

DOCKETED

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Project Title:	Alamitos Energy Center
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Document Title:	SCAQMD Determination of Permit Incompletion Letter to AES for the Alamitos Energy Center
Description:	SCAQMD Determination of Permit Incompletion Letter to AES for the Alamitos Energy Center listing issues in application for a PDOC/FDOC requiring further clarification.
Filer:	Christopher Meyer
Organization:	South Coast Air Quality Management District
Submitter Role:	Public Agency
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Docketed Date:	11/30/2015



South Coast Air Quality Management District

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November 20, 2015

Stephen O’Kane
Manager
AES Alamitos, LLC
690 N. Studebaker Road
Long Beach, CA 90803

Subject: Permit Applications for the Amended Alamitos Energy Center, located at
690 N. Studebaker Road, Long Beach, CA 90803 (Facility ID# 115394)

Dear Mr. O’Kane:

The South Coast Air Quality Management District (SCAQMD) received permit applications for the proposed Amended Alamitos Energy Center (AEC) on October 23, 2015. As a first step in our review process, we have briefly evaluated the applications to determine whether they are complete and ready for review. Based on our initial review of the submitted materials it has been determined that the application package is incomplete. The reference application numbers for this project and our initial review determination are provided in the table below:

Application	Equipment Description	Completeness Determination
579140	RECLAIM/Title V Revision	Deemed Incomplete
579142	Combined Cycle Turbine	Deemed Incomplete
579143	Combined Cycle Turbine	Deemed Incomplete
579145	Simple Cycle Turbine	Deemed Incomplete
579147	Simple Cycle Turbine	Deemed Incomplete
579150	Simple Cycle Turbine	Deemed Incomplete
579152	Simple Cycle Turbine	Deemed Incomplete
579158	Auxiliary Boiler	Deemed Incomplete
579160	SCR/CO Catalyst for Combined Cycle Turbine	Deemed Incomplete
579161	SCR/CO Catalyst for Combined Cycle Turbine	Deemed Incomplete
579162	SCR/CO Catalyst for Simple Cycle Turbine	Deemed Incomplete
579163	SCR/CO Catalyst for Simple Cycle Turbine	Deemed Incomplete
579164	SCR/CO Catalyst for Simple Cycle Turbine	Deemed Incomplete
579165	SCR/CO Catalyst for Simple Cycle Turbine	Deemed Incomplete
579166	SCR for Auxiliary Boiler	Deemed Incomplete
579167	Ammonia Tank for Combined Cycle Turbines	Deemed Incomplete
579168	Ammonia Tank for Simple Cycle Turbines	Deemed Incomplete
579169	Oil/Water Separator Combined Cycle Turbines	Deemed Incomplete
579170	Oil/Water Separator Simple Cycle Turbines	Deemed Incomplete

Please be aware that, in addition to the information required below, other information will be needed during the course of our full engineering evaluation. Your cooperation is key to the timely review of the applications. The following issues have been identified during the completeness review:

1. CDs of Application Materials

SCAQMD received two hard copies of the Title V Permit to Operate Modification, Alamitos Energy Center, October 2015 (Application) and four sets of the five modeling CDs. SCAQMD's Prevention of Significant Deterioration Rule 1703(a)(3)(F) requires the SCAQMD to send a complete copy of the application package, once it is deemed complete, to the (1) US Department of Agriculture Forest Service; (2) U.S. EPA, Region IX; and (3) Federal Land Manager (FLM), National Park Service. (SCAQMD is aware that page 5.1-35 of the Application indicates the results of the visibility and deposition modeling, provided in Appendix 5.1G, were prepared as a separate document and submitted to the appropriate FLM for review and approval.) Please provide four copies of the Application on CD.

2. Fees

The following provides an explanation for our understanding of the correct fees for the ammonia tanks and oil/water separators. Rule 301(b)(20) defines "identical equipment" to mean "any equipment which is to be operated by the same operator, and have the same equipment address, and have the same operating conditions and processing material to the extent that a single permit evaluation would be required for the set of equipment." This means the emissions from each identical equipment are required to be identical.

The two identical ammonia tanks were submitted as three identical tanks. The fees submitted and our corrections are shown below.

