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Addendum to Final Determination of Compliance (FDOC) for
El Segundo Power Facility Modification (ESPFM) Project dated August 26, 2014

Appendix H

CEC Comment	District Response
<p>The facility owner originally proposed a two-tier CO BACT limit as follows: 50 ppmv CO at boiler loads between 20 percent and 100 percent, and 100 ppmv CO at boiler loads below 20 percent. The facility owner originally proposed a 10 ppmvd NH3 slip emission limit for the auxiliary boiler based on a 90 percent reduction of NOx emissions across the SCR catalyst and a minimum inlet catalyst temperature of 500 degrees F. The District staff confirms that the applicant and the District have agreed that the correct NH3 slip BACT emission limit should be 5 ppmvd at 3 percent O2 instead of 10 ppmvd.</p>	<p>The District staff has confirmed with the applicant that the CO emission limit for the auxiliary boiler should be 100 ppmvd at 3 percent O2 at boiler loads below 20 percent and 50 ppmvd for loads between 20 and 100 percent. As such condition D29.13 has been modified to require testing for CO at maximum, average, and minimum loads. Minimum load shall be defined as between 10 and 20% to show compliance with the 100 ppm CO limit. The District staff confirms that the applicant and the District have agreed that the correct NH3 slip BACT emission limit should be 5 ppmvd at 3 percent O2 instead of 10 ppmvd.</p>
<p>On page 70 of the FDOC, condition D12.20 limits the NH3 injection rate of the auxiliary boiler to 5 lb/hr, and Table D-5 on page 110 shows the NH3 emission rate to also be 5 lb/hr. Energy Commission staff believes the ammonia emission rate should be much less than 5 lb/hr because most of the injected NH3 would have reacted with NOx emissions. The District staff agreed to check the ammonia emission rate of the auxiliary boiler.</p>	<p>The District contacted the applicant and has verified that the correct ammonia slip rate is 0.081 lb/hr based on an ammonia slip rate of 5 ppmvd. Table D-5 of the FDOC has been revised to show the correct NH3 slip rate.</p>
<p>On page 117, the CO2e emissions for the Trent 60 simple cycle gas turbines were estimated to be 967.10 lb/net MWh, based on CO2e emission of 424,884 tons/yr. However, since the GWP values in Part 98 of the Federal Register were revised in January 2014 for CO2, CH4, and N2O, the CO2e emissions were revised to 425,166 tons/yr, and hence, 967.74 lb/net MWh.</p>	<p>The District has revised the calculations based on the GWP emission factors and has verified the GHG level of 968 lb/net MWh and made the necessary revisions to Permit Condition E193.6. (See p. 116-123 of FDOC revised 6-23-2015)</p>
<p>Condition E448.3 on page 80 of the FDOC limits the total maximum amount of electricity produced from the new turbines to 447 MWh</p>	<p>Condition E448.3 will be revised to correct the typographical error as well as address applicant comment. (See p. 83-84 of FDOC revised 6-23-2015)</p>

<p>For the GE 7FA gas turbine, the applicant provided emissions during commissioning which were based on a sulfur content of 0.75 gr/100 scf. CEC staff believes the revised SOx emissions for the Trent 60 simple cycle gas turbines are based on 0.25 gr/100 scf. Staff also believes that the commissioning of the GE7FA gas turbine on page 87 of the FDOC were based on a sulfur content of 0.75 gr/100 scf. CEC staff requests the SOx emissions during commissioning of the GE7FA gas turbine be revised based on a sulfur content of 0.25 gr/100 scf.</p>	<p>District staff has revised the SOx emissions during commissioning for the GE7FA and based the revised emissions on 0.25 gr/100 scf. (See p. 87 and 96 of FDOC revised 6-23-2015)</p>
<p>Condition D29.10 on page 71 of the FDOC requires a source test protocol to be submitted to the District engineer within a maximum timeframe of no later than 90 days before the proposed test date. CEC staff requests that the 90 days should be revised to read 60 days to be consistent with other source test conditions in the FDOC.</p>	<p>District staff has revised Condition D29.10 to require that a source test protocol be submitted to the District engineer no later than 60 days before the proposed test date. (See p. 75-76 of revised 6-23-2015)</p>
<p>On page 57 of the FDOC, the required RTCs for the first year of operation are shown to be 242,084 lbs. On page 122, the total RTCs required for the first year of operation is calculated to be 242,139 lbs. CEC staff believes the correct total RTCs for the first year of operation should be 242,139 lbs.</p>	<p>District staff has reviewed the RTC calculations and has determined that the correct amount of RTCs for the first year of operation is 242,139 lbs. (See p. 57 of revised 6-23-2015)</p>
<p>Applicant Comments</p>	<p>District Response</p>
<p>Remove CO2 emission limits (1,000 lb CO2/net MWh) from the permit until such time as a final GHG rule has been promulgated</p>	<p>This limit is in effect based on the January 8, 2014 date of publication of the proposed GHG standards of performance. This limit is applicable to the GE 7FA Combined Cycle Gas Turbine.</p>
<p>For the auxiliary boiler, the expected CO emission level is 100 ppm for low boiler operating loads between 10 to just below 20 %. We request exemptions from the CO and NOx ppm levels during start-up, shutdowns and during commissioning.</p>	<p>The District has included new permit condition A195.21 to state that the emission limits do not apply during start-up, shutdown, and commissioning. The manufacturer guarantees CO compliance with 100 ppmv between boiler loads of 10 - 20% and 50 ppmv at boiler loads greater than 20%.</p>

