Final Staff Assessment/
Environmental Assessment
Filed Jointly by the California Energy Commission
and Western Area Power Administration

BLYTHE ENERGY POWER PLANT PROJECT

Application For Certification 99-AFC-8
Riverside County

CALIFORNIA ENERGY COMMISSION

STAFF REPORT

NOVEMBER 2000

Western AREA POWER ADMINISTRATION

DOE/EA-1349

Gray Davis, *Governor*

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UNITED STATES DEPARTMENT OF ENERGY

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EXECUTIVE SUMMARY

Lance Shaw

INTRODUCTION

This Final Staff Assessment (FSA)/ Environmental Assessment (EA) contains the California Energy Commission (Energy Commission) and Western Area Power Administration (Western) staffs' independent assessment of the Blythe Energy Project's (referred to as either “BEP” or “the applicant”) Application for Certification (AFC) (99-AFC-8). The electric generating plant and related facilities, such as the connecting electric transmission line, connecting natural gas pipelines, and plant water supply are under the Energy Commission’s or (or and /or) Western's jurisdiction and cannot be constructed or operated without proper certification.

BACKGROUND

On December 9 1999, the applicant filed an AFC with the Energy Commission to construct and operate the BEP. On March 22, 2000, the Energy Commission deemed the AFC data adequate, at which time Energy Commission and Western staffs began analysis of the proposal. The analyses contained in this FSA/ EA are based upon information from: 1) the AFC; 2) subsequent amendments; 3) responses to data requests; 4) supplemental information from: local, and state agencies; interested individuals; 5) existing documents (including publications); 6) independent field studies, and research: comments provided by the applicant, agencies, and the public on staff’s Preliminary Staff Assessment (PSA).

The Energy Commission and Western have jointly reviewed the project. The Energy Commission and Western have signed a Memorandum of Understanding (MOU) by which staffs of each have worked jointly as an independent party in the proceedings. Western is the lead federal agency for the purposes of National Environmental Policy Act (NEPA) compliance. The Energy Commission and Western are issuing this joint NEPA/CEQA (California Environmental Quality Act) document.

PROJECT DESCRIPTION

The project as proposed will be a nominal 520-megawatt (MW) natural gas-fired combined cycle power plant. The project will have two combustion turbines (CT), two heat recovery steam generators (HRSG), and one steam turbine, and supporting equipment, (a 2X2X1 configuration). Inlet air to the two combustion turbines will be chilled by an anhydrous ammonia refrigeration system. The exhaust stacks from the HRSGs will use aqueous ammonia in the selective catalytic reduction (SCR) process to reduce harmful emissions.

Either or both, a 0.8-mile or an 11.5-mile connecting line will supply natural gas to BEP. The 0.8-mile connecting line will connect to a SoCalGas line south of the proposed site. The 11.5-mile line will connect to the El Paso Gas facility in

Ehrenberg, AZ. The applicant will bore under the Colorado River to make the El Paso gas connection.

Water requirement for the project is 2,200 gallons per minute at full operation and will be supplied by 3 new wells to be drilled on site. The project will have zero liquid discharge. Used plant water will be sent to one of two 8-acre evaporation ponds. Waste sanitary water will be sent to a septic system with leach fields.

The project proposes to interconnect with the regional electric transmission grid at Western's existing Blythe Substation located within 600 feet of the proposed project site. This substation interconnects with five existing 161 kV regional transmission lines. Three of which are owned by Western, one by Imperial Irrigation District. (IID), the other is owned by Southern California Edison (SCE).

The project's estimated capital cost is about $225 million. Up to 480 construction workers will be required at peak workload. A permanent professional workforce of approximately 20 people will operate the plant.

STAFF'S ASSESSMENT

The Final Staff Assessment (FSA)/ Environmental Assessment (EA) is a joint document presenting the California Energy Commission (Energy Commission) and Western Area Power Administration (Western) staffs' (referred to as staff) independent review and analysis of Blythe Energy Limited Liability Company's (the applicant) Application for Certification (AFC) for the Blythe Energy Project (BEP).

The Energy Commission and Western have signed a Memorandum of Understanding (MOU) by which staffs of each are working jointly as an independent party in the proceedings. Western is the lead federal agency for the purposes of National Environmental Policy Act (NEPA) compliance. The Energy Commission and Western are issuing this joint NEPA/CEQA document. This FSA/EA is a staff document, presenting staffs' independent analyses. The FSA/EA contains analyses similar to those contained in Environmental Impact Reports required by (CEQA) and contains the EA analyses required under NEPA.

The FSA/ EA includes staff's assessments of:

- the environmental setting of the proposal;
- environmental impacts, and measures proposed to mitigate these impacts;
- impacts on public health and safety, and measures proposed to mitigate these impacts;
- the engineering design of the proposed facility, and engineering measures proposed to ensure the project can be constructed and operated safely and reliably;
- project alternatives;

- compliance of the project with all applicable laws, ordinances, regulations, and standards (LORS) during construction and operation; and
- proposed conditions of certification, where these can be identified at this time.

COMPLETE ANALYSES

Air Quality	Reliability
Alternatives	Socioeconomics
Biological Resources	Soil & Water Resources
Cultural Resources	Traffic & Transportation
Efficiency	Trans. Line Safety & Nuisance
Facility Design	Transmission System Engineering
Geology & Paleontology	Visual Resources
Hazardous Materials	Waste Management
Noise	Worker Safety & Fire Protection
Public Health	General Conditions & Compliance

INCOMPLETE ANALYSES

In two of the topic areas which had unresolved issues in the PSA/ Draft EA (land use, water and soil) significant actions and documentation by the applicant and other government agencies will ultimately be necessary before project construction can begin. In both cases, the staff has proposed conditions which require the completion of these actions and documentation by the appropriate federal, state, and local agencies.

WATER AND SOIL

The Bureau of Reclamation considers groundwater in excess of certain depths in the mesa area to be, due to hydrologic connection between groundwater and the river, Colorado River water. Although the impacts from the project on the regional water supply will be relatively small, water from the Colorado River has been fully allocated. For this reason, the cumulative impact of the project water use with regard to regional water management is an issue.

