</sup>, which is less than the state standard of 339 µg/m<sup>3</sup>. The background value of 169 µg/m<sup>3</sup> was recorded at the LAX monitoring station in 2008, as shown in the Application for Certification (AFC). However, more recent data for 2011 show an elevated background NO<sub>2</sub> background value of 182.7 µg/m<sup>3</sup> (data obtained November 2013). If the more recent data are used in the modeling assessment, operating all three turbines (unabated) during the commissioning period would result in a total predicted impact (modeled impact plus background concentration) of 351.18 µg/m<sup>3</sup>, which would cause a predicted exceedance of the state standard (even without including concurrent demolition and construction activities). To avoid the potential for exceeding ambient air quality standards for NO<sub>2</sub>, we recommend limiting the number of turbines that can be commissioned at a time.

### **Background Concentrations**

5. Background concentrations shown in Table 30, Modeling Results, are from the LAX monitoring station for the three year period, 2008 to 2010. More recent data are available that may be applicable to the project site. Air quality improvements have reduced PM<sub>10</sub> background concentrations. However, as shown in comment number 4, if the more recent data are used for the commission phase impact assessment, violations of the state 1-hr NO<sub>2</sub> limiting standard are indicated.

### **Inconsistencies between RBEP and HBEP condition requirements**

6. There are inconsistencies between the reporting requirements for the RBEP and the reporting requirements for the Huntington Beach Energy Project (HBEP). RBEP condition K67.6 only requires the facility to keep records of the natural gas fuel use during the commissioning period. HBEP condition K67.5 requires the facility to keep records for all of the following parameters or items during commissioning: (1) commissioning hours and types of control and fuel use; (2) date, time, and duration of each start up and shutdown, and type of start-up (cold, warm, or hot); (3) in addition to the requirements of a certified CEMS, natural gas fuel use records are required to be kept during and after the commissioning period and prior to CEMS certification; (4) minute by minute data (NO<sub>2</sub> and O<sub>2</sub> concentration and fuel flow rate at a minimum) for each turbine start up; (5) monthly number of hours each turbine is operated with duct firing; and (6) total annual power output in MWh. We recommend reconciling these inconsistencies.

7. D12.10 of the HBEP PDOC requires the exhaust at the inlet of the CO catalyst be maintained at a minimum of 500 degrees Fahrenheit, except during start up and shut down. D12.9 of the RBEP PDOC requires the exhaust temperature at the inlet of the SCR/CO catalyst shall be maintained between 400 degrees Fahrenheit and 700 degrees Fahrenheit, except during startups and shutdowns. We recommend reconciling these inconsistencies.

### **Emission Limits**

8. PDOC conditions C1.5 and C1.6 allow a warm start, steady state, and shutdown within a single hour, which equates to 29.76 lb/hr of NO<sub>x</sub>. The applicant's proposed worst case hourly NO<sub>x</sub> emissions, and modeled emissions, assumed one cold start in a single hour which results in 25.4 lb/hr. C1.5 further defines and limits a cold startup to 28.7 lb of NO<sub>x</sub> within 90 minutes, which means that if the startup is concluded within one hour NO<sub>x</sub> emissions could be elevated above the modeled emission rate of 25.4 lb/hr for the first hour while maintaining compliance with C1.5. Similarly, the applicant's proposed worst case hourly CO emissions, and modeled emissions, assumed one cold start in a single hour which results in 113.9 lb/hr, while C1.5 allows 115.9 lb within 90 minutes, which means that if the startup is concluded within one hour CO emissions could be elevated above the modeled emission rate of 113.9 lb/hr for the first hour while still maintaining compliance with C1.5. We recommend including worst case emission limits in lb/hr to maintain consistency with proposed and modeled worst case emission rates and to ensure compliance with the AAQS.
9. Condition A63.1 establishes monthly emission limits for PM<sub>10</sub>, SO<sub>x</sub>, and VOC. The condition contains emission factors (in lb/mm<sup>3</sup>scf) that are meant to limit total emissions during commissioning and routine operation. These emission factors were derived by dividing the total estimated emissions for commissioning and operation by the total estimated fuel use (i.e. total heat input \* heating value of natural gas) during each phase of operation. However, the condition does not limit short term emission rates (e.g. lb/hr and lb/day) that were used to evaluate project impacts with respect to the AAQS. Additionally, the monthly limits, when totaled for 12 months, allow more than the annual emission estimates that were modeled for PM<sub>10</sub>, as shown in PDOC Table 28, Modeled Emission Rates. We recommend limiting short term and annual emissions (i.e. lb/hr, lb/day, and lb/yr) to ensure compliance with the AAQS.
10. Condition A99.1 contains an emission factor (in lb/mm<sup>3</sup>scf) for NO<sub>x</sub> that is meant to limit total emissions during the commissioning period for RECLAIM reporting purposes. This emission factor was derived by dividing the total estimated emissions for the commissioning period by the total estimated fuel use (i.e. total heat input \* heating value of natural gas) during various operating conditions of the commissioning period. Condition K67.6 requires that the operator record natural gas fuel use during the commissioning period; however, there is no limit on the amount of fuel that can be used during the commissioning period. Condition E193.4 limits the total hours during the commissioning period to 491 hours, which was the basis for the emission estimates; however PDOC Table 13, Commissioning Activity

Parameters and Emissions for a Single CTG, shows that fuel consumption varies with turbine load and activity. Since these various loads and activities are not limited the facility could potentially exceed emission estimates. We recommend limiting fuel use to ensure that the facility stays below its proposed and modeled emission rates. In addition, this emission factor only limits total emissions during the commissioning period and does not limit or reflect the higher worst case short term emission rates. Staff also recommends limiting all emission rates that are elevated during the commissioning period, by lb/hr and lb/year, to be consistent with the proposed and modeled worst case emission rates as proposed by the applicant (including emission limits during the commissioning period for CO) to ensure compliance with AAQS.

