CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

January 14, 2002

Greg Lambert
IEEC Project Manager
4160 Dublin Blvd.
Dublin, CA 94568-3139

Dear Mr. Lambert:

INLAND EMPIRE ENERGY CENTER PROJECT (01-AFC-17) DATA REQUESTS

Pursuant to Title 20, California Code of Regulations, section 1716, the California Energy Commission (Energy Commission) staff requests that the Calpine supply the information specified in the enclosed data requests.

The subject areas addressed in the 161 attached data requests are air quality, biological resources, cultural resources, geological and paleontological resources, land use, noise, power plant efficiency and reliablity, public health, soil and water resources, transmission systems engineering, and visual resources. Other data requests may be submitted at a later date. The information requested is necessary to: 1) understand the project, 2) assess whether the project will result in significant environmental effects, and 3) assess project alternatives and mitigation measures.

Written responses to the enclosed data requests are due to the Energy Commission by February 13, 2002 or at such later date as may be agreed upon by the Energy Commission staff and the applicant.

If you are unable to provide the information requested in the data requests or object to providing it, you must contact the committee assigned to the project, and the project manager, within five days of receiving these requests stating your reason for delay or objections.

If you have any questions regarding the enclosed data requests, please call me at (916) 651-8839.

Sincerely,

Jim Bartridge
Siting Project Manager

Enclosure
cc: Docket (01-AFC-17)
Proof of Service 01-AFC-17

INLAND EMPIRE ENERGY CENTER
Data Requests
(01-AFC-17)

Technical Area: Air Quality
Author: Brewster Birdsall

BACKGROUND

Construction Emissions

According to the text of the AFC, impacts from construction emissions exceed the 1-hour state standard for NO_2 and the state and federal standards for PM_{10} (AFC §5.2.3.1 p. 5.2-27). In the Technical Appendices (AFC Appendix K-2, Table K.2-5), the 1-hour impacts of NO_2 are not shown to exceed the state standard. Staff needs further information to determine if a significant impact would occur. Additionally, staff has questions on the derivation of the emission rates and the assumed schedule for construction activities. Without further analysis, staff may be forced to propose a Condition of Certification that would prohibit construction except between the hours of 8 a.m. to 4 p.m.

DATA REQUEST

1. Please explain the apparent discrepancy between the text of the AFC (p. 5.2-27) and Technical Appendices (AFC Appendix K-2 Table K.2-5) regarding violations of the state-level 1-hour standard for NO_2.

2. The short-term NO_x emissions from the peak month of activity of construction equipment was modeled (AFC Appendix K-2) to determine compliance with the NO_2 standard. This equipment is capable of generating about 130 lb/day of NO_x (AFC Appendix K-2, Table K.2-2). Preliminary review of the modeling files submitted electronically indicates that the area source of NO_x emissions was modeled at an hourly average emission rate of 1.712×10^{-5} grams per second per square meter. Please provide supporting calculations explaining how the modeled short-term NO_x emission rate (in terms of $g/s\text{-}m^2$) is derived from the daily emission rate of approximately 130 lb/day, and reevaluate ambient impacts with use of the ozone limiting method (OLM), if necessary.

3. Preliminary review of the modeling files submitted electronically indicates that the construction considers area sources are modeled with emissions occurring only between the hours of 8 a.m. and 4 p.m. These hours are inconsistent with the 7 a.m. to 7 p.m. construction schedule anticipated for the project (AFC p. 3-50). Please describe the basis for modeling source operation for an eight-hour duration when a 12-hour duration is anticipated to be necessary, and reevaluate ambient impacts based on the 12-hour daily schedule, if necessary.

BACKGROUND

Detailed Emission Calculations

Based on review of AFC Appendix K.3, staff has a variety of questions regarding the emission calculations.

DATA REQUEST

4. The emission calculation methods for the auxiliary boiler and emergency engines (AFC Tables K.3-5 and 6) are not clear. Please provide supporting emission calculations and identify the source of the emission factors used in these calculations. For example, identify if these emission factors are design specifications or defined by a specific vendor.

5. The Summary of ERC/RTC (emission reduction credits and RECLAIM Trading Credits) Requirements (AFC Table 5.2-32 p. 5.2-56) refers to a net emission increase caused by the combustion turbines/HRSGs and auxiliary boiler. According to Tables K.3-8 and 9, the auxiliary boiler is not included in the calculation of required credits. Please explain why the boiler should not be included in Tables K.3-8 and 9 and Table 5.2-32. Please update the tables and supporting calculations as necessary.

6. The Summary of ERC/RTC Requirements (AFC Table 5.2-32 p. 5.2-56) refers to a net emission increase of CO of 689 lb/day based on operation of combustion turbines/HRSGs at 11.08 lb/hr (Table K.3-9). According to Table K.3-1 normal operation of these sources will cause between 23 and 33 lb/hr of CO, and according to Table 5.2-21 (p. 5.2-31) maximum daily emissions would be 8339 lb/day. Please explain why the CO emission calculations in Table K.3-9 and Table 5.2-32 rely on the lower emission rate. Please update the tables and supporting calculations as necessary.

BACKGROUND

Startup Emission Calculations

Startup emissions data from a variety of other projects (AFC Appendix K-3 Table K.3-3) were used to characterize the emissions that could occur during startup of the equipment at IEEC. The data in Table K.3-3 shows that hot start emissions of NO_x and CO commonly exceed cold start emissions. A single emission rate is assumed for both hot and cold starts at the IEEC (AFC Table 5.2-18 p. 5.2-29). The assumptions and safety margins used to derive the emission rates in Table 5.2-18 are not clearly explained. Staff must be assured that the levels assumed in the AFC conservatively account for emissions that would occur during hot and cold starts of the actual equipment installed. Emissions occurring at IEEC will depend upon the site-specific

climate, equipment type, and other factors. Staff assumes that vendor-specified emission rates, if available, would provide a conservative representation of expected emissions. Other applications presently before the CEC (e.g., the Roseville Energy Facility, 01-AFC-14) with equipment similar to that of the IEEC identify startup emissions that are between 150 percent to 200 percent of those presented for the IEEC in Table 5.2-18.

DATA REQUEST

7. Please discuss how the emission levels proposed in AFC Table 5.2-18 adequately characterize the actual emissions that may occur during both hot and cold start conditions. This discussion should address staff concerns that vendor-specified or site-specific factors should be considered in the determination of IEEC startup emission rates, and it should explain why vendor-specified emission rates were not used.

8. Please discuss in more detail and provide all assumptions and calculations, including the safety margins, used to derive the emission rates in AFC Table 5.2-18 from the data in Table K.3-3.

BACKGROUND

Best Available Control Technology for Ammonia

The applicant proposes an ammonia slip emission limit of 10 ppm (AFC p. 5.2-56). Guidance on BACT emission levels for Power Plant Siting published by the Air Resources Board in 1999 calls for 5 ppm at 15 percent O_2. Staff agrees with the Air Resources Board that a level of 5 ppm is achievable. BACT is required for ammonia through South Coast Air Quality Management District Rule 1303(a). Other licensing cases currently before the commission are specifying ammonia slip limits of 5 ppm. Examples of projects proposing to achieve 5 ppm are Rio Linda (01-AFC-1), Russell City (01-AFC-7), and Magnolia (01-AFC-6). Please also refer to Public Health concerns of the Romoland School District in the November 14, 2001 letter from J. Oderman of Rutan & Tucker, LLP to the County of Riverside (CEC Dockets 01-AFC-17).

DATA REQUEST

9. Please identify why this project, as opposed to other proposed and certified projects, cannot meet an ammonia slip level of 5 ppm at 15 percent O_2. In this discussion, please identify measures, including increasing catalyst surface area, that might allow the project to meet the BACT guideline level for ammonia, and identify the associated costs of such measures.

BACKGROUND

Best Available Control Technology for Engines

The applicant specifies that the emergency engines associated with IEEC (fire pump and standby generator) will meet the BACT levels defined by the South Coast Air Quality Management District (AFC p. 5.2-54 to 56). However, the technologies that will be used to achieve the proposed emission levels have not been identified.

DATA REQUEST

10. Please identify the emission control technologies that will be used to achieve BACT levels for the emergency engines.

BACKGROUND

Best Available Control Technology for Combustion Turbines

The AFC specifies that the proposed BACT levels from the combustion turbines will be 2.5 parts per million (ppmvd) of NO_x and 6 ppmvd of CO on a one-hour average (AFC p. 5.2-4). The U.S. EPA has identified a federal Lowest Achievable Emission Rate (LAER) for this type of equipment to be 2 ppmvd for both NO_x and CO on a one-hour average. Because this equipment is required to implement BACT, which is as stringent as federal LAER for these pollutants (AFC p. 5.2-67), the proposed BACT level should match the level specified by the U.S. EPA.

DATA REQUEST

11. Please identify proposed BACT levels for NO_x and CO from the gas turbines that match the 2 ppmvd LAER levels specified by the U.S. EPA, or provide an analysis that demonstrates such limitations are not achievable. Please refer to the October 25, 2001 letter from Mr. Gerardo Rios, Chief, Permits Office, U.S. EPA Region IX to Mr. Moshen Nazemi, South Coast Air Quality Management District (as attached to SCAQMD November 8, 2001 letter to Mr. Michael Hatfield, Calpine).