BEP has proposed the water conservation offset program (WCOP) will mitigate the impact of project water consumption on a regional basis, water consumed by the BEP would be fully offset under the terms of the WCOP, and the regional water balance would not be affected.

The WCOP document provided by the applicant, as currently written does not provide adequate information necessary to evaluate the capacity of the WCOP to offset the project's water use either regionally or within the Palo Verde Mesa. Staff covers this concern as well in its Water and Soil testimony.

LAND USE

Staff has concerns about lands being retired in the WCOP. The lands to be retired will be in Palo Verde Irrigation District's (PVID) boundaries on the mesa or in the valley. Selection of the lands will be subject to PVID approval, and will include lands that have been or could be irrigated under PVID's priority 3 water rights to the Colorado River water. Details regarding the location of lands under consideration for retirement on the mesa, or for fallowing in the valley, have not been made available by the applicant.

Staff's further land use concern involves a height variance which must be filed for with the City of Blythe since the heat recovery steam generator (HRSG) stacks will exceed the 34-foot height restriction in the Heavy Industrial Zone. Staff covers these concerns in the Land Use testimony.

Two additional sections warrant comments:

Air Quality

Mojave Desert Air Quality Management District (MDAQMD) issued its Final Determination of Compliance without having the South Coast Air Quality Management District's (SCAQMD) emission offset credit (ERC) package approved by the South Air District Board for transfer from SCAQMD to MDAQMD. ERCs are required for BEP.

Biological Resources

Since the project may impact federally listed species, the desert tortoise, the consultation and resulting biological opinion under Section 7 of the Federal Endangered Species Act must be completed prior to BEP construction. Staff will continue to work closely with U.S. Fish and Wildlife Services (USFWS) in order to address all of its biological resource concerns. Habitat conservation for the desert tortoise is still in the process of resolution. Staff recommends that the habitat loss be compensated at a 1:1 ratio. The compensation goal will be the protection of high conservation value lands for desert tortoise, that fit into a plan for regional conservation. This compensation will be funded by the project owner.

STAFF RECOMMENDATION

Staff has concluded that if all recommended conditions of certification are adopted by the Commission and implemented by the applicant, no significant adverse environmental impacts will result from the BEP.

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INTRODUCTION

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PURPOSE OF THIS REPORT

The Final Staff Assessment (FSA)/ Environmental Assessment (EA) is a joint document presenting the California Energy Commission (Energy Commission) and Western Area Power Administration (Western) staffs' (referred to as staff) independent review and analysis of Blythe Energy Limited Liability Company's (the applicant) Application for Certification (AFC) for the Blythe Energy Project (BEP).

The Energy Commission and Western have signed a Memorandum of Understanding (MOU) by which staffs of each are working jointly as an independent party in the proceedings. Western is the lead federal agency for the purposes of National Environmental Policy Act (NEPA) compliance. The Energy Commission and Western are issuing this joint NEPA/CEQA document. This FSA/EA is a staff document. It is neither a Committee document or is it a draft decision or proposed decision.

The FSA/EA describes the following:

1. the existing environment;
2. the proposed project;
3. whether the facilities can be constructed and operated safely and reliably in accordance with applicable laws, ordinances, regulations and standards (LORS);
4. the environmental consequences of the project including potential public health and safety impacts;
5. mitigation measures proposed by the applicant, staff, interested agencies, and intervenors which may lessen or eliminate potential impacts;
6. the proposed conditions under which the project should be constructed and operated if it is certified;
7. project alternatives; and
8. project closure.

The analyses contained in this FSA/EA are based upon information from: 1) the AFC; 2) subsequent amendments; 3) responses to data requests; 4) supplementary information from local and state agencies; 5) existing documents and publications; and 6) independent field studies and research; and 7) comments on the Preliminary Staff Assessment (PSA)/ Draft Environmental Assessment (Draft EA). The FSA/EA presents conclusions and proposed conditions that apply to the design, construction, operation, and closure of the proposed facility. Each proposed condition of certification is followed by a proposed means of "verification." The verification is not part of the proposed condition, but is the Energy Commission

Compliance Unit's method of ensuring post-certification compliance with adopted requirements.

The Energy Commission and Western staffs' analyses were prepared in accordance with Public Resources Code, section 25500 et seq., Title 20, California Code of Regulations, section 1701 et seq., and the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.) and its guidelines (Cal. Code Regs., Title 14, § 15000 et seq.); and Regulations of the Council of Environmental Quality at 40 CFR 1500 to 1508, and National Environmental Policy Act (NEPA) Implementing Procedures of the Department of Energy at 10 CFR part 1021.

ORGANIZATION OF THE FINAL STAFF ASSESSMENT/ ENVIRONMENTAL ASSESSMENT

The **INTRODUCTION** section of this FSA/EA explains the purpose of the FSA/EA, its relationship to the Energy Commission's siting process, and to Western's Environmental Assessment. The **PROJECT DESCRIPTION** section of the FSA/EA provides a brief overview of the project including its purpose, location, and major project components.

Western's **PURPOSE AND NEED** section follows the **PROJECT DESCRIPTION**. Next are the environmental and engineering evaluations of the proposed project.

In the environmental analyses, the project's environmental setting is described, environmental impacts are identified and their significance assessed, and the project's compliance with applicable laws is reviewed. The mitigation measures proposed by the applicant are reviewed for adequacy and conformance with applicable laws, ordinances, regulations, and standards (LORS). Any remaining unmitigated impacts are identified, and additional mitigation measures and project alternatives are proposed by staff where necessary. Staff's conclusions and recommendations are discussed, and proposed conditions of certification are included, if applicable.

In the engineering analyses, the project is evaluated in each technical area with respect to applicable LORS and performance objectives. Staff's proposed modifications to the facility, if applicable, are listed. Each technical section ends with a discussion of facility closure, conclusions and recommendations. Proposed conditions of certification are included, if applicable.

ENERGY COMMISSION SITING PROCESS

The California Energy Commission has the exclusive authority to certify the construction and operation of thermal electric power plants 50 megawatts (MW) or larger. The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies, and federal agencies to the extent permitted by federal law (Pub. Resources Code, section 25500). The Energy Commission must review power plant Applications for Certification (AFC) to assess potential environmental impacts including potential impacts to public health and safety,

potential measures to mitigate those impacts (Pub. Resources Code, section 25519(c)), and compliance with applicable governmental LORS (Pub. Resources Code, section 25523 (d)).

