CALIFORNIA ENERGY COMMISSION
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May 11, 2007

Mr. Gregory Lamberg
Manager, Project Development, Mail Code N12G
Pacific Gas and Electric Company
P.O. Box 770000
San Francisco, CA 94177-0001

HUMBOLDT BAY REPOWERING PROJECT (06-AFC-7) – Preliminary Air Quality & Public Health Issues

Dear Mr. Lamberg:

Energy Commission staff has identified several potentially significant Air Quality and Public Health issues in conducting our preliminary evaluation of the Application for Certification for the proposed Humboldt Bay Repowering Project (HBRP). Staff had identified some of these issues early in this proceeding in its Issues Identification Report dated November 30, 2006, and has been unable to resolve them during our preliminary analysis despite conducting three rounds of Data Requests and three Data Response and Issues Resolution Workshops. Our analysis, using data and information from Pacific Gas and Electric (PG&E) and local, state, and federal air quality agencies, indicates that HBRP could result in a significant public health impact due to airborne toxins and may not conform with Laws, Ordinances, Regulations and Standards (LORS) per the U.S. Environmental Protection Agency's (U.S. EPA's) federal standard for particulate matter. Factors contributing to our preliminary conclusions include inconsistencies in PG&E's application for both hours of diesel operation and air dispersion modeling techniques, coupled with the emission levels of the HBRP generation technology and fuel choices. Given the issues encountered to date, we believe PG&E should examine alternatives to the proposed project inclusive of alternatives to its backup fuel supply of California Air Resources Board low-sulfur diesel, reconfiguring its design, and evaluating other generation technologies.

Staff believes one of the most significant issues is that the modeling provided in the application and as updated in data responses shows a violation of the federal ambient air quality standard for particulate matter less than 2.5 micrometers (PM2.5) for the 24-hour average concentration. PG&E shows in its Class II increment analysis that the project would contribute a particulate matter concentration of 17.82 μg/m³ when firing on natural gas with a 0.7 percent diesel pilot and a particulate matter concentration of 28.9 μg/m³ when firing exclusively on diesel fuel, which when added to the PM2.5 ambient concentrations would lead to maximum concentrations ranging over 50 μg/m³, well above the EPA standard of 35 μg/m³. The North Coast Unified Air Quality Management District's (Air District's) rules [Rule 110, Sections 1.1 and 8.9] indicate that the Control Officer shall grant an Authority to Construct only after he has determined that the new or modified stationary source of air contaminants will not cause a violation of any state or

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federal ambient air quality standard. It appears HBRP, as proposed would cause a new violation of the federal 24-hour standard for PM2.5. Our understanding is that without an indication that the project will comply with LORS, the District may not be able to proceed with a Preliminary Determination of Compliance (PDOC) associated with PG&E's Application for Authority to Construct Permit for the HBRP.

Another significant issue pertains to the Health Risk Assessment which relies on air dispersion modeling results, and shows health risks considerably above the significance threshold as defined under California EPA's Air Toxics Hot Spots Program Risk Assessment Guidelines. Compared to the California EPA threshold of significance for cancer risk of 10 in one million, our initial analysis indicates that the project would result in a cancer risk of 11 in one million for operation under natural gas only, 37 in one million based on 100 hours of diesel operation, and 212 in one million based on 800 hours of diesel operation per year.

In reviewing PG&E's air dispersion modeling, staff believes air emission concentrations have been underestimated as a result of PG&E's modeling techniques. Staff believes that PG&E's air dispersion modeling assumption merging the two sets of five engine stacks into two equivalent stacks (rather than modeling as 10 individual stacks) is neither consistent with U.S. EPA guidelines given the stack spacing, nor appropriate for the project technology in a location affected by elevated terrain. Staff also questions the use of the CTSCREEN screening model with its default meteorological conditions, when five years of actual hourly meteorological data is available for use with the U.S. EPA recommended regulatory model (AERMOD). If the HBRP engines are remodeled as ten separate stacks per U.S. EPA guidelines using the five years of real meteorological data, we believe the modeled impacts are higher. Some cases may show amplified violations of ambient air quality standards as well as health risks above those already identified as significant.