BACKGROUND

Modeling Protocol: Merged Sources

Dispersion modeling of impacts using a merged point source for the two combustion turbine stacks was not identified in the modeling protocol of AFC Appendix K-4. The Applicant's SCREEN3 analyses (AFC Appendix K.5, Table K.5-4 and electronic submittal on CD-R) show that buoyancy and momentum flux from the stacks range widely depending on the loading and operating scenario of the combustion turbine/HRSG equipment. Staff's preliminary analyses of PM_{10} impacts indicate that

modeling these sources as two adjacent stacks could result in 24-hour PM_{10} concentrations 20 percent higher than those presented in AFC Table 5.2-26. This is noted because the modeled impacts of PM_{10} presented elsewhere in the AFC (AFC Table 5.2-29 p. 5.2-47) are shown to be within one percent of the 24-hour 2.5 $\mu g/m^3$ significance threshold of District Rule 1303. Staff is concerned that grouping of these two sources into one merged point source may underestimate the impacts caused by these sources. This may be pronounced during periods when the two gas turbines operate under different scenarios or periods when one gas turbine is operating in startup mode.

DATA REQUEST

12. For further consideration by staff, please analyze the sensitivity of modeled ambient impacts with respect to merging the gas turbine/HRSG sources under different loading and operating scenarios.

13. Please provide an updated dispersion modeling analysis with the combustion turbine/HRSG stacks modeled as separate sources.

14. Please provide confirmation that the South Coast Air Quality Management District has been consulted and that the modeling approach to merge the gas turbine/HRSG sources has been reviewed and approved by the District.

BACKGROUND

Modeling Protocol: Meteorological Data

Use of one year (1981) of meteorological data from Riverside was proposed in the modeling protocol of Appendix K-4. CEC Staff understands that this one year of data is normally acceptable for permitting new stationary sources in this part of the South Coast Air Basin. However, this meteorological data is not gathered onsite. When site-specific meteorological data is not available, federal guidelines recommend five years of data from the nearest National Weather Service station should be used (U.S. EPA Draft NSR Workshop Manual, October 1980 p. C-39). Although the climatology is similar between Riverside and the project site, the meteorology at these locations may not be spatially equivalent (e.g., the wind directions may not be similar). Staff is interested in investigating multiple years of meteorological data from a station closer to the project site. For example, the availability of alternative data from the March Air Force Base needs to be assessed.

DATA REQUEST

15. Because site-specific meteorological data was not used, please examine if alternative data may be available from other locations closer to the project site. Specifically address whether data from March Air Force Base can be obtained. If

meteorological data is available from a closer station, please update the dispersion modeling analysis using five years of data. More recent meteorological data may also be available from a station in Peris (please refer to the letter to Mr. Freitas of Riverside County, from Rutan & Tucker dated January 4, 2002 in CEC Docket 01-AFC-17, which also addresses this issue).

BACKGROUND

Commissioning

Commissioning of the combustion turbines will result in emission rates above those that will occur during normal operation. The AFC does not identify each of the tasks that would be associated with plant commissioning (e.g., first fire, emissions monitor certification, performance testing, etc.). The data provided (AFC p. 5.2-40 to 42) does not indicate if any of the tasks would need to occur repeatedly or if any special commissioning tasks would be necessary to bring the HRSGs to operation. Additionally, the discussion seems to indicate that emissions from only one turbine were considered.

DATA REQUEST

16. For staff to verify that the worst-case commissioning scenarios were identified in the AFC (p. 5.2-40 to 42), please identify each of the necessary commissioning tasks, the anticipated duration of each task, the fractional load of the turbines during the task, and the maximum expected total duration of the commissioning period.

17. Please demonstrate why the two scenarios in the AFC would conservatively characterize commissioning conditions by summarizing the emissions and stack parameters assumed for other commissioning tasks.

18. Please discuss whether simultaneous commissioning of both combustion turbines could occur and update the impacts assessment as necessary.

BACKGROUND

The dispersion modeling analysis for commissioning (AFC File IEEC_13.out, submitted electronically on CD-R) shows that the one-hour impact from gas turbine operation during commissioning would be approximately 6.7 $\mu g/m^3$ per gram-per-second of emissions. At the stated commissioning emission rate of 59.5 g/s NO_x per turbine (AFC p. 5.2-42), the corresponding one-hour NO_x impact would be over 400 $\mu g/m^3$. This result differs substantially from the result presented in the text, which are based on a highest unit impact of 3.4 $\mu g/m^3$ per gram-per-second (AFC p. 5.2-42). Simultaneous commissioning of both gas turbines could double the impact. Including background

NO_2 concentrations of 211 µg/m^3, the impacts during commissioning may cause a violation of the state one-hour NO_2 standard.

DATA REQUEST

19. Please verify that ambient air quality impacts during commissioning are correctly represented between the electronic modeling files and the text of the AFC (p. 5.2-42). As discussed in Data Requests above, simultaneous commissioning of each unit should be considered. If necessary, identify mitigation steps to ensure that the commissioning of each gas turbine will not cause a new violation of the state 1-hour NO_2 standard.

BACKGROUND

Ambient Air Quality Modeling Analyses

Maximum modeled impacts of NO_2 and other pollutants are presented inconsistently in the AFC. For example, Table 5.2-26 (AFC p. 5.2-43) shows annual NO_2 impacts of 1.1 µg/m^3 while Table 5.2-24 (AFC p. 5.2-41) and Table 5.2-33 (AFC p. 5.2-58) each show 0.9 µg/m^3. Additionally, Table 5.2-26 shows maximum 24-hour PM_{10} impacts of 9.9 µg/m^3 while Tables 5.2-24 and 5.2-29 show maximum 24-hour impacts of 2.48 µg/m^3.

DATA REQUEST

20. Maximum modeled impacts of one-hour NO_2 in AFC Table 5.2-26 are noted to be modeled with ISC OLM. Electronic modeling files submitted with the AFC (AFC File NO2_SHRT.dat, submitted electronically on CD-R) do not include any runs incorporating OLM. Please clarify whether maximum one-hour NO_2 impacts presented in Table 5.2-26 (AFC p. 5.2-43) reflect use of the ozone limiting method.

21. Please clarify whether maximum annual NO_2 impacts presented in Table 5.2-26 (AFC p. 5.2-43) reflect use of the Ambient Ratio Method (ARM) and the default ratio of 0.75 NO_2/NOx.

22. Please clarify whether maximum project impacts presented in Table 5.2-26 (AFC p. 5.2-43) for PM_{10} reflect use of the CTSCREEN model.

23. Please summarize why maximum modeled impacts for the entire facility would be presented differently between Tables 5.2-24, 5.2-26, 5.2-29, and 5.2-33.

BACKGROUND

Modeling Analysis: NO_2 Increments

Ambient annual impacts of NO_2 appear to cause total concentrations equaling approximately 110 percent of the 1 $\mu g/m^3$ PSD Significance Level (AFC Table 5.2-26 p. 5.2-43, and AFC File NO2_ANN.out, submitted electronically on CD-R). For a project exceeding the PSD Significance Level, an analysis of the project in conjunction with other emission sources in the impact area must be conducted to evaluate if the project would contribute to a violation of the maximum allowable increase (Class II Increment) over the baseline NO_2 concentration in the area (District Rule 1703). The modeling protocol (AFC Appendix K-4, p. K.4-14) indicates that a supplemental protocol would be provided to the District for any increments analysis.

DATA REQUEST

24. Please acknowledge the modeled exceedance of the annual NO_2 PSD Significance Level identified in AFC Table 5.2-26 p. 5.2-43 and electronic modeling files, or provide additional analysis, if necessary, to demonstrate that the PSD Significance Level would not be exceeded.

25. For any exceedances of the PSD Significance Level, please provide a supplemental modeling protocol for the increments analysis. The protocol would identify how the impacts of the project would be characterized in conjunction with other emission sources in the impact area so that the increase in annual NO_2 concentrations can be compared with the maximum allowable increase (Class II Increment). If the maximum allowable increase would be exceeded, the protocol should identify mitigation measures that would to reduce the impact to a less than significant level.

BACKGROUND

Maximum Hourly Impacts

Total project impacts of NOx cause ambient NO_2 concentrations equaling approximately 94 percent of the one-hour state standard (AFC Table 5.2-26 p. 5.2-43). Staff is concerned that under foreseeable operating scenarios, the standard may be exceeded. One scenario that staff is reviewing closely against the one-hour NO_2 standard is the case of simultaneous use of two turbines in startup mode. Maximum hourly emissions of NO_x identified in Table 5.2-21 (AFC p. 5.2-31) are based on one gas turbine operating in startup mode and one operating at full load (AFC p. 5.2-30). Because each startup may take up to three hours, staff considers both turbines operating in startup mode to be a reasonable scenario occurring within the range of any single hour. Without further analysis, staff may be forced to propose a condition of certification that would prohibit simultaneous startups.

DATA REQUEST

26. Please discuss the likelihood of both combustion turbines operating simultaneously in startup mode during a worst-case condition. If technical or operational constraints preclude operating both turbines in startup mode simultaneously, please identify them. If no constraints exist and both turbines could potentially operate in startup mode simultaneously, please reevaluate the maximum hourly emissions of Table 5.2-21 and reassess the associated ambient air quality impacts.

BACKGROUND

Emission Offset Requirements

The AFC (p. 5.2-56 to 57) indicates that additional information of emission reduction credits (ERCs) and RECLAIM Trading Credits (RTCs) would be supplied to staff under separate cover (e.g., AFC Appendix K-10, submitted to dockets on November 30, 2001). Staff recognizes that the task of obtaining offsets is continuing and ERC procurement will evolve. In the Staff Assessment, staff must certify that ERCs are real, quantifiable, surplus, permanent, and enforceable. In order for staff to complete this analysis, updates to the ERC/RTC status must be filed in a timely manner.

DATA REQUEST

27. Please continue to submit to staff timely updates of the ERC/RTC document (AFC Appendix K-10) reflecting current ERC/RTC status. The details of the offset package may remain confidential, given the status of purchase and option negotiations. The offset strategy will then be summarized in the Preliminary Staff Assessment.