The Energy Commission's siting regulations require staff to independently review the AFC and assess whether the list of environmental impacts contained is complete, and whether additional or more effective mitigation measures are necessary, feasible, and available (Cal. Code Regs., tit. 20, sections 1742 and 1742.5(a)). Staff's independent review is presented in a report, which we call a Preliminary Staff Assessment (Cal. Code Regs., tit. 20, section 1742.5).

In addition, staff must assess the completeness and adequacy of the project's health and safety standards, and the reliability of power plant operations (Cal. Code Regs., tit. 20, section 1743(b)). Staff is required to develop a compliance plan (coordinated with other agencies) to ensure that applicable LORS are met (Cal. Code Regs., tit. 20, section 1744(b)).

Staff conducts its environmental analysis in accordance with the requirements of the California Environmental Quality Act (CEQA). No Environmental Impact Report (EIR) is required because the Energy Commission's site certification program has been certified by the Resources Agency (Public Resource Code, section 21080.5, Cal. Code Regs., tit. 14, section 15251(k)). The Energy Commission's certified process implements the subjective portions of CEQA.

The staff normally prepares both a Preliminary Staff Assessment (PSA)/ Draft Environmental Assessment (Draft EA) and Final Staff Assessment (FSA)/ Environmental Assessment (EA). The PSA/ Draft EA presents for the applicant, intervenors, agencies, other interested parties, and members of the public the staff's preliminary analysis, environmental assessment; conclusions; and recommendations. The FSA /EA incorporates written comments on the PSA/ Draft EA and comments on the PSA/ Draft EA received at PSA/ Draft EA workshops. The FSAEA serves as staff's testimony on a proposal.

Staff uses the PSA/ Draft EA to resolve issues between the parties and to narrow the scope of adjudicated issues in the evidentiary hearings. During the period between publishing the PSA/ Draft EA and FSA/EA, the staff conducts workshops to discuss findings, proposed mitigation, and proposed compliance monitoring requirements. Based on these workshops and written comments, staff refines the analysis, corrects errors, and finalizes conditions of certification to reflect areas where staff has reached agreement with the parties.

The staff's assessment is only one piece of evidence that will be considered by the Committee in reaching a decision on whether or not to recommend that the full Energy Commission approve the proposed project. At the public hearings, all parties will be afforded an opportunity to present evidence and to rebut the testimony of other parties, thereby creating a hearing record on which a decision on the project can be based. The hearing before the Committee also allows all parties to argue their positions on disputed matters, if any, and it provides a forum for the Committee to receive comments from the public and other governmental agencies.

Following the hearings, the Committee's recommendation to the full Energy Commission on whether or not to approve the proposed project will be contained in a document entitled the Presiding Members' Proposed Decision (PMPD). Following publication, the PMPD is circulated for a minimum of 30 days in order to receive written public comments, and a public hearing may be held to take additional comments.

At the conclusion of the comment period, the Committee may prepare a revised PMPD. A revised PMPD is required to undergo a 15-day comment period. At the close of the comment period for the revised PMPD, the PMPD is submitted to the full Energy Commission for decision. Following Energy Commission adoption, any party may appeal the decision to the Energy Commission within 30 days.

A Compliance Monitoring Plan and General Conditions will be assembled from conditions contained in the FSA and other evidence presented at the hearings. The Compliance Monitoring Plan and General Conditions will be presented in the PMPD. The Energy Commission staff's implementation of the plan ensures that a certified facility is constructed, operated, and closed in compliance with the conditions adopted by the Energy Commission. The proposed **Compliance Monitoring Plan and General Conditions** are included at the end of the PSA.

PROJECT DESCRIPTION

Testimony of Lance Shaw

NATURE AND PURPOSE OF THE PROJECT

Blythe Energy Project Limited Liability Company (referred to as either "Blythe Energy Project" or the "applicant") proposes to construct and operate the Blythe Energy Project (BEP), a nominal 520 megawatt (MW) natural gas-fired electrical facility. The applicant's objective is "to develop a maximally efficient merchant power plant that can competitively produce electricity for sale to regional markets in southern California, Arizona, and the surrounding region".

PROJECT LOCATION

The proposed site is five miles west of the center of the City of Blythe on privately owned lands near Interstate 10 and the Blythe Airport. This is in a recently-annexed part of the City of Blythe. See **PROJECT DESCRIPTION Figure 1** for the regional setting of the project.

PROJECT DESCRIPTION

POWER PLANT

The nominal 520-megawatt (MW) natural gas-fired combined cycle power plant will have two combustion turbines (CT), two heat recovery steam generators (HRSG), and one steam turbine. Inlet air will be chilled by an anhydrous ammonia refrigeration system. The purpose of this chiller is to provide the combustion turbines with inlet air at a constant 59 degrees Fahrenheit. The exhaust stacks from the HRSG will use aqueous ammonia in the selective catalytic reduction (SCR) process to reduce harmful emissions. (Note that this nominal power rating of the generating facility is based upon preliminary design information and generating equipment manufacturers' guarantees. The project's actual maximum generating capacity will differ from, and likely exceed this figure of 520 MW.)

An aerial view of the plant layout **PROJECT DESCRIPTION Figure 2** shows the site and Western Area Power Administration's (Western) existing Blythe electrical substation. The rendering in **PROJECT DESCRIPTION Figure 3** provides a view of how the plant will look on the site. **PROJECT DESCRIPTION Figure 4** shows elevations of some of the power plant facilities.

TRANSMISSION LINE FACILITIES

The project proposes to interconnect with the regional electric transmission grid at Western's existing Blythe Substation located within 600 feet of the proposed project site. This substation interconnects five existing 161 kV regional transmission lines. Three are owned by Western, one by Imperial Irrigation Dist. (IID), the other is owned by Southern California Edison (SCE).

NATURAL GAS PIPELINE

The applicant is requesting that the Energy Commission evaluate and license the two proposed natural gas connecting pipelines. **PROJECT DESCRIPTION Figure 5** shows both connecting lines. The 0.8-mile pipeline will connect to a SoCalGas line south of the proposed site. The 11.5-mile pipeline will connect to the El Paso Gas facility in Ehrenberg, Arizona. The applicant will bore under the Colorado River to make the El Paso gas connection.

