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Mr. Andrew Lee
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Subject: AES Alamitos, LLC (Facility ID 115394)
Preliminary Determination of Compliance Comments

Dear Mr. Lee:

AES Alamitos, LLC (AES) appreciates the efforts by the South Coast Air Quality Management District (SCAQMD) in preparing the Alamitos Energy Center's (AEC) Preliminary Determination of Compliance (PDOC). AES agrees with the conclusions derived by the SCAQMD and provides the following comments on the draft Facility Permit to Operate and the PDOC.

Draft Permit to Operate Comments

There are a few proposed conditions which are either in error or are inconsistent with the information submitted and subsequent analysis included with the PDOC. These changes to the permit conditions have no impact on the conclusions of the analysis, are consistent with the data submitted to the SCAQMD for analysis, and will allow the proposed equipment to operate as required by the local electrical balancing authority.

Page 41 of the Facility Permit to Operate and Page 22 of the PDOC, Condition C1.3 – The start-up restrictions are not consistent with the maximum month emissions, place undue operating restrictions on the equipment without justification, and would result in the equipment being unable to respond to dispatch orders from the local balancing authority. Since the warm and hot start-up emissions and durations are identical and are in all cases less than the emissions from a cold start, there should be no restriction on hot and warm starts other than the total monthly and annual limits on any start condition. The following revisions to Condition C1.3 are necessary:

> The operator shall limit the number of start-ups to no more than 62 in any one calendar month.
>
> The number of cold startups shall not exceed 15 in any calendar month~~, the number of warm startups shall not exceed 12 in any calendar month, and the number of hot startups shall not exceed 35 in any calendar month~~, with no more than 2 startups in any one day.
>
> The number of cold startups shall not exceed 80 in any calendar year~~, the number of warm startups shall not exceed 88 in any calendar year,~~ and the <u>total</u> number of ~~hot~~ startups shall not exceed ~~332~~<u>500</u> in any calendar year.

For the purposes of this condition, a cold startup is defined as a startup which occurs after the combustion turbine has been shut down for 48 hours or more. A cold startup shall not exceed 60 minutes. The NOx emissions from a cold startup shall not exceed 61 lbs. The CO emissions from a cold startup shall not exceed 325 lbs. The VOC emissions from a cold startup shall not exceed 36 lbs.

For the purposes of this condition, a non-cold~~warm~~ startup is defined as a startup which occurs after the combustion turbine has been shut down less than ~~10 hours or more but less than 4~~8 hours. A ~~warm~~non-cold startup shall not exceed 30 minutes. The NOx emissions from a ~~warm~~non-cold startup shall not exceed 17 lbs. The CO emissions from a ~~warm~~non-cold startup shall not exceed 137 lbs. The VOC emissions from a ~~warm~~non-cold startup shall not exceed 25 lbs.

~~For the purposes of this condition, a hot startup is defined as a startup which occurs after the steam turbine has been shut down for less than 10 hours. A hot startup shall not exceed 30 minutes. The NOx emissions from a hot startup shall not exceed 17 lbs. The CO emissions from a hot startup shall not exceed 137 lbs. The VOC emissions from a hot startup shall not exceed 25 lbs.~~

The beginning of a startup occurs at initial fire in the combustor and the end of startup occurs when the BACT levels are achieved. If during startup the process is aborted the process will count as one startup.

The operator shall maintain records to demonstrate compliance with this condition and shall make such records available to the Executive Officer upon request. The records shall be maintained for a minimum of 5 years in a manner approved by SCAQMD.

Page 50 of the Facility Permit to Operate and Pages 24 and 38 of the PDOC, Condition D29.2 – The Facility Permit to Operate requires oxides of sulfur (SOx) testing at the outlet of the selective catalytic reduction (SCR) serving this equipment (the combined-cycle and simple-cycle combustion turbines), whereas the PDOC Condition D29.2 requires SOx testing via a fuel sample. Additionally, the Facility Permit to Operate requires District Method 207.1 or U.S. Environmental Protection Agency (EPA) Method 17 for ammonia (NH_3) testing, whereas the PDOC Condition D29.2 requires District Method 207.1 and 5.3 or EPA Method 17. Please revise the Facility Permit to Operate Condition D29.2 to require SOx testing via a fuel sample and District Method 207.1 and 5.3 or EPA Method 17 for NH_3 testing.

