ADAMS BROADWELL JOSEPH & CARDOZO
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
601 GATEWAY BOULEVARD, SUITE 1000
SOUTH SAN FRANCISCO, CA 94080-7037
TEL: (650) 589-1660
FAX: (650) 589-5062
gsmith@adamsbroadwell.com

DANIEL L. CARDOZO
RICHARD T. DRURY
THOMAS A. ENSLOW
TANYA A. GULESSERIAN
MARC D. JOSEPH
OSHA R. MESERVE
SUMA PEESAPATI
GLORIA D. SMITH

OF COUNSEL
THOMAS R. ADAMS
ANN BROADWELL

SACRAMENTO OFFICE
520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4715
TEL: (916) 444-6201
FAX: (916) 444-6209

February 26, 2007

Kevin Johnson
LS Power Generation, LLC
1735 Technology Drive, Suite 820
San Jose, CA 95110
KJohnson@LSPower.com

Re: South Bay Replacement Project (06-AFC-3):
CURE Data Requests, Set One (Nos. 1-55)

Dear Mr. Johnson:

California Unions for Reliable Energy (CURE) submit this **first set of data requests** to LS Power for the South Bay Replacement Project pursuant to Title 20, section 1716(b), of the California Code of Regulations. The requested information is necessary to: (1) more fully understand the project; (2) assess whether the project will be constructed and operated in compliance with all laws, ordinances, regulations and standards; (3) assess whether the project will result in significant environmental impacts; (4) assess whether the project will be constructed and operated in a safe, efficient and reliable manner; and (5) assess potential mitigation measures.

On February 15, 2007, CURE submitted a request for an extension of time to submit data requests to which the Committee has not yet made a determination. Accordingly, CURE herein submits its data requests covering air quality issues only. Our request for an extension of time was based in part on matters beyond our control; principally, DTSC's need to locate and compile voluminous files before our expert, Matt Hagemann, may personally inspect DTSC's records for the LNG lands and the existing power plant site. Because Mr. Hagemann has not yet conducted his review, CURE will submit a second set of data requests under separate cover as soon as possible. Given that LS Power itself has delayed this proceeding by at least four months, CURE's second set of data requests will in no way harm LS Power or otherwise prejudice any party to this proceeding.

Pursuant to section 1716(f) of the Energy Commission's regulations, written responses to these requests are due within 30 days. If you are unable to provide or object to providing the requested information by the due date, you must send a written notice of your objection(s) and/or inability to respond, together with a statement of reasons, to Commissioners Geesman and Rosenfeld and to CURE within 10 days.

Please contact us if you have any questions. Thank you for your cooperation with these requests.

Sincerely,

/s/

Gloria D. Smith

GDS:bh
Attachment

1933-017a

SOUTH BAY REPLACEMENT PROJECT

CURE Data Requests Set One (# 1-55)

AIR QUALITY

Background: NEW FEDERAL PARTICULATE MATTER AMBIENT AIR QUALITY STANDARDS

Recently, the U.S. EPA tightened the federal 24-hour PM2.5 ambient air quality standard from 65 µg/m^3 to 35 µg/m^3, effective December 17, 2006.[1] The monitored levels of PM2.5 in the area exceed this new ambient air quality standard. Compliance with this new standard is mandated by 2015.

Data Request

1. Please discuss the existing background PM2.5 concentrations and projected PM2.5 concentrations in the region including emissions from the South Bay Replacement Project ("SBRP") in view of this new standard. Please discuss how the SBRP's incremental emissions would affect future compliance of the region's air quality with the new federal 24-hour ambient air quality standard for PM2.5 of 35 µg/m^3. Please include a discussion of potential worst-case daily PM2.5 emissions.

Background: PROJECT CONSTRUCTION PHASING

The AFC's construction emissions analysis is based on the assumption that construction of the SBRP will be conducted in three subsequent phases: a) the construction phase, which consists of demolition of the existing structures and foundations associated with the former liquefied natural gas ("LNG") facility on site, site preparation, construction of the SBRP, and construction of an interim interconnection to the existing South Bay substation; b) the demolition phase of the old South Bay Power Plant ("SBPP"), which would occur after the SBRP achieves commercial operation; and c) the new

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[1] United States Environmental Protection Agency, Office of Air Quality Standards And Planning, September 2006 Revisions to the National Ambient Air Quality Standards for Particle Pollution, September 2006; United States Environmental Protection Agency, National Ambient Air Quality Standards for Particulate Matter, Final Rule, Federal Register, 40 CFR Part 50, Vol. 71, No. 200, pp. 61144-61233, October 17, 2006.

substation phase, which would involve the construction of the new San Diego Gas & Electric ("SDG&E") substation and subsequent demolition of the existing South Bay substation. The AFC's construction emissions estimates are based on month 12 of the SBRP construction phase, assuming that no other construction activities would take place simultaneously. Yet, with respect to the interim electrical interconnection, the AFC states that "nothing in this AFC precludes eliminating this step and instead relying entirely on the final substation facilities…"[2] Thus, construction of the SBRP and the new SDG&E substation could potentially occur simultaneously, leading to considerably higher construction emissions and increased impacts on air quality and public health.

Data Request

2. Please provide a revised detailed construction project schedule that identifies potential overlaps for all construction subphases including simultaneous construction of the new SDG&E substation and the SBRP, or, alternatively, discuss how overlap of these construction phases would be avoided.

3. Please provide revised construction emissions for the peak month based on the revised construction project schedule and discuss how the cumulative impacts from simultaneous construction of these project components would be mitigated, or, alternatively incorporate a condition of certification ("CoC") into the AFC mandating that all construction subphases will be constructed successively.

Background: CONSTRUCTION TRUCK DELIVERIES

The AFC provides a construction schedule for monthly truck deliveries in Table 2.3-9. This schedule appears to have omitted a number of deliveries including the delivery of construction equipment for the demolition/site grading phase (1 compactor, 3 dozers, 3 excavators); off-site hauling of demolition material; and the removal of construction equipment from the site after it is no longer used.

[2] AFC, p. 1-5.

Data Request

4. Please provide a revised construction schedule that includes the delivery of construction equipment for the demolition/site grading phase; the removal of construction equipment from the site after it is no longer used, and off-site hauling of demolition material.

Background: CONSTRUCTION VEHICLE TRAVEL DISTANCES

The AFC assumes average round trip distances for worker commuter vehicles and delivery trucks of 65 and 130 miles, respectively. The AFC also assumes onsite travel on unpaved roads for flatbed trucks, concrete pump trucks, water trucks, fuel/lube trucks, articulating trucks, and delivery trucks of 2.2, 9.0, 13.4, 6.7, 16.5, and 0.2 miles/day and truck, respectively.[3] The AFC contains no support for these assumptions.

Data Request

5. Please provide support for worker commuter vehicle and delivery truck roundtrip distances and demonstrate how the varying distances for construction truck travel on unpaved roads were derived.

Background: WATER TRUCK USAGE

The AFC, Table 2.3-8, did not include a schedule for water trucks for construction months 6 through 9 and 23 through 28. Review of the construction schedules provided in the AFC shows that a considerable number of heavy-duty construction equipment and on-site trucks would be operating on site during these months. In addition, a considerable number of truck deliveries would occur during these months. Operation of construction equipment and trucks would result in fugitive dust emissions, which are apparently unmitigated. The AFC provides no explanation why watering the site with water trucks is not deemed necessary during these construction periods.