WATER SUPPLY AND WASTE WATER TREATMENT

Water required for the project is approximately 2,200 gallons per minute at full operation (this is approximately 3,000 acre-feet per year). It will be supplied by 3 new wells to be drilled on site. The applicant is proposing a wet cooling system.

The project will have zero liquid discharge. Used plant water will be sent to one of two evaporation ponds. **PROJECT DESCRIPTION Figure 6** shows the evaporation ponds. **PROJECT DESCRIPTION Figure 7** shows the embankment elevation of the evaporation ponds. Waste sanitary water will be sent to a septic system with leach fields.

The applicant has proposed a water conservation offset program (WCOP) with the Palo Verde Irrigation District (PVID) to address the issue of Colorado River water accounting and cumulative regional water supply impacts. More information on WCOP is in **SOILS AND WATER RESOURCES** and **LAND USE** testimonies.

CONSTRUCTION AND OPERATION

The project's estimated capital cost is about $225 million. Up to 480 construction workers will be required at peak workload. A permanent professional workforce of approximately 20 people will operate the plant.

PROJECT DESCRIPTION Figure 8 shows the laydown area to be used during on-site construction. The applicant plans to begin construction immediately after certification, which is expected to occur in the first half of 2001. The applicant projects an 18-month construction schedule. This could lead to commercial operation by the second half of 2002.

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PURPOSE AND NEED STATEMENT

Nicholas Chevance, Western Area Power Administration

NEED FOR THE PROPOSED ACTION

Wisvest Corporation has applied for access to Western's electric power transmission system for its proposed Blythe Energy Project. Western, as a major transmission owner, must provide access to its transmission system, provided there is sufficient capacity or sufficient capacity that can be achieved through feasible system additions.

PURPOSE OF THE PROPOSED ACTION

The purposes of this proposed action include:

- To meet the requirements of Western's Open Access Tariff, which is intended to meet the intent of FERC Order 888 in providing non-discriminatory transmission access;
- To provide transmission service and capacity for the Blythe Energy Project without degrading service to existing customers.
- To ensure transmission system reliability is maintained.
- To cause the minimum practical adverse environmental effects, consistent with sound land management practices.

ALTERNATIVES

Testimony of Kevin Kennedy, Ph.D.

INTRODUCTION

Staff is required to examine the "feasibility of available site and facility alternatives to the applicant's proposal that substantially lessen the significant adverse impacts of the proposal on the environment". The purpose of staff's alternatives analysis is to provide the Energy Commission with an analysis of a reasonable range of feasible alternative sites which could substantially reduce or avoid any potentially significant adverse impacts of the proposed project (Cal. Code Regs., tit. 14, §15126.6; Cal. Code Regs., tit. 20, § 1765). This section identifies the potential significant impacts of the proposed project and analyzes technology alternatives and alternative sites that may reduce or avoid significant impacts. In addition, alternative routes for the proposed project's linear facilities are addressed. Alternatives were developed in response to information provided by Energy Commission and Western staff and staffs of other agencies.

ALTERNATIVE ANALYSIS CRITERIA

The "Guidelines for Implementation of the California Environmental Quality Act" (CEQA), Title 14, California Code of Regulations Section 15126.6(a), provide direction by requiring an evaluation of the comparative merits of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project." In addition, the analysis must address the "no project" alternative (Cal. Code Regs., tit. 14, §15126.6(e)).

The range of alternatives is governed by the "rule of reason" which requires consideration only of those alternatives necessary to permit informed decision-making and public participation. CEQA states that an environmental document does not have to consider an alternative of which the effect cannot be reasonably ascertained and of which the implementation is remote and speculative. (Cal. Code Regs., tit. 14, §15125(d)(5).) However, if the range of alternatives is defined too narrowly, the analysis may be inadequate. (City of Santee v. County of San Diego (4th Dist. 1989) 214 Cal. App. 3d 1438.)

To prepare this alternatives analysis, staff used the following methodology:

- Identify the basic objectives of the project.
- Identify and evaluate alternatives to the project. The principal project alternatives examined that do not require the construction of a natural gas-fired facility are increased energy efficiency (or demand side management) and the construction of alternative technologies (e.g. wind, solar, or geothermal).
- Identify and evaluate alternative locations or sites.

- Evaluate the impacts of not constructing the project (the “no project” alternative).

DETERMINING THE SCOPE OF THE ALTERNATIVES ANALYSIS

The purpose of staff’s alternatives analysis is to provide the Energy Commission with a reasonable range of feasible alternatives which could substantially reduce or avoid any potentially significant adverse impacts of the proposed project. To accomplish this, staff must determine the appropriate scope of analysis. Consequently, it is necessary to identify and determine the potentially significant impacts of the proposed project and then focus on alternatives that are capable of reducing or avoiding significant impacts.

In considering location alternatives, the staff determined a reasonable geographical area. Since alternatives must consider the underlying objectives of the proposed project, staff confined the geographic area for location alternatives to the local Blythe area. The locations chosen are consistent with the Blythe Energy Project’s (BEP) objectives and most of the applicant’s siting criteria: availability of transmission system interconnection; presence of high-volume, high-pressure natural gas [supply] pipelines; suitable water supplies for cooling systems; availability of vacant and compatible land; proximity to transportation corridors (BEP 1999a, AFC page 6.0-2).

BASIC OBJECTIVES OF THE PROJECT

After studying the applicant’s Application for Certification (AFC), Energy Commission staff has determined the project’s objectives to be:

- The construction and operation of a merchant power plant in the Blythe area that supplies economical, reliable, and environmentally sound electrical energy in the restructured power market.
- To locate near key infrastructure, such as transmission line interconnections, and supplies of process water and natural gas.

PROJECT DESCRIPTION AND SETTING

A more complete description of the project and its setting is in the **PROJECT DESCRIPTION** section of this Final Staff Assessment (FSA).