11. PDOC conditions E195.5, E195.6, and E195.7 limit NO<sub>x</sub>, CO, and VOC emissions to 2.0 PPMV, averaged over 1 hour, dry basis at 15 percent oxygen. We recommend also limiting these pollutants to the applicant's proposed worst case, steady state lb/hr emission limits. This is because concentration limits are a function of volumetric flow, which varies with ambient conditions and integrity of the equipment. The facility could be in compliance with the concentration limits while emitting more than the proposed lb/hr estimates used in the modeling to demonstrate compliance with the AAQS.

### **Combustor Tuning**

12. We recommend that once worst case emissions limits are in place for short term NO<sub>x</sub> and CO emissions for the commissioning period as proposed by comment number 10 above, that combustor tuning events be added to the conditions to allow for infrequent elevated emissions necessary during maintenance and equipment repair or replacement. The Emission Calculations, Four Operational Modes section of the PDOC (Permits to Construct, p. 55), states that the applicant indicated that periodic combustor tuning activities are not expected to result in emissions above either the startup/shutdown or normal operating mode. While this may be true on an emissions rate basis, combustor tuning events generally take more hours than the allowable startup/shutdown timeframes and provision should be analyzed to allow for combustor tuning ensuring optimum performance as the facility ages.

### **California GHG Emissions Performance Standard (EPS)**

13. PDOC condition E193.6 limits GHG emissions to 1,063.3 lb CO<sub>2</sub>/MWh<sub>net</sub>, which was based on the applicant's hypothetical operating scenario showing that RBEP could comply with the state's GHG Emissions Performance Standard (EPS) of 1,100 lb CO<sub>2</sub>/MWh<sub>net</sub>. We recommend allowing RBEP the flexibility of meeting the GHG EPS of 1,100 lb CO<sub>2</sub>/MWh<sub>net</sub>, and not restricting facility operations to the hypothetical operating scenario used to derive the lower value. The purpose is to ensure compliance with the applicable EPS.

### **RECLAIM Trading Credits (RTCs)**

14. The NO<sub>x</sub> RECLAIM Trading Credit (RTCs) requirements for the turbines and duct burners are provided starting on page 147 of the Permits to Construct. Offset requirements for first year RTCs for the turbines and duct burners was based on

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total commissioning emissions plus a full year of routine operation emissions. However, a discussion of how compliance with subsequent years of operation, including offset requirements, was not included. We believe that district DOCs generally explain the offset requirements for subsequent routine operation and a discussion of how the facility would continue to comply annually with RECLAIM and CEQA requirements.

### **Administrative Changes**

15. Rule 2005(c)(2) evaluation (Permits to Construct, p. 148) states that each turbine/duct burner requires a total of 89,268 lb/yr (NO<sub>x</sub> RTCs), and the three turbines/duct burners require a total of 267,867 lb/yr (NO<sub>x</sub> RTCs). This should be corrected to 89,286 lb/yr, and the three turbines/duct burners require a total of 267,858 lb/yr.
16. The discussion of compliance with 40 CFR 60 Subpart KKKK (Permits to Construct, p. 165) describes the requirements for a new natural-gas fired turbine with a heat input > 50 MMBtu/hr and ≤ 850 MMBtu/hr, as being 25 ppmv @ 15% O<sub>2</sub> for NO<sub>x</sub>. The heat input for each of the proposed natural-gas fired turbines is 1,492 MMBtu/hr, so the turbines are subject to the > 850 MMBtu/hr limitation of 15 ppmv @ 15% O<sub>2</sub>; the facility is expected to comply.
17. Permits to Construct, page 172, provides a discussion of how the proposed turbines would comply with the GHG Emissions Performance Standards and the GHG New Source Performance Standards. The GHG efficiency is calculated by multiplying the overall average net heat rate (Btu/kWh-HHV) by the CO<sub>2</sub> emission factor (kg CO<sub>2</sub>/MMBtu-HHV) to result in CO<sub>2</sub>/MWh. The HHV is associated with the Btu content of the fuel and should not be included in the units of CO<sub>2</sub>/MWh. This should be corrected in conditions I193.6 and I193.7.
18. Permits to Construct, page 175 states, "The 1,063.3 lb CO<sub>2</sub> /MWh<sub>net</sub> (exclusive of degradation) demonstrates that RBEP can meet the 1,000 lb CO<sub>2</sub>/MWh<sub>net</sub> standard." This should be correct to "can meet the 1,100 lb CO<sub>2</sub>/MWh<sub>net</sub> standard."

We appreciate the opportunity to provide these comments, and we would be pleased to provide you any assistance in the preparation and publication of the FDOC. If you have any questions or comments, please contact Joseph Hughes at (916) 651-0970 or [joseph.hughes@energy.ca.gov](mailto:joseph.hughes@energy.ca.gov), or please call me at (916) 654-3868.

Sincerely,

/s/

MATTHEW LAYTON  
Supervising Mechanical Engineer

cc: Joseph Hughes, Energy Commission  
Gerry Bemis, Energy Commission  
John Yee, SCAQMD  
Andrew Lee, SCAQMD