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[3] AFC, Appendix. 8.1F, attached Tables 8.1F-4, 8.1F-5, and 8.1F-2.

Data Requests

6. Please explain why the construction schedule does not include water trucks for months 6 through 9 and 23 through 28.

7. If water trucks are not used during these months, please calculate total unmitigated fugitive dust emissions for each month and estimate the potential reduction in fugitive dust emissions if water trucks were used.

Background: CONSTRUCTION FUGITIVE DUST EMISSIONS

The AFC estimates fugitive dust emissions during construction for four sources: a) windblown dust from the active construction area; b) entrained road dust from trucks on unpaved roads on site; c) fugitive dust emissions from excavator, dozer, and truck unloading; and d) fugitive dust emissions associated with material handling by excavators. The following sources of fugitive dust appear to have been incorrectly calculated or omitted:

a. **Wind erosion:** The AFC calculated an emission factor of 1.682E-05 pounds per square foot and day ("lb/sqft-day") for fugitive dust emissions due to wind erosion based on an emission factor of 0.011 tons of PM10 per acre-month ("ton/acre-month") and assuming 30 work-days per month.[4] This calculated emission factor is incorrect. The emission factor of 0.011 ton/acre-month used to determine this emission factor is based on a 1996 study conducted by the Midwest Research Institute ("MRI") for the South Coast Air Quality Management District ("SCAQMD").[5] This study sought to improve the fugitive dust emission factors contained in the U.S. EPA's *Compilation of Air Pollutant Emission Factors* ("AP-42") and developed emission factors that can be used to determine fugitive dust emissions from construction activities over the entire construction period of a project. The MRI report specifically notes that these emission factors do *not* include wind erosion or mud/dirt trackout from the site.[6] As a result, the AFC incorrectly calculated and substantially underestimated fugitive dust emissions from wind erosion. Emissions due to wind

[4] *See* Appendix. 8.1-F, "Notes – Fugitive Dust Emission Calculations."

[5] Midwest Research Institute (MRI), Improvement of Specific Emission Factors (BACM Project No. 1), Final Report, March 29, 1996.

[6] *Id.* at p. 4-1.

erosion can be calculated with AP-42, Section 13.2.5, Industrial Wind Erosion.

b. **Mud/dirt trackout:** Mud and dirt on the tires and bodies of equipment leaving the construction site are deposited on adjacent paved roads. This increases the surface loading of dust, which is entrained by passing vehicles. These emissions can be substantial, if not controlled using street sweeping. A recent study found that mud/dirt trackout from an active construction site increased PM10 emissions from every vehicle passing over the affected roadway by roughly 6 grams.[7] These emissions were not included in the construction emission inventory and should be added.

c. **Stockpiles:** Fugitive PM10 emissions are generated by wind erosion of open storage piles. Several stockpiles would be present at the various construction sites. Topsoil storage piles, for example, would be required for construction of the generation facility and linear facilities. Further, temporary storage piles are commonly used to balance cut and fill. The fugitive dust emission calculations do not include any fugitive PM10 emissions from these piles. The U.S. EPA has developed procedures (*See above* AP-42, Section 13.2.4, Aggregate Handling and Storage Piles) to estimate these emissions. Construction emissions should be revised to include wind erosion of stockpiles.

d. **Drop emissions:** Drop operations, such as adding material to a storage pile, removing material from a storage pile, loading material onto a truck bed, dumping material from an excavator, etc., generates substantial amounts of PM10 emissions. The AFC calculated fugitive dust emissions from material unloading for the two loaders and the articulating truck.[8] The AFC provides no explanation why drop emissions from the two dozer, two backhoes, and the grader, which are also on site during construction month 12, were not included. Further, the AFC assumed that the material transported by the truck and loaders would only be handled once. However, drop emissions occur every time the material is handled, *e.g.*, once when it is loaded into a truck and once when it is unloaded from the truck. In addition, the AFC calculated fugitive dust emissions using a formula contained in

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[7] G.E. Muleski and A.E. Page, Characterization of PM Emissions from Mud/Dirt Carryout, Proceedings of the Air &Waste Management Association's 94th Annual Conference & Exhibition, June 24-28, 2001.

[8] Appendix. 8.1-F, Table 8.1F-2.

AP-42, Section 13.2.4, and using a moisture content of 15% for moist soil based on the SCAQMD's CEQA Handbook.[9] By assuming a moisture content 15% for moist soil, the AFC essentially estimates controlled rather than uncontrolled fugitive dust emissions. The AFC proceeds to apply a 92% control efficiency to these emissions, thereby effectively double-counting the emissions control due to watering.

e. **Equipment operation:** The AFC estimates fugitive dust emissions for backhoe trenching and dozer operation, but fails to include emissions from loader movement on site.[10] The AFC calculated the emission factor for loader travel on unpaved roads, but failed to include emissions estimates for loader travel in Table 8.1F-2.[11]

f. **Entrained road dust on unpaved roads:** The AFC provides estimates for entrained road dust emissions for unpaved roads using an equation from AP-42, Section 13.2.2. The AFC calculated emission factors for each vehicle based on its weight. AP-42, Section 13.2.2, specifically provides that the equation is "*not* intended to be used to calculate a separate emission factor for each vehicle class within a mix of traffic on a given unpaved road. That is, in the example, one should *not* determine one factor for the 2-ton vehicles and a second factor for the 20-ton trucks. Instead, only one emission factor should be calculated that represents the "fleet" average of 2.4 tons for all vehicles traveling the road."[12]

g. **Entrained road dust on paved roads:** The AFC does not estimate entrained road dust for vehicle movement on paved roads off site. Entrained road dust from paved roads can be calculated with AP-42, Section 13.2.1, Paved Roads.

Data Requests

8. Please provide a description and support for the daily process rates for each of the emission sources in Appendix 8.1F, attached Table 8.1F-2.

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[9] Appendix. 8.1-F, Table 8.1F-2.

[10] *Id.*

[11] *Id.* at "Notes – Fugitive Dust Emission Calculations."

[12] AP-42, Section 13.2.2, p. 13.2.2-6.

9. Please revise fugitive dust emissions from wind erosion based on AP-42, Section 13.2.5, Industrial Wind Erosion, or equivalent guidance.

10. Please revise fugitive dust emissions from drop operations to include all drop operations on site, *i.e.* accounting for all equipment handling and all material handling. Please use an appropriate moisture content for these calculations.

11. Please revise fugitive dust emissions on unpaved roads to include all equipment operating on site, specifically operation of the loaders. Please correct the emission factors for trucks to reflect the average weight of vehicles traveling these roads rather than calculating an emission factor for every vehicle class.

12. Please estimate fugitive emissions for mud/dirt carryout, stockpiles, and entrained road dust on paved roads or explain why they are excluded.

Background: CONSTRUCTION FUGITIVE DUST EMISSIONS CONTROL EFFICIENCY

The AFC assumes a control efficiency of 92% for entrained road dust on unpaved roads, fugitive dust emissions from grading, and windblown dust.[13] The AFC calculated this control efficiency based on an equation from a report, *Control of Open Fugitive Dust Sources,* prepared for the U.S. EPA.[14] This equation was developed specifically for dust control of unpaved roads.[15] Thus, the AFC incorrectly applied the calculated control factor to fugitive dust emissions from grading and windblown dust.

