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| **Project Title:** | Stanton Energy Reliability Center |
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South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
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October 6, 2017

Kara Miles
President
Stanton Energy Reliability Center, LLC
650 Bercut Drive, Suite A
Sacramento, CA 95811

Subject: Permit Applications for the Stanton Electric Reliability Center (16-AFC-01), located at 10711 Dale Avenue, Stanton, CA 90680 (Facility ID# 183501)

Dear Ms. Miles:

The South Coast Air Quality Management District (AQMD) has received your letter dated May 17, 2017 in response to the information requested in our letter dated February 24, 2017 regarding the permit applications (Application) for the Stanton Energy Reliability Center (SERC) received on November 2, 2016. District's comments are provided below in the same sequence as the comments presented in our letters dated December 2, 2016, February 2, 2017, and February 24, 2017. We have added questions 17 through 20 to allow our continued evaluation of the project.

7. Toxic Emissions Factors

e. After review of the initial health risk assessment prepared by SERC, the SCAQMD letter, dated 12/2/16, provided the AP-42 toxic/hazardous air pollutants emission factors in terms of lb/MMBtu, with citations for the sources of the emission factors, which are required to be used in the health risk assessment. The SERC letter, dated 12/29/16, indicated the emission factors had been revised to the AP-42 emission factors provided by the SCAQMD but continued to use an unverified control efficiency factor for some toxic compounds for the revised health risk assessment. The SCAQMD letter, dated 2/2/17, requested verification of the assumed control efficiency factor. The SERC letter, dated 2/15/17, indicated the unverified control efficiency factor had been removed for the revised health risk assessment.

In the SERC submittal, dated 2/15/17, *Table 5.1A-4 Calculation of Hazardous and Toxic Pollutant Emissions from Combustion Turbines* presented the emissions factors in terms of lb/MMSCF.

i. Please explain the conversion from the lb/MMBtu, provided by the SCAQMD from AP-42, to the lb/MMSCF used by SERC for the following compounds. The conversion factor of 1017 btu/scf is included on *Table 5.1A-4*, and confirmed by the *Design Fuel Gas Analysis* table provided by SERC.

aa. Ethylbenzene: (3.2 E-05 lb/MMBtu)(1017 MMBtu/MMSCF) = 0.0326 lb/MMSCF
Please explain why SERC used 0.02630 lb/MMSCF.

bb. Naphthalene: (1.3 E-06 lb/MMBtu)(1017 MMBtu/MMSCF) = 0.00132 lb/MMSCF

Please explain why SERC used 0.00140 lb/MMSCF.

cc. Propylene oxide: (2.9 E-05 lb/MMBtu)(1017 MMBtu/MMSCF) = 0.0295 lb/MMSCF
Please explain why SERC used 0.00292 lb/MMSCF.

dd. Toluene: (1.3 E-04 lb/MMBtu)(1017 MMBtu/MMSCF) = 0.132 lb/MMSCF
Please explain why SERC used 0.09560 lb/MMSCF.

ee. Xylene: (6.4 E-05 lb/MMBtu)(1017 MMBtu/MMSCF) = 0.0651 lb/MMSCF
Please explain why SERC used 0.05590 lb/MMSCF.

ff. For aa – ee, please revise your calculations to reflect the SCAQMD approved emission factors.

ii. The SCAQMD did not provide emission factors for hexane and propylene because emission factors are not provided by AP-42. In a telephone conversation on 12/6/16, it was explained to SERC that the SCAQMD does not accept CATEF emission factors.

Please revise your calculations to reflect the SCAQMD approved emission factors for hexane and propylene.

iii. The SCAQMD indicated that (1) naphthalene and (2) PAHS (excluding naphthalene) are to be considered separately in the HRA. The PAHS (excluding naphthalene) are the carcinogenic PAHS.

SERC evaluated (1) naphthalene and (2) all PAHS (including naphthalene). Therefore, naphthalene is double counted.

From above, the naphthalene emission factor should be 0.00132 lb/MMSCF.

PAHS (excluding naphthalene) emission factor should be 0.000915 lb/MMSCF, instead of the 0.00230 lb/MMSCF used.

[2.2 E-06 lb/MMBtu (all PAHs) – 1.3 E-06 lb/MMBtu (naphthalene)]
(1017 MMBtu/MMSCF) = 0.000915 lb/MMSCF

Please revise your calculations to reflect the PAH emissions factor of 0.000915 lb/MMSCF.

f. Please revise the proposed health risk assessment to incorporate the above emission factor changes. Please e-mail the revised health risk assessment to Melissa Sheffer and Vicky Lee as soon as possible.

9. Annual Facility-Wide Emissions Limit
Thank you for Scott Galati's memo, dated 5/26/17, regarding Rule Analysis Supporting Annual Facility Wide Emission Limits, Stanton Energy Reliability Center. The issue is under review by our Legal Dept. and the District will address this separately.