POWER PLANT

Located in eastern Riverside County, the proposed BEP site is located within the city limits of the City of Blythe and about one mile east of Blythe Airport Industrial Park. The proposed site is located approximately 5,000 feet east of the east-west runway at Blythe Airport. The site is currently unused. The proposed plant would be a nominal 520-megawatt, 2-on-1 combined-cycle, natural gas-fired power plant with two combustion turbine generators/heat recovery steam generator (HRSG) combinations. Steam generated in the two HRSGs would be combined and used to

run one steam turbine generator. The power plant would cover approximately 30 acres of the 76 acre project site (BEP 1999a, AFC page 2.0-1). See **PROJECT DESCRIPTION Figure 1** for a map of the location of the proposed project site and related facilities.

RELATED FACILITIES

NATURAL GAS SUPPLY PIPELINE

BEP proposed two separate natural gas supplies and routings for certification by the Energy Commission. If both are certified, BEP will select one or both of these supplies and routings based upon business factors.

One new pipeline would connect with Southern California Gas Company's (SoCalGas) delivery pipeline located about 0.8 mile south of the project site. The other would connect with El Paso Natural Gas Company's (EPNG) interstate, high-pressure pipeline system in Arizona. This interconnection would require a new 11.5-mile pipeline that would route through portions of unincorporated Riverside County, the City of Blythe, and under the Colorado River.

TRANSMISSION LINE

Electricity generated by the BEP would be transmitted to the Blythe Electrical Substation located approximately 600 feet to the east of the power plant site. This substation is part of Western Area Power Administration's (Western) regional grid system. The applicant plans to make use of existing transmission lines to the extent possible, which will allow connection to the existing substation through three transmission lines totaling 1,700 feet in length.

RAW WATER SUPPLY

Groundwater would be supplied to the project by wells located on site. See the **SOIL AND WATER RESOURCES** section of this FSA for detailed information regarding uses of water by the project.

WASTEWATER DISPOSAL

Wastewater would be disposed of through evaporation from two evaporation ponds located on a total of 16 acres of the plant site.

POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACTS

Staff has identified potential significant environmental effects of the proposed project on air quality, biological resources, hazardous materials, land use, traffic and transportation, transmission system engineering, and water resources. To the extent possible, staff's current assessment of the expected environmental consequences of the proposed project has been summarized below.

The Riverside County Airport Land Use Commission (RCALUC) evaluated possible impacts of the proposed project on the Blythe Airport operations. On October 19, 2000 the RCALUC determined that the proposed project would be consistent with

the Blythe Airport Comprehensive Land Use Plan (CLUP), subject to certain conditions (RCALUC/Downs 2000). The impacts related to the Blythe Airport are discussed in the **LAND USE** and **TRAFFIC AND TRANSPORTATION** sections of the FSA.

AIR QUALITY

In the PSA, staff had identified a number of air quality issues that must be resolved before a final determination could be made on the significance of potential air quality impacts from the proposed project. Staff has now reviewed the additional documentation supplied by the applicant, and the Mojave Desert Air Quality Management District's Final Determination of Compliance. Staff concludes that the project will not cause any significant impact on any ambient air quality standard, provided the proposed Conditions of Certification are strictly adhered to.

BIOLOGICAL RESOURCES

Loss of sensitive species habitat is the primary concern of staff since conversion of habitat to agriculture and urban development is so prevalent in this area. Because the entire 76-acre power plant site would be fenced to exclude wildlife, construction of the power plant, substation, and two evaporation ponds would permanently impact the Sonoran creosote scrub habitat that is present at the site. Sonoran creosote bush scrub is habitat for desert tortoise, a federal and state-listed species. In addition, the evaporation ponds could attract bird and other wildlife use. Because the water for these ponds is expected to contain some level of contaminants, including chloride, arsenic, and selenium, that will concentrate at the bottom of the ponds over time, the direct loss of birds or other wildlife could occur. In addition, if birds are attracted to these ponds, they may pose a potential hazard to aviation due to the proximity of the ponds to the Blythe Airport runways.

HAZARDOUS MATERIALS

Staff has identified potentially significant impacts from the possible on-site storage and use of anhydrous ammonia for an electric chiller to cool the turbine inlet air.

LAND USE

The proposed project is located in an area recently approved for annexation by the City of Blythe. The proposed project is consistent with the City of Blythe's General Plan and generally consistent with the city's proposed zoning designation for the area, though a variance from the city's height restriction will be needed.

Staff had initial concerns about possible conflicts with airport operations. On October 19, 2000 the RCALUC determined that the proposed project would be consistent with the Blythe Airport CLUP, subject to certain conditions (RCALUC/Downs 2000). Staff is also concerned about possible impacts on Williamson Act Preserve Program lands based on the applicant's proposed water conservation offset program. Additional detail regarding these impacts can be found in the **LAND USE** and **SOIL AND WATER RESOURCES** sections of this FSA.

TRAFFIC AND TRANSPORTATION

No significant impacts on traffic and transportation have been identified in this FSA. The proposed site is located approximately 5,000 feet east of the east-west runway at Blythe Airport. The airport is on a bluff approximately 60 feet higher in elevation than the project site. The Federal Aviation Administration (FAA) has made an evaluation related to the project stack height and found that the proposed structure would not exceed obstruction standards and would not be a hazard to air navigation (BEP 1999a, AFC page 7.2-10; FAA 1999). The Riverside County ALUC has legal authority to review and comment on any proposed development within the "airport influenced area". The BEP is within the "airport influenced area" and the ALUC reviewed the project for land use compatibility. The ALUC standards are based on the criteria of noise, safety and height. On October 19, 2000 the RCALUC determined that the proposed project would be consistent with the Blythe Airport CLUP, subject to certain conditions (RCALUC/Downs 2000).

TRANSMISSION SYSTEMS ENGINEERING

Staff initially identified potential Transmission System Engineering (TSE) impacts related to the development of the proposed project. Information received since the Preliminary Staff Assessment (PSA) was published has identified a need to upgrade a single conductor at the Eagle Mountain substation.

WATER RESOURCES

Staff has been unable to determine if BEP's proposed Water Conservation Offset Program is capable of providing for the conservation of the same amount of water the BEP will consume because the applicant has not provided details of the plan. Without additional information, staff is unable to determine whether BEP will result in significant impacts related to water resources.