Further, the assumed 92% control efficiency appears too high. Control efficiencies for watering unpaved roads have been estimated to range from 45 to 85%.[16] The AFC calculated the 92% control efficiency assuming an application intensity of 1.4 liters per square meter ("L/m^2") claiming that this is a "typical level" from the U.S. EPA report on page 3-23. This is incorrect.

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[13] AFC, Appendix. 8.1F, attached Table 8.1F-2.

[14] AFC, Appendix. 8.1F, "Notes – Fugitive Dust Emission Calculations."

[15] Cowherd *et al.*[15], p. 3-12.

[16] South Coast Air Quality Management District, CEQA Air Quality Handbook, p. 11-16, April 1999.

The report does not present a typical level for application rates (the value of 1.4 L/m² appears nowhere on the page), but rather provides an equation to determine the application rate necessary to achieve a desired control efficiency. To achieve a 92% control efficiency, the AFC calculated the necessary application rate as 1.4 L/m² assuming watering of the site once every hour.[17] The assumption of watering once every hour is not realistic and, in fact, may be counterproductive because it would turn the soil muddy and result in increased trackout of soil from the site. Typically, construction sites are watered two to four times per work-day, *i.e.* every 2½ to 5 hours. Further, one water truck, as assumed by the AFC's construction schedule, can not cover the entire 12.9-acre site in one hour.

Data Request:

13. Please include a fully documented engineering calculation that provides support for all assumptions, including the water application rate, application frequency, capacity and number of water trucks.

Background: DAILY AND ANNUAL FUEL USE FOR CONSTRUCTION

The AFC presents combustion emissions for construction equipment.[18] To calculate these emissions, the AFC relies on the "daily fuel use based on peak combustion month equipment schedule," the "annual fuel use based on average level during peak 12-month period," and "annual fuel use based on average level during the entire construction period." The AFC does not provide any support for the assumed daily and annual fuel uses.

Data Request

14. Please demonstrate how the respective daily and annual fuel use were derived and support your assumptions with references.

Background: CONSTRUCTION EQUIPMENT INVENTORY

The equipment inventory summarized in Tables 2.3-8 appears to be for construction of the SBRP only not including other construction activities that

[17] AFC, Appendix. 8.1F, "Notes – Fugitive Dust Emission Calculations."

[18] AFC, Appendix 8.1F, attached Table 8.1F-3.

would occur simultaneously and does not appear to be sufficient to construct the project described in Section 2 of the AFC.

Natural gas pipeline: The construction schedule provided in Figure 1.6-1 shows that construction of the fuel gas pipeline overlaps with construction of the SBRP generating facility. The specialized equipment required to construct the pipeline does not appear to be included in Table 2.3-8. Typical pipeline construction activities include hauling and stringing of the pipe along the route; welding, radiographic inspection and coating of the pipe welds; installing pipe supports; raising the pipe into the aboveground rack; hydrostatic testing of the pipeline; and cleanup and restoration. These activities would typically require the following additional equipment: flatbed trucks to import pipe, pipe-stringing trucks to transport pipe from the shipment point or storage yard to the pipeline right-of-way ("ROW"), bending machines to conform the pipe to the terrain, welding trucks and rigs to weld the pipe, side-boom tractors to lift the pipe into the racks, dump trucks to remove dirt displaced by the pipe, jack hammers, pavement saws to remove asphalt, dump trucks to haul away broken asphalt and to return fresh asphalt, asphalt rollers, asphalt trucks in blacktop spreads, and numerous support equipment including an A-frame truck, boring machine, coating truck, mechanics rig, parts van, slurry truck, pumps, air compressor, portable generators, and X-ray trucks, among others.

Interim substation and transmission line: The construction schedule provided in Figure 1.6-1 shows that construction of the initial 230-kV substation and above-ground and underground transmission lines overlaps with construction of the SBRP generating facility and construction of the fuel gas pipeline. A number of specialized trucks and equipment would be required to construct the transmission line, including a large track hoe for trench excavation, a truck-mounted auger for foundation excavation, dump trucks for the removal of excavated material, concrete trucks, various delivery vehicles, small to medium sized cranes, reel trailers, and pulling and tensioning equipment for overhead wire, and common utility vehicles. The equipment inventory provided in the AFC in Tables 2.3-8 and 2.3-9 does not appear to include this construction equipment.

Pile driving: The Applicant proposes to use pre-cast *or* augered-cast-in-place concrete piles for the SBRP foundations.[19] Pre-cast concrete piles are hammered into place with hydraulic, diesel-or or compressed air-powered impact pile drivers. Augered-cast-in-place concrete piles are pre-drilled and

[19] AFC, pp. 2-65 and 8.5-28.

then filled with concrete. Both impact pile drivers and drilling augers are typically mounted on a crane. It is unclear whether the equipment inventory list provided by the AFC includes the pile driving equipment and concrete delivery trucks or trucks to transport the pre-cast concrete piles necessary to construct the SBRP foundation.

Data Requests

15. Please identify all of the equipment and trucks that would be used to construct the natural gas pipeline.

16. Please identify all of the equipment and trucks that would be used to construct the interim 230-kV substation and transmission lines.

17. Please identify the months during which pile driving would occur.

18. Please identify the type and number of pile drivers that would be on site to construct the SBRP foundation. Please clarify whether this equipment is included in the AFC's equipment inventory in Table 2.3-8.

19. Please provide a separate equipment inventory and construction schedule for construction of the SBRP, the fuel pipeline, and the interim substation and transmission line, identifying major construction phases such as site preparation, construction of foundations, installation of turbines and other operating equipment, line tensioning, etc.

20. Please provide a revised worst-case emission inventory including emissions from the equipment identified in responses to Data Requests #15 through 20, if not already included.

Background: MAXIMUM DAILY CONSTRUCTION EMISSIONS ESTIMATES BASED ON MONTH 12

The AFC calculates maximum short-term construction emissions for Month 12 of the construction schedule, likely because during this month, the highest number of large construction equipment (dozers, backhoes, excavators) are projected to be on site.[20] This approach may not result in worst-case daily

[20] AFC, Appendix 8.1F, p. F-2, and Table 2.3-8.

emissions estimates because of the varying contributions of combustion emissions from construction equipment on site, worker commuter travel, and delivery trucks and fugitive dust emissions to total Project construction emissions.

For example, the number of standard and heavy haul truck deliveries during site mobilization is considerably higher than in month 12. From month 2 through month 5, about 125 truck deliveries are expected to occur per day as opposed to the 13.5 daily truck deliveries scheduled for month 12.[21] Based on the emission factors provided in the AFC, Appendix 8.1F, attached Table 8.1F-4, combustion emissions from these delivery trucks alone would by far exceed the AFC's emissions estimate for construction month 12. For example, NOx emissions from truck deliveries during these months would amount to 445.3 lb/day NOx,[22] 232 lb/day higher than estimated by the AFC for month 12. In month 16, the total number of workers on site, 401, is 70% higher than the 236 workers projected for month 12. Consequently, combustion and entrained road dust emissions from worker commuter vehicles are also 70% higher. Contributions from these various sources vary from month to month.

