

DOCKETED

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Subject: AES's Comments on the HBEP PDOC
Attachments: HBEP SCAQMD PDOC Comments-03-07-14.pdf

Mohsen and Andrew,

Attached are AES's comments on the HBEP PDOC. As noted during our recent meeting, we do not believe that the District needs to delay the issuance of the public noticing in order to incorporate compliance measures for the proposed New Source Performance Standard (NSPS) Subpart TTTT for two reasons. First, in its current form proposed Subpart TTTT would apply to HBEP and AES has demonstrated that it can operate in compliance with the proposed NSPS emission limits. Secondly, EPA addressed proposed Subpart TTTT in the recently issued (February 28, 2014) Pio Pico Prevention of Significant Deterioration permit by noting "Once finalized, the NSPS will be an independent requirement that will apply to any source subject to the NSPS that commences construction after the date the NSPS is proposed. Thus, this facility may ultimately be subject to, and may need to comply with, the NSPS after it is finalized, even if the emission limits in the final PSD permit are higher than the standards in the final NSPS."

Please call Mr. Stephen O'Kane or myself if you have any questions.

Thanks,

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March 7, 2014

Mr. Mohsen Nazemi, P.E.
Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178

**Subject: Huntington Beach Energy Project Permit Application (Facility ID# 115389)
Preliminary Determination of Compliance Comments**

Dear Mr. Nazemi:

AES Huntington Beach, LLC (AES) appreciates the South Coast Air Quality Management District's (SCAQMD) efforts in preparing the Huntington Beach Energy Project (HBEP) Preliminary Determination of Compliance (PDOC) and respectfully submits the following comments.¹ The comments are presented by page number, section number, Table number and/or paragraph as applicable. When revisions to Conditions are proposed, a copy of the applicable portion of the condition is provided with underline/strike-out used to identify insertions and deletions, respectively.

Section H, Page 2 to 12 – CO Oxidation Catalyst and SCR Catalyst Manufacturers

- **Comment:** The proposed oxidation catalyst manufacturer is Johnson Matthey (or equivalent) and the proposed SCR catalyst manufacturer is Haldor Topsoe (or equivalent).

Section H, Page 6 – Turbine, Steam, Common with Gas Turbine Nos. 1A and 1B, 155.6 MW Gross

- **Comment:** The megawatt rating of the Block 1 steam turbine is 148.7 megawatts gross.

Section H, Page 7 – Turbine, Steam, Common with Gas Turbine Nos. 2B and 2C, 155.6 MW Gross

- **Comment:** The megawatt rating of the Block 2 steam turbine is 148.7 megawatts gross.

¹ Applicant reserves the right to provide additional comments, if necessary, during the noticed public comment period.

Section H, Page 9 – Turbine, Steam, Common with Gas Turbine Nos. 2A and 2C, 155.6 MW Gross

- **Comment:** The megawatt rating of the Block 2 steam turbine is 148.7 megawatts gross.

Section H, Page 10 – Turbine, Steam, Common with Gas Turbine Nos. 2A and 2B, 155.6 MW Gross

- **Comment:** The megawatt rating of the Block 2 steam turbine is 148.7 megawatts gross.

Page 13 – Table 1.1 – Project Application Numbers

- **Comment:** Add the oil/water separator Application Number 549121 to Table 1.1.

Page 14 – Prevention of Significant Deterioration (PSD) Applicability

- **Comment:** Please consistently describe that HBEP is subject to PSD review for oxides of nitrogen (NO_x), carbon monoxide (CO), particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀), and greenhouse gases (GHG).

Page 14 – Construction Schedule

- **Comment:** HBEP Block 1 construction is expected to commence in the 2nd quarter of 2015 with the demolition of existing facilities and be completed by the 4th quarter of 2018.

Page 16 – Steam Turbine Rating

- **Comment:** The description of the steam turbine electrical generation of 150.6 MWs is inconsistent with the correct description in Section H of 148.7 MWs.