10. Commissioning

d. The SCAQMD has reviewed the revised *Commissioning Emissions (per Turbine)*, provided as Attachment 5 to the SERC Letter, dated 5/17/17. The total commissioning emissions for NOx, CO, and VOC proposed in the SERC response letter, dated 5/17/17, have decreased significantly from the commissioning emissions proposed in its application, dated 11/10/17. Further, the total commissioning emissions for NOx and CO proposed by SERC for all three of its submittals are significantly lower than the commission emissions for NOx and CO provided for a permitted power plant based on GE estimates.

The SCAQMD requires assurance that the actual commissioning emissions are no greater than the permitted emissions. To demonstrate compliance, SERC is provided with two options, discussed below.

- The first option is that the PDOC will be based on the commissioning emissions provided by SERC in its 5/17/17 submittal. However, a Method 100.1 source test van CEMS will be required to monitor the NOx emissions for the entire commissioning period for both turbines. Commissioning emissions factors provided in the facility permit will be used for all other criteria pollutants (CO, VOC, $PM_{10}$ and SOx). The fuel usage will be used to calculate the corresponding mass emissions of NOx, CO, VOC, $PM_{10}$, and SOx emissions for commissioning.

- The second option is that the PDOC will be based on the estimated commissioning emissions provided by GE for the SERC project. Since the GE estimated emissions are likely conservative, a source test van CEMS will not be required to monitor the NOx emissions during commissioning. However, the modeling for the commissioning may need to be adjusted to align with the GE emissions.

Please advise the option selected by SERC.

11. Guarantees

c. In the SCAQMD Letter, dated 2/2/17, item 11.a. requested SERC to forward a copy of the guarantees/warranties for the BACT emission rates for NOx, CO, VOC, $PM_{10}$, $PM_{2.5}$, and $NH_3$. Item 13.a. requested manufacturing specifications including a guarantee for the life of the SCR. Item 13.b. requested a guarantee for the life of the oxidation catalyst.

In the meeting with SERC representatives on 2/8/17, SERC clarified they are unable to provide the requested information because they have not entered into a commercial relationship with any control equipment manufacturer. They urged the SCAQMD to deem the application complete because they may enter into a commercial relationship in as little as two months.

In the SERC letter, dated 2/15/17, the response to 11.a. stated: "Data collected via SERC's initial procurement efforts is reported in the District's required application forms, and SERC is confident that the procurement process will be sufficiently advanced in order to allow the guarantees to be supplied to the District prior to the issuance of the Preliminary Determination of Compliance (PDOC)."

In a conference call with SERC representatives on 4/13/17, the SCAQMD followed up regarding the need for the guarantees and manufacturing specifications **prior** to the issuance of the PDOC.

i. Please forward a copy of the guarantees/warranties for the BACT emission rates for NOx, CO, VOC, $PM_{10}$, $PM_{2.5}$, and $NH_3$.

ii. If the guarantees/warranties are not available, please provide the date by which they will be provided.

13. SCR and CO Oxidation Catalyst Specifications and Guarantees

a. SCR

The SERC letter, dated 2/15/17, provided responses for items 13.a.i.– a.vi. based on an existing SCR and oxidation catalyst located at a similar facility. As soon as the control equipment is procured for this project, please provide updates to the following prior responses.

i. The dimensions were provided as WIDTH: 23 FT 4.8 IN; HEIGHT: 25 FT; LENGTH: 2 FT 8 IN. Please update.

iii. The ammonia injection rate range was provided as 0 to 200 lb/hr of ammonia solution during normal operation. Normal operation is not intended to include start-ups and shutdowns. Please update and provide the lower operating range, not 0 lb/hr, for normal operation.

iv. In response to the question regarding the maximum allowable pressure drop, the maximum expected pressure drop across the catalyst was provided as 2.7 inches water. Please update.

v. The exhaust temperature range required at the inlet of the SCR for proper operation was provided as 480 to 850 deg F. Please update.

vi. Guarantee for Catalyst Life

The SCR catalyst warranty period was provided as expected to be five (5) years, but an actual warranty was unavailable. Please forward the guarantee for the life of the catalyst as soon it is available.

vii. The SERC letter, dated 2/15/17, provided a revised *Form 400-E-5--SCR System, Oxidation Catalyst, and Ammonia Catalyst* based on the existing SCR and oxidation catalyst located at a similar facility. Please provide an updated *Form 400-E-5*, including the area velocity unless proprietary, for the control equipment for this project.

b. CO Oxidation Catalyst

i. Guarantee for Catalyst Life

The CO catalyst warranty period was provided as expected to be three (3) years, but an actual warranty was unavailable. Please forward the guarantee for the life of the catalyst as soon it is available.

ii. The SERC response letter, dated 2/15/17, included a revised *Form 400-E-5--SCR System, Oxidation Catalyst, and Ammonia Catalyst*. For the Oxidation

Catalyst, the size of each layer or module is 2.1 in. long, 2 ft wide, 2 ft high, with 120 layers or modules, based on the oxidation catalyst located at a similar facility.

Please provide the overall dimensions for the CO oxidation catalyst for this project.

