

CALIFORNIA ENERGY COMMISSION

1515 NINTH STREET
SACRAMENTO, CA 95832-0151

May 29, 2007

Mr. Jack P. Broadbent
Executive Officer/Air Pollution Control Officer
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Mr. Broadbent,

**AMENDED PRELIMINARY DETERMINATION OF COMPLIANCE FOR THE
RUSSELL CITY ENERGY CENTER, APPLICATION 15487**

Thank you for the opportunity to comment on the Amended Preliminary Determination of Compliance (PDOC) for the proposed Russell City Energy Center (RCEC), a 600 MW combined cycle project located in the city of Hayward. In the Amended PDOC the District finds that, subject to specified permit conditions, the proposed project will comply with all applicable federal, state and Bay Area Air Quality Management District (District) rules and regulations.

In considering this project, we believe there may be better and more direct ways to reduce or avoid the cumulative impacts from ozone precursor emissions than those proposed by the project owner. We believe that there is current technology that the District should consider requiring as Best Available Control Technology (BACT) that will significantly limit the ozone precursor emissions that result from start-up and load following transitions. We believe that impact avoidance (i.e., preventing emissions) is generally a better approach than impact mitigation of air emissions through the provision of offsets when complying with the requirements of the California Environmental Quality Act.

OFFSETS

The planned operating profile of the project, frequent start-up and shutdown cycles, is creating a significant disparity between the daily emissions and the average daily offsets. The project owner is requesting that no District or Energy Commission conditions be attached to the project that would restrict the number of start-up and shutdown cycles or the annual hours of operation. They would, instead, accept a condition that would limit the facility's annual emissions to 134 tons per year (TPY) of oxides of nitrogen (NOx) and 28.5 TPY of precursor organic compounds (POC).

The Amended PDOC, per the District New Source Review (NSR) regulations, identified That RCEC will surrender emission reduction credits (ERC) in the amounts of 103 TPY of NOx and 80 TPY of POC to offset new emissions of 134 TPY of NOx and 28.5 TPY of POC. On a daily basis, including days that experience ozone violations, staff estimates that the project could emit up to 2,213 lbs of NOx, while the proposed

emission reduction credits provided would amount to only 844 lbs per day. This offset amount mitigates approximately 38 percent (844 lbs/2,213 lbs) of the project's potential emissions for NO_x on any given day. Thus on those days when violations of the ozone air quality standards occur, the project's emissions would contribute to violations of the standard.

BACT

According to the Amended PDOC, each unit of the RCEC must be equipped with BACT for NO_x, carbon monoxide (CO), POC, particulate matter less than 10 microns (PM₁₀), and oxides of sulfur (SO_x). The Amended PDOC states that BACT for each unit is the use of selective catalytic reduction (SCR) and CO oxidation catalyst systems to control NO_x, POC and CO emissions, and the use of natural gas as BACT for PM₁₀ and SO_x.

The SCR system will maintain a normal operation NO_x emissions limit of 2.0 parts per million (ppm) averaged over a one-hour period. The District determined that this meets District guidelines for BACT. Missing from this determination is consideration of the facility's potential high daily NO_x emissions from multiple start-up and shutdown cycles. Energy Commission staff estimates that the facility can potentially emit 2,213 pounds per day of NO_x. The hourly emissions during start-up and shutdown events are much greater than during normal operation since the SCR and ammonia injection system are not at optimal conditions. The resulting daily emissions could have a significant effect on ozone and air quality in the Bay Area air basin because the proposed NO_x emission reduction credits are approximately equivalent to 844 pounds per day, well below the potential emissions of 2,213 pounds per day of NO_x.

Energy Commission staff recommends that the district consider requiring, as part of their BACT analysis, hardware and software modifications to the project that can shorten start-up and shutdown events and optimize emission control systems. There is evidence that start-up and shutdown emissions from the facility can be reduced significantly with design changes to the heat recovery steam generator (HRSG) units that can include the use of the once-through HRSG (Benson Boiler). The start-up time for each turbine/HRSG unit could be reduced from the proposed 6 hours to approximately one hour, resulting in a significant reduction in start-up emissions. If the project is built with the aforementioned Fast-Start technology, the project start-up NO_x emissions are expected to be reduced from the proposed 480 lbs to 22 lbs for each cold start-up event, and from 240 lbs to 28 lbs for hot or warm start-up events. This represents 95 and 88 percent reductions in NO_x emissions per cold and hot or warm start-up events, respectively. In addition to reducing the facility's NO_x emission liabilities, the use of Fast-Start technology at the RCEC project would result in cost savings from less fossil fuel use to create steam that is vented during start-ups. Staff has not estimated the actual fuel saving because this cost will tie directly to how many start-up and shutdown cycles the facility has during a year. According to one manufacturer (Siemens), the cost for the design changes is not significantly higher than the cost of the standard, off the shelf, HRSG.

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Alternatively, the 600 MW combined cycle Palomar Project in Escondido has installed a proprietary control system, OpFlex from General Electric, and injects ammonia earlier to shorten start-up times and reduce start-up emissions at the facility. Preliminary, non-optimized results from their March 7, 2007, Petition for Variance 4703 Extension indicated that they have reduced NOx emissions from 120 lbs to 28 lbs for hot or warm start-up events.

If design or process control changes to reduce the facility's start-up and shutdown emissions are implemented, the RCEC daily emissions can be reduced. These design changes could be found to be cost-effective and included as BACT for the proposed facility.

GENERAL COMMENTS

- Page 2 and page 36 of the Amended PDOC identifies the source S-5, the cooling tower, "with efficiency drift eliminators make and model to be determined" while on page 14 the drift is specified as 0.0005%.
- Page 4, Item 3.c. identifies the POC limit of 1 ppmvd @15% O₂. However, Table 1 on the same page identifies POC limit of 2 ppmv.
- Page 5, Table 2 identifies PM10 emissions from the cooling tower, although drift elimination efficiency was not specified on page 2 and the TDS limits are not provided.
- Page 13 and Condition 20(g) specifies that the project will burn natural gas in the turbine and heat recovery steam generator with an annual average of 0.25 grains sulfur per 100 standard cubic feet. What is the basis for this value and how will it be enforced?

Thank you for the opportunity to provide comments on the District Amended PDOC for the Russell City Energy Center. We believe that design changes to the project could significantly reduce the facility's daily potential to emit, and at the same time address the effectiveness of the applicant's proposed offset mitigation. If you have any questions regarding our comments, please contact Matt Layton at (916) 654-3868.

Sincerely,



PAUL C. RICHINS, JR
Environmental Protection Office Manager

cc: Docket (01-AFC-7)
Proof of Service List
Agency List