Page 19 – Table 2.2 Turbine Data

- **Comment:** The steam turbine output of 336.6 MWs is incorrect. The correct value is 300.7 MWs. Also, the steam turbine reference temperature should be 66 degrees Fahrenheit (°F).

Page 19 – Last Paragraph

- **Comment:** The heat recovery steam generator (HRSG) exhaust gas temperature is approximately 1,000 °F, not 1,100 °F.

Page 20 – Text Preceding Table 2.3 Oxidation Catalyst Data

- **Comment:** The VOC outlet concentration is 2.0 parts per million by volume dry (ppmvd) corrected to 15 percent oxygen, which is consistent with the District's BACT determination.

Page 20 – Table 2.3 Oxidation Catalyst Data

- **Comment:** Table 2.3 has two typographical errors. The proposed catalyst manufacturer is Johnson Matthey or equivalent and the proposed VOC outlet concentration is 2.0 ppmvd corrected to 15 percent oxygen (see comment above).

Page 21 – Table 2.4 SCR Catalyst Data

- **Comment:** Table 2.4 has three typographical errors. The proposed catalyst manufacturer is Haldor Topsoe or equivalent, the ammonia injection rate is 255.8 pounds per hour, and the operating temperature range is 400 to 700 °F.

Page 21 – Exhaust Stacks

- **Comment:** The HBEP exhaust stacks will be 18 feet in diameter and 120 feet tall.

Page 21 – Table 2.5 Stack Data

- **Comment:** The HBEP exhaust stacks will be 18 feet in diameter and 120 feet tall with an exhaust gas temperature of 376 °F.

Page 22 – Cooling System

Comment: The air-cooled condensers utilize more than two large fans to blow ambient air across finned tubes. AES suggests that the word “two” be deleted from this paragraph.

Page 23 – Table 3.1 – Operational Scenarios for SGGs

- **Comment:** The title of Table 3.1 should be changed to Table 3.1 – Operational Scenarios for HBEP. The VOC concentration for normal operations in row 4 of the table should be changed from 1.0 ppmvd to 2.0 ppmvd, which is consistent with the BACT determination. The shutdown hours per year in row 5 of the table should be changed from 62.4 to 104 hours per year.

Page 25 – Table 3.4 Highest Single Hour Emissions (1 Turbine)

- **Comment:** The NO_x, carbon monoxide (CO), and VOC values are incorrect for a cold start and shutdown hourly emission rate, respectively. The correct NO_x, CO, and VOC hourly emission rates for a cold start and shutdown are 25.5, 113.9, and 32.5 pounds per hour, respectively.

Page 25 – Table 3.5 Highest Single Hour Emissions (6 Turbines)

- **Comment:** Table 3.5 represents the single highest hourly PM₁₀ emission rate at 57 pounds per hour (9.5 pounds PM per hour x 6 turbines). The HBEP power blocks cannot fire duct burners in all three HRSGs while the turbines are operated at base load. Therefore, the highest single hour PM₁₀ emission rate is 47 pounds per hour (9.5 pounds PM per hour x 4 turbines + 4.5 pounds PM per hour x 2 turbines).

Page 28 – Table 3.13 12-Annual Emissions Non-Commissioning Year, 6 Turbines

- **Comment:** The annual emissions presented in Table 3.13 use the maximum hourly emission rates based on an ambient air temperature of 32 °F, which overestimates the annual air emissions. The annual emission rate should be based on the average annual ambient air temperature.

Page 34 – Table 4.2 – Proposed Control Levels for HBEP Turbines

- **Comment:** The table presents the duct burner fired PM₁₀ emission rate of 9.0 pounds per hour. The correct value is 9.5 pounds per hour.

Page 37 – Alternative Analysis

- **Comment:** Subsection 6.7.3 of the HBEP air permit application analyzed alternative generating technologies including geothermal, hydroelectric, wind, solar, biomass, and energy storage. These alternative generating technologies were determined to be infeasible due to either a lack of available resources (in the case of geothermal, hydroelectric, wind, biomass, and solar) or physical constraints (in the case of energy storage).