BACKGROUND

Class I Impacts

The Class I impact analysis provided in Appendix K-6 identifies project effects on visibility; however, staff needs further clarification on modeling parameters that appear to be inconsistent with project conditions.

DATA REQUEST

28. The NO_x emission rates used in the near-field visibility analysis (AFC Appendix K-6) are inconsistent with the maximum hourly emissions presented in the text of the AFC (Table 5.2-21 p. 5.2-31). Please discuss the basis of the NO_x emission rates used in the visibility analysis (AFC Appendix K-6, Table K.6-3) in relationship to the maximum hourly emissions in Table 5.2-21.

29. The background ozone levels used in the near-field visibility analysis are inconsistent with the ozone levels recently observed in Perris (AFC Table 5.2-7 p. 5.2-15). Please discuss the basis of the background ozone levels used in the visibility analysis (AFC Appendix K-6, Table K.6-3) in relationship to the ozone levels in Table 5.2-7.

BACKGROUND

The Class I impact analysis provided in Appendix K-6 identifies project effects on deposition; however, the significance of nitrogen deposition impacts is not identified in the AFC. Recent guidance from the Federal Land Managers Air Quality Related Values Work Group (FLAG) on nitrogen deposition analysis thresholds[1] indicates that for western Class I areas, a deposition analysis threshold of 0.005 kg/ha/yr N may be used to indicate the level that would "trigger management concern." According to Table K.6-7 (AFC Appendix K-6), the IEEC project impacts would exceed these levels.

DATA REQUEST

30. Please characterize the project effects on sulfur and nitrogen deposition in the affected Class I areas. In the discussion, identify the source of the significance thresholds used to characterize the effects, and provide mitigation steps if necessary to avoid a significant impact. Please note that Data Request #40 addresses this issue as well.

BACKGROUND

General Facility Description

The natural gas compressor station proposed with the project under Alternative A would be powered by electric motor (AFC p. 3-64). The potential for emissions from the prime movers, which may commonly be natural gas powered, is thus eliminated. Section 5.2 and Appendix K-2 of the AFC do not identify any other potential emission sources associated with construction or operation of the compressor station.

DATA REQUEST

31. Please identify any and all emission sources that would be associated with construction of the compressor station.

32. Please discuss any ancillary equipment that would be located at the compressor station and would have potential emissions (e.g. stand-by generators or backup prime movers that may be diesel- or natural gas-fired), and identify the impacts associated with operation of these sources.

[1] Guidance available at: http://www2.nature.nps.gov/ard/flagfree/index.htm. Accessed October 2001.

BACKGROUND

The applicant indicated in Data Adequacy Responses (dated October 9, 2001) that the application for the Determination of Compliance and Authority to Construct was submitted to the South Coast Air Quality Management District (District) on September 25, 2001. Staff recognizes that there may be other documents (e.g., follow-up information for responses to incomplete determinations), not provided with the AFC, which may have been sent to the District or received from the District that could affect staff's review of this case.

DATA REQUEST

33. Please continue to provide staff with a copy of permitting-related submittals to or official correspondence from the District relating to the IEEC. Also, please continue to provide to staff copies of all documents sent/received to/from the District until such time as the Commission decision for this AFC has been finalized.

Technical Area: Biological Resources
Authors: Natasha Nelson and Shari Koslowsky
Technical Senior: Jim Brownell

BACKGROUND

The AFC identifies seasonal wetlands that coincide with the proposed alignment of linear facilities and that may be occupied by the vernal pool fairy shrimp (*Branchinecta lynchi*), a Federally threatened species. This species survives the hot summer months in an inactive form and completes the majority of its life cycle in short-lived seasonal wetlands and vernal pools that develop after seasonal rains. Eggs are readily transported and dispersed from pool to pool, or dry depression to dry depression and the quality of the wetland is not a definitive indicator of presence or absence (Eriksen and Belk 1999; USFWS 1994).

Because of the seasonality in their life cycle, survey guidelines published by the USFWS require both dry and wet season surveys to conclusively determine the presence or absence of the species (USFWS 1996). The applicant has provided staff with the results of the dry season survey. Wet season surveys will be carried out by the applicant when suitable conditions exist.

DATA REQUESTS

34. Please provide a copy of the wet season survey results within ten business days after completion of the final survey. The report shall indicate the biologist's survey permit and conditions of that permit, if any, per USFWS guidelines.

BACKGROUND

Appendix J of the AFC indicates that the applicant completed wetland delineations according to USACE guidelines. Seasonal wetlands within the non-reclaimable wastewater pipeline, transmission line and gas pipeline alignments are identified. On 19 October 2001 the applicant completed a field survey with a representative of the USACE Regulatory Branch to confirm the results of the applicant’s survey.

As compensation for wetland losses, the applicant originally proposed to pursue any necessary permits and purchase habitat from a USFWS approved mitigation bank (IEEC 2001a). The applicant has subsequently proposed to avoid all wetland or bed and bank features (IEEC 2001b).

DATA REQUEST

35. Please prove the USACE field report and determination of jurisdiction.

36. Please provide a description of construction measures and placement of structures that demonstrate avoidance of wetlands and defined bed and bank features consistent with the findings of the USACE field report and Figure B-2 (IEEC 2001b).

37. Provide a map of wetlands or other jurisdictional features in greater detail than that provided in the AFC that is compatible with the quantification of wetlands to one-tenth of an acre presented in the text. The scale should also be consistent with the information provided in data request 3. Wetland features at the corner of Murrieta and McLaughlin Road are misplaced and the defined bed and bank features identified within the project area have not been geographically identified. The estimate of wetland acreage affected by the transmission line and non-reclaimable wastewater pipeline in Table 5.3-7 (0.5 acres) and the text in page 5.3-32 (0.8 acres) of the AFC are inconsistent. These inconsistencies and omissions should be corrected as they detract from the conclusions provided in the document and are necessary for staff to appropriately assess mitigation of potential impacts.

BACKGROUND

Nitrogen dioxide (NO_x) or ammonia (NH_3) emissions, from the IEEC Plant will originate from several sources: two natural gas-fired combustion turbine generators (CTGs); two heat recovery steam generators (HRSGs) with Selective Catalytic Reduction (SCR); a diesel engine-driven back-up fire pump; a natural gas auxiliary boiler; a 100 kW natural gas-fired emergency generator; and as a by-product of the SCR technology used to limit NO_x emissions. Of particular concern are impacts of nitrogen deposition from NO_x and ammonia emissions on surrounding habitats and ecological processes.

The National Park Service (NPS) and the U.S. Fish and Wildlife Service (FWS) have developed criteria for evaluating the contribution of additional nitrogen (N) deposition within Class I areas. A guidance document (http://www2.nature.nps.gov/ard/flagfree/) has been developed that describes the equation and process by which Deposition Analysis Thresholds (DATs) are being developed for Class I areas (e.g., wilderness areas, including those in refuges). This guidance has been provided to the applicant.

The Western DAT for N, applicable to Class I parks and refuge areas located west of the Mississippi River is 0.005 kg/ha/yr N. The incremental increase in N deposition from plant emissions provided in Table 5.3-11 of the AFC indicates that the maximum-modeled deposition of nitrogen exceeds the DAT in the San Jacinto, Agua Tibia and Joshua Tree Class I wilderness areas.

Section 5.3.6 of the AFC provides an assessment of cumulative impacts. This assessment does not address the cumulative N deposition effects from plant emissions plus existing and projected future background conditions.

DATA REQUEST

38. Provide a discussion of the types of nitrogen generated as a result of the project and confirm that the modeled deposition rates at Class I wilderness areas in Table 5.3-11 are based on a worse case analysis of the maximum NO_x and ammonia emissions that could occur during plant operation. Provide an isopleth graphic over a USGS 7.5 minute quadrangle maps (or equally detailed map or more current map) of the direct deposition values (not weighted average). Provide complete citations for all references used in this analysis.

39. Provide the ambient/background levels in the project area and the Class I wilderness areas, and the source for this information (e.g., a complete copy of the papers or reports cited).

40. Provide a matrix of projects considered in the cumulative air quality analysis proposed in Section 5.2.5 of the AFC. In your results, indicate the amount of nitrogen deposition from the cumulative projects using the values tons per year and kg/ha-yr. The matrix should include the source's distance and direction from the proposed power plant, the amount of NO_x emitted using the values tons per year and kg/ha/yr, and a short description (or assumptions made) of the sources. Once all projects have been identified, using the ISCST3 model, provide the cumulative nitrogen deposition on the Class I wilderness areas identified in Table 5.3-11 of the AFC. Provide an isopleth graphic over a USGS 7.5 minute quadrangle maps (or equally detailed map or more current map) of the direct deposition values (not weighted average). Please note that Data Request #40 addresses this issue as well.

BACKGROUND

The applicant has proposed a compressor station in disturbed agricultural croplands. Figure 5.3-2A of the AFC shows the station west of Menifee Road. Section 3 of the AFC contains descriptions of plant facilities; however, a description of the compressor station is lacking. Section 5.3.4 of the AFC addresses impacts from the compressor station, but does not address connection of the station to the electrical grid.

DATA REQUEST

41. The applicant should describe how the compressor station would be connected to the electrical grid and whether this connection would require additional distribution lines or poles. If distribution lines are needed, describe impacts to wildlife and protections against electrocution that will be installed.

BACKGROUND

For mitigation measures to be successful, it is important that there be a clear and detailed plan for responsible individuals to carry out. If conditions change such that a specified mitigation appears to be unworkable, or unsuitable under new unanticipated circumstances, the plan shall allow for modification with the approval of the Energy Commission compliance project manager (CPM) in consultation with appropriate local, state, and federal agencies. This plan is especially important when Federally listed species or protected areas (such as wetlands) are present on the site.

