

DOCKETED

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Air Pollution Control Board

Greg Cox	District 1
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May 29, 2014

via certified US Mail

GEORGE PIANTKA Application Nos. APCD2014-APP-003480–003487
DIRECTOR, ENVIRONMENTAL BUSINESS
CARLSBAD ENERGY CENTER, LLC
4600 CARLSBAD BLVD.
CARLSBAD, CA 92008

APPLICATION STATUS

Your applications for an Authorities to Construct for an approximately 655 megawatt electrical power plant, Carlsbad Energy Center, LLC, consisting of six new natural-gas-fueled simple cycle General Electric LMS 100 combustion turbine engines, one 327 horsepower emergency diesel-fueled fire pump engine, one 779 horsepower diesel-fueled emergency electrical generator, and associated emission control and electrical generating and transmission equipment that is proposed to be located at the Encina Power Station (EPS) facility at 4600 Carlsbad Boulevard, Carlsbad, California, were received on May 9, 2014, and are assigned Application Nos. APCD2014-APP-003480 and -003481 for the emergency generator engine and fire pump engine, respectively, and Application Nos. APCD2014-APP-003482 through APCD2014-APP-003487 for the six combustion turbines. This project replaces an existing electrical power plant with an electrical output of approximately 1000 MW consisting of five natural-gas fueled boilers and one peaking combustion turbine at the same location. This project also replaces the previously authorized, but not constructed, power plant project with an electrical output of approximately 538 MW consisting of two new combined cycle combustion turbines and one new 246 HP diesel-fueled emergency fire pump and associated emission control, steam generating, and electrical generating equipment at the same location (Application Nos. APCD2007-985745, -985746 and -985748), which received certification from the California Energy Commission (Application for Certification No. 07-AFC-06C). These most recent applications for the six combustion turbines and other equipment are considered an amendment of the previously certified project by the California Energy Commission but are being considered a new project by the District.

Because this project is under the jurisdiction of the California Energy Commission, it will be processed under District Rule 20.5. Pursuant to this rule the District issues a Preliminary Determination of Compliance (PDOC) and Final Determination of Compliance (FDOC) to the California Energy Commission. The FDOC attains all the rights and privileges of a District authority to construct only upon California Energy Commission approval of the project in accordance with Rule 20.5.

After initial review of the information submitted with the application, the District has determined that the application is incomplete pursuant to Rule 18 Section (a) since there are elements within the application which need correction, clarification, amplification, or additional information in order to process the application. The required information is identified in Section A below (unless otherwise noted, references refer to the documentation accompanying the application submittal) and will require a written response from the applicant to be submitted to the District no later than June 28, 2014. The information identified in Section A is necessary for application completeness since major components of the District's evaluation of the application cannot proceed until this information is submitted. If more time is needed to prepare a complete response, please contact the District.

Pursuant to Rule 23 the District has also determined that there are additional elements within the application which may need correction, clarification, amplification, or additional information in order to efficiently process the application and/or issue a FDOC, if warranted. The information required is identified in Sections B and C below and will require a written response from the applicant to be submitted to the District no later than the dates specified in those sections. If more time is needed to prepare a complete response for the items identified in these sections, please contact the District.

Please note that the information in Sections B and C is not required for application completeness. However, the information in Section B is needed to process the application as efficiently as possible. In addition, please be advised that to evaluate the application the District may use suitably conservative assumptions or other information in place of elements of the requested information in Section B if the requested elements are not available or are not provided in a timely manner. Based on the preliminary review of the application submittal, the information in Section C is needed before the District can complete its evaluation of the application and issue a FDOC, if warranted.

Based on the initial review of the information submitted with the application, it does not appear that this project triggers District Prevention of Significant Deterioration (PSD) requirements based on criteria pollutant emissions. However, as the District currently understands the recently revised federal PSD program, the facility could trigger federal PSD based on the potential to emit greenhouse gases (GHGs). In the event this occurs, and the District becomes the delegated or primary permitting authority implementing the federal PSD program (the District currently has no authority to implement federal PSD), additional information will likely be required to address federal PSD before the project can begin construction. One likely element of this information would be a detailed analysis of the feasibility of increasing the project thermal efficiency by using combined cycle rather than simple cycle combustion turbines or a combination of combined cycle and simple cycle combustion turbines to address best available control

technology (BACT) for GHGs. Several other elements including a revised and/or expanded Air Quality Impact Analysis (AQIA) to address federal PSD requirements would also potentially be needed. You should also be aware that on May 20, 2014, EPA released a final guidance document regarding PM_{2.5} permit modeling to show compliance with the 24-hour national ambient air quality standard for PM_{2.5}. The District will consider this guidance in evaluating the application, which may result in additional air quality modeling for the AQIA.