Page 38 – Rule 1304.1 – Electrical Generating Facility Fee for Use of Offset Exemption

- **Comment:** The table at the bottom of page 38 shows HBEP's gross megawatts as 1,091 and does not include the physical limitations of the HBEP transmission interconnection that results in a maximum gross of 972 megawatts of new generation.

Page 41 – Regulation XVII – Prevention of Significant Deterioration

- **Comment:** Please verify that the PDOC addresses the requirements of Regulation 17 for all pollutants subject to PSD review.

Page 42 – Visibility Analysis

- **Comment:** The Class I visibility discussion does not include reference to either the United States Forest Service's (USFS) August 23, 2013 letter or the United States National Park Service June 5, 2013 electronic mail confirming that HBEP will not adversely affect Air Quality Related Values of USFS or National Park Service Class I areas.

Page 43 – PSD BACT Analysis

- **Comment:** While AES agrees with the conclusions of the SCAQMD's GHG BACT determination, in order to satisfy the PSD process described on pages 40 and 41 of the PDOC, the SCAQMD should incorporate the BACT determination for criteria HBEP pollutants subject to PSD review (NO_x, CO, GHG, and PM₁₀) by reference to the most recent SCAQMD analysis and permit .

Page 49 – Thermal Efficiency, 1st Complete Paragraph

- **Comment:** Update this paragraph to include United States Environmental Protection Agency's (EPA) rescinding of the March 27, 2012 proposed New Source Performance Standard (NSPS) and issuance of a new proposed GHG NSPS regulation on January 8, 2014 and that AES will be required to comply with this NSPS when the rule is finalized..

Page 49 – Thermal Efficiency, 2nd Complete Paragraph

- **Comment:** This paragraph contains 3 typographical errors. References to the CCGS project should be removed. HBEP's minimum load factor is 70 percent, not 60 percent. Appendix F, page 115 of the PDOC indicates HBEP's GHG emission rate is 1,053.7 pounds of carbon dioxide (CO₂) per megawatt-hour at 100 percent load, not 876.89 pounds of CO₂ per megawatt-hour.

Page 55 – NESHAPS for Stationary Gas Turbines – 40CFR Part 63 Subpart YYYY

- **Comment:** This section concludes that HBEP is a major source of hazardous air pollutants (HAPs) due to the project's formaldehyde emissions exceeding 10 tons per year. AES contends that HBEP is not subject to Subpart YYYY as it does not expect to emit more than 10 tons per year of any individual HAP or more than 25 tons per year of combined HAPs. In the SCAQMD's analysis, it uses a formaldehyde emission factor of 3.6x10⁻⁴ pounds per million British Thermal Units (lb/MMBtu), which is overly conservative as it assumes that the oxidation catalyst system incorporated in HBEP's HRSGs will reduce the formaldehyde emissions by only 50 percent (from 7.1 x10⁻⁴ lb/MMBtu). Whereas, the referenced document used to identify the formaldehyde emission factor (EPA AP-42, Section 3.1) notes "*The performance of these oxidation catalyst systems on combustion turbines results in 90-plus percent control of CO and about 85 to 90 percent control of formaldehyde. Similar emission reductions are expected on other HAP pollutants.*"² Therefore, AES requests the SCAQMD to revise this section to indicate that Subpart YYYY is not applicable to HBEP. As a note of clarification, Subpart YYYY does not apply to the HRSG duct burners (Title 40, CFR, 63.6092) and natural gas fired combustion turbines are only required to comply with the notification requirements of Section 63.6145 (Title 40, CFR, 63.6095(d)).

Page 58 – Recommendations

- **Comment:** AES suggests revising the conclusion to reflect the need for the California Energy Commission to issue its Final Decision prior to the SCAQMD's issuance of the Permit to Construct.