Storage Tank, Other	\$1,521.32	
Storage Tank, Other (2 <u>1</u> Identical)	\$1,521.32	<u>\$ 760.66</u>
Expedited Processing Fee	\$1,521.32	<u>\$1,140.99</u>

Overpayment = \$4563.96 (paid) - \$3422.97 (two identical) = \$1140.99

The two non-identical oil/water separators were submitted as two identical separators. As shown in Table 5.1B.17—Oil-Water Separator Calculations, the emissions are different for the two separators. Therefore, they are not identical. The fees submitted and our corrections are shown below.

Oil/Water Separator (\geq 10,000 GPD) (<u>7FA.05</u>)	\$3,835.06
Oil/Water Separator (\geq 10,000 GPD) (1 identical)	\$1,917.53
<u>Oil/Water Separator ($<$ 10,000 GPD) (LMS-100PB)</u>	<u>\$2,424.63</u>
Expedited Processing Fee	\$2,876.30 <u>\$3129.85</u>

Shortfall = \$9389.54 (two non-identical) - \$8628.89 (paid) = \$760.65

Amount to be refunded = \$1140.99 (storage tanks overpayment) - \$760.65 (oil/water separators shortfall) = \$380.34

- a. Please confirm the above corrected fee calculations reflect the proposed equipment.
 - b. Please be aware that VOC emission reduction credits (ERCs) will be required for the 7FA.05 separator. The need for VOC ERCs was not mentioned in the Application.
3. Common Ownership
In Appendix 5.1E, pages 1 - 2 of the Application cover letter, dated 10/23/2015, indicate all AES-owned electric steam utility boilers proposed for retirement, as set forth in Table 1—AES Rule 1304(a)(2) Schedule, are owned by wholly-owned subsidiaries of the AES Corporation. An attached organization chart illustrates the corporate structure and demonstrates the common ownership of AES Redondo Beach, LLC; AES Huntington Beach, LLC; and AES Alamitos, LLC, per the requirements of Rule 1304(a)(2).
- Page 1-1 of the Application indicate AES Alamitos Energy, LLC (AES) will construct, own, and operate the AEC. Page 2-1 indicates AEC will be constructed on the site of the AES Alamitos Energy, LLC (AES) Alamitos Generating Station (AGS). Please explain why AES Alamitos Energy, LLC is not on the organization chart.
4. Equipment Internal References
As there are multiples of the following equipment, the equipment description on the facility permit will include the AES name or numbering for each equipment.
- a. Combined Cycle
What are the AES name or numbering for the two turbines?
 - b. Simple Cycle
What are the AES name or numbering for the four turbines?
 - c. Ammonia Tank
What are the AES name or numbering for the two tanks?
 - d. Oil/Water Separators
What are the AES name or numbering for the two separators?
5. Combined Cycle Power Block (CCGT) Commercial Operation
Pages 1-5 and 2-20 indicate CCGT commercial operation will begin first quarter 2020. Pages 5.1-2, 5.1-11, 5.9-2, and 6-3 indicate a conflicting commercial operation date of second quarter 2020 (before May 1, 2020). Further, page 2 of the Application cover letter indicate AGS Units 1, 2, 5 will retire 12/29/2019, which supports the first quarter date. Please provide most recent estimate of the commercial operation date.
6. Turbines Ratings
- a. Combined Cycle Block (CCGT)
Page 2 of the Application cover letter provides Table 1—AES Rule 1304(a)(2) Schedule. The combined cycle block rating for the AEC is shown as 692.951 MW gross. Footnote c indicates this rating is based on 59 °F without evaporative coolers operating.
 - i. Footnote a to Table 1 indicates the basis for the Huntington Beach Energy Project (HBEP) combined cycle block is 65.8 °F with evaporative coolers operating.