A. INFORMATION REQUIRED FOR A COMPLETE APPLICATION

Please provide the following information no later than June 28, 2014:

1. For Table 5.1B2, turbine operating parameters for 50% load and at sync-idle load (a fuel heat input rate of approximately 129 MMBtu, higher heating value) such as those already provided for 100% and 25% load.
2. A detailed description of the reverse osmosis and polishing demineralization processes, including the types of equipment to be used and key operating parameters necessary to determine their performance, and the design basis for the removal efficiency of total dissolved solids and arsenic, cadmium, hexavalent chromium, copper, manganese, mercury, selenium, nickel, lead, sulfates, and fluorides from the input reclaimed and sea water streams. The analysis must include the expected concentrations of total dissolved solids and arsenic, cadmium, hexavalent chromium, copper, manganese, mercury, selenium, nickel, lead, sulfates, and fluorides for the inlet reclaimed and sea water and supporting documentation for these inlet concentrations; the expected concentrations of the inlet species in the reverse osmosis product water; the expected concentrations of the inlet species in the polishing demineralization product water; any regulatory limits on the inlet concentrations in the inlet water supply; and any vendor or other specification for the concentrations of contaminants in the combustion turbine injection water.
3. The detailed supporting calculations for the baseline emissions in Tables 5.1B-7-1 through 5.1B-7-7 for the EPS Unit Nos. 1-5 and the peaking combustion turbine, including the minute-by-minute continuous emission monitoring system (CEMS) data for operating time, NO_x emissions, and fuel flow data for each unit, as applicable, in Excel spreadsheet or other electronic spreadsheet format acceptable by the District.
4. Documentation such as the vendor guarantees, source tests, or any other information supporting the proposed 3.5 pound per hour particulate matter emission level proposed as BACT for the gas turbine engines including, but not limited to, any limitations on achieving such an emission level such as air inlet filter cleaning requirements and water quality for the combustion turbine water injection.
5. Minimum operating temperature for ammonia injection for the selective catalytic reduction (SCR) catalyst.
6. The maximum continuous and maximum intermittent operating temperature that the SCR catalyst can sustain without incurring significant damage to the catalyst.

7. The following additional modeling scenarios to ensure that the potential worst-case emission air quality impacts have been identified:
 - a. For PM_{10} and $PM_{2.5}$, 24-hour impacts for operation at 50% load and at sync-idle load;
 - b. For NO_2 and CO, 1-hour impacts for operation at sync-idle load; and
 - c. Maximum acute toxic impacts, from shoreline fumigation.
8. The following additional data for the proposed fire-pump engine and emergency engine:
 - a. Proposed model year and EPA family for each proposed engine with certified emission rates for each family;
 - b. Information, including any relevant local, state, or federal laws, ordinances and regulations or other operational limitations, that support for the assumption of 50% load during engine testing along with use of 100% load emission factors for calculating potential to emit;
 - c. Breakdown of the 200 operating hours per year per engine based on whether the operation is defined as emergency or non-emergency use under each applicable rule including District rules 69.4 and 69.4.1, the ATCM for Stationary Diesel Compression Ignition Engines (17 CCR 93115), and NSPS subpart IIII, and whether the required amount of non-emergency operation will classify either engine as non-emergency under each respective rule;
 - d. Rule analyses for the State Air Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (17 CCR 93115); and
 - e. If the potential to emit for NO_x , VOC, SO_x , or PM_{10} during non-emergency operation, including maintenance and testing exceeds 10 lb/day for either engine, a BACT analysis must be submitted for that engine including analysis of alternative technologies such as natural gas fired engines.
9. Comparison of thermal efficiencies for similar available simple cycle combustion turbine engines to justify the claim that the proposed simple cycle combustion turbines have the highest thermal efficiency of all available turbines. The comparison should include both maximum thermal efficiency, and thermal efficiency at expected typical operating conditions.