DATA REQUEST

42. Please provide a detailed outline of the "Biological Resources Mitigation Implementation and Monitoring Plan" (BRMIMP) which includes the applicant's biological resources mitigation measures and the HCP's incidental take measures for Stephen's kangaroo rat (Riverside County Habitat Conservation Agency 1996).

Technical Area: Cultural Resources
Author: Gary Reinoehl and Roger Mason

BACKGROUND

The AFC does not provide any information on above-ground structures and facilities that may be more than 45 years old. Additional information is needed to complete the staff analysis.

DATA REQUEST

43. Please identify all structures and facilities that are more than 45 years old within the area of direct impact. These could include the wooden power poles that will be removed along the transmission line route, the SCE substation at the end of the transmission line route, and the irrigation system breathers and risers along McLaughlin Road (Wastewater Pipeline and Transmission Line). If any of these structures/facilities are more than 45 years old, please have an architectural historian or a historian with a specialty in industrial or architectural history evaluate them for eligibility for the California Register of Historical Resources (CRHR).

44. Please identify all structures more than 45 years old within a half mile and from which a major portion of the new Inland Empire Energy Center will be visible. Please provide copies of completed DPR 523 forms for each resource and ensure that each form contains a discussion of the significance of the building or structure under CEQA Section 15064.5, (a), (3), (A)(B)(C) & (D). Please have an architectural historian or a historian with a specialty in industrial or architectural history complete the evaluation. For those structures and properties evaluated as eligible, please have the architectural historian evaluate whether the integrity of setting will be significantly impacted by construction of the energy center such that the significance of the resource will be materially impaired.

BACKGROUND

The discussion of cumulative impacts in the AFC does not provide any information on other projects in the area that could impact cultural resources. The discussion of cumulative impacts should consider such other projects. Additional information is needed to complete the staff analysis.

DATA REQUEST

45. Please provide information on other types of existing ground disturbing projects or proposed projects (i.e., projects that have entered a permit review process) within one mile of the IEEC that have the potential to impact cultural resources.

46. Please provide a discussion of the cumulative impacts relevant to the information from the previous question.

BACKGROUND

It cannot be determined from the AFC and Data Adequacy Responses whether local historical societies, local archeological societies, and local jurisdictions (cities and counties) were contacted to determine if any historical resources in or near the project area are listed in local historical inventories or registers. Such local inventories are often not reflected in information obtained from a records search at the appropriate Archaeological Information Center. Historical resources listed on county or city inventories may be eligible for the CRHR, even if they have not been formally evaluated. This is part of a thorough background search. Staff needs this information to complete its analysis.

DATA REQUEST

47. Please provide a list of any historical resources listed on Riverside County, City of Perris, or City of Hemet local inventories or registers within one half mile of the power plant site and all linear routes that are part of the project. Note any of these resources that are within an area where there is a potential for impact.

48. If local historical societies and archaeological societies were not contacted, please contact them and provide copies of any inquiries and responses from such societies. If contact is made through interviews rather than by letter, please provide a written description of contact methods used, information obtained, and the names and contact information for those interviewed.

BACKGROUND

The CEC must comply with local LORS (laws, ordinances, regulations), as well as state and federal LORS. Additional information on local LORS is needed to complete the staff analysis.

DATA REQUEST

49. Please provide a summary of County of Riverside LORS that pertain to cultural resources.

BACKGROUND

Appendix L-1 of Volume 2 of the AFC refers to a confidential cultural resources technical report being submitted under separate cover. However, this report has not been received. This report is needed to complete the staff analysis.

DATA REQUEST

50. Please submit all cultural resources survey reports (archeological, historic, ethnographic, and architectural) that provide the methods and results of all surveys conducted for this project. The methods section should indicate the width of each linear survey area. If the survey coverage was less than 50 feet on each side of the centerline of the linear alignments, additional survey should be completed to attain this coverage. The locations of all survey areas and all identified cultural resources should be indicated on a map of a scale of at least 1:24,000. The report appendices should contain resumes of investigators, a letter from the information center where the records search was performed stating they performed the search or that an in-person search was conducted by the applicant's consultant, and copies of all DPR 523 record forms for cultural resources identified in the record search of the project area and all linear alignments required for the project.

Technical Area: Geology and Paleontology
Author: Dal Hunter, Ph.D., C.E.G.

BACKGROUND

The Geologic Resources and Hazards Section (5.5) of the AFC states in the first paragraph (Section 5.5) that "then Energy Center Soils…are not subject to liquefaction, subsidence, landslides or flooding."

DATA REQUEST

51. Please provide references to the information on flood potential, including the appropriate FEMA map(s).

BACKGROUND

The geologic map (Figure 5.5-3A) extends only 1 mile away from the project site. Geologic information is required for a 2-mile radius.

DATA REQUEST

52. Please resubmit the map to reflect the 2-mile requirement.

Technical Area: Hazardous Materials
Author: Alvin Greenberg, Ph.D.
Technical Senior: Rick Tyler

BACKGROUND

Additional information is needed on the identity and toxicity of hazardous materials proposed for use at the Inland Empire Energy Center Project. To assess the potential for any impacts associated with accidental hazardous materials releases, it is necessary to know the specific identity and quantity of each chemical to be used at the facility. It is also necessary to conduct site-specific modeling of down wind concentrations of aqueous ammonia should an accidental release occur. The applicant must conduct the required analysis because it requires information regarding specific design elements of the facility. The AFC (section 5.12.1.2) describes the use of secondary containment around the aqueous ammonia storage tank and transfer pads but a diagram or preliminary design drawings are not included. Staff needs to be assured that the design is adequate and is consistent with any offsite consequence analysis. Finally, emergency response time for hazardous materials spills should be identified.

DATA REQUESTS

53. Please provide an offsite consequence analyses for aqueous ammonia including accidental release modeling as described in Section 5.12.3.4 of the Application for Certification.

54. Please provide a schematic figure or preliminary design drawings of the aqueous ammonia storage tank and transfer pads, including the measurements of length, width, and depth.

55. Please provide toxicity information and/or a material safety data sheet for the substance "non-oxidizing biocide (NALCO 7330)" identified in table 3.4-7.

56. Please provide a figure that shows the specific locations of all hazardous materials as listed in table 3.4-7, including the hydrogen gas cylinder trailer (Figure 3.3-2 is not adequate).

57. Please provide an offsite consequence analysis of blast effects should the hydrogen storage cylinders explode.

58. Please identify the agency and the time it will take their personnel to respond to either an on-site hazmat spill or a transportation spill (within five miles of the facility).

Technical Area: Land Use
Author: Michael Berman

BACKGROUND

Staff will analyze whether the proposed project conforms to applicable policies in relevant general plans. There is a need to identify geographically general plan land use designations and jurisdictions adjacent to the project site and near proposed linear facilities. The AFC contains several diagrams labeled "General Plan Land Use Designations" (i.e., Figures 5.7-2A – 5.7-2C). It is not clear that these are the land use designations from the local general plans (i.e., zoning information appears to be included) and where the boundaries between the various jurisdictions lie. Also, it is not clear if the land use designations are provided along all proposed linear facilities.

DATA REQUEST

59. Provide a map that illustrates general plan land use designations by jurisdiction within a mile of the proposed energy facility site and a quarter mile of the natural gas pipeline, transmission line, potable water pipeline, and the wastewater discharge line.

BACKGROUND

The AFC indicates on Page 5.7-3 that there is a school approximately a quarter mile northeast of the project site. Figure 5.7-4A illustrates the existing land uses in the project area but does not depict the school.

DATA REQUEST

60. Provide a map that illustrates existing land uses including schools, health care, recreational facilities, and religious institutions within a mile of the project site and a quarter mile of the natural gas pipeline, transmission line, water pipeline, reclaimed water pipeline, wastewater line and the substation.

BACKGROUND

The AFC states on Page 3-1 that the 45.8-acre project site consists of a single parcel APN 331-180-08. The Final Draft Data Adequacy Responses submitted by the applicant provide data indicating the project site contains several parcels. On Page 3-1 the AFC indicates that approximately 24 fenced acres would be required to accommodate the generation facilities and that 11 acres of the 35 acres of permanent disturbance include areas outside the fence such as landscaping and access roads. It is not clear from the data in the AFC which portions of the 45.8 acre site would be used

for the power plant and what will occur on remaining portions of the 45.8 acre site both during and after construction.

DATA REQUEST

61. Provide a map that shows the existing property line clearly labeled in relation to proposed facilities and indicate where any proposed future lot lines will be when the project has been built.

62. Indicate the proposed use of all portions of the 45.8-acre project site both before and after construction.

63. Confirm that APN 331-180-08 is a legal lot or indicate where the legal lot lines are.

BACKGROUND

Page 3-23 of the AFC indicates that the project would obtain potable water from the (Eastern Municipal Water District) EMWD, which will construct a new 4.7-mile water supply line to serve the project needs. This water line is a part of the project and the location should be clearly described.

DATA REQUEST

64. Provide a map showing the location of the proposed new potable water supply line indicating the general plan designations, zoning classifications, and existing land uses within a quarter mile of the new pipeline.

BACKGROUND

Page 3-28 of the AFC indicates that a new 12 to 18-inch diameter, 4.7-mile non-reclaimable wastewater pipeline will be constructed. The AFC does not indicate where this facility would be installed.

DATA REQUEST

65. Provide a map that shows the location of the proposed non-reclaimable wastewater pipeline, indicating the general plan designations, zoning classifications, and existing land uses within a quarter mile of the new pipeline.

BACKGROUND

Table 5.7.4 is used to support the cumulative analysis provided in the land use section. Table 5.7.4 provides a list of discretionary permits under review and recently approved within a mile radius of the project.

DATA REQUEST

66. Please update Table 5.7-4 of the AFC to provide a list of all projects either under construction or approved for construction within a 1-mile radius of the project site.