- aa. Please explain the difference in the temperature basis between AEC (59 °F) and HBEP (65.8 °F).
 - bb. Please explain the difference in evaporative coolers operation between AEC (without) and HBEP (with).
- ii. Table 5.1B.3—Combined-Cycle: GE 7FA.05 Performance Data in Appendix 5.1B
This table indicates that Case 1 yields the highest “Gross 2x1 Combined-Cycle, kW” of 692,905 kW at 28 °F without inlet air coolers operating, with the turbines operating at max load. Case 5 provides conditions closest to the conditions listed in footnote c. For Case 5, the “Gross 2x1 Combined-Cycle, kW” is 684,653 kW at 65.3 °F without inlet air coolers operating, with the turbines operating at max load.
- aa. Please confirm footnote c to Table 1 is correct with respect to ambient temperature and the operation of the evaporative coolers.
 - bb. Table 5.1B.3 provides performance data for 28 °F, 65.3 °F, and 107 °F, but footnote c is based on 59 °F. Therefore, Table 5.1B.3 cannot be used to reliably provide the gross and net ratings for the CTGs and steam turbine generator.
 - (1) Please provide the gross output for each CTG with the basis for temperature and coolers operation.
 - (2) Please provide the corresponding net output for each CTG.
 - (3) Please provide the associated gross output for the steam turbine generator for the same basis.
 - (4) Please provide the corresponding net output for the steam turbine generator.
 - (5) Are the combined ratings of the two CTGs and steam turbine generator equal to 692.951 MW gross?
- b. Simple Cycle Block (SCGT)
In Table 1, the simple cycle block rating is shown as 401.751 MW gross. Footnote d indicates the rating is based on 59 °F without evaporative coolers operating.
- i. Footnote b indicates the basis for the Huntington Beach Energy Project (HBEP) simple cycle block is 65.8 °F with evaporative coolers operating.
 - aa. Please explain the difference in temperature between AEC (59 °F) and HBEP (65.8 °F).
 - bb. Please explain the difference in evaporative coolers operation between AEC (without) and HBEP (with).
 - ii. Table 5.1B.7—Simple Cycle: GE LMS-100PB Performance Data in Appendix 5.1B
This table indicates that Case 1 yields the highest “4 LMS-100PB Gross, kW” at 401,268 kW at 28 °F without inlet air coolers operating, with the turbines operating at 100% load. Case 5 provides conditions closest to the conditions described in

footnote d. For Case 5, the “4 LMS-100PB Gross, kW” is 395,152 kW at 65.3 °F without inlet air coolers operating, with the turbines operating at 100% load.

- aa. Please confirm footnote d to Table 1 is correct with respect to ambient temperature and the operation of the evaporative coolers.
- bb. Table 5.1B.7 provides performance data for 28 °F, 65.3 °F, and 107 °F, but footnote d is based on 59 °F. Therefore, Table 5.1B.7 cannot be used to reliably provide the gross rating for the CTGs.
 - (1) Please provide the gross output for each CTG with the basis for temperature and operation of coolers.
 - (2) Please provide the corresponding net output for each CTG.
 - (3) Are the combined ratings of the four CTGs equal to 401.751 MW gross?

7. Combined-Cycle Turbine VOC Emission Rate

In Appendix 5.1E, the Nooter/Eriksen letter, dated 6/5/15, paragraph 1.2 indicates the CO vendor guarantees the CO catalyst system will oxidize the VOC content of the exhaust gas to a maximum of 1.0 ppmvd at 15% O₂. In Appendix 5.1-D, page 2-11 correctly proposes a combined-cycle level of 2.0 ppm as BACT, based on SCAQMD’s Method 25.3—Determination of Low Concentration Non-Methane Non-Ethane Organic Compound Emissions for Clean Fueled Combustion Sources. On page 5.1-16, Table 5.1-15—Maximum Pollutant Emission Rates for Operation of One GE 7FA.5 Turbine indicates the maximum rates for VOC are 2 ppmvd at 15% O₂ and 1.58 lb/hr. On page 5.1-20, Table 5.1-23—AEC Facility Emissions indicates the combined-cycle VOC hourly emission rate is 1.58 lb/hr per GE 7FA.05. According to Table 5.1B.3—Combined-Cycle: GE 7FA.05 Performance Data in Appendix 5.1B, the 1.58 lb/hr corresponds to 0.55 ppmvd (dry, 15% O₂) at 28 °F with inlet cooling off, with turbines operating at maximum load. Footnote 5 indicates CO catalyst VOC destruction rate of 50% is assumed.

- a. Please explain why a 50% VOC destruction rate is reasonable.
- b. For Table 5.1B.3, please revise the hourly VOC emission rates to be based on the BACT level of 2 ppmvd (dry, 15% O₂).
- c. For Table 5.1-14—GE 7FA.05 Startup/Shutdown Emission Rates on page 5.1-16, please adjust the startup and shutdown rates to be consistent with a normal operation rate of 2 ppmvd (dry, 15% O₂).