Similarly, fugitive dust emissions are likely greatest during the demolition/site preparation phase, not during month 12. Fugitive dust emissions during this construction period result from material handling of demolition material; material handling of 165,000 cubic yards of fill material; entrained road dust from delivery trucks; grading of the 19.4-acre site; windblown dust from the graded site and storage piles; entrained road dust from delivery and off-site haul trucks; and entrained road dust from construction worker vehicles.

Clearly, estimating the maximum daily construction emissions based on the month with the highest number of heavy-duty construction equipment on site does not necessarily result in the worst-case emissions estimate.

Data Requests

21. Please explain why construction month 12 was chosen to estimate construction emissions.

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[21] 13.1 standard truck deliveries + 0.4 heavy haul truck deliveries = **13.5 truck deliveries**

[22] (125 trucks/day) × (0.0274 lbs NOx/VMT) × (130 VMT) = **445.25 lb NOx/day.**

22. Please calculate maximum daily combustion and fugitive dust emissions for each month of the construction period based on the updated construction equipment list, construction worker commuter vehicles, and delivery trucks and taking into account the issues discussed in Data Requests 2 through 20 above to determine maximum potential daily emissions from the site. Please provide electronic copies of the emissions calculations.

23. Please revise the ambient air dispersion modeling for construction emissions based on the revised emissions estimates. Please provide electronic copies of the modeling files.

Background: CONSTRUCTION EXHAUST EMISSIONS MITIGATION

The Applicant proposes 13 mitigation measures for Project construction.[23] However, the proposed mitigation measures only address fugitive dust emissions from Project construction and would not reduce combustion emissions.

Data Requests

24. Please develop a detailed construction mitigation management plan that specifies all mitigation measures to control diesel exhaust and fugitive dust emissions that will be implemented for construction of the SBRP.

Background: CONSTRUCTION NON-EXHAUST VOC EMISSIONS

Non-exhaust emissions can account for a substantial portion of the VOC emissions from off-road equipment, and for certain engine types, the non-exhaust component is comparable to the exhaust component. The bulk of these non-exhaust emissions comes from evaporative emissions[24] and refueling losses.[25] Evaporative losses include diurnal, hot soak, and

[23] AFC, Appendix 8.1F, pp. F2 – F3.

[24] C.A. Harvey, United States Environmental Protection Agency, Office of Mobile Sources, Basic Evaporative Emission Rates for Nonroad Engine Modeling, February 13, 1998.

[25] G.J. Dolce, United States Environmental Protection Agency, Office of Mobile Sources, Refueling Emission for Nonroad Engine Modeling, August 20, 1998.

crankcase emissions. Evaporative emissions are losses from the fuel tank while the engine is not in use due to daily ambient temperature changes. Hot soak emissions are gasoline vapors generated immediately following shutdown of an engine due to vaporization of fuel remaining in the carburetor float bowl as it is warmed by residual engine heat. Most of the construction equipment used at the site would be refueled at the site and stored at the site. Thus, evaporative emissions and refueling losses should have been included in the construction equipment emission inventory, but were not. Daily losses, for example, are estimated at 3.0 to 4.0 grams VOC per gallon fuel. Non-exhaust VOC emissions can be estimated from the 1991 U.S. EPA's *Nonroad Engine and Vehicle Emission Study*[26] and more recent U.S. EPA guidance.

Data Request

25. Please provide an estimate of evaporative and refueling emissions during the construction period and support your estimate with references and calculations.

Background: OPERATIONAL EFFICIENCY

The SBRP would be configured as two natural gas-fired combustion turbines and one steam turbine with a nominal 500-MW output at 62 degrees Fahrenheit. The SBRP would include supplemental duct firing which can raise the output by an additional 120 MW by boosting the output of the steam turbine.[27] The maximum hours per year of duct burner operation for peaking purposes is expected to be approximately 800 hours/year, *i.e.* less than 10% of the operating time in baseload mode.[28] The rest of the year, the oversized steam turbine is working at less than maximum efficiency, which lowers the optimal heat rate of the whole plant.

In general, as increasing peak firing capacity is designed into a plant, the unfired baseload performance is shifted further away from the optimal

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[26] United States Environmental Protection Agency, Nonroad Engine and Vehicle Emission Study, Report, November 1991.

[27] AFC, p. 2-1.

[28] CH2MHill, Data Response #5, Set 1a, South Bay Replacement Project (06-AFC-3), prepared for LSP South Bay, LLC, November 2006.

unfired plant performance.[29] If a plant is designed for baseload output only without supplemental duct firing, it can achieve a considerably better efficiency. The demand for peak power can be more efficiently met with a smaller peaker plant. Thus, an alternative for the proposed SBRP would be to design the plant for maximum baseload efficiency, which would considerably decrease the heat rate. As a result, emissions from the plant would be considerably lower. Eliminating duct firing would also dramatically reduce the cooling load and the size and visual bulk of the air-cooled condenser. The AFC evaluated a number of alternatives to the proposed SBRP including a smaller simple cycle peaking project but did not analyze a baseload operation alternative without duct firing.

Data Request

26. Please compare the relative fuel efficiency of a plant designed for maximum baseload efficiency along with a simple cycle peaker plant to the fuel efficiency of the proposed project.

27. Please provide an analysis of an unfired alternative to the project including the following elements:
    a) heat balances
    b) water balances
    c) noise analysis
    d) emission estimates and air quality modeling.

28. Please discuss the feasibility of optimizing the SBRP for baseload operations without duct firing. If peak capacity is necessary, please discuss the feasibility of constructing a separate peaker plant to satisfy this demand.

Background: HEAT RATE DEGRADATION AND COMPLIANCE WITH EMISSIONS LIMITS

The AFC states that on an annual average day (62 F), the 500-MW SBRP would have a baseload heat rate of 6,993 BTU/kWh (HHV[30]). The duct-fired incremental heat rate on an annual average day is approximately 9,488 BTU/kWh (HHV) resulting in a net plant heat rate of 7,463 BTU/kWh

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[29] C. Jones and J.A. Jacobs III, GE Power Systems, Economic and Technical Considerations for Combined-Cycle Performance Enhancement Options, GER-4200, November 2000.

[30] Higher heating value.

(HHV) during peaking operation.[31] Heat rates for both baseload and peaking operation are expected to increase with increasing age of the equipment, *i.e.* more fuel will be required to produce the same amount of electricity. Higher fuel consumption will result in an increase of emissions.

Data Requests

29. Please clarify whether the stated baseload operations and duct-firing heat rates are new-and-clean ratings or lifetime-average ratings and provide supporting documentation.

30. Please provide vendor guarantees and estimates for the anticipated degradation with time for both baseload operation and duct-firing heat rates and support your estimates with references.

31. Please clarify whether the emissions estimates provided in the AFC are for new-and-clean conditions or for life-time average conditions. Please quantify the anticipated increase in emissions over the lifetime of the SBRP.

32. Please indicate whether the SBRP will have maximum daily and annual fuel limits.

Background: AMMONIA SLIP

The AFC's BACT analysis cites to the CARB's *Guidance for Power Plant Siting and Best Available Control Technology*, which recommends that Districts should consider permit conditions that limit ammonia slip to 5 ppm and acknowledges that slips as low as 2 ppm can be achieved using standard technology.[32] Yet, the AFC proposes an ammonia slip of 10 ppmv[33] for the proposed turbine configurations.[34] CEC staff requested an explanation why SCR systems with ammonia slip at 5 ppm or less are not technically feasible and cost-effective for this project.[35] LS Power responded that "[t]echnically

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[31] AFC, pp. 2-66 – 2-67.