67. Please provide a map that shows the location of all cumulative projects identified in the revised table 5.7-4.

68. Please identify the appropriate local agency contact that can verify the cumulative project list and locations.

Technical Area: Noise
Author: Ron Brown

BACKGROUND

The CEC requires estimates of the noise levels within the project boundaries for both construction and plant operation and the potential impact to workers. The applicant failed to provide noise level estimates or to fully address the potential worker impacts.

DATA REQUEST

69. Please provide estimates of in-plant noise levels during operation.

70. Please provide estimates of noise levels for construction of all linear facilities.

71. Please provide estimates of existing and future switchyard noise levels.

BACKGROUND

The CEC requires a description of the major noise sources of the project, including the range of noise levels and the tonal and frequency characteristics of the noise emitted. The AFC did not provide the expected noise levels for the major noise sources.

DATA REQUEST

72. For the major noise sources of the project, please provide the noise levels generated at a standard distance such as 50 feet.

73. Please provide a discussion of the potential for generation of tonal frequency components of these sources.

BACKGROUND

The initial start-up of a combined cycle power plant typically includes steam pipe cleaning by means of “steam blows.” No discussion of the noise effects of this specific practice was provided in the AFC.

DATA REQUEST

74. Please provide a discussion of the potential noise effects associated with steam blows for the proposed project at the nearest sensitive receptors. Include estimates of steam blow noise levels, their effects, and any proposed mitigation measures.

BACKGROUND

The AFC does not list pile drivers as a potential construction noise and vibration source.

DATA REQUEST

75. If pile driving is planned during construction, please provide estimates of noise and vibration levels at the nearest sensitive receptors.

BACKGROUND

Location 1 of the noise survey was located at the nearest noise sensitive receptor but that location is very close to a busy highway (Highway 74). The noise level at this location is artificially high due to traffic noise. A new location within the community of Romoland needs to be selected that would be more representative of the community noise environment. This location shall be used to determine the extent of noise impact from plant construction and operation. In addition, a measurement will be required at the Romoland Elementary School to determine noise impact at that facility.

DATA REQUEST

76. Please perform two 25-hour noise measurements to determine the existing community ambient conditions. Locations for these measurements shall be as follows: one location shall be within the Romoland community that will minimize noise from traffic along Highway 74. The second location is to be selected within the Romoland Elementary School property, also selected to minimize noise from traffic along Highway 74 while allowing a determination of power plant impacts after the plant has begun operations.

Technical Area: Power Plant Efficiency and Reliability
Author: Richard Minetto

BACKGROUND

Staff needs additional information regarding the reliability and efficiency performance for the above-mentioned project. The AFC provided by the applicant provides basic information necessary for review, and this request is intended to supplement the information contained within the AFC.

DATA REQUEST -- EFFICIENCY

77. Please provide an assessment of overall efficiency of the plant with and without duct firing. Please include expected duct firing hours and overall decrease in plant capacity without duct firing.

DATA REQUEST -- RELIABILITY

78. Please provide a description of the operation of the combined cycle block for a failure of the HRSG. Include with this description, the method of operating the plant with only the CTs, and include any estimated time constraints for having the CTs on line for a failure of the HRSG.

Technical Area: Public Health
Author: Alvin Greenberg, Ph.D.
Technical Senior: Mike Ringer

BACKGROUND

The AFC section 5.15 contains a multi-pathway screening health risk assessment addressing toxic air contaminants emitted from the gas turbine, the auxiliary boiler and the cooling tower.

Two non-inhalation pathways, ingestion of home garden fruits and vegetables and the nursing pathway, were not assessed. Although it would be expected that these pathways will not contribute significantly to any risk posed by the emission of toxic air contaminants from this facility, these pathways should be assessed in order to reassure the public.

DATA REQUESTS

79. Please provide a quantitative risk assessment of the fruit and vegetable ingestion pathway for all appropriate toxic air contaminants emitted from the three sources listed above.

80. Please provide a quantitative risk assessment of the nursing pathway for PAHs emitted from the three sources listed above.

Technical Area: Soil and Water Resources
Author: Greg Peterson, Philip Lowe, and John Kessler

BACKGROUND

Various figures, tables, and text contain discrepancies within themselves and with criteria presented in other tables and text.

DATA REQUEST

81. Please clarify which of the following values are correct, or if there is a qualifying basis to justify the use of different parameters in different sections;

Process Parameter	First Reference	Value	Other Reference	Value
Cooling Tower Circulation Flow	Figure 3.4-4, Table 3.4-1, #35	0 gpm	Figure 3.4-4, Table 3.4-1, #34	145,000 gpm
Cooling Tower Make-up, average day	Figure 3.4-4, Tbl 3.4-1,#38	488 gpm	Figure 3.4-6	2447 gpm
Cooling Tower Blow-down, average day	Figure 3.4-4, Tbl 3.4-1,#39	29 gpm	Figure 3.4-6	489 gpm
Total Make-up Water	Table 3.4-4 Table 3.4-4	3560 gpm ave 6190 gpm max	Figure 3.4-6 Figure 3.4-7	2468 gpm ave. 5136 gpm max
Cooling Tower ave. evaporation /drift loss	Figure 3.4-4	0 / 0 gpm	Figure 3.4-6	1957 / 0.8 gpm
EMWD Desalination Project Scope	Section 5.4.1.4.3	8,000 AF/Yr	Table 5.4-4 Section 5.4.2.3	12,000 AF/Yr in 2015 13,000 AF/Yr, IEEC reduces to 10,500 AF/Yr
Non-Potable Make-up water	Sections 3.1, 1.5.6	5,000 AF/yr	9-27-01 EMWD letter, 1st table Table 3.4-3 Table 3.4-4	3,814 AF/Yr 4,918 AF/Yr 4,150 AF/Yr
Reclaimed water Nitrate concentration	Table 3.4-5	0.4 to 2.9 mg/L as $CaCO_3$	Table 5.4-3	12 to 23 mg/L as NO_3

BACKGROUND

The Inland Empire Energy Facility (IEEC) proposes to get 80 percent of its non-potable make-up water needs from Eastern Municipal Water District (EMWD) reclaimed water at start-up in late 2004 and all of its monthly needs after 2010, with an average annual demand of 3,814 AF/Yr and a peak annual rate of 5,604 AF/Yr. Imported fresh surface water is proposed to meet reclaimed water shortfalls. The diversion of reclaimed water

to IEEC reduces groundwater recharge (Table 5.4-5 of Section 5.4.1.4.8) and the scope of EMWD's planned brackish water desalination project (Section 5.4.2.3), causing a comparable increase in imported fresh water. Section 3.4.9.2 describes the additional water pumps needed to supply other EMWD customers as a result of diverting reclaimed water to IEEC. Reclaimed water supply also can not be guaranteed, as future supply increases are dependent on future population growth.

DATA REQUEST

82. Please update Table 5.4-5 to reflect the proposed use of 100 percent reclaimed water on an annual basis, and Table W-b (from the Data Adequacy Response) on a peak month and peak annual basis, consistent with EMWD's 9-27-01 letter that commits to allocating 100 percent of future reclaimed water supply attributable from population growth, to fulfill IEEC requirements.

BACKGROUND

The water resource supply/reuse/desalination processes and growth rates discussed in Chapters 3.4 and 5.4 indicate that the region's water balance has many complex variables. IEEC water use will increase during warm weather, and even more so with supplemental duct firing. Transfers shown in Table 5.4-4 are a significant EMWD supply source, but are not discussed.

DATA REQUEST

83. Please provide a schematic diagram of the various recycled water supply sources, uses, and storage accumulation/depletion on a peak summer day, as well as on a base line basis, to better explain their relationships. Please explain the transfers shown in Table 5.4-4 and any associated impacts on the source of these transfers on fresh surface water supplies in other areas.

BACKGROUND

Table 3.4-5 indicates relatively high silica, ammonia, calcium, and bicarbonate, but critical RO membrane parameters such as SDI (silt density index), phosphate, and iron are not defined. Tertiary effluent treatment is a difficult RO application, and RO membranes are often plagued with scaling and bio-growth, and will not reject certain compounds, such as dissolved silica, nitrate, ammonia, and bicarbonate alkalinity to the same degree as TDS. In addition, such an application often requires chemical addition, which normally requires high quality dilution and mix water, so it's commonly necessary to increase the internal recycle rate or increase fresh water use to provide this additional water demand, which was not show on either Figure 3.4-6 or 3.4-7.

DATA REQUEST

84. Please provide SDI, phosphate, iron, and other parameters needed for predicting RO membrane scaling. How will scaling be controlled?

85. Please estimate the ion balance, process duty, and availability for microfiltration (MR), reverse osmosis (RO), and demineralization processes. How will water required for chemical mix, dilution, and clean-up be met for each process.

86. Please describe how soluble silica, ammonia, bicarbonate, nitrate, sodium, chloride, oxygen, phosphate, and other constituents will be reduced to and maintained at the levels required in the HRSG condensate.

87. Please assess alternatives for reducing the volume of the non-reclaimable wastewater discharge by 75 percent (ref. Figures 3.4-6 & 3.4-7). Recovered wastewater could be used to reduce IEEC raw water make-up.

BACKGROUND

Section 3.4.10.1 states that the MF (microfiltration) process will produce a backwash water stream. However, conventional and crossflow MF normally produce a reject stream, as well as periodic cleaning cycles.

DATA REQUEST

88. Please clarify whether the “MF backwash” is meant to represent the normal MF reject stream or the periodic cleaning stream.

BACKGROUND

Although the primary project water supply as proposed is reclaimed water, there continues to be need to analyze water conservation measures due to potential impacts to groundwater recharge and increased use of fresh water for other EMWD customers as a result of IEEC’s proposed use of reclaimed water. Section 3.10.6.6 briefly mentions wet and dry cooling alternates, but does not define the pros/cons of each, or of hybrid wet-dry cooling towers, spray-enhanced dry cooling, or refinements to an evaporative cooling system, such as variable speed fan motors, non-clog fill, or plume abatement configuration.