ALTERNATIVES TO THE PROJECT

TECHNOLOGY ALTERNATIVES

DEMAND SIDE MANAGEMENT

The Warren-Alquist Act prohibits the agency, in its alternatives analysis, from considering such conservation programs to be alternatives to a proposed generation project. (Pub. Resources Code, Section 25305(c).) This is because the approximate effect of such programs has already been accounted for in the agency's "integrated assessment of need," and the programs would not in themselves be sufficient to substitute for the additional generation calculated to be needed.

While such programs are not considered alternatives to a proposed project, the Energy Commission is responsible for several programs to reduce energy consumption. These programs are typically called "energy efficiency," "conservation," or "demand side management" programs. One goal of these programs is to reduce overall electricity use; some programs also attempt to shift

such energy use to off-peak periods. The most notable of these programs are the energy efficiency standards for new buildings and for major appliances.

The California Public Utilities Commission also supervises various demand side management programs administered by the regulated monopolies, and many municipal electric utilities have their own demand side management programs. The combination of these programs constitutes the most ambitious overall approach to reducing electricity demand administered by any state in the nation.

The Energy Commission is also responsible for determining what the state's energy needs are in the future, using 5 and 12 year forecasts of both energy supply and demand. The Commission calculates the energy use reduction measures discussed above into these forecasts when determining what future electricity needs are, and how much additional generation will be necessary to satisfy the state's needs.

Having considered all of the demand side management that is "reasonably expected to occur" in its forecasts, the agency then determines how much electricity is needed. The most recent estimation of electricity needs is found in the 1996 Electricity Report.

The Warren-Alquist Act was amended in 1999 to delete the necessity of a Commission finding of "need" in power plant licensing cases. Nevertheless, the Commission's most recent need determination, adopted in 1997, makes it abundantly clear that conservation programs alone can not displace the need for power generation for California's growing economy.

GENERATION TECHNOLOGY ALTERNATIVES

Staff compared various alternative technologies with the proposed project, scaled to meet the project's objectives. Technologies examined were those principal electricity generation technologies that do not burn fossil fuels such as geothermal, solar and wind. Each of these technologies could be attractive from an environmental perspective because of the absence or reduced level of air pollutant emissions.

Solar and wind resources require large land areas in order to generate 520 megawatts of electricity. Specifically, utility scale solar thermal projects require between four and ten acres per megawatt depending on the type of system (parabolic trough, parabolic dish, or central receiver) (CEC 1996, pp. B.15.1-2). A project comparable to the proposed 520 megawatt BEP would require a minimum of 2,500 acres, or more than 30 times the amount of space taken by the proposed plant site and linear facilities. Wind generation "farms" generally require about 17 acres per megawatt, with 520 megawatts more than 8,500 acres, more than 100 times the amount of space taken by the proposed plant site and linear facilities (CEC 1996, pp. B.16.1).

The alternative technologies discussed above have the potential for significant land use impacts due to the large land areas required. Because most areas in California

that could accommodate development of this type offer habitat for sensitive species, such projects are also likely to have significant biological impacts. Consequently, staff does not believe that solar and wind technologies present any feasible alternatives to the proposed project.

Geothermal resources are available in limited areas of California. Geothermal resources are present in Imperial County, primarily in the Imperial Valley (CEC 2000r). Sixteen geothermal power plants with a combined online capacity of approximately 480 MW are present in Imperial County (CEC 2000s). While development of additional geothermal resources in southeastern California is possible, geothermal power is not a feasible alternative at the scale of the proposed 520 MW Blythe Energy Project.

SITING AND RELATED FACILITIES ALTERNATIVES

POWER PLANT SITING ALTERNATIVES

In addition to the applicant's proposed site, three sites in the Blythe vicinity have been identified as potentially appropriate sites for industrial development and are considered in this alternatives analysis. The applicant considered sites in two of these areas (near the Blythe Airport and south of Blythe along the Southern Pacific rail line) as part of its alternatives analysis (BEP 1999a, AFC page 6.0-4). Staff has also evaluated sites in these areas as Alternative Sites A and B, though the sites analyzed here do not correspond exactly to the applicant's alternatives analysis. Staff also identified a third alternative site located on the south side of Interstate 10 approximately two miles east of the proposed site as Alternative Site C. Please see **ALTERNATIVES Figure 1** for site locations.

ALTERNATIVE SITE DESCRIPTIONS

Alternative Site A – South of Blythe site

Alternative Site A consists of approximately 70 acres adjacent to the Atchison Topeka Sante Fe rail line, bordered by Seeley Avenue to the north, S. Lovekin Boulevard to the west, and the rail line to the east. The southern boundary of this alternative site is a parcel boundary approximately 2,500 feet south of Seeley Avenue.[1] The site lies outside the Blythe city limits. The applicant stated that the City of Blythe is planning to annex this land and zone it for commercial or industrial use (BEP 1999a, AFC page 6.0-4). While the city is considering future annexation along the railroad tracks south of the city, the city has no specific plan for annexation of this area at this time (Wellman 2000). The northern portion of this site has a Riverside County General Plan designation of Industrial, and the southern portion of the site has a General Plan designation of Agricultural. Portions of the site have County Zoning designations of Manufacturing, Heavy Agriculture, and Controlled Development.

[1] This alternative site consists of the northern half of the applicant's Alternative Site A. The southern portion of the applicant's alternative site was not included in this analysis to avoid a parcel of the applicant's alternative site that is zoned rural residential. The southern boundary of staff's Alternative Site A is the northern boundary of this parcel.

ALTERNATIVES Figure 1
Location of Alternative Sites

The closest electrical substation that would allow connection to the transmission grid is the Blythe Substation, located approximately 5 miles northwest of this site. The closest natural gas supply line is the SoCalGas pipeline that runs along 14th Avenue through Blythe, approximately one mile north of this site. The applicant's proposed pipeline connection to the El Paso natural gas pipeline in Arizona runs along the northern boundary of this site. This alternative site could connect with either or both natural gas pipelines.

Alternative Site B – Airport site

Alternative Site B is located in the northeast portion of the Blythe Airport property, northeast of the airport taxiway. The site is on the outskirts of land leased by the City of Blythe from Riverside County for the airport, and is currently vacant. The County General Plan designation for this land is Industrial, and the County Zoning designation is Medium Manufacturing.

