CH2MHILL

CH2M HILL
3 Hutton Centre Drive
Suite 200
Santa Ana, CA
92707
Tel 714.429.2000
Fax 714.429.2050

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November 7, 2006

Mr. Bill Pfanner
Project Manager
Systems Assessment and Facility Siting Division
California Energy Commission
1516 9th Street, MS 15
Sacramento, CA 95814-5512

Subject: LSP South Bay, LLC – South Bay Replacement Project AFC (06-AFC-3): Docketing of October 5, 2006 Letter to San Diego County Air Pollution Control District: Non-Modeling Issues

Dear Mr. Pfanner:

On behalf of LSP South Bay, LLC, please find enclosed 12 copies and one original of copy of the October 5, 2006 letter from Sierra Research to the San Diego County Air Pollution Control District regarding non-modeling air emission issues related to the South Bay Replacement Project (SBRP). For docketing purpose, also find attached the Proof of Service declaration.

We will coordinate this submittal with the Commission's Docket Unit.

LSP South Bay, LLC appreciates the continued opportunity to work with CEC staff on this important project.

Sincerely,

CH2M HILL

for Robert C. Mason
Project Director

Attachments

cc: Docket Unit – California Energy Commission
Kevin Johnson, LSP South Bay, LLC

sierra research

1801 J Street
Sacramento, CA 95814
Tel: (916) 444-6666
Fax: (916) 444-8373

Ann Arbor, MI
Tel: (734) 761-6666
Fax: (734) 761-6755

October 5, 2006

Camqui T. Nguyen
Air Pollution Control Engineer
San Diego County Air Pollution Control District
10124 Old Grove Road
San Diego, CA 92131

Dear Ms. Nguyen:

We appreciate the time you and your colleagues—Tom Weeks, Dan Speer, John Annicchiarico, and Ralph DeSiena—spent meeting with us on September 14, 2006, to discuss the South Bay Replacement Project (SBRP). On behalf of LSP South Bay, LLC, this letter addresses the non-modeling issues raised during the meeting. Separately, Sierra Research will update and resubmit the modeling protocol for the air quality impact analysis to reflect the use of the new Chula Vista meteorological data set provided by the District on August 31, 2006.

To facilitate understanding of each non-modeling issue, we are presenting our discussion in a question-and-response format based on questions that arose during the September 14, 2006 meeting.

1. Commissioning

   a. *Question:* How will the day-to-day commissioning activities be planned to result in the minimum emissions over the shortest feasible time period?

      Response: Successful commissioning requires a carefully prescribed methodology of testing all power plant systems, including the gas turbines, over the entire range of plant operating loads. This includes operating the gas turbines at a wide range of loads that are not typical of routine (post-commissioning) operation. To accomplish this basic goal, the turbines will be operated the minimum number of hours necessary to test each plant component system, with the gas turbines operating in the following operating modes:

      i. 20% load with no SCR
      ii. 50% load with SCR
      iii. 100% load with no SCR
      iv. 100% load with partial SCR
      v. 100% load with full SCR
      vi. Hot starts

Detailed commissioning plans are generally considered to be proprietary to the gas turbine manufacturers. However, given the cost of operating the turbines prior to commercialization, both the plant constructor and owner have a strong incentive to minimize unnecessary operation to the extent possible.

b. *Question*: How will emissions be monitored during commissioning?

Response: The CEMs will monitor NOx and CO emissions. Fuel consumption and electricity production will be recorded separately. Although the CEMS will not be certified until towards the end of the commissioning period, the CEMS will be operational and will be calibrated daily prior to first fire of each unit. VOC, SOx, and PM_{10} emissions during the commissioning period will be calculated based on fuel consumption and emission factors, in the same manner as will be used during routine operation..

c. *Question:* Can the planned 1,884 hours for commissioning presented in AFC Table 8.1B-9 be shortened?

Response: The actual number of commissioning hours is expected to be less than the 1,884 hours listed in the SBRP permit application package (Table 8.1B-9). However, due to the nature of commissioning activities and the uncertainties associated with this type of activity, at this point in the process it would be premature to provide a revised estimate of the number of commissioning hours. It was, and remains, our intention to estimate maximum emissions during this period.

d. *Question*: During the commissioning period, how will the combined emissions from the existing South Bay Power Plant (SBPP) and the SBRP be calculated?