[32] AFC, Appendix 8.1C, Table 8.1C-3, p. C-6.

[33] 10 ppm by volume, dry ("ppmvd"), corrected to 15% oxygen content.

[34] AFC, p. 8.1-36.

[35] CEC Data Request #20.

feasible/cost effectiveness are terms associated with a BACT analysis.[36] Because ammonia is not a pollutant regulated under the SDAPCD's New Source Review (NSR) regulations, there is no BACT requirement for ammonia emissions. Consequently, there is no NSR requirement to perform a technical feasibility/cost effectiveness analysis for ammonia." In support of the 10 ppm ammonia slip limit, the LS Power cites to two projects approved by the CEC in the past two years, the San Joaquin Valley Energy Center and the Blythe Energy Project Phase II, which were both permitted with a 10 ppm ammonia slip. However, LS Power fails to mention that for the more recently permitted Blythe project, U.S. EPA, CARB, and CEC staff strongly recommended "a limit of 5 ppm because additional ammonia control would be feasible and beneficial in reducing secondary PM10 formation" and imposed a condition of certification requiring the project owner to "replace, repair, or recondition the injection grid if ammonia slip begins consistently to exceed 5 ppm averaged over a 24-hour period."[37]

LS Power's contention that no legal requirements for lowering the ammonia slip limit exist is not correct. Ammonia reacts with nitric and sulfuric acids contained in the exhaust gases and/or ambient air to form PM2.5 and PM10 and, therefore, is a precursor for the formation of secondary particulate matter. San Diego County is in violation of California PM10 and PM2.5 ambient air quality standards.[38] Under CEQA, every impact that contributes to an existing violation of an ambient air quality standard must be evaluated and mitigated to the extent feasible.[39] Consequently, a facility that has the potential to increase secondary PM2.5 and PM10 ambient air concentrations, aggravating an existing nonattainment problem, must employ all feasible mitigation for precursors of criteria pollutants.

Lower ammonia slip levels can be readily and inexpensively achieved using a standard SCR system designed to meet a lower slip. Most gas-fired power plant projects in California are required to meet an ammonia slip of 5 ppm. There are a large number of facilities that are successfully operating with both low NOx and ammonia slip levels. Some of these facilities are continuously monitoring ammonia. A number of recent combined-cycle power plant projects, using similar size and larger gas-fired turbines, have been licensed with an ammonia slip of 5 ppm. For examples, please see the

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[36] CH2MHill Response to CEC Data Request #20.

[37] CEC Blythe Energy Project Phase II Commission Decision, CoC: AQ-C10, p. 16.

[38] AFC, pp. 8.1-9 to 8.1-11.

[39] Public Resources Code § 21002; CEQA Guidelines 15092(b)(2).

Magnolia Power Project,[40] the Mountain View Power,[41] the Tesla Power Plant Project,[42] and the Palomar Energy Project.[43]

Massachusetts, Connecticut, Rhode Island, and other states have established 2 ppm ammonia slip BACT limits for new power plants. Rhode Island requires all power plant permit applicants to justify why they cannot achieve a 2 ppm ammonia slip for SCR as part of their BACT analysis. The Massachusetts Department of Environmental Protection has established a "Zero Ammonia Technology" BACT standard for gas turbines larger than 50 Megawatt ("MW").[44]

Several large projects in Massachusetts and Connecticut have issued prevention of significant deterioration ("PSD") permits specifying a NO_x limit of 2 ppm achieved with a 2 ppm ammonia slip, demonstrated using ammonia continuous emissions monitoring ("CEMs") and both averaged over 1 hour. For an example of this technology, please see the Sithe Mystic Development.[45] The Massachusetts permits further require that the applicant retrofit the facilities with zero ammonia technology at the end of

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[40] South Coast Air Quality Management District, AQMD BACT Determinations, Application No. 386305, Magnolia Power Project, Burbank, CA, http://www.aqmd.gov/bact/386305Magnolia.doc; 181 MW net gas turbine, permitted 3-hr NOx limit 2.0 ppm, permitted 1-hr NH_3 limit 5.0 ppm.

[41] South Coast Air Quality Management District, AQMD BACT Determinations, Application No. 366147, Mountain View Power Co., LLC, San Bernardino, CA, http://www.aqmd.gov/bact/366147_Mountainview_Power.doc; 176 MW net has turbine, permitted 3-hr NOx limit 2.5 ppm, permitted 1-hr NH_3 limit 5.0 ppm.

[42] California Energy Commission, Tesla Power Project, Application for Certification (01-AFC-21), Alameda County, Presiding Member's Proposed Decision, P800-04-007, February 2004; 1120 MW net gas turbine, proposed 1-hr NOx limit 2.0 ppm, proposed 3-hr NH_3 limit 5.0 ppm.

[43] California Energy Commission, Palomar Energy Project, San Diego County, Application for Certification (01-AFC-24), Final Commission Decision, August 2003, P800-03-009; 550 MW net gas turbine, 1-hr average NOx limit 2.0 ppm (or 3-hr average when duct firing or during transient hours), 1-hr NH_3 limit 5.0 ppmvd and 10.0 ppm during transient hours.

[44] Memorandum from David B. Struhs, Commissioner, Massachusetts Department of Environmental Protection, to Ed Kunch, Re: Best Available Control Technology (BACT)/Lowest Achievable Emission Rate (LAER) for Electric Power Generators, January 29, 1999.

[45] South Coast Air Quality Management District, Other LAER/BACT Determinations, Application No. MBR-99-COM-012, Sithe Mystic Development, LLC, Everett, MA, http://www.aqmd.gov/bact/MBR-99-COM-012-Mystic2.doc; two 250 MW net gas turbines, permitted 3-hr NOx limit 2.0 ppm except during startup, permitted 1-hr NH_3 limit 2.0 ppm except during startup.

five years. Two of these facilities are currently operating with NH_3 slip levels less than 1 ppm, demonstrated by CEMS.

The CARB document, *Guidance for Power Plant Siting and Best Available Control Technology*, cited in the AFC's BACT analysis, recommends that air districts should consider permit conditions that limit ammonia slip to 5 ppm and acknowledges that slips as low as 2 ppm can be achieved using standard technology.[46] All of the major SCR vendors will guarantee ammonia slips substantially below 10 ppm. Attachment D to the CARB guidance document includes performance guarantees from four major SCR vendors for a 5 ppm ammonia slip, the only level requested. In addition, all of the major vendors are currently offering performance guarantees of 2 ppm to compete in the New England market.[47]

There are two methods that can be used to meet a lower slip limit, *i.e.* increasing the volume of catalyst and using an oxidizing layer downstream of the SCR catalyst to convert ammonia to nitrogen gas and water. The BACT analysis in the AFC, Appendix 8.1C, did not evaluate either of these two methods of meeting a lower ammonia slip limit than 10 ppm. Two major catalyst vendors are commercially offering an oxidizing layer downstream of the catalyst for gas turbines, Cormetech and Engelhard. Near-zero slip levels can be readily and inexpensively achieved using this system. In addition, a lower ammonia slip limit can also be achieved by increasing the SCR catalyst volume. This approach was selected by Calpine in the permitting of its Towantic facility in Connecticut to meet a 2 ppm ammonia slip limit.