<p>Revise draft condition F2.1 to include the emissions for existing Units 4, 5, and 7 and include the corresponding PM2.5 emission factors for these units. Correct PM2.5 emission factors for Unit 9 and the PM2.5 factor for the auxiliary boiler to 4.51 lb/mmscf and 6.80 lb/mmscf, respectively</p>	<p>The District has reviewed this request and revised Permit Condition F2.1 accordingly.</p>
<p>Remove CO CEMS requirement for the auxiliary boiler due to the small size (36 MMBTU/hr) of the unit.</p>	<p>The District has reviewed and concurs with this request. Therefore, the requirement for installation of a CO CEMS will be removed and Condition A63.5 has been revised to include tracking emissions by using monthly fuel use and emission factors.</p>
<p>Revise Conditions A195.12, A195.13, and A195.14 to show that the start-up and shutdown duration limits and limits on the annual number of start-ups do not include the commissioning period. We request that aborted start-ups/re-starts be counted as a single start-up event.</p>	<p>The District has reviewed this request and has incorporated language to state that start-up and shutdown duration limits and limits on the annual number of start-ups do not include the commissioning period. Language has also been incorporated to state that aborted start-up and re-starts are counted as a single start-up event if the event duration is 30 operating minutes or less for a fast start-up and 60 operating minutes or less for a traditional start-up.</p>
<p>Revise Conditions A195.15, A195.16, and A195.17 to show that the start-up and shutdown duration limits and limits on the annual number of start-ups do not include the commissioning period. We request that aborted start-ups/re-starts be counted as a single start-up event.</p>	<p>The District has reviewed this request and has incorporated language to state that start-up and shutdown duration limits and limits on the annual number of start-ups do not include the commissioning period. Language has also been incorporated to state that aborted start-up and re-starts are counted as a single start-up event if the event duration is 30 operating minutes or less.</p>
<p>Modify condition C1.7 to show clearly that Unit 9 is allowed to undergo 2 start-ups per day with 1 start-up being a traditional start-up.</p>	<p>The District has reviewed this request and revised condition C1.7 to state that Unit 9 is allowed to undergo 2 start-ups per day with 1 start-up being a traditional start-up.</p>
<p>Modify condition C1.8 to show clearly that the limit on the number of start-ups does not apply during the commissioning period. In addition, add language to state that aborted start-ups/restarts shall be counted as a single start-up event.</p>	<p>The District has reviewed this request and has revised condition C1.8 to state that the limit on the number of start-ups does not apply during the commissioning period and that aborted start-ups/restarts shall be counted as a single start-up event if the event duration is 30 operating minutes or</p>

	less.
Revise conditions D12.15, D12.18, and D12.21 to show that the catalyst operating temperature requirements do not apply during the commissioning period.	The District has reviewed this request and has modified Conditions D12.15, D12.18, and D12.21 to show that the catalyst operating temperature requirements do not apply during the commissioning period.
Revise the Test Method for PM10 to “Approved Test Method” rather than the test methods stated in Condition 29.13	The District has reviewed this request and has incorporated the requested change into the permit
Revise the GHG emission factor in permit condition E193.6 (60.179 tons CO2e/mmscf) to match the revised factor shown in the FDOC evaluation	The emission factor has been corrected in Condition E193.6 to reflect the revised factor of 60.179 tons CO2e/mmscf.
Revise Permit Condition E193.8 to reflect the updated GHG emission factor of 60.179 tons CO2e/mmscf and correct the GHG emission limit to reflect the updated value of 141,093 tons/year, and 1,544 lb CO2e/net MWh	Condition E193.8 has been revised to reflect the updated emission factors and limits.
Revise Permit Condition E448.2 to state the following: “...This equipment shall not supply either one third or more of its potential electrical output or <u>and</u> more than 219,000 MWh net electrical output to a utility distribution system on a 3 year rolling average basis....”	The District has reviewed the requirements of the GHG NSPS published on January 8, 2014 and has modified Permit Condition E448.2 accordingly.
Revise Permit Condition E448.3 to state the following: “...The total maximum amount of electricity produced on a gross basis from <u>gas turbine devices D67 and D68 and the corresponding steam turbines</u> , gas turbine device D90 and the corresponding steam turbine, device D100 and Device D106 shall not exceed 447 <u>1,020 MWh</u> .” The gross electrical output shall be measured at the <u>two generators serving each of the two Siemens combined cycle gas turbines</u> , the two generators serving GE 7FA combined cycle gas turbine, and the two generators serving the two Trent 60 simple cycle gas turbines....”	The District has reviewed this request and has incorporated a facility wide electrical output limit of 1,020 MW on the Facility Permit. As such, Condition E448.3 has been modified to reflect total gross output limit of 1,020 MW.
Revise Permit Condition I297.6 to state the updated NOx RTC requirement for the Auxiliary Boiler to 564 lbs.	The District has reviewed this request and will revise Permit Condition I297.6 to read 564 lbs of NOx.