DATA REQUEST

89. Please address the feasibility of dry, hybrid wet-dry, and spray-enhanced dry cooling.

90. Please address the benefits of; variable speed drives on each cooling tower fan. Considerations should include; power saving, reduced drift loss, and reduced maintenance.

91. Please address the benefits of: non-clog cooling tower fill to reduce biological fouling and a plume abatement configuration to reduce visible cooling tower plume.

BACKGROUND

IEEC's proposed use of EMWD reclaimed water reduces groundwater recharge and the scope of EMWD's planned brackish water desalination project. These impacts can be reduced if brackish groundwater or agricultural return water is used for some or all of IEEC's make-up water requirements. In addition, since water treatment requirements for cooling tower make-up can be significantly less demanding (and less expensive) than for potable water use, operating flexibility and cost savings are possible.

The past 10 years of AB3030 monitoring has shown significant groundwater depression around water supply wells and significant increases in the Lakeview sub-basin TDS (Section 5.4.1.4.7) and pumping rate (Section 5.4.1.4.2). Section 5.4.1.4.7 indicates that groundwater TDS varies seasonally and with climatic cycles. It has not yet been demonstrated that reductions in the historic groundwater recharge rate shown in Table 5.4-5 will not adversely impact groundwater resources.

DATA REQUEST

92. Describe groundwater TDS and pumping trends in each sub-basin and how these trends would be impacted by 50, 75%, and 100% allocation of IEEC's projected demand.

93. Please assess the feasibility of using brackish groundwater and irrigation return water for some or all IEEC make-up water (at a minimum of the 5:1 cycles of concentration shown in Figures 3.4-6 and 3.4-7). The analysis should include a discussion of the sustainable brackish water yield, implications of IEEC use of brackish water on the need for or required capacity of the planned EMWD desalination project, implications of IEEC use of brackish water as compared to wastewater/surface water on other water uses and quality within the EMWD, and costs of brackish water use in comparison to wastewater/surface water.

BACKGROUND

Section 5.4.1.4.7 indicates that contaminated groundwater remediation is under way at March AFB and may be necessary at Double Butte landfill, but no information was provided regarding remedial scope, schedule, or treated water discharge requirements.

DATA REQUEST

94. Please assess the feasibility of using contaminated groundwater from either area for some or all of IEEC make-up requirements.

BACKGROUND

Reclaimed water is normally characterized by variable quality as well as seasonal and significant diurnal flow variation. At certain times, such as during summer nights, it is reasonable to expect that RWRF reclaimed water flow could be a small fraction (perhaps <5 to 10%) of nominal capacity. If reclaimed water is utilized for evaporative cooling make-up, greater definition of projected supply and peak IEEC demand patterns is needed to assure that there is adequate onsite water storage and a contingency plan is in place to accommodate various combinations of; effluent quality variation, supply shortfalls, IEEC peak demand, and process equipment downtime, without resorting to unplanned fresh water make-up or curtailed output.

The reclaimed water supply pattern contrasts with IEEC's water demand, which remains relatively steady year around, but can more than double during peak conditions. The proposed raw/reclaimed water storage tank (Section 3.4.9.6) appears to be sized to dampen short-term supply shortfalls, but does not provide seasonal storage. Table 5.4-5 shows EMWD's current recycled water supply at 36,000 AF/Yr, although daily and seasonal extremes are not shown, nor is the potential role of additional storage facilities to better match supply and demand patterns.

DATA REQUEST

95. Section 5.4.1.5 states that EMWD's five RWRF facilities treat "over 32 MGD each year", which is confusing since if this is meant to be "32 MGD each day", then this would be equivalent to the 36,000 AF/yr shown in Table 5.4-5 only if run at full capacity, every day of the year. If it was meant to be "32 MG each each year", then it would only be a tiny fraction of Table 5.4-5. Please explain annual, monthly, weekly, daily, and diurnal flow variation at the RWRFs which are proposed to provide recycled water to IEEC, including projected7Q10 (7day low summer flow, 10 year reccurrence interval) low flow. How will these supply patterns change with future population growth?

96. Explain how demands from other EMWD recycled water customers will be prioritized (relative to IEEC) during periods of IEEC peak daily demand and low 7Q10 reclaimed water supply. Explain the basis used for sizing the reclaimed water storage tank to fulfill maximum IEEC demand for such a low flow period.

97. Assess the feasibility of using onsite or offsite seasonal storage to meet IEEC peak water demands above the average day conditions shown in Figure 3.4-6.

98. How will the site water balance be managed during maintenance downtime of 100 percent duty treatment processes during periods of peak demand? Will any intermediate storage be provided?

BACKGROUND

Make-up water quantity is dependent on the heat and mass balance. The AFC heat and mass balance has some inconsistencies, making it difficult to verify net heat input and thermal efficiencies, with and without supplemental firing. For example, both Fig 3.4-4 (heat and mass balance) and Fig 3.4-6 (water balance) are at the same base line conditions (61F dry bulb, 54F wet bulb, nominal loading), but give different values for cooling tower circulation, make-up, blow-down, and cycles of concentration.

Section 1.1 describes IEEC as "highly efficient" and Section 3.10.6.1.3 says that a conventional combined cycle is able to achieve a thermal efficiency of up to 52 percent (HHV basis). However, literature sources, such as Kehlhofer's Combined-Cycle Gas & Steam Turbine Power Plants, 2nd edition, indicate that for modern triple pressure combined-cycle plants, supplemental firing is not a common practice, since the increased exhaust gas temperature has a negative effect on efficiency and electricity cost.

Section 3.4.2 indicates that at peak capacity, incremental heat rate will range from 8,100 to 9,000 Btu/kwhr, although the basis (heat input and power output) for each value is not defined. Section 3.4.3.2, defines the peak supplemental firing heat at 1260 MMBtu per hour, but fails to define peak CTG or auxiliary boiler heat input, or the various heat sinks.

DATA REQUEST

99. How does the base line net heat rate compare to average and optimum CTG and STG conditions? Please provide heat and mass balances, net heat rate, thermal efficiency, water balance, auxiliary boiler output, and output for average, 90 percent, and 99 percent ASHRAE conditions, with and without supplemental firing.

100. Assess the feasibility of alternatives for internal water conservation, including, but not limited to; a) reduced or no supplemental duct firing, b) increased CTG and STG capacity to enable a reduction in supplemental firing, c) hybrid wet-dry cooling, d) spray-enhanced dry cooling, e) pre-treatment of make-up water or other means needed to enable higher cooling tower cycles of concentration, and f) recovery of water from the cooling tower blow-down and MF waste streams by use of a RO, evaporator, direct osmosis, or other concentration process.

BACKGROUND

Wet cooling tower evaporation is primarily determined by the condenser heat load. Section 3.4.2 projects a nominal capacity of 538 MW at base line conditions, and 670 MW at peak conditions with supplemental firing. A "peak day" at 72F wet bulb (99 percent ASHRAE) consumes a disproportionate amount of fuel and water above the base line consumption of 6,700 Btu/kwhr and 0.4 gal/kwhr, based on Figures 3.4-4 & 3.4-6.

DATA REQUEST

101. Please explain why supplemental duct firing is proposed for this project, given the negative effect on thermal efficiency and water consumption.

102. Please clarify natural gas flow, CTG net output, and STG net output, with and without supplemental firing. Please summarize the total nominal capacity and overall thermal efficiency, with and without supplemental firing, at average, 90 percent, and 99 percent ASHRAE wet bulb conditions.

103. How many hours/day and hours/month will the auxiliary boiler and supplemental duct firing be used and at what rate? Please define how CTG, STG, and overall thermal efficiency will be optimized under different loadings.

BACKGROUND

Section 3.4.9.6 indicates the Raw Water Storage Tank capacity will be 2,500,000 gallons. RWRF flow interruption or upsets can surpass the buffer provided by the storage tank and could be sufficient to curtail reclaimed water delivery, leading to an emergency IEEC shutdown.

DATA REQUEST

104. Please define recycled water quality parameters that will be monitored and how operations will respond to quality deviations.

105. Please estimate recycled water BOD5, COD, aluminum, chromium, copper, manganese, zinc, soluble and total nitrogen (all forms), and phosphate.

106. Please explain how IEEC operations will respond to an extended short-fall in recycled water supply, in reference to EMWD's historical supply interruptions (in hours) vs. the hours of available supply provided by onsite storage.

107. Please define the projected working volume for the Reclaimed Water Storage tank. Is this intended to dampen daily fluctuation in reclaimed wastewater quality as well as flow rate?

108. How will odor and algae be controlled in this tank?

BACKGROUND

The water balance is sensitive to unanticipated quantity or quality at each point in Figures 3.4-6 and 3.4-7 flow diagrams. Recycled water quantity and quality, cooling tower blow-down, plant drainage, and various internal recycle/waste streams from the wastewater treatment system can vary.

DATA REQUEST

109. Please identify the key water constituents that will be monitored (e.g. silica, phosphate, ammonia, etc) for internal streams.

110. Is water quality monitoring proposed by continuous real-time monitors or with grab samples? Will an alarm be automatically activated? What processes will shutdown or divert to storage?

111. Please describe the control system (or procedure) that would be initiated if a stream does not meet discharge limits.

BACKGROUND

The “peak day” flow would appear to control the wastewater process design criteria, but it is not stated for how long this condition could be managed with the proposed storage tank volumes under a 7Q10 supply scenario.

DATA REQUEST

112. Please define the basis of the design water balance, peaking factor, all recirculation flows, allowances for maintenance and wash down/cleaning, standby equipment, and assumed storage tank accumulation/depletion rates for the 7Q10 flow.