Data Requests

33. Do you acknowledge that CEQA requires mitigation of secondary particulate matter formation and that reducing the ammonia slip limit would represent a method to mitigate particulate matter impacts?

34. Does LS Power acknowledge that limits of 2 to 5 ppm for ammonia and 2 ppm for NOx have been achieved in practice in gas-fired combined-cycle power plants and are feasible for this project?

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[46] California Air Resources Board, Guidance for Power Plant Siting and Best Available Control Technology, September 1999.

[47] Personal Communications with engineers at Peerless, Engelhard, Hitachi, and Mitsubishi, December 1999.

35. If the answer to request 34 is no, please provide documentation to demonstrate why an ammonia slip limit of 2 to 5 ppm is not feasible for this project.

36. In addition, please explain why the CEMs data and/or source tests for the following projects do not individually establish BACT or in the aggregate, collectively establish BACT for ammonia slip for the REP. Please provide supporting data for any of the following facilities that you believe do not demonstrate a lower ammonia slip limit than 10 ppm.
    - i. Lake Road, CT
    - ii. Milford Power LLC, CT
    - iii. Wallingford, CT
    - iv. West Springfield, MA
    - v. ANP Blackstone, MA
    - vi. Cogentrix River Road, WA
    - vii. University of California, San Diego, CA
    - viii. Los Medanos Energy Center, CA

37. Please expand the BACT analysis to specifically evaluate the use of an oxidizing layer to meet an ammonia slip limit of 2 ppm at the SBRP.

38. Please expand the BACT analysis to specifically evaluate increasing the volume of SCR catalyst to meet a slip limit of 2 ppm, and if rejected, explain why this approach is feasible in Connecticut, but not in California on nearly identical projects.

Background: BACT FOR AUXILIARY BOILER

The project includes a 38.0 MMBtu/hr auxiliary boiler that would operate up to 1,664 hours per year.[48] The Applicant is proposing emissions limits for NOx of 9 ppm and for CO of 50 ppm.[49] The AFC does not include a top-down BACT analysis for the auxiliary boiler in support of these limits, arguing that the boiler is exempt from BACT because potential emissions from the boiler would be below the BACT significance thresholds established in the SDAPCD's Rule 20.3.[50] It appears that the Applicant relied on a provision of

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[48] AFC, p. 8.1-30 and Appendix 8.1B, Table 8.1B-4.

[49] AFC, p. 8.1-30.

[50] AFC, p. 8.1-52.

Rule 20.3 that applies to new emission units associated with an existing stationary source. This is not the case here because the SBRP is a new stationary source for purposes of NSR review. Thus, emissions from the SBRP must be evaluated in the aggregate, rather than for each individual emissions unit.[51]

The CARB and SCAQMD BACT Clearinghouses show that several comparable boilers have been permitted with lower NOx limits than the 9 ppm limit proposed for the SBRP's auxiliary boiler and are currently in compliance with their permits, including:

i. Crockett Cogeneration Facility, three auxiliary boilers: permitted at 8.2 ppm NOx in 1996;
ii. Equilon Cogeneration Facility, Martinez, CA auxiliary boiler: permitted at 5 ppm NOx in 12/1993;
iii. Damapong Textiles, 16.5 MMBtu/hr-boiler: permitted at 7 ppm NOx in 12/1999;
iv. General Dyeing and Finishing, 13.5 MMBtu/hr boiler: permitted at 5 ppm NOx in 10/1999;
v. Coca Cola, 31.5 MMBtu/hr boiler: permitted at 7 ppm NOx in 11/1999;
vi. Fansteel, 39.9 MMBtu/hr boiler: permitted 5 ppm NOx in 8/1998; and
vii. Lacorr Packaging, 21.0 MMBtu/hr boiler: permitted at 7 ppm NOx in 8/2000.

Considerably lower CO emission levels than the proposed 50 ppm limit for the SBRP have been permitted and demonstrated at other comparable sources, including:

i. Crockett Cogeneration Facility, three auxiliary boilers: permitted at 11 ppm CO in 1996, achieved using an oxidation catalyst; June 1997 source test measured 3.24 ppm CO from Boiler B and June 1998 source test measured 6.02 ppm CO from Boiler C; and
ii. Los Medanos, 320-MMBtu/hr auxiliary boiler: although permitted at 50 ppm CO, source-tested at 1.87 ppm CO.

39. Please prepare a formal, top-down BACT analysis for the auxiliary boiler.

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[51] *See* Rule 20.1(d)(1)(ii).

Background: COMPLIANCE MONITORING

The Applicant proposes to monitor NOx and CO emissions with continuous emissions monitoring ("CEMS"). Short- and long-term emissions of VOCs would be monitored based on fuel use levels and emission factors, which would be confirmed during annual compliance tests.[52] The Applicant did not propose any monitoring or source tests for PM, PM10, PM2.5, NH_3, or SO_2, emissions. The AFC also provides emission estimates for non-criteria pollutant emissions, including NH_3, benzene, aldehydes, polycyclic aromatic hydrocarbon ("PAH") from the gas turbines, heat recovery steam generators ("HRSGs"), and the auxiliary boiler in Table 8.1-26 and states that these emissions reflect the maximum proposed emissions for the SBRP. The AFC does not propose any monitoring or source testing for non-criteria pollutants.

Continuous monitoring and/or annual or bi-annual source tests for most of these pollutants during normal operating conditions at different loads and startup/shutdown have been required for other power plants including the Sutter[53] (NOx, CO, VOC, SO_2, PM10, NH_3), Pittsburg District EnergyFacility[54] (NOx, NH_3, PM10 including condensable particulate matter, precursor organic compounds as CH_4, methane, formaldehyde, benzene, specified PAHs), and the Metcalf Energy Center[55] (NOx, ethane, PM10 including condensable particulate matter, benzene, formaldehyde, specified PAHs, NH_3).

Data Requests

40. Please clarify whether annual or bi-annual source tests would be conducted for NOx and CO.

41. Please indicate whether the annual source tests for VOC emissions would include measurements during startup and shutdown.

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[52] CH2MHill, Data Responses, Set 1a, South Bay Replacement Project (06-AFC-3), prepared for LSP South Bay, LLC, November 2006; response to CEC Data Request #4.

[53] California Energy Commission, Commission Decision, Application for Certification, Sutter Power Plant Project, Docket No. 97-AFC-2, P800-99-010, April 1999.

[54] California Energy Commission, Commission Decision, Application for Certification, Pittsburg District Energy Facility, Docket No. 98-AFC-1, P800-99-013, August 1999.

[55] California Energy Commission, Commission Decision, Application for Certification 99-AFC-3, Metcalf Energy Center, P800-01-023, September 2001.

42. Please explain how PM, PM10, PM2.5, and SO_2 emissions would be monitored and how continuous compliance with the facility's hourly, daily and annual emission limits for these pollutants would be guaranteed.

43. Please indicate whether annual or bi-annual compliance source testing would be required for PM, PM10, PM2.5, NH_3, and SO_2 and whether this source testing would include source testing during startup and shutdown. If the answer is no, please explain why source testing for these pollutants is deemed not necessary.