Compounding the modeling uncertainty is the lack of specific emission factors for the proposed generation technology, Wärtsila dual-fueled engines. The use of surrogate California Air Resources Board database emission factors for diesel-fired engines and natural gas-fired engines may not be representative of these proposed engines that fire natural gas and some diesel simultaneously. Furthermore, the engine database does not contain similarly sized or emission-controlled engines. Emissions from the few other analogous dual-fueled Wärtsila engines located worldwide (i.e., generation facilities in Chambersburg, PA and in Spain and Denmark) have not been adequately tested under conditions representative of the project which would include using California test methods, similar emission control equipment, California Air Resources Board diesel, and preferably the same size and configuration as proposed for the HBRP. While we believe PG&E should obtain actual emission factors for the proposed engines, we caution that it may still not alleviate all the issues associated with the proposed use of diesel.

Another problem concerns the inconsistency in the project description with the air permit application specifying up to 800 hours per year of diesel operation, while PG&E's Health

Risk Assessment assumes no more than 100 hours of diesel operation. In an effort to better understand the expected duration and frequency of diesel operation, staff met with representatives of PG&E Gas regarding effects and responses to past natural gas supply curtailments/interruptions and the California Independent System Operator regarding associated electric system effects. Staff understands the relevance of PG&E's premise that the new project, with its modular configuration and improved efficiency, could reduce project demand for natural gas compared to the existing generation facility. However, this information does not resolve which hourly limit should be permitted and evaluated for the level of annual operation using diesel fuel as a backup to natural gas. The project description needs to be consistent across all permit conditions. Absent any change in PG&E's project description proposing to secure air quality permits based on 800 hours of diesel fuel operation per year, staff's air quality and public health analyses will be based on the higher number of hours.

In light of the above, we believe it is prudent that PG&E examine alternatives to the proposed project inclusive of alternatives to its backup fuel supply, reconfiguring the project design, and evaluating other generation technologies. In addition, we believe PG&E should remodel the project using AERMOD and five years of local meteorological data, while considering changes to the project configuration including stack height, back-up fuel types and operating hours, and generation technologies. If PG&E chooses to remodel the project, we would recommend providing staff and the Air District with a detailed modeling protocol for review and comment before initiating the modeling. Examples of alternatives staff believes are worthy of exploration, include but are not limited to the following:

1. Establishing a reliable natural gas supply to eliminate the need for diesel as a backup fuel in one or more of the following ways:

    a) Reinforcing all or a portion of the natural gas supply pipeline from its source in the Sacramento Valley or from the Tompkins Hill gas field located in Humboldt County;
    b) Utilizing the Tompkins Hill gas field for local storage of natural gas; or
    c) Providing on-site storage of natural gas at the HBRP, using either compressed gas or liquid states for its storage.

2. Evaluating propane and any other technically feasible alternative fuels to the proposed diesel backup fuel;

3. Changing from dual-fueled to all natural gas-fueled reciprocating engine-generators, recognizing that measures for improving natural gas supply reliability would also be needed; and

4. Changing from reciprocating engine to gas turbine/combined cycle technology, recognizing that measures for improving natural gas supply reliability would also be needed, and considering the use of reclaimed water supply with wet cooling, and dry cooling.

We will continue to work with the Air District, California Air Resources Board and U.S. EPA to complete the analysis of the project. However, we believe PG&E should examine project modifications and alternatives to the proposed project. Until the issues discussed previously are resolved, staff believes that several key steps contributing to this AFC proceeding may be delayed including the Air District's ability to issue a PDOC, Energy Commission staff's ability to complete its preliminary analysis, and the Coastal Commission staff's ability to issue its report. If you have any questions, please call me at (916) 654-4679 or email me at jkessler@energy.state.ca.us. We would be glad to set up an Issues Resolution Workshop if it would be productive at this time. Please respond in writing as to PG&E's plans and schedule for addressing the issues identified in this letter by May 25, 2007.

Sincerely,

John S. Kessler

John S. Kessler
Project Manager

cc: Docket (06-AFC-7)
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BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE HUMBOLDT BAY REPOWERING PROJECT BY PACIFIC GAS AND ELECTRIC COMPANY	**Docket No. 06-AFC-7** **PROOF OF SERVICE** **(Revised 3/27/07)**

INSTRUCTIONS: All parties shall 1) send an original signed document plus 12 copies OR 2) mail one original signed copy AND e-mail the document to the web address below, AND 3) all parties shall also send a printed OR electronic copy of the documents that shall include a proof of service declaration to each of the individuals on the proof of service:

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DECLARATION OF SERVICE

I, Joann Gonzales, declare that on May 11, 2007, I deposited copies of the attached Preliminary Air Quality & Public Health Issue, in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

[signature]