8. Cold, Warm, Hot Startup Definitions

- a. Combined Cycle Turbines
 - i. Please define “cold start.”
 - ii. Please define “warm start.”
 - iii. Please define “hot start.”
- b. Auxiliary Boiler
 - i. Please define “cold start.”
 - ii. Please define “warm start.”
 - iii. Please define “hot start.”

9. SCR and CO Oxidation Catalyst Specifications and Guarantees

a. Combined Cycle

i. SCR

aa. Form 400-E-5 indicates the ammonia injection rate is 242.0 lb/hr. As there will be a D12 condition that requires a flow meter and specifies a flow rate range, please provide the flow rate range in lb/hr or gal/hr.

bb. What is the maximum allowable pressure drop across the catalyst?

b. Simple Cycle

i. SCR

aa. Form 400-E-5 indicates the ammonia injection rate is 180 lb/hr. As there will be a D12 condition that requires a flow meter and specifies a flow rate range, please provide the flow rate range in lb/hr or gal/hr.

bb. What is the maximum allowable pressure drop across the catalyst?

cc. Please provide a guarantee for the life of the catalyst.

ii. CO Oxidation Catalyst

aa. Please provide a guarantee for the life of the catalyst.

c. Auxiliary Boiler

i. SCR

aa. What is the maximum allowable pressure drop across the catalyst?

bb. In Appendix 5.1B, Table 5.1B.12 indicates the catalyst life is three years, but does not provide a guarantee. Please provide a guarantee for the life of the catalyst.

10. Auxiliary Boiler

a. Preliminary Selection

In Appendix 5.1B, Table 5.1B.11—Auxiliary Boiler: Performance Data, footnote 3 on page 1 states: “Auxiliary boiler sizing reflects conservative design assumptions for use in establishing permit limits. Final equipment size and selection (based on major equipment OEM selection) during detailed design phase will likely reduce aux boiler size to ~50-60 MMBtu/hr.”

SCAQMD provides clarification that the make, model, rating and emissions limits for permitting purposes are based on the actual boiler selected. If a different boiler is selected after the SCAQMD has performed a substantial evaluation on the proposed boiler, a new application will be required to be submitted.

b. Process Description

In Appendix 5.1D, page 1-1 indicates the auxiliary boiler will be used to reduce the startup duration of the combined-cycle power block, thereby reducing air emissions. Page 3-3 indicates the auxiliary boiler will facilitate fast start capabilities of the combined-cycle block. No further details were provided regarding the operation of the boiler.

- i. Please provide a process description for the auxiliary boiler, including a step-by-step description of how the boiler assists with the fast start of the combined-cycle block.
 - ii. In Appendix 5.1B, Table 5.1B.13—Auxiliary Boiler: Summary of Operation Emissions—Criteria Pollutants, footnote d indicates the annual emissions assume 8,760 hours of operation at the maximum hourly firing rate, with 24 cold starts, 48 warm starts, and 48 hot starts. Does this mean the boiler is operated continuously?
- c. Dispersion Modeling
- i. On page 5.1-33, Table 5.1-33—Auxiliary Boiler Emission Rates and Stack Parameters indicates the maximum 1-hour NO_x and CO emission rates are based on normal operation at the maximum firing rate. Please explain why a startup event was excluded.
- d. Specifications
- Please provide manufacturer's specifications, including the following information:
- i. A more specific model number than "D-Type" listed on the Form 400-E-9a.
 - ii. Emissions levels prior to control by SCR.
 - iii. General description of boiler construction features and operation.
- e. Commissioning
- i. Please explain whether the boiler will be "commissioned" or otherwise emit emissions at AEC, in addition to regular operation and cold, warm, and hot startups.
 - ii. If so, please provide duration and emissions for the "commissioning" period.

11. Auxiliary Boiler 30-Day Averages

- a. In Appendix 5.1E, the Cleaver Brooks letter, dated 6/10/15, provides guaranteed stack emissions rates for NO_x (post-SCR), CO, VOC, PM₁₀, and ammonia slip. The hourly rates presented in Table 5.1B.11—Auxiliary Boiler: Performance Data in Appendix 5.1B were based on the guaranteed emission rates, with the exception of VOC. VOC was guaranteed for 0.003 lb/MMBtu, but the hourly rates were based on 0.004 lb/MMBtu to apparently provide a safety margin. The bases for the hourly emissions rates are clear.