113. Please state the average and peak capacity for each treatment unit process and equipment item, and how “non-reclaimable wastewater” will be managed during downtime of key equipment items.

BACKGROUND

The cooling tower drift loss is projected at 0.0005 percent of circulating flow. This is below what is commonly guaranteed by cooling tower manufacturers for standard tower designs.

DATA REQUEST

114. Please provide a cooling tower manufacturer's recommended features to reliably achieve this drift loss. Consideration should be provided to; drift eliminator configuration, impingement area, and separation from fill; whether the drift eliminator will be interrupted by the cooling tower structural frame; method of fan speed control; vertical air flow rate; and water loading rate.

BACKGROUND

Figure 3.3-1, Site Plan, does not illustrate locations of existing and proposed pipelines for recycled and raw water, pump stations for recycled and raw water, the proposed interconnection between raw and recycled water and the non-reclaimable wastewater pipeline.

DATA REQUEST

115. Please provide a revised site map illustrating locations of these existing and proposed facilities, and provide a description of the proposed interconnection between raw and recycled water systems, demonstrating the ability to avoid backflow of recycled water into the raw water system.

BACKGROUND

Figure 3.5-2 of the AFC, Grading and Drainage Plan, shows a "space for future channel," but details on this channel are not provided.

DATA REQUEST

116. Please provide an explanation of the nature and function of the future channel; who will build and be responsible for it, whether the space provided is sufficient for the channel right-of-way, and when it is expected this channel will be constructed.

BACKGROUND

On-site drainage is routed to a detention pond intended to reduce post-development discharge so it does not exceed pre-development discharge. The detention basin will drain by pumping. Note 6 of Figure 3.5-2 indicates the onsite drainage system will be designed for a 2-year, 24-hour recurrence event. It further states that pre-development runoff is 0.5 cfs, and developed runoff will be 3.3 cfs, regulated to 0.5 cfs by use of 4.3 acre-foot detention basin. Section 5.4.2.2 of the AFC states that the surface drainage system will be designed for 2, 5 and 10-year, 24-hour recurrence storms.

Offsite stormwater runoff will be diverted around the site using a combination of berms and swales (AFC Page 3-43). The grading and drainage plan shows a concrete ditch constructed along the north site boundary and possibly connecting to a culvert across Antelope Road. A similar ditch is proposed along the east side of the property to end at the south property line (McLaughlin Road) where water will be released. According to Note 4 on Figure 3.5-2, the ditches on the northern and eastern boundaries are designed to intercept the offsite watershed runoff from a 100-year, 1-hour storm event of 407 cfs. No background information is provided regarding the basis or design of these features.

The existing ground at and around the project site is flat. The ditches, along with the pumped discharge of the detention basin, appear to concentrate flow at locations where flow does not now concentrate, possibly to the detriment of adjacent property through increased flooding and erosion, particularly near the points where the concentrated flow would be discharged. Figure 5.3-2A of the AFC indicates the presence of Riparian/Permanent Wetlands on property immediately north and south of the proposed project site.

DATA REQUEST

117. Please summarize design criteria specified by the Riverside County Flood Control Agency and clarify under what criteria the IEEC storm water system, including the detention basin, is being designed.

118. Since the detention basin outlet discharges as drainage across downstream property, the 2, 5, 10, 25 and 100-year discharge should be defined. As planned under Appendix C of the Draft SWPPP for Construction Activities, please provide a background hydrology study of sufficient detail to describe the contributing offsite and conceptual onsite watershed areas, peak discharge computations, and peak discharge rates at key concentration points for pre-developed and proposed developed conditions for the 2, 5, 10, 25 and 100-year discharges.

119. Please provide a background hydraulic study, or results of any existing studies, demonstrating the basis for the hydraulic design of the perimeter diversion channels, the culvert across Antelope Road, and the detention basin. The detention basin analysis should include a basin routing and/or hydrograph volume analysis to demonstrate the capacity and function and draining of this basin assuming back-to-back storms, and storms exceeding the capacity of the basin.

120. Please provide expected hydraulic flow conditions (flow depth, width and velocity) at key concentration points exiting the property for existing and proposed conditions. For locations where proposed discharges exiting the property will be greater in magnitude than under existing conditions, or diverted to a location where flow does not currently concentrate, please demonstrate the conditions of downstream terrain, land use and improvements, whether the

diverted discharge will cause any increase in flooding or erosion damage, and what mitigation measures will be taken to avoid such damage.

121. Please provide evidence of consultation with the Riverside County Flood Control Agency regarding the existing and proposed grading and drainage plan and hydrologic and hydraulic conditions on the site, and demonstration that the proposed drainage plan, with modified downstream discharge points, complies with Riverside County regulations and standards.

122. Please provide evidence of consultation with the Army Corps of Engineers identifying design and permitting requirements applicable to the proposed grading and drainage plan, and particularly applicable to the discharge of storm water to adjacent wetlands.

BACKGROUND

Section 5.4.2.2 of the AFC states that a Storm Water Pollution Prevention Plan (SWPPP) will be implemented to assure no significant increase in erosion from construction activities. The December 4, 2001 Data Adequacy Response includes a Draft SWPPP for Construction Activity, and refers to Figure 5-1, which then refers the reader to AFC Figure 3.5-2 for a grading and drainage site plan. Although the draft SWPPP lists proposed BMP's for the plant site, linear facilities and adjacent wetlands, the conceptual location of these construction BMP's, along with distinction of existing vs. proposed drainage channel facilities, is not shown on a drainage plan.

DATA REQUEST

123. Please provide a Construction Grading and Drainage Site Plan similar to AFC Figure 3.5-2, but clearly identifying and distinguishing existing vs. proposed drainage facilities, labelling the proposed flood control channel where storm water will be discharged, and the conceptual location of construction BMP's consistent with the Draft SWPPP for Construction Activity. In addition, please provide representative profiles and cross-sections further illustrating existing vs. proposed grades and storm water facilities.

BACKGROUND

Section 5.4.2.2 of the AFC states that storm water runoff from the curbed portions (process areas) of the site (with potential for oil contamination – referred to as contact stormwater) will be collected and routed through an oil-water separator into a holding tank, tested to confirm adequate quality, and then reclaimed for use as cooling tower makeup. The December 4, 2001 Data Adequacy Response includes a draft SWPPP for Industrial Activity, and Section 5.0 on page 18, states that storm water runoff from process areas, after verification of quality in the holding tank, will be discharged to a flood control channel.

The grading and drainage plan shows a storm sewer oil water separator in line with a 48-inch storm sewer that discharges directly into the detention basin, which will be pumped to drain to an adjacent flood control channel. It is not clear how facilities separating runoff from process vs. non-process areas will be arranged.

DATA REQUEST

124. Please provide a revised Figure 3.5-2 - Grading and Drainage Plan, or an additional figure, clearly distinguishing between existing vs. proposed drainage facilities, the proposed point of storm water discharge into the existing flood control channel, existing wetlands, and conceptual location of operational BMP's consistent with the draft SWPPP for Industrial Activity. The curbed (contact) portion of the site (with potential for contamination) and non-curbed drainage systems and design should be differentiated in terms of location, drainage area, drainage conveyance design, storage system design and capacity, peak flow rates and runoff volumes.

125. Please provide pre-development and post-development storm water discharge rates and volumes for process and non-process areas for the 2, 5, 10, 25- and 100-year recurrence intervals.

126. Please provide written evidence of consultation with the Regional Water Quality Control Board confirming expected compliance of the IEEC project under the General Permit for Discharge of Stormwater Associated with Industrial Activity.

127. Were other storm water management methods considered such as buried infiltration chambers or a larger detention basin considered as alternative to reduce surface discharge?

128. Please provide a brief analysis considering the value of using the detention basin and/or perimeter runoff channels for storing and conveying storm water runoff for use as cooling tower make-up?

129. Please describe how process drainage sent to the oil/water separator and Holding Tank will be analyzed, before transfer to the cooling tower. Explain how the cooling tower and condensers would deal with significant oil or chemical spills.

130. Please describe the basis for sizing the Holding Tank, its capacity, and the ability (in number of hours or days of storage) to contain contaminated storm water if found to not be of suitable quality for discharge to the cooling tower.

131. Please describe any other potentially polluting materials (other than oil) that may come in contact with storm water, and the Post Construction BMPs (PCBMPs) that will be employed to remove the pollutants prior to discharge.

BACKGROUND

Page 3-43 of the AFC states that debris and large rocks unsuitable for compaction will be disposed of at an acceptable location. This location is not described, nor are guidelines given for selection of an appropriate location.

DATA REQUEST

132. Please identify and describe the proposed disposal site for debris and large rocks, or provide guidelines for selecting an appropriate site, with examples of sites that would be considered appropriate

BACKGROUND

Section 3.4.13 states that the 240,000 gal Fire Water Storage Tank will be filled with potable water.

DATA REQUEST

133. Please define how a chlorine residual can be maintained in the Fire Water Storage Tank if there is no make-up flow.

Technical Area: Transmission System Engineering
Author: Mark Hesters

BACKGROUND

The System Impact Study that is provided in Appendix I of the AFC included the Rainbow Valley Interconnect. The Public Utilities Commission is currently reviewing the proposal for the Rainbow Valley Interconnect and there is a significant amount of controversy about the transmission line. Since it is uncertain whether or not the Rainbow Valley Interconnect will be constructed staff needs to determine whether or not the Inland Empire Energy Center has significant transmission impacts without the Rainbow Valley Interconnect.

DATA REQUEST

134. Please provide a sensitivity study that analyzes the Inland Empire Energy Center without the Rainbow Valley Interconnect. This study should analyze contingencies (n-0, n-1, and critical n-2) without the Rainbow Valley Interconnect.