44. Please explain how non-criteria pollutant emissions would be monitored and how compliance with the facility's hourly and annual emission limits for these pollutants shown in Table 8.1-26 would be guaranteed.

45. Please indicate whether annual or bi-annual compliance source testing would be required for non-criteria pollutant emissions and whether this source testing would include source testing during startup and shutdown. If the answer is no, please explain why source testing for these pollutants is deemed not necessary.

Background: NON-CRITERIA POLLUTANT EMISSION ESTIMATES FOR SBRP OPERATION

The AFC presents maximum hourly and annual non-criteria pollutant emissions for the SBRP in Table 8.1-26 for normal turbine operations. These emissions estimates are based on emission factors from U.S. EPA's *Compilation of Air Pollutant Emission Factors* ("AP-42") and the CARB's CATEF database.[56] These emission factors are derived from units operating at high loads (≥80 percent).[57] Considerably higher emissions can occur during startup and shutdown. Particularly aldehyde emissions are higher during startup and shutdown than during full load operations due to incomplete combustion. Based on extrapolations from established data, the emission factors for acrolein, for example, have been estimated to be approximately 20 times greater during startup than at full-load operations.[58]

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[56] AFC, Appx. 8.1B, Table 8.1B-8.

[57] U.S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors, Volume I, Section 3.1 Stationary Gas Turbines, Table 3.1-3, Footnote b.

Aldehydes, including acrolein, acetaldehyde, and formaldehyde, are hazardous air pollutants ("HAPs"). The AFC does not provide emissions estimates for aldehydes or other non-criteria pollutants during startup and shutdown.

Further, the AFC indicates that annual emission estimates are based on 8,760 operating hours per year.[59] However, review of the annual emission estimates shows that a considerably lower number of annual operating hours, between 6,700 and 7,500 hours, was assumed to calculate annual operating non-criteria pollutant emissions.[60]

Data Request

46. Please quantify emissions of non-criteria pollutants for startup and shutdown and operation with duct burners and support your estimates with engineering calculations and references. Please revise the annual emissions estimates to reflect the worst-case scenario for a combination of normal operations, startup and shutdown, and operation with duct burners.

PUBLIC HEALTH

Background: CONSTRUCTION HEALTH RISK ASSESSMENT

The AFC modeled the annual average concentrations for the combustion portion of PM10 emissions from *on-site* construction equipment and determined the carcinogenic risk for the construction period from these modeled emissions.[61] The Applicant submitted a revised air quality dispersion modeling and revised health risk assessment to the SDAPCD on February 15, 2007.[62] The Applicant determined a carcinogenic risk from

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[58] California Energy Commission, Commission Decision, Application for Certification 99-AFC-3, Metcalf Energy Center, P800-01-023, September 2001, p. 178.

[59] AFC, Appx. 8.1B, Table 8.1B-8.

[60] Back calculated hours from annual emissions estimates (ton/year) and (lb/hr).

[61] AFC, Appx. 8.1F, Table 8.1F-4.

[62] Eric Walther, Sierra Research, Letter to Camqui Nguyen and Ralph deSiena, San Diego Air Pollution Control District, Re: Air Dispersion Remodeling Results, South Bay Replacement Project, Chula Vista, California, February 14, 2007.

exposure to diesel exhaust from construction of the SBRP between 12 and 17 in one million. These cancer risks exceed both the significance thresholds of 1 in one million and 10 in one million for projects constructed with and without toxics best available control technology ("T-BACT"), respectively. The Applicant emphasizes that these impacts are highly localized near the project site and barely extend beyond the facility fenceline and that they are expected to be reduced to less than significant with implementation of mitigation measures required by the CEC.[63] There are a number of problems with this health risk assessment and the Applicant's conclusion.

First, the AFC did not account for and model the diesel exhaust emissions from *off-site* truck traffic and construction worker vehicles. As discussed in Data Request #4, off-site emissions from haul trucks are considerable and would substantially add to the modeled carcinogenic risk from on-site construction combustion emissions.

Second, the Applicant used an "adjustment factor" of 28/840 to reduce the 70-year (840 month) lifetime exposure to a 28-month construction exposure period.[64] This adjustment factor is inappropriate and incorrect. The adjustment of exposure duration is inconsistent with CARB and OEHHA guidance, which requires the use of a lifetime exposure when assessing diesel impacts, regardless of the actual length of the project.[65] The OEHHA routinely rejects risk assessments in which shorter durations, such as used here, are employed for short-term projects. Further, construction of the SBRP would be followed by construction of the final 690-kV and 138-kV substation and demolition of the existing South Bay facility, which will generate combustion emissions similar to those described for the construction phase.[66] According to the construction schedule, construction of the SDG&E substation and demolition of the existing South Bay facility is expected to require an additional 32 months for a total construction/demolition period of 60 months.[67] Thus, even if the use of an adjustment factor was justified, the total exposure duration assumed by the AFC is underestimated.

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[63] AFC, Appx. 8.1F, p. F-7.

[64] Eric Walther, Sierra Research, Letter to Camqui Nguyen and Ralph deSiena, San Diego Air Pollution Control District, Re: Air Dispersion Remodeling Results, South Bay Replacement Project, Chula Vista, California, February 14, 2007.

[65] CARB, Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines, October 2000 (http://www.arb.ca.gov/diesel/documents/rmgFinal.pdf).

[66] AFC, Appx. 8.1F, p. F-2.

[67] *See* AFC, Figure 1.6-1.

Third, the AFC compares the modeled maximum incremental cancer risk (MICR") at the point of maximum impact, the maximally exposed individual resident ("MEI"), and the maximally exposed off-site worker ("MEW") to a significance threshold of 10 in one million, which is the threshold for projects constructed with T-BACT. The AFC does not discuss the fact that the calculated carcinogenic health risk exceeds these thresholds. Further, the AFC does not require the SBRP to be constructed with T-BACT.

Finally, the AFC notes that the mitigation measures required by the CEC are expected to reduce these impacts to less than significant levels.[68] However, the proposed mitigation measures do not include a single mitigation measure that addresses combustion emissions.[69] Carcinogenic diesel exhaust tailpipe emissions can be considerably reduced, *e.g.*, by installing post-combustion controls such as oxidizing soot filters on construction equipment and haul trucks and/or requiring the use of newer fleets, *e.g.,* construction equipment meeting at least Tier 2 standards and a post-1994 delivery truck fleet.[70]

Data Requests

47. Please provide all data, calculations, reports, correspondence, and other information that supports using a less than lifetime exposure duration to estimate cancer risk from diesel exhaust.

48. Please prepare a cancer risk analysis for diesel exhaust emissions during construction of on-site and linear facilities based on the revised construction emissions requested in Data Request #22 and based on a lifetime exposure duration and/or a 60-month exposure duration. Please present the results in a figure which shows risk isopleths and locates all sensitive receptors. Please provide all modeling input/output files in electronic format.

49. Please identify all proposed mitigation measures (in a construction mitigation plan) that would reduce combustion emissions due to project construction and demonstrate that these mitigation measures would reduce the significant cancer risks due to construction to a level below the significance threshold.

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[68] AFC, Appendix 8.1F, p. F-7.