16. BACT Levels
    a. Revised *Section 5.1—Air Quality* was submitted as part of the SERC response package, dated 5/17/17. Please review the revisions to ascertain that all stated BACT levels are correct.

    b. Please review the other sections/appendices of the AFC, including *Section 2—Project Description* and *Appendix 5.1F—Evaluation of Best Available Control Technology*, to ascertain that all stated BACT levels are correct.

17. SOx Emissions
    a. For the application, dated 11/2/16, the *Maximum Annual & Monthly Emissions – Normal Year* table in *Appendix 5.1A* based the monthly and annual SOx emissions on 0.25 gr S/100 scf. The SCAQMD letter, dated 12/2/16, indicated the monthly emissions are required to be based on 0.75 gr S/100 scf for normal operation, startup, and shutdown. The annual emissions may be based on 0.25 gr S/100 scf for normal operation, startup, and shutdown, if the facility will accept a permit condition for monthly testing of the natural gas. The SERC response letter, dated 12/29/16, indicated that all hourly, daily, monthly and annual emissions are now based on 0.75 gr S/100 scf. This response was unexpected because other projects have based annual emissions on 0.25 gr S/100 scf. It should be emphasized that applicants are strongly encouraged to minimize the number of offsets for which an applicant is applying for an offset exemption. Therefore, please revise your **annual** SOx emissions calculations based on 0.25 gr S/100 scf.

18. Gross and Net MW Ratings
    As gross and net MW rating for each case number are not provided in the *Combustion Turbine Operating Emissions and Support Data* table, the *GE Power & Water Estimated Average Engine Performance* table was consulted.

    a. Gross kW Ratings per Turbine
        i. Please confirm the "kW, Gen Terms" data in the *GE Power & Water Estimated Average Engine Performance* table, as reproduced below, represent the gross MW ratings. According to *Figure 2.1-3 Heat and Mass Balance Diagram*, these values do represent the gross MW ratings.

| **Case No.** | **100** | **101** | **102** | **103** | **104** | **105** | **106** | **107** | **108** |
|---|---|---|---|---|---|---|---|---|---|
| CTG Load Level (%) | 100 | 50 | 21 | 100 | 50 | 21 | 100 | 50 | 20 |
| CTG Inlet Air Cooling | On | Off | Off | On | Off | Off | Off | Off | Off |
| Ambient Temperature (°F) | 102.7 | 102.7 | 102.7 | 65.0 | 65.0 | 65.0 | 40.0 | 40.0 | 40.0 |
| Gross CTG Output, kW (one CTG) | 47,252 | 23,649 | 10,148 | 49,058 | 24,532 | 10,074 | 51,049 | 25,530 | 10,074 |
| Net CTG Output, kW (one CTG) | ?? | ?? | ?? | ?? | ?? | ?? | ?? | ?? | ?? |

b. Net kW Ratings per Turbine
   i. *Figure 2.1-3 Heat and Mass Balance Diagram* provides the plant net power output for three cases. Please have GE provide the net kW rating per turbine for each case.

19. Ammonia Tank, A/N 589941
The *Form 400-E-18—Storage Tank* is incomplete and appears to include incorrect information.

a. The *Forms 400-A* and *400-E-18* state the contents are 19.5% aqueous ammonia. However, pp. 2-24, 5.1-2, 5.5-3, 5.5-5, and 5.5-10 of the Application for Certification (AFC) state the concentration is 19%. Please confirm the concentration is 19%.

b. On *Form 400-E-18*, the pressure setting is stated to be 2.5 psig. This setting will be included in a permit condition.

   i. Please explain why the setting is 2.5 psig for an aqueous ammonia tank. Such tanks are normally pressure vessels.

   ii. If the 2.5 psig is not correct, please provide the correct pressure setting.

c. Process Description
   i. The *Form 400-E-18* skipped over the "Vapor Control During Loading or Unloading." Please explain the vapor control operation.

   ii. The *Form 400-E-18* skipped over the "Turnovers Per Year."

      aa. Page 5.5-11 of the AFC indicates: "Ammonia will be delivered five times per year on average, and at a maximum frequency of six deliveries per month for continuous operation." Please explain how deliveries are five times per year on average but a maximum of six deliveries per month. The PDOC will included a discussion of the expected maximum number of annual and monthly deliveries.

      bb. Will the deliveries be approximately 7000 gallons per tanker truck shipment?

20. Battery Storage
a. From page 1-2 of the AFC, the battery for each turbine is rated at 10 MW. Please explain why the storage is 5 megawatt-hours.

b. Please discuss the utilization and flexibility of the battery energy storage portion of the project, both in technical and non-technical language.

It would be appreciated if you can provide responses to the above comments at the earliest, but no later than October 31, so that we can complete our evaluation of your applications in a timely manner. Please feel free to contact me at (909) 396-2643, or alee@aqmd.gov, or Ms. Vicky Lee, at (909) 396-2284, or vlee1@aqmd.gov for further information or clarification.

Sincerely,

Andrew Y. Lee, P.E.
Sr. Engineering Manager
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AYL:BC:RC:VL

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