Page 54 of the Facility Permit to Operate and Pages 57, 60, and 63 of the PDOC, Condition D29.4 – The Facility Permit to Operate requires NH_3 testing at the inlet of the SCR serving this equipment (the combined-cycle combustion turbines, simple-cycle combustion turbines, and auxiliary boiler), whereas the PDOC Condition D29.4 requires NH_3 testing at the outlet of the SCR. Please revise the Facility Permit to Operate Condition D29.4 to require NH_3 testing at the outlet of the SCR.

Page 55 of the Facility Permit to Operate and Page 50 of the PDOC, Condition D29.5 – The Facility Permit to Operate requires SOx testing at the outlet of the SCR serving this equipment (the auxiliary boiler), whereas the PDOC Condition D29.5 requires SOx testing via a fuel sample. Additionally, the Facility Permit to Operate requires District Method 207.1 or EPA Method 17 for NH_3 testing, whereas the PDOC Condition D29.5 requires District Method 207.1 and 5.3 or EPA Method 17. Please revise the Facility Permit to Operate Condition D29.5 to require SOx testing via a fuel sample and District Method 207.1 and 5.3 or EPA Method 17 for NH_3 testing.

PDOC Comments

AES also offers the following corrections to information contained within the PDOC.

Page 89, Worst Case Operating Scenario – The ambient temperature listed as 63.3 degrees Fahrenheit (°F) should be 65.3°F, consistent with data presented throughout the remainder of the PDOC.

Page 95, Startup of Combined-Cycle Turbines – The combined-cycle combustion turbine hot and warm start emissions and duration are identical. Therefore, per the comment provided on the Facility Permit to Operate, the SCAQMD should describe these as a single start type (i.e., non-cold) and consolidate emissions presented throughout this section accordingly (see Tables 17, 18, 21, and 25).

Page 132, Table 40 – The CO emissions during simple-cycle turbine commissioning should be 50.07 tons per year (tpy), based on the equation presented.

Page 134, Particulate Matter (PM) Calculations – The 30-day average emissions for particulate matter with aerodynamic diameter less than or equal to 10 microns (PM_{10}) should be 154.60 pounds per day (lb/day), consistent with the R2/R1 equation provided.

Page 140, Oil Water Separator (OWS) Calculations – The total containment area for OWS-2 should be 16,117 square feet. The resulting emissions are correct as listed.

Page 163, Last Paragraph – AES proposes the following changes to the background concentrations used throughout the analysis, as first indicated in this paragraph:

> For 1-hour federal SO_2, the background concentration should be an average of the maximum values from the 3 most recent years, not the maximum itself. Using data from the North Long Beach monitoring station (South Coastal Los Angeles County 1) for the years 2011 through 2013, this 3-year average should be 30.6 micrograms per cubic meter ($\mu g/m^3$). Note that 2014 data are not available from this station.

Page 168, Table 53 – The worst-case emission scenarios provided for 1-hour and 1-hour (federal) SO_2 should be described as follows:

> 1-hour SO_2: Four turbines in startup, shutdown, and balance of period at ~~minimum~~maximum (~~50%~~100%) load, 28 °F ambient temperature.
>
> 1-hour (federal) SO_2: Four turbines in startup, shutdown, and balance of period at ~~minimum~~maximum (~~50%~~100%) load, 65.3 °F ambient temperature.

Page 173, Table 57A – For consistency with Table 57, the 1-hour (99th percentile) background SO_2 value of 30.1 $\mu g/m^3$ should be revised to 58.2 $\mu g/m^3$, unless the background concentrations are revised as recommended above.

Page 185, Annual Offset Fee Basis, Calculation c – The Max Allowable Operating Hours Annually should be 4,640 hours per year, as listed later within this calculation.

Page 236, NOx and SO_2 Calculations – The result of the NOx calculation should be 354.11 tpy. Additionally, the SO_2 emission rate used for the simple-cycle combustion turbines should be 0.64 tpy instead of 0.83 tpy, for consistency with data presented in Table 41. Similarly, the SO_2 emission

rate used for the combined-cycle combustion turbines should be 3.72 tpy instead of 4.59 tpy, for consistency with data presented in Table 25.

Should you have any questions regarding the comments provided, please do not hesitate to call me at 562-493-7840. We appreciate your attention to these comments and look forward to a revised Permit to Operate issued by the SCAQMD.

Sincerely,

Stephen O'Kane
Manager
AES Alamitos, LLC

cc: Jeffrey Harris/ESH
Jerry Salamy/CH2M
Keith Winstead/CEC