The closest electrical substation that would allow connection to the transmission grid is the Blythe Substation, located just over one mile southeast of this site. The substation is located on an intermediate portion of the Palo Verde Mesa, approximately 50 feet lower than Alternative Site B in elevation. The closest natural gas supply line is the SoCalGas pipeline that runs just south of Interstate 10, approximately one and a half miles south of this site. This site could also be served by a longer version of the applicant's proposed pipeline connection to the El Paso natural gas pipeline in Arizona.

Alternative Site C – Interstate 10 site

Alternative Site C consists of approximately 65 acres bordered by Interstate 10 to the north, the West Side Drain to the west, W. 14th Avenue to the south, and Arrowhead Boulevard to the east. This site is currently used as a gas compressor station for the SoCalGas pipeline that runs along the south side of Interstate 10. The County General Plan designation for this land is Industrial, and the County Zoning designation is Medium Manufacturing.

ALTERNATIVE SITE ANALYSIS

Alternative Site A – South of Blythe site

The primary advantage of this alternative site versus the proposed site is its distance from the Blythe Airport. The Riverside County ALUC has determined that the BEP at the proposed site is compatible with airport operations.

The applicant evaluated a larger version of staff's Alternative Site A. Two primary disadvantages of this site were identified by the applicant. First, it is located much closer to the residential areas of Blythe. The significance of construction and operation impacts related to noise, construction traffic, visual intrusion, and possible exposure to hazardous materials may be increased by the presence of nearby sensitive receptors.

Second, Alternative Site A is located on the Palo Verde Valley floor, where groundwater is present much closer to the ground surface than on the Palo Verde Mesa. The applicant notes that saturated soils pose an increase seismic risk due to potential liquefaction of the soil (BEP 1999a, AFC page 6.0-5). This increased risk would likely require changes to the plant design and construction to withstand potential ground shaking in the case of a major earthquake.

The closest potential connection to the electric transmission grid is the Blythe Substation, located almost five miles to the west-northwest on Palo Verde Mesa. The applicant did not identify a specific route for a transmission line to connect this site to the substation, but noted that it would cross primarily agricultural lands except where it climbed the face of the mesa. This line would most likely be highly visible from Blythe and the Colorado River, resulting in potentially significant visual impacts. The transmission line would also cross desert flora where it crossed the face of the mesa, which could result in biological impacts.

This site may also complicate the interconnection to the Blythe Substation. The proposed project makes use of existing transmission lines both to minimize the length of new transmission lines and because the existing substation would require upgrading and expansion to accommodate a direct connection of the project to the substation. The existing transmission lines that connect to the Blythe Substation do not run closer to Alternative Site A than the substation. Interconnection to the substation would require either an expansion and upgrade of the substation, or running multiple lines to connect existing transmission lines to the project site switchyard and then from the switchyard to the substation.

The applicant has requested the certification of two options for natural gas supply. Alternative Site A lies along the pipeline path proposed for the connection to the EPNG natural gas supply in Arizona. Development of this site instead of the proposed site would reduce the length of this pipeline from approximately 11.5 miles to less than five miles. Alternative Site A is approximately one mile south of the other potential source of natural gas, the SoCalGas pipeline. The most likely path to connect to the SoCalGas pipeline would be directly north along Lovekin Boulevard. Limited traffic impacts would result from construction activities, but these impacts most likely could be mitigated through the implementation of an appropriate traffic control plan.

In summary, proposed site is preferred to Alternative Site A. This site's increased proximity to sensitive receptors, the increased distance required for the transmission connection, and the possible technical difficulties involved in connecting the power plant to the Blythe Substation outweigh the minor advantage resulting from increased distance from the airport.

Alternative Site B – Airport site

Alternative Site B is located immediately adjacent to the airport. According to the applicant's alternatives analysis, this site has greater potential to interfere with airport operations than the proposed site because it is closer to the runways and at the same elevation as the runway (BEP 1999a, AFC page 6.0-6). Alternative Site B

is not located in line with any of the runways, which could reduce potential impact on airport operations in spite of its proximity. Because the Riverside County ALUC has found the BEP at the proposed location consistent with airport operations, no significant impacts related to the airport have been identified. Further consideration of the merits of the two sites relative to the airport is not needed as part of this alternatives analysis.

Development of the BEP project at Alternative Site B would increase the length of the transmission connection to the Blythe Substation. The proposed site is located close to two of the transmission lines that currently connect to the Blythe Substation, and the proposed project was designed to intertie with those lines to minimize the need for new construction of transmission lines. The applicant proposes to construct a total of 1,900 linear feet in three transmission lines. Alternative Site B is located approximately 7,500 feet from the Blythe Substation and 2,500 feet from the closest transmission line. If a similar design were used to tie the existing line through the BEP switchyard, two new lines of at least 2,500 feet each would be needed. Construction of the longer transmission lines to connect Alternative Site B to the Blythe substation may increase the visual impact of transmission lines from the project.

The applicant has requested the certification of two options for natural gas supply. Alternative Site B would require an increase in the length of the pipeline to the site from either proposed source of natural gas. One option is a connection with the SoCalGas pipeline about 0.8 mile south of the project site. The distance to the SoCalGas pipeline from Alternative Site B is approximately 1.5 miles. The second option is a connection with EPNG's interstate, high-pressure pipeline system in Arizona, which would require a new 11.5 mile pipeline that would route through Blythe and under the Colorado River. To connect to Alternative Site B, this pipeline would have to be increased in length by approximately one mile.

Overall, the impacts of developing the project at Alternative Site B appear to be very similar to those anticipated for the proposed site. The increased length of transmission lines and natural gas pipelines needed to serve this site result in an increase in possible biological and cultural impacts.

The impacts of the proposed site and Alternative Site B are similar. Because the transmission lines and other linears associated with the proposed site are shorter, limiting the extent of linear-related impacts, the proposed site is preferred to Alternative Site B.

Alternative Site C – Interstate 10 site

As noted above, this site is currently used by SoCalGas as a natural gas compressor station for its gas pipeline. This site was considered because it is currently zoned industrial, but the use of the site for the compressor station makes development of a power plant there infeasible.