Technical Area: Visual Resources
Author: Michael Clayton

BACKGROUND

Staff will need to make use of the Applicant's figures presented in the AFC and supplemental filings.

DATA REQUEST

135. Please provide three sets of electronic files on CDs of the following figures or their revisions: 3.2-1, 3.3-1, 3.3-2, 3.4-1, 3.4-2, 3.4-3, and all figures contained in the Visual Resources Section of the AFC.

136. Please provide three sets of electronic files on CDs of the revisions to existing figures and new figures as requested in the following Data Requests.

BACKGROUND

Natural gas for the facility would be delivered by a pipeline that would extend approximately 0.9 mile to the east and south of the proposed project site to a proposed new gas compressor station. The proposed project would also include a 4.7-mile wastewater pipeline, which would connect to EMWD's existing non-reclaimable wastewater collection system southwest of the project site.

DATA REQUEST

137. Please provide existing setting photographs of the alternative gas pipeline route and the wastewater pipeline route. Each linear facility should have a sufficient number of photographs to fully characterize the different landscapes crossed by the pipeline rights of way.

138. For a typical pipeline spread (and note any differences between gas and wastewater pipelines), please describe the construction equipment to be used, the length of a typical spread, and the amount of time a typical spread would be visible at any one location along the routes.

139. Please identify any potentially sensitive viewing locations along the pipeline routes including residences, recreational areas or facilities, and scenic highways.

BACKGROUND

As noted in the AFC (p. 5.10-2), the proposed project site is located immediately south of an existing asphalt plant.

DATA REQUEST

140. Please identify the height of the tallest asphalt plant structures.

BACKGROUND

Figures 3.4-1 and 2 provide elevation views of the proposed project but do not show structure heights (though these are provided in Table 5.10-2).

DATA REQUEST

141. Please revise Figures 3.4-1 and 3.4-2 to identify structures and specify their heights.

BACKGROUND

Six key observation points (KOPs) were established in order to evaluate both the visual setting and the potential for project-induced visual impacts. Photographs were obtained at each KOP and presented along with visual simulations of the proposed project. Section 5.10.1.4 *Sensitive Viewing Areas and Key Observation Points* (p. 5.10-5) states that "For all of these KOPs, photo simulations were developed to serve as a basis for visualizing the Energy Center's potential effects." However, the images presented (setting photographs as well as simulations) are less than life-size scale when viewed at a standard reading/viewing distance of 18 inches. The presentation of images at a reduced scale does not accurately represent the views that would be experienced at the KOPs because the images understate the prominence of visible landscape features as well as potential visual impacts. Also, staff considers any project-induced visual impact extending beyond five years after completion of project construction to be a long-term visual impact. The simulations presented in the AFC show vegetation growth at years 0 and 20.

DATA REQUEST

142. Please re-scale all setting and simulation images to achieve life-size scale. If re-scaling results in substantial degradation of the image, please provide new high resolution setting and simulation images at life-size scale. After obtaining appropriately scaled images, please provide six photocopies of high quality 11"x17" color images of the existing views and simulations.

143. For each KOP, please provide photocopies of high-resolution 11"x17" color images of life-size scale simulations of the screening vegetation at five years of growth.

BACKGROUND

The AFC discusses the need for project night lighting and the controls that would be utilized to minimize the visibility of night lighting (AFC p. 5.10-15).

DATA REQUEST

144. Please describe existing visible night lighting at the project site and in the immediate project vicinity.

145. Please describe the extent to which night lighting during project operation would be visible from each KOP. Also, please describe the visibility of project components (including exhaust stacks and vapor plumes) due to illumination from: a) existing ambient lighting and b) the combination of existing ambient lighting and proposed project lighting.

146. Please identify whether or not facility stack lighting would be required and if so, by which agency or requirement, and in what manner.

147. Please describe night lighting to be used during project construction and lighting control measures to be employed during construction.

BACKGROUND

The AFC discusses the formation of water vapor plumes associated with the proposed project (AFC pp. 5.10-15 and 16) but does not identify whether or not there are any existing sources of plumes in the immediate project vicinity or region.

DATA REQUEST

148. Please describe and map any other plume sources in the proposed project region.

BACKGROUND

The discussion of potential visual Impacts from KOPs 4 and 5 (AFC pp. 5.10-20 to 22) identifies the need for additional vegetative screening mitigation along the State Route (SR) 74 corridor between Antelope and Junipero Roads.

DATA REQUEST

149. For both KOP 4 and KOP 5, please provide two additional visual simulations of the vegetative screening mitigation proposed for the SR 74 corridor. One simulation should show the landscaping at five years of growth. A second

simulation should show the landscaping at maturity if greater than five years. For both the existing view image and simulations, please provide photocopies of high-resolution 11”x17” color images at life-size scale.

150. If the time to landscaping maturity is greater than five years, please specify the time to landscaping maturity.

151. Please provide a conceptual plan that: (a) shows the location of the proposed screening vegetation along SR 74, (b) identifies the types of vegetation to be planted and the anticipated vegetation heights and five years and at maturity, and (c) the time to maturity for each species to be planted.

152. Please provide an additional setting photograph and simulations of the Highway 74 vegetative screening when viewing along SR 74. The viewing location should capture the trees on both the north and south sides of SR 74. One simulation should show the landscaping at five years of growth. A second simulation should show the landscaping at maturity if greater than five years. For both the existing view image and the simulations, please provide photocopies of high-resolution 11”x17” color images at life-size scale.

153. Please identify whether or not Riverside County has commented on the proposed planting plan along SR 74, and if so, please indicated their comments and provide the contact information for the appropriate County contact(s).

BACKGROUND

Section 5.10.3 *Cumulative Impacts* discusses the potential cumulative visual impacts that would result from the proposed project but does not identify any cumulative projects or their locations.

DATA REQUEST

154. Please update Table 5.7-4 of the AFC to provide a list of all projects either under construction or approved for construction in the project vicinity.

155. Please provide a map that shows the location of all cumulative projects identified in the previous data request.

156. Please identify the appropriate local agency contact that can verify the cumulative project list and location.

Technical Area: Visual Resources, Visible Plume
Author: Brewster Birdsall

BACKGROUND

Section 5.10.2.3 of the AFC claims that vapor plumes would occur less than 10 percent of the daylight, no-fog, no-rain hours any one year. This claim is based on review of analyses prepared for other combined cycle power plants in Southern California. Beyond this comparison, the AFC does not quantify the frequency, duration and size characteristics of the HRSG or cooling tower water vapor plumes that may be specific to the IEEC project and local weather. Staff requires further information about these conclusions to independently evaluate project impacts.

DATA REQUEST

157. Please identify the other combined cycle power plant projects that were reviewed to arrive at the assessment presented in Section 5.10.2.4 (AFC p. 5.10-23). For each of the other projects, please provide:

- the project name and location,
- the Energy Commission docket number,
- a description (e.g., heat rejection rate) of basic project components examined for visible plume effects,
- a description of plume temperature, mass flow, and moisture content for the other projects' components compared to the parameters for the IEEC cooling tower cells and HRSG stacks,
- a description of any operating strategies implemented to reduce potential visible plumes, and
- the size and frequency of the visible plumes predicted.

BACKGROUND

Staff will conduct an independent visible plume modeling analysis to confirm the Applicant's conclusions and determine whether potential visual impacts from plumes would exist. Staff requires additional project and site data to complete this analysis.

DATA REQUEST

158. Please summarize, for the IEEC cooling tower, the conditions that affect vapor plume formation including exhaust temperature, exhaust mass flow rate, and moisture fraction by weight. These values should account for a range of ambient conditions that shows a reasonable worst-case operating scenario. For example, provide sufficient

operating data to fill the following table. A range of ambient temperatures should be used as was in AFC Appendix K-3 for the turbines.

Parameter	**Cooling Tower Exhausts**		
Number of Cells	14 cells		
Cell Height	17.98 meters (each cell)		
Cell Diameter	11.35 meters (each cell)		
Ambient Temperature	**@ 36°F**	**@ 61°F**	**@ 97°F**
Ambient Relative Humidity			
Heat Rejection (MMBtu/hr)			
Liquid/Gas Mass Flow Ratio			
Exhaust Temperature (°F)			
Exhaust Flow Rate (lb/hr)			
Molecular Weight (estd)	28.8 g/g-mol		
Moisture Content (% by wt) (if cells are plume-abated)			

159. Please note that staff intends to model the cooling tower using hourly estimated exhaust conditions based on the hourly ambient conditions of the meteorological file used to perform the modeling. The cooling tower exhaust conditions will be interpolated based on the exhaust values given. The Applicant may provide exhaust conditions for any range of ambient scenarios that is different from those above, as long as a similar range of conditions is reflected.

160. Please summarize, for the HRSG stacks, the conditions that affect vapor plume formation including stack temperature, exhaust mass flow rate, and moisture fraction by weight. Also, please indicate if there would be any relationship between the use of duct burners and/or evaporative cooler with ambient conditions (i.e. note temperature/relative humidity conditions when either will not be operated). For example, provide sufficient operating data to fill the following table.

Parameter	**HRSG Exhausts**					
Number of Stacks	2 CTG/HRSGs					
Stack Height	59.44 meters (each stack)					
Stack Diameter	5.64 meters (each stack)					
Ambient Temperature	**@ 36°F**		**@ 61°F**		**@ 97°F**	
Ambient Relative Humidity						
Duct Burner	Off	On	Off	On	Off	On
Exhaust Temperature (°F)						
Exhaust flow rate (lb/hr)						
Molecular Weight (estd)						
Moisture Content (% by wt)						

161. Please provide operational and performance data for any plume abatement strategies proposed by the Applicant for either the cooling tower or HRSG stacks.