Response: NOx and CO emissions will be based on the CEM data collected from both plants. VOC, SOx, and PM_{10} emissions will be calculated using fuel consumption data for both plants and emission factors.

e. *Question*: How often will the emissions information from both power plants be provided to the District?

Response: The combined emissions information will be provided to the District during the commissioning period in a monthly compliance report. This report will include a comparison between the combined emissions from both plants and the SBPP annual emissions baseline used to offset the SBRP annual emissions.

f. *Question*: Please discuss the NSR regulatory impacts associated with the combined SBPP and SBRP emissions during the commissioning period.

Response: To determine the regulatory impact associated with the short-term simultaneous operation of the SBPP and SBRP during the commissioning period, it is necessary to review the three components of the District NSR

regulations (BACT, air quality impact analysis, emission offsets). The following paragraphs discuss each of these components of the NSR regulations.

BACT – As discussed in District Rule 20.3.d.1.i, BACT is required for any new or modified emission unit that has any increase in its potential to emit. Since the SBRP gas turbines will be equipped with BACT, BACT is not an issue for the SBRP. With regards to the existing units at the SBPP, since there will be no physical change or change in method of operation of the existing units due to the commissioning of the new SBRP gas turbines, the commissioning of the SBRP will not result in a modification of the existing SBPP units. Therefore, the existing SBPP units will not trigger BACT due to the commissioning of the new SBRP gas turbines.

Air Quality Impact Analysis – As discussed in District Rule 20.3.d.2.i, an Air Quality Impact Analysis (AQIA) is required for a new or modified permit unit. Since an AQIA was performed for the SBRP project, AQIA is not an issue for the SBRP. With regards to the existing units at the SBPP, as discussed above, the commissioning of the SBRP will not result in a modification of the existing SBPP units. Therefore, the existing SBPP units will not trigger the AQIA requirement due to the commissioning of the new SBRP gas turbines. While an AQIA is not triggered for the existing SBPP units, the AQIA performed for the SBRP includes the ambient background levels for the project site (see SBRP permit application package, Tables 8-1.29 and 8-1.30). Since these background levels include the impacts from the existing SBPP units, the AQIA performed for the SBRP does include the impacts from the existing SBPP units.

Emission Offsets – As discussed in District Rule 20.3.d.8.i.B, the District requires offsets for a facility-wide net emission increase above the major modification annual emission trigger levels. As discussed in the permit application package for the SBRP, due to the annual emission reductions associated with the shutdown of the existing units at the SBPP, the SBRP does not result in an annual net emission increase above the major modification threshold levels for NOx, VOC, SOx, or PM_{10} (see SBRP permit application package, Table 8.1-34). Consequently, the SBRP does not trigger any new emission offset requirements.

As discussed in the permit application package for the SBRP (Table 8.1B-7), the annual emission reductions for the shutdown of the SBPP were based on actual emissions during a 2004–2005 baseline period. To avoid triggering a facility-wide net emission increase above the major modification threshold levels during the year that includes the commissioning period, it will be necessary to monitor and report the combined emissions from the existing SBPP units and new SBRP units during the commissioning period. It will also be necessary to monitor and report the emissions from the new SBRP units following the commissioning period. Because of the monitoring and reporting procedures discussed above, the combined SBPP/SBRP emissions during the commissioning period and the SBRP emissions following the

commissioning period will not exceed the maximum annual emissions projected for the SBRP in the permit application package (see SBRP permit application package, Table 8.1-23), and, hence, no new emission offset requirements will be triggered. Since the District offset requirements are based on annual emissions during a calendar year, the monitoring of the combined emissions for the SBPP and the SBRP will be necessary only during the calendar year(s) that includes the SBRP commissioning period. The method that will be used to calculate and report emissions for the SBPP and SBRP is discussed in the above response to this question.

g. *Question*: Please provide proposed draft permit language to assure that the combined emissions from SBRP commissioning and SBPP operation will be controlled to the level limited by SBPP shutdown offsets.

Response: The following are the proposed draft Authority to Construct permit conditions:

i. *During the calendar year(s) in which the SBRP commissioning period occurs, the combined emissions from the SBPP and SBRP shall be limited to the following:*

- *NOx: 104.0 tons/yr*
- *VOC: 39.6 tons/yr*
- *PM10: 69.2 tons/yr*
- *SOx: 11.0 tons/yr*

ii. *During the calendar year(s) in which the SBRP commissioning period occurs, the operator of the SBRP shall maintain monthly records of NOx, VOC, PM_{10}, and SOx emissions for the SBRP and SBPP in terms of pounds per month. These records shall be made available to the District upon request, and shall be transmitted monthly to the District within fifteen (15) days following the end of each calendar month.*

h. *Question*: Please provide a screening health risk assessment (SHRA) of commissioning emissions.