Page 58 – Condition F2.1

- **Comment:** AES suggests including language in the 2nd paragraph of this condition to allow the use of source test-based emission factors. Also, the duct fired PM_{2.5} emission factor should be 5.22 pounds per million cubic feet (lbs/mmcf), which is consistent with Condition A63.1. The proposed, revised language is as follows:

For purposes of demonstrating compliance with the 100 tons per year limit the operator shall sum the PM_{2.5} emissions for each of the major sources at this facility by calculating a 12 month rolling average using the calendar monthly fuel use data and following emission factors for each turbine PM_{2.5} = 3.36 lbs/mmcf with no duct firing

² <http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s01.pdf>, page 3.1-7.

and PM2.5 = 5.522 lbs/mmcf with duct firing or SCAQMD-approved source test-based emission factors.

Page 59 – Condition F52.1

- **Comment:** The 3rd paragraph should be revised to provide some additional flexibility regarding the timing of the notarized statement. The proposed, revised language is as follows:

AES shall provide SCAQMD by December 31, 2018 or within 30 calendar days after actual shutdown with a notarized statement that HB Beach Boilers 1 and 2 and RB Boilers 6 and 8 are permanently shutdown and that any re start...

Page 60 – Condition A63.1

- **Comment:** The VOC emission factors are incorrect and should be 2.61 lbs/mmcf for duct burner firing and 2.56 lbs/mmcf for no duct burner firing. Additionally, the condition should be revised to allow the use of source test-based emission factors. The proposed, revised language is as follows:

The operator shall calculate compliance with the emission limit(s) by using fuel use data and the following emission factors: VOC: 1.472.61 lbs/mmcf with DB firing and 2.56 lbs/mmcf with no DB firing, PM10: 3.36 lbs/mmcf with no DB firing and 5.22 lbs/mmcf with DB firing or SCAQMD-approved source test-based emission factors.

Page 61 – Condition A99.1

- **Comment:** The NO_x emission factor of 327.4 lbs/mmcf appears to be incorrect. Based on Appendix B, Table B.3, the correct commissioning NO_x emission factor is 12.75 lbs/mmcf.

Page 64 – Condition D29.1, 2nd Paragraph

Comment: It is not possible to measure an individual turbine's net generating output unless only one turbine is operated. AES suggests to measuring and reporting the power blocks net generating output. The proposed, revised language is as follows:

The test shall be conducted to determine the oxygen levels in the exhaust. In addition, the tests shall measure the fuel flow rate (CFH), the flue gas flow rate, and the turbine generating output in ~~MW net and~~ MW gross and the power block generating output in MW net.

Page 64 – Condition D29.1, 4th Paragraph

- **Comment:** The HBEP turbines are proposed to operate between 70 and 100 percent load, such that requiring the turbines be tested at a 50 percent load rate is inappropriate. The proposed, revised language is as follows:

The test shall be conducted when this equipment is operating at loads of 100, 75, and 50 percent without duct firing, and 100 percent with duct firing, or at load rates specified in the approved protocol.

Page 66 – Condition D29.4

- **Comment:** AES does not believe HBEP is subject to Title 40, CFR, Part 63, Subpart YYYY and this condition is unnecessary. However, if HBEP were subject to Subpart YYYY, then only the initial notification requirements are applicable per Title 40, CFR, Section 63.6095(d).

Page 68 – Condition E193.4

- **Comment:** The GHG emission factor presented in this Condition is for all combustion-related GHG compounds (CO₂, N₂O, and CH₄), whereas both the California Environmental Performance Standard and the proposed EPA GHG NSPS emission limits (Title 40, CFR, 60.5515) are in the form of pounds of CO₂ per megawatt-hour. AES suggests the following revised changes to Condition E193.4:

E193.4

The operator shall upon completion of the construction, operate and maintain this equipment according to the following specifications:

The operator shall record the total net power generated in a calendar month in megawatt-hours.

The operator shall calculate and record greenhouse gas emissions for each calendar month using the following formula:

$$\text{GHG} = 60.139 * \text{FF}$$

$$\text{CO}_2 = 60.08 * \text{FF}$$

Where, GHG is the greenhouse gas emissions in tons of CO₂e and FF is the monthly fuel usage in millions standard cubic feet.