B. INFORMATION REQUIRED TO EFFICIENTLY EVALUATE THE APPLICATION

Please provide the following information no later than July 28, 2014:

1. For the NO_x best available control technology (BACT) analysis, information supporting the statement in Section 5.3.2.1 on page 5.1C4 that the proposed four startups per day would significantly shorten the lifetime of any fast-starting combined cycle combustion

turbine. The District notes that, although four startups per day are proposed as a maximum, the average number of startups per day would be expected to be significantly less as 400 startups per year are being proposed.

2. For the NO_x best available control technology (BACT) analysis, a quantitative analysis, with supporting documentation that compares the NO_x emission rates, NO_x emission reduction cost effectiveness, and feasibility of the proposed project to the following alternative equipment options capable of delivering comparable peaking electrical power: one or more fast-starting combined cycle combustion turbines, such as the F-class turbines already authorized for this location, for example; a combination of one or more large fast-starting combined cycle combustion turbines and one or more simple cycle combustion turbines, such as the two F-class turbines already authorized for this location and two LMS 100 turbines, for example; and six LMS 100 turbines operating in combined cycle mode. The analysis must consider the proposed potential operating scenario of up to four startups per day, 400 startups per year, and 2700 hours of operation per year. In addition, the analysis should identify any other environmental or energy impacts of such alternative equipment that should be considered by the District.
3. Information on any other operating periods in addition to startups and shutdowns such as periodic testing or maintenance requirements (including any FERC/WECC testing and certification, equipment tuning operations, etc.) that may necessitate operating the turbine outside of typical operating ranges for limited durations and therefore make meeting steady state BACT emission limits infeasible during these periods.
4. Any available source test data, continuous emission monitoring data, or vendor supplied information to support the exhaust stack nitrogen dioxide (NO₂) to NO_x ratio used in the AQIA. The information should support the NO₂ to NO_x ratio used for steady state operations and transient operations such as startups and shutdowns; and the various commissioning operations.
5. A detailed drawing(s) of the stack showing proposed location of the continuous emission measurement system (CEMS) probe(s) and sample ports for source testing in the stack. The drawing(s) should be sufficiently detailed to indicate any potential flow disturbances in the stack resulting from turning, expanding, or contracting of the exhaust flow.
6. The preliminary oxidation catalyst volume and space velocity during normal operations at 100% load and 25% load and the expected control efficiency versus catalyst temperature for CO, methane, ethane, propane, formaldehyde, and benzene or toluene at those space velocities both when new and after 20,000 hours of operation (or at the recommended catalyst replacement age, if sooner).
7. While the modeling files (xxxxx.ADI and xxxxx.ADO files) are in the submittal it would provide a much simpler start point for the District review and shorten the review time if the software Project Backup and Save to .ZIP features are used and all the AQIA associated project files for each modeling run are submitted.

C. INFORMATION REQUIRED BEFORE FDOC ISSUANCE

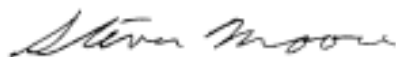
The following information must be provided before the District can issue a FDOC.

1. Verification that you control the emission offsets proposed for the project.
2. A certification, signed by a responsible official, that all major sources operated by the applicant in the state are in compliance with all applicable emissions limitations and standards under the federal Clean Air Act.
3. Submittal of a complete Acid Rain permit application.

You should be aware that changes in emission estimates or other aspects of the project as a result of the information requested above, future information provided by the applicant or other parties, or as a result of the District's evaluation may require revision of the Air Quality Impact Analysis, Health Risk Assessment, and the regulatory analysis associated with this application.

Please be advised that, as evaluation of the application proceeds, pursuant to District Rules 14, 17, and 23, additional information may be requested in the future that may be necessary to complete the evaluation and issue a Final Determination of Compliance, if warranted. If you have any questions concerning the above, please contact me at (858) 586-2750.

This is not a Permit to Operate.



Steven Moore
Senior Air Pollution Control Engineer