Response: As shown in the SBRP permit application package (Table 8.1B-8), the hourly and annual non-criteria pollutant emissions used for the SHRA are based on maximum hourly and annual fuel use levels for the gas turbines. Since the gas turbine hourly fuel use levels during the commissioning period will be no greater than the maximum levels used for the SHRA, there is no need to revise the SHRA due to different operating levels during commissioning. During our meeting, the District raised the issue of higher non-criteria pollutant emissions during commissioning associated with operating the gas turbines without the oxidation catalyst. The SBRP permit application package (Table 8.1B-4) notes that the only non-criteria pollutant emissions factors that reflect the use of an oxidation catalyst are acrolein, benzene, and formaldehyde.

During the early commissioning hours before the oxidation catalyst is installed, the difference between the with- and without-catalyst emission factors for acrolein, benzene, and formaldehyde will have a negligible effect on the long-term (i.e., 70 year) chronic and carcinogenic risks shown in the SHRA. To determine if there is an impact on acute impacts during those same early commissioning hours, Table 1 summarizes the difference in two emission factors for the four pollutants. This table also increases the Acute HHI contribution from each of the four pollutants due to the difference in the emission factors. As shown in the table, with the higher emission factors for the four pollutants the revised Acute HHI remains well below the significance level of 1.0.

Table 1
Revised Acute HHI During Commissioning Period

Pollutant	GT Emission Factor without Ox. Cat.[a] (lbs/MMscf)	GT Emission Factor with Ox. Cat.[b] (lbs/MMscf)	Percent Increase without Ox. Cat.	Modeled Contribution to Acute HHI[c]	Revised Contribution to Acute HHI
Acrolein	6.53E-03	3.69E-03	77%	6.01E-02	1.06E-01
Benzene	1.22E-02	3.33E-03	266%	7.92E-06	2.90E-05
Formaldehyde	0.724	0.367	97%	1.20E-02	2.36E-02
Other Pollutants				1.33E-02	1.33E-02
Total =				8.54E-02	1.43E-01

Notes :
a. AP-42, Table 3.1-3, 4/00.
b. SBRP permit application package, Table 8.1B-8.
c. SBRP permit application package, Table 8.1E-5.

2. Startups

a. *Question*: What options can be implemented to reduce startup time for the SBRP combustion gas turbines during normal operation?

Response: As discussed in the SBRP permit application package, gas turbine startup times range from 1 to 6 hours depending on whether it is a hot start or a cold start. The added time for a cold startup is due to the time necessary to bring the heat recovery steam generator and steam turbine up to operating temperature. Other than the installation of an auxiliary boiler, which is included in the design of the SBRP, we know of no way to reduce the startup time of a combined cycle F-class installation like the SBRP. The District mentioned the possible use of a HRSG bypass system to reduce the startup time. While bypassing the HRSG would allow the gas turbine to startup

relatively quickly (less than an hour), since the HRSG contains the oxidation catalyst and SCR system, the catalyst systems would also be bypassed with this type of installation. Due to the elevated emissions associated with bypassing the HRSG, this type of configuration is not considered a feasible option for the SBRP.

b. *Question*: Please discuss the District rule requirement limiting gas turbine startups to 2 hours.

Response: District Rule 69.3 limits NOx emissions from gas turbines to 42 ppmv @ 15% O_2 (1-hour average). The rule includes a two-hour exemption from this NOx limit during gas turbine startups and shutdowns. As discussed in Response 2.a, hot startups will be less than two hours, so compliance during hot startups will not be an issue with regards to Rule 69.3. The worst-case startup is a cold start that may take as long as six hours. As shown in the permit application package for the SBRP (Table B.1B-5), over a six-hour startup the NOx emissions are assumed to average approximately 160 lbs/hr per gas turbine. During actual operation, maximum NOx emissions will occur during the first couple of hours of operation and then curtail as the unit warms up. A NOx emission rate of 160 lbs/hr at a gas turbine low load operating level (50% load) is equivalent to approximately 39 ppm @ 15% O2 (1-hour average).[1] Consequently, on average after two hours of operation during a cold startup it is expected that the SBRP gas turbines will be able to comply with the Rule 69.3 NOx limit. However, we will continue to examine this issue and will inform the District if a different conclusion is reached based on additional design information for the project.