[69] AFC, Appendix 8.1F, pp. F2 – F3.

[70] http://www.dieselnet.com/standards/us/

50. Please specify all construction mitigation measures that would justify using the T-BACT significance threshold of 10 in one million. Or alternatively, evaluate health risks from SBRP construction compared to the significance threshold of one in one million for projects constructed without T-BACT.

51. Is the Applicant willing to require the use of construction equipment that meets at least Tier 2 standards and the use of post-1994 delivery trucks? Is the Applicant willing to require the use of construction equipment with post-combustion controls such as oxidizing soot filters on all applicable diesel-powered equipment to mitigate the impacts from Project construction? For both questions, if the answer is no, please justify your answer.

NOISE

Background: AUGER CAST PILING

The AFC states that the Applicant proposes to use auger cast piles instead of standard piles driven by hammer-type pile drivers.[71] Auger cast piles are installed by rotating a continuously flighted hollow shaft auger into the soil to a specified depth. High strength cement grout is pumped under pressure through the hollow shaft as the auger is slowly withdrawn. The resulting grout column hardens and forms an auger cast pile. Reinforcing, when required, can be installed while the cement grout is still fluid or (in the case of full length single reinforcing bars) through the hollow shaft of the auger prior to the withdrawal and grouting process.[72] The AFC states that vibration levels for auger cast piling are typically from 20 to 30 (and maybe 50) decibels lower than standard hammering techniques citing to an article by Thorburn Associates.[73] However, this article discusses the installation of steel-H piles with a hydraulic piling machine, not auger cast piling.[74] Elsewhere the AFC states that the SBRP would be supported on deep

[71] AFC, p. 8.5-28.

[72] Auger Cast Piles, Technology Overview; http://www.augercastpiles.com/auger-cast-piles-technology/auger-cast-piles-technology.asp?Task=Overview&SiteID=2 - 2, accessed February 13, 2007.

[73] AFC, p. 8.5-28.

[74] Thorburn Associates, Hydraulic Pile Drivers Work Out of a Tight Spot, Quietly; http://www.ta-inc.com/newshtml/piledriver.htm, accessed February 13, 2007.

foundations consisting of reinforced concrete pile caps supported by driven pre-cast *or* augered-cast-in-place concrete piles.[75] Further, the noise mitigation measures proposed in the AFC do not mention the use of auger cast piling rather than standard pile driving.[76]

Data Request

52. Please clarify which type of pile driving, auger cast piling, hydraulic piling of steel H-piles, or driven pre-cast concrete piles, is proposed for the SBRP foundations.

53. Please identify the noise and vibration levels for the selected pile driving method and support these levels with references.

54. Is the Applicant willing to accept the use of auger cast piling as a CoC to mitigate construction noise from pile driving?

GEOLOGIC HAZARDS

Background: SEA LEVEL RISE

Coastal observations and global model projections indicate that California's open coast and estuaries will experience a substantial sea level rise during the next century, even faster than the historical rates. By mid-century (2035–2064), global sea level is predicted to rise between 2.4 and 12.6 inches relative to 1990 levels. In the San Diego region, the rate of historical sea level rise has been close to 8 inches per century and the occurrence of sea level extremes has increased markedly. Coastal sea level extremes are also exacerbated by storm effects, such as heavy surf from wind-driven waves. At La Jolla, sea level extremes have increased thirty-fold since 1933. It is expected that these extremes may become even more common. In recent years, a trend has been documented in the tide range along much of the California coast with high tide levels rising faster than mean sea level for

[75] AFC, p. 2-66.

[76] AFC, Noise Mitigation Measure #1 through #7, pp. 8.5-39 – 8.5-41.

reasons that are not yet understood.[77] The coastal San Diego region has been identified as one of the areas with the highest risk to sea level rise.[78] A recent report, supported by the California Energy Commission and the California Environmental Protection Agency, concluded: "If heat-trapping emissions continue unabated and temperatures rise into the higher warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century."[79]

The proposed SBRP facility site is located at the San Diego Bay shore with an approximate elevation of 10 to 25 feet above mean sea level.[80] After demolition of the former LNG tank foundations, the SBRP will be brought to an elevation of 22 feet above mean sea level with the addition of approximately 168,000 cubic yards of imported structural fill.[81]

The anticipated life of the combined cycle units that will be installed at the SBRP is a minimum of 30 years, and continued operation beyond 30 years is viable.[82] If sea levels rise and coastal sea level extremes occur as projected, the SBRP would be at risk from flooding by mid-century. The AFC states that the SBRP site is not located within the 100-year floodplain, but does not discuss the impacts of the projected sea level rise on the site.

Data Request

55. Please discuss the potential impacts of the projected sea level rise by mid-century and how the SBRP would be protected.

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[77] California Climate Change Center, Projecting Future Sea Level, White Paper, CEC 500-2005-202-SF, March 2006; http://www.energy.ca.gov/2005publications/CEC-500-2005-202/CEC-500-2005-202-SF.PDF, accessed February 7, 2007.

[78] V.M. Gornitz, T.W. Beaty, and R.C. Daniels, Oak Ridge National Laboratory, A Coastal Hazards Database for the U.S. West Coast, ORNL/CDIAC-81, NDP-043C, 1997; http://cdiac.ornl.gov/ftp/ndp043c/ndp043c.pdf, accessed February 7, 2007.

[79] California Climate Change Center, Our Changing Climate, Assessing the Risks to California, p. 15, CEC-500-2006-077, July 2006; http://www.ucsusa.org/assets/documents/global_warming/Our-Changing-Climate-final.pdf, accessed February 1, 2007.

[80] AFC, p. 8.15-2.

[81] AFC, p. 8.15-5.

[82] AFC, p. 4-3.

STATE OF CALIFORNIA

Energy Resources Conservation and Development Commission

In the Matter of:

The Application for Certification for the LSP SOUTH BAY, LLC SOUTH BAY REPLACEMENT PROJECT

Docket No. 06-AFC-3

PROOF OF SERVICE

I, Bonnie Heeley, declare that on February 26, 2007, I served copies of the attached CURE DATA REQUESTS SET ONE (NOS. 1-55) as follows:

Via mail:

CALIFORNIA ENERGY COMMISSION
DOCKET UNIT
ATTN: Docket Unit 06-AFC-3
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

Kevin Johnson
LS Power Generation, LLC
1735 Technology Drive, Suite 820
San Jose, CA 95110

Via email:

docket@energy.state.ca.us
jgeesman@energy.state.ca.us
pflint@energy.state.ca.us
pao@energy.state.ca.us
gshean@energy.state.ca.us
bpfanner@energy.state.ca.us
kwillis@energy.state.ca.us

kjohnson@lspower.com
cte@eslawfirm.com
Robert.mason@ch2m.com
Sarah.madams@ch2m.com
mdjoseph@adamsbroadwell.com
speesapati@adamsbroadwell.com
wolff@smwlaw.com
bundy@smwlaw.com
laurah@environmentalhealth.org
mmeacham@ci.chula-vista.ca.us
pfanfera@portofsandiego.org
cteufel@coastal.ca.gov
esaltmarsh@eob.ca.gov

I declare under penalty of perjury that the foregoing is true and correct. Executed at South San Francisco, California, on February 26, 2007.

/s/
Bonnie Heeley