SCAQMD is unable to reproduce the monthly and daily emissions in Table 5.1B.11. Pursuant to New Source Review requirements, the monthly emissions, 30-day averages, and ERCs for each pollutant are required to be based on maximum monthly emissions for that pollutant, including commissioning emissions, if any. Please provide detailed emissions calculations for the monthly emissions and 30-day averages.

12. Turbines Toxic Emissions and Rule 1401 Health Risk Assessment

- a. Toxic Emissions
In Appendix 5.1B, Table 5.1B.6—Combined-Cycle: Summary of Operation Emissions—Air Toxics and Table 5.1B.10—Simple Cycle: Summary of Operation Emissions—Air Toxics present air toxics emissions summaries.

- i. The PAHs emission factor should be 0.90 E-06 lb/MMBtu, instead of the 2.2 E-06 lb/MMBtu shown in the tables. The reason is that naphthalene needs to be subtracted from the total PAHs because naphthalene is considered separately. (2.2 E-06 – 1.3 E-06 = 0.90 E-06.)
- ii. As requested by SCAQMD, the formaldehyde emission factor of 3.6 E-04 lb/MMBtu is based on AP-42, Section 3.1, Background Information, Table 3.4-1-- Summary of Emission Factors for Natural Gas-Fired Gas Turbines, for formaldehyde controlled by CO catalyst, April 2000.

From the same Table 3.4-1, please use the following updated emission factors that incorporates CO catalyst control.

Pollutant	Emissions Factors
Acetaldehyde	1.76 E-04 lb/MMBtu, or 1.80 E-01 lb/MMscf
Acrolein	3.62 E-06 lb/MMBtu, or 3.69 E-03 lb/MMscf
Benzene	3.26 E-06 lb/MMBtu, or 3.33 E-03 lb/MMscf

b. Rule 1401 Health Risk Assessment

- i. Please revise the proposed health risk assessment to incorporate the above emission factor changes.

13. Auxiliary Boiler Toxic Emissions and Rule 1401 Health Risk Assessment

a. Toxic Emissions

In Appendix 5.1B, Table 5.1B-14—Auxiliary Boiler: Summary of Operation Emissions – Air Toxics presents the air toxics emissions summary.

- i. The emission factors used are from Tables 1.4-3 and 1.4-4 of AP-42. Please use the following emission factors from the Ventura County Air Pollution Control District for natural gas fired external combustion equipment rated 10 – 100 MMBtu/hr:

Pollutants	Emissions Factors, lb/MMcf
Benzene	0.0058
Formaldehyde	0.0123
PAHs (excluding naphthalene)	0.0001
Naphthalene	0.0003
Acetaldehyde	0.0031
Acrolein	0.0027
Propylene	0.5300
Toluene	0.0265
Xylene	0.0197
Ethyl Benzene	0.0069
Hexane	0.0046

- ii. Please explain the derivation of the Maximum Annual Heat Input of 310,096 MMBtu/yr (HHV).

b. Rule 1401 Health Risk Assessment

- i. Please revise the proposed health risk assessment to incorporate the above emission factor changes.

14. Turbines Combustor Tuning

a. Combined Cycle Turbines

- i. In Appendix 5.1B, Table 5.1B.1—Summary of Commissioning Emission Estimates: Combined-Cycle Turbines does not mention combustor tuning. Please confirm no tuning will be required after commissioning.
- ii. If tuning is required, please describe the combustor tuning events anticipated as the facility ages.
- iii., iv., and v. Please provide the same information as requested for Simple Cycle Turbines below.

b. Simple Cycle Turbines

- i. In Table 5.1B.2—Summary of Commissioning Emission Estimates: Simple-Cycle Turbines, footnote 1 indicates that after commissioning, tuning is expected to occur twice a year. Please confirm the footnote is correct.
- ii. If tuning is required, please describe the combustor tuning events anticipated as the facility ages.
- iii. The draft permit will include three A195 conditions that will require BACT levels for NO_x, CO, and VOC except during commissioning, startup, and shutdown periods. If an exemption for a specific number of hours needs to be added for "combustor tuning events" or other type of "maintenance", please specify the following:
- aa. Definition for "combustor tuning events," "maintenance," or whichever term is proposed.
- bb. Total number of hours required.
- cc. Emissions for the total number of hours. Typically, the total number of hours is assumed to take place at one time.
- iv. Are the emissions rates from combustor tuning events expected to exceed the modeled emission rates in the Application?