3. New Source Review and Title V

Question: Please discuss the Federal and District New Source Review and Title V regulations specific to a replacement project.

Response: Generally under the Federal and District New Source Review (NSR) and Prevention of Significant Deterioration (PSD) regulations, there are certain exemptions from regulatory requirements associated with replacement units. For purposes of NSR/PSD, the SBRP project is a modification to an existing stationary source. We are claiming no replacement unit exemptions for the SBRP, and have addressed all applicable components of the NSR and PSD regulations in the permit application package for this project. With regards to Title V, following permitting under the NSR/PSD regulations, the proposed SBRP will be treated as a significant Title V permit modification under the District Title V regulations (SDACPD Rule 1410.k), which will include both a public and an EPA notification/review process.

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[1] Based on a NOx emission level of 8.29 lbs/hr at 2.0 ppmv at 50% load, annual average temperature (see SBRP permit application package, Table 8.1B-1). (160/8.29)*(2) = 39 ppmv.

4. Cumulative Health Risk Assessment

Question: Conduct a health risk assessment of the combined emissions from the proposed SBRP and the existing SBPP when they operate simultaneously during commissioning.

Response: Since the commissioning period is expected to occur over a period of only approximately three months, the only expected cumulative effects during the simultaneous operation of the SBPP and SBRP are with respect to acute health impacts. As discussed above in Response 1.h, the revised acute health hazard index (HHI) for the SBRP during commissioning is approximately 0.14. The District calculated that the maximum potential acute HHI for the SBPP is 0.34, based on 2004 emissions.[2] Consequently, the maximum potential cumulative health impact from both plants during the brief three-month commissioning period is an acute HHI of approximately 0.48, which is below the significance threshold of 1.0.

If you have any questions or need any additional information, please do not hesitate to contact us.

Sincerely,

Eric Walther
Managing Partner

cc: Kevin Johnson, LS Power Generation, LLC
Robert Mason, CH2M Hill

[2] San Diego Air Pollution Control District. *2004 Air Toxics "Hot Spots" for San Diego County,* December 2005.

CALIFORNIA
ENERGY
COMMISSION

1516 Ninth Street
Sacramento, CA 95825-5512
800-822-6228
www.energy.ca.gov

ELECTRONIC PROOF OF SERVICE LIST
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SOUTH BAY REPLACEMENT PROJECT
APPLICATION FOR CERTIFICATION,
DOCKET NO. 06-AFC-3

docket@energy.state.ca.us	Energy Commission Docket Unit
jgeesman@energy.state.ca.us	Commissioner John Geesman
pflint@energy.state.ca.us	Pat Flint, Commissioner Rosenfeld's Office
pao@energy.state.ca.us	Margaret J. Kim, Public Adviser
gshean@energy.state.ca.us	Garrett Shean, Hearing Officer
Bpfanner@energy.state.ca.us	Bill Pfanner, Staff Project Manager
kwillis@energy.state.ca.us	Kerry Willis, Staff Attorney
kjohnson@lspower.com	Kevin Johnson, LS Power Generation, LLC
cte@eslawfirm.com	Chris Ellison, Applicant's Attorney
Robert.mason@ch2m.com	Robert Mason, CH2M HILL
Sarah.madams@ch2m.com	Sarah Madams, CH2M HILL
mdjoseph@adamsbroadwell.com	Marc D. Joseph, CURE
speesapati@adamsbroadwell.com	Suma Peesapati, CURE
wolff@smwlaw.com	Osa L. Wolff, Atty for Environmental Health Coalition
bundy@smwlaw.com	Kevin P. Bundy, Atty for Environmental Health Coalition

I declare that I transmitted the foregoing document via e-mail, or as indicated by first class postal mail, to the above named on the date indicated thereby. I declare under penalty of perjury that the foregoing is true and correct.

Sarah Madams
CH2M HILL

Distribution List	
laurah@environmentalhealth.org	Laura Hunter, Environmental Health Coalition
mmeacham@ci.chula-vista.ca.us	Michael Meacham, City of Chula Vista
pfanfera@portofsandiego.org	Paul Fanfera, San Diego Port District
cteufel@coastal.ca.gov	Cassidy Teufel, California Coastal Commission