The operator shall calculate and record the GHG emissions in pounds per net megawatt-hours on the 12-month rolling average. The GHG emissions from this equipment shall not exceed 3,907,239 tons per year per turbine on a 12-month rolling average basis. The calendar annual average ~~GHG~~CO₂ emissions shall not exceed 1,053.7 pounds per net megawatt-hours (1,138.0 lbs of CO₂ per net megawatt hours inclusive of equipment degradation) or the proposed GHG NSPS issued on January 8, 2014.

The operator shall maintain records in a manner approved by the SCAQMD to demonstrate compliance with this condition. The records shall be made available to SCAQMD upon request.

Page 71 – Condition A195.9

- **Comment:** The ammonia (NH₃) calculation methodology differs from that contained in recently-issued air permits and Preliminary Determination of Compliances (PDOCs). AES requests the use of the following calculation, which is consistent with the recently-issued El Segundo PDOC and Scattergood Generating Station PDOC.

The 5 ppmv NH₃ emission limit is averaged over 60 minutes at 15% O₂, dry basis. The operator shall calculate and continuously record the NH₃ slip concentration using the following:

$$\text{NH}_3 \text{ (ppmv)} = [a-b*(c/*1.2)/E+061,000,000]*1,000,000E+06/b \text{ or}$$

$$\text{NH}_3 \text{ (ppmvd)} = [a-b*(c*1.2)/1,000,000]*1,000,000/b$$

Page 72 – Condition D12.7

- **Comment:** As noted in our comments on Table 2.4, the SCR has an operating range of 400 to 700 °F. Please change the SCR/CO catalyst range to 400 to 700 °F, such that the proposed, revised language is as follows:

The exhaust temperature at the inlet of the SCR/CO Catalyst shall be maintained between ~~4500-65700~~ 4500-65700 deg F except during start up and shutdowns.

Page 90 – Table A.23 Monthly Commissioning Emissions

- **Comment:** The commissioning emissions presented in Table A.23 are not consistent with the correct HBEP commissioning emissions shown in Table B.1. Please revise Table A.23 to be consistent with Table B.1.

Page 93 – Table B.3 Total Commissioning Emissions (Per Block)

- **Comment:** The SO₂ emission factor is based on a fuel sulfur content of 0.75 grains per 100 standard cubic feet of natural gas (gr/100 SCF) when it should be based on 0.25 gr/100 scf (0.47 lbs/mmcf).

Page 105 – Table E.2 Modeled Emission Rates – Start Up/Shutdowns and Normal Operation

- **Comment:** The correct SO_x 3-hour emission rate is 2.45 pounds per hour.

Page 106 – Table E.3 Model Results – Start Up/Shutdown and Normal Operation

- **Comment:** Please verify that the modeling results and background values presented in Appendix E Tables E.3, E.6, and E.7.

Page 125 – Table L.7

- **Comment:** Please replace “PM_{2.5}” with “PM₁₀” in the first column. The project area is non-attainment for PM_{2.5} and therefore cannot undergo PSD review. However, the project area is in attainment of PM₁₀ and is subject to PSD review for this pollutant.

Page 131 – Appendix Q Modeling Memorandum

- **Comment:** Please verify the modeling results in this memorandum.

Mr. Mohsen Nazemi, P.E.

Page 9

March 7, 2014

If you require further information, please do not hesitate to contact me at 562-493-7840.

Sincerely,

A handwritten signature in black ink, appearing to read "S O'Kane". The signature is fluid and cursive, with the first name "Stephen" and last name "O'Kane" clearly legible.

Stephen O'Kane

Manager

AES Huntington Beach, LLC

Attachments

cc: Chris Perri/SCAQMD
Robert Mason/CH2M HILL
Jennifer Didlo/AES
Melissa Foster/Stoel Rives
Jerry Salamy/CH2M HILL
Felicia Miller/CEC