ANCILLARY FACILITIES ALTERNATIVES

The following related facilities pertain only to those associated with the applicant's preferred power plant site. The possible impacts of related facilities if the project were developed at the alternative sites have been considered as part of the evaluation of those sites in the section above.

NATURAL GAS SUPPLY PIPELINE

In its Application for Certification, BEP has requested that two pipeline alternatives for connection to existing natural gas supply pipelines be certified. In addition, BEP analyzed many alternative routes for connecting with the EPNG supply line in Arizona. Staff limited its analysis of alternatives for natural gas supply to evaluating certification of just one of BEP's two potential connection routes.

Staff analysis of the two primary natural gas pipeline alternatives has not revealed any significant impacts related to either pipeline. The greater length of the connection to the EPNG supply is offset by the proposed routing along existing road right-of-ways, where the ground has been previously disturbed. The shorter connection to the SoCalGas line south of Interstate 10 would also lie primarily along previously disturbed lands, following existing road right-of-ways north of Interstate 10 and crossing agricultural land south of Interstate 10.

Staff analysis of the proposed connections to either the EPNG or the SoCalGas supply pipelines did not identify significant impacts. Neither connection is clearly preferable to the other.

TRANSMISSION LINES

The project proposes to interconnect with the regional electric transmission grid at Western's existing Blythe Substation located approximately 2,000 feet southeast of the proposed project electrical switchyard site. This connection will include tying two existing transmission lines to the BEP electrical switchyard through the construction of tie lines of 450 and 650 feet, and a connection from the new switchyard to the Blythe Substation through the construction of a 600 foot tie line to one of the existing transmission lines.

The applicant's proposal, which connects to the existing transmission grid through the construction of three tie lines between 450 and 650 feet in length, maximizes use of existing right-of-way. The applicant's proposed transmission connection has been evaluated throughout this FSA. All alternative routes or configurations would require construction of longer transmission lines, which would be expected to increase any identified impacts.

THE "NO PROJECT" ALTERNATIVE

CEQA Guidelines and Energy Commission regulations require consideration of the "no project" alternative. This alternative assumes that the project is not constructed, and is compared to the proposed project. A determination is made whether the "no project" alternative is superior, equivalent, or inferior to the proposed project.

In the AFC, the applicant presented the “no project” alternative and determined it to be inferior to the proposed project for the following three reasons (BEP 1999a, AFC page 6.0-2):

9. the “no project” alternative would not offer substantive environmental benefits, since “project designs and mitigation actions have been proposed to ensure that development of the proposed power plant will not produce any significant or unavoidable environmental impacts”;
10. the no project alternative would not satisfy the objectives of California’s restructured electricity market; and
11. the no project alternative would hamper the applicant’s business plan to develop a new merchant power generating facility.

If this project is not built, the same market conditions that encouraged it to be proposed will encourage others. Therefore, the “no project” alternative is feasible. It is quite feasible that a substantial amount of additional generating capacity will be proposed even in the absence of this project. Staff can reasonably expect California’s need for new plants to be filled with or without the proposed project. There is no reason to assume that the total amount of capacity actually built would differ, with or without this project.

It follows then, that the extent to which retired, nuclear and fossil generation resources will be replaced by new resources can be expected to be the same with or without this project. The extent to which generation from existing power plants would consume fuel and emit pollutants would be the same with or without this project. And whatever effect new plants might have insulating ratepayers and taxpayers from risk will occur whether or not the proposed plant is included among the new plants actually built.

Peak electrical demand in California may exceed supply in the summers of 2001, 2002, and 2003. According to the construction schedule presented by the applicant in the AFC, if certified, this plant is expected to go online in time for the summer 2003 peak. The “no project” alternative might reduce the amount of new generation available to meet peak demand in 2003.

The “no project” alternative would eliminate the expected economic benefits which the proposed project would bring to City of Blythe and Riverside County. These include estimated property tax revenues of approximately $2 million per year to be split between the city and county. Local construction supply and materials purchases are estimated to be $5 to $10 million, with sales tax revenues generated for the City of Blythe and Riverside County. To maintain the Blythe Energy Project during its operating life will require major maintenance for the facility every 3 to 4 years. It is estimated that this cost will be $10 million, with approximately 15 percent ($1.5 million) of this spent locally. This spending will generate sales tax revenues for the City of Blythe and Riverside County. A 20-person permanent full-time staff is anticipated to operate the Blythe Energy Project, with an annual payroll of approximately $1 million per year (BEP 1999a, AFC page 7.6-22).

This is because the BEP would have, in an unmitigated condition, potentially significant environmental impacts in a number of areas, including air quality, biological resources, hazardous materials, noise, transmission system engineering, and water resources. Not constructing and operating an (unmitigated) power plant would avoid these impacts. For these reasons, staff has determined that the “no project” alternative is environmentally superior to the proposed project in an unmitigated condition. The mitigation measures included in this FSA are sufficient to reduce the identified impacts to less than significant levels. The BEP offers economic benefits to the City of Blythe and Riverside County, and may aid California in avoiding a shortfall in electrical generation capacity in the summer of 2003. These benefits would not be realized under the “no project” alternative. For these reasons, staff prefers the proposed project to the “no project” alternative.

RESPONSE TO PUBLIC AND AGENCY COMMENTS

Daniel, Rigoberto, and Carmela F. Garnica (intervenor) suggested that BEP be located out in the desert near the prisons, which are located roughly twelve miles west of the proposed site (IL 2000d). They express concern about the natural gas pipelines in Blythe, including the existing pipelines, the pipelines proposed as part of BEP, and other proposed new pipelines.

As discussed above, staff selected alternative sites to analyze based on a number of factors, including the availability of transmission system interconnection, the presence of high-volume, high-pressure natural gas supply pipelines, and the availability of vacant and compatible land. Constructing a power plant near the prisons would require industrial development of open desert land not currently zoned for industrial uses. Staff's search for compatible land focused on sites zoned or currently considered for future zoning as industrial. In addition, a site near the prisons would require significant transmission lines to connect to the Blythe substation, and no other substations are present in the area. For these reasons, staff did not consider possible sites near the prisons as appropriate alternative sites for the project.

Staff also notes that locating the BEP near the prisons would also require increasing the length of natural gas pipeline