15. Table 5.1-23—AEC Facility Emissions

On pages 5.1-20 to 5.1-21, Table 5.1-23 provide a summary of AEC facility emissions, with the footnotes providing the bases for the emissions.

- a. Footnote a indicates that hourly SO₂ emissions are based on a maximum fuel sulfur content of 0.75 grain per 100 dscf of natural gas, whereas daily monthly, and annual SO₂ emissions are based on an average fuel sulfur content of 0.25 grain per 100 dscf of natural gas. This conflicts with footnotes e to Tables 5.1B.5 and 5.1B.9 in Appendix 5.1B. Footnotes e indicate hourly, daily, and monthly SO₂ emissions are based on 0.75 grain per 100 dscf of natural gas, whereas annual SO₂ emissions are based on of 0.25 grain per 100 dscf of natural gas.

Please confirm footnotes e, not footnote a, is correct.

- b. Footnote c indicates the maximum hourly VOC, CO, and NO_x emissions for a GE 7FA.05 are based on a cold start. This conflicts with footnote a to Table 5.1B.5. Footnote a indicates the hourly emissions are for the turbine in normal operation only, excluding startup or shutdown emissions.

Please confirm footnote a, not footnote c, is correct.

- c. Footnote d indicates the maximum hourly VOC, CO, and NO_x emissions for a GE LMS-100 are based on one hot startup, one shutdown, and the balance of the hour at full load at 28 °F. This conflicts with footnote a to Table 5.1B.9. Footnote a indicates the hourly emissions are for the turbine in normal operation only, excluding startup or shutdown emissions.

Please confirm footnote a, not footnote d, is correct.

- d. Footnote g indicates that for the GE 7FA.05s and GE LMS-100s, the maximum monthly emissions include steady-state operation at 100 percent load and 65.3 °F.

Please explain why the maximum monthly emissions are based on 65.3 °F, instead of 28 °F.

16. Turbines 30-Day Averages

a. Combined Cycle Turbine

In Appendix 5.1B, Table 5.1B.5—Combined-Cycle: Summary of Operation Emissions—Criteria Pollutants, footnote c indicates the monthly emission rates assume 31 days and include 2 cold starts, 15 warm starts, 45 hot starts, and 62 shutdowns per month. Pursuant to New Source Review requirements, the monthly emissions and 30-day averages for each pollutant are required to be based on maximum monthly emissions for that pollutant, including commissioning emissions.

Since the commissioning period for each turbine is 996 hours (more than one month), maximum emissions for three different months are required to be calculated.

i. First Month

- aa. Regarding Table 5.1B.1—Summary of Commissioning Emission Estimates: Combined-Cycle Turbines, please explain which steps will be completed the first month.

ii. Second Month

- aa. The remaining steps from Table 5.1B.1 will be completed in the second month. In addition, please provide the number of normal operating hours, cold starts, warm starts, hot starts, and shutdowns that will take place after the commissioning is completed.

iii. Third Month

- aa. Please confirm the monthly emissions will be as described in footnote c to Table 5.1B.5.

b. Simple Cycle Turbine

In Appendix 5.1B, Table 5.1B.9—Simple-Cycle: Summary of Operation Emissions—Criteria Pollutants, footnote c indicates the monthly emission rates assume 31 days and include 62 startups and 62 shutdowns per month. As explained above, the commissioning emissions are required to be considered.

Since the commissioning period for each turbine is 280 hours (less than one month), maximum emissions for two different months are required to be calculated.

i. First Month

aa. Regarding Table 5.1B.2—Summary of Commissioning Emission Estimates: Simple-Cycle Turbines, please confirm all steps will be completed in the first month.

bb. In addition, please provide the number of normal operating hours, startups and shutdowns that will take place after the commissioning is completed.

ii. Second Month

aa. Please confirm the monthly emissions will be as described in footnote c to Table 5.1B.9.

17. Greenhouse Gas (GHG) Global Warming Potentials and Emission Factors

In Appendix 5.1B, Table 5.1B.16 is comprised of three tables. Footnote a to the GHG Netting table indicates the global warming potentials used to calculate the CO₂ equivalents were from Table B.1 of TCR’s 2015 *Climate Registry Default Emission Factors*. SCAQMD uses the global warming potentials from Table A-1 to Subpart A of 40 CFR Part 98—Global Warming Potentials, as amended by 79 FR 73779, 12/11/14. Currently, both sources indicate the global warming potential of CH₄ is 25 and N₂O is 298.

Footnotes a and b to the GHG Emission Factors table indicate the GHG emission factors are from TCR’s 2015 *Climate Registry Default Emission Factors*. SCAQMD uses emission factors for CO₂, CH₄, and N₂O from the US EPA website, Emission Factors for Greenhouse Gas Inventories, Table 1—Stationary Combustion Emission Factors, revised April 4, 2014. Consequently, the following emission factors will be used in the PDOC and FDOC for all natural-gas fired equipment: CO₂, 53.06 kg CO₂/MMBtu; CH₄, 1 g CH₄/MMBtu; and N₂O, 0.10 g N₂O/MMBtu.

18. SF₆ Emissions Calculations

On page 5.1-22, Table 5.1-25—Estimated Annual Greenhouse Gas Emissions from AEC, footnote a indicates SF₆ emissions from 12 circuit breakers are included.

a. Page 2-3 indicates the CCGT and SCGT each has one 230-kV interconnection to the existing SCE switch yard but do not provide any details. In Appendix 5.1B, Table 5.1B.18—SF₆ Calculations lists twelve electrical breakers. Please provide a discussion regarding which interconnection(s) or equipment each of the twelve electrical breakers serves.

b. A F52 condition will require leak detection equipment and impose an emissions limit on the total CO₂e emissions from all circuit breakers. The emissions calculations in the Application are based on a 0.1% annual leak limit. Please confirm the emissions limit is to be based on the 0.1% annual leak limit without a safety margin.

19. PSD Cumulative Impacts of AEC and Competing Sources

Page 5.1-40 states: "The cumulative impacts of the AEC and competing sources were assessed for all receptors where the AEC impacts alone exceeded the 1-hour NO₂ SIL of 7.52 µg/m³. Based on a comparison of these results to the 1-hour NO₂ NAAQS of 188 µg/m³, it was determined that there were receptors where the contributions from the AEC combined with those from competing sources and representative background concentrations exceeded the 1-hour NO₂ NAAQS. Therefore, AERMOD-generated output files were reviewed to assess the contribution of the AEC's emissions at each of the receptors where an exceedance of the 1-hour NO₂ NAAQS was modeled. The files show that the maximum contribution from the AEC to any modeled exceedance was less than the 1-hour NO₂ Class II SIL of 7.52 µg/m³. Therefore, the AEC's contribution to each modeled exceedance is less than significant and would not cause or contribute to any modeled exceedance of the 1-hour NO₂ NAAQS."

In Appendix 5.1C, Table 5.1C.11—Competing Source Results shows "All (Max. Impact)" for 2006, 2007, 2008, 2009, and 2011. The impacts ranged from 99 to 108. For clarification, please add information to the table to show the maximum impacts and background concentrations exceed 188 µg/m³.

20. Rule 1304.1 Estimated Fees

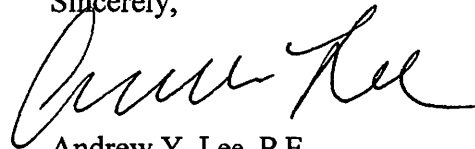
Please provide the "Average Last 2 Years of Existing Units(s) Actual Generation (MWh/yr)" for AGS Units 1, 2, and 5, which will be retired, to allow an estimate of the total annual fee to be calculated. Please include data for actual generation by year and unit. An explanation will be included to explain the total annual fee is an estimate and will be finalized once the date of permits issuance, if the permits are approved, is established.

21. AGS Actual Emissions for Past Two Years

For the AGS, please provide the actual emissions for 2013 and 2014, and the two-year average, for CO, NO_x, PM₁₀, PM_{2.5}, ROG, SO_x, and CO_{2e} for all units and the total facility.

Please feel free to contact me at (909) 396-2643, or alee@aqmd.gov, for further information or clarification.

Sincerely,



Andrew Y. Lee, P.E.
Sr. Engineering Manager
Engineering and Compliance

AYL:CDT:JTY:VL

cc: Mohsen Nazemi
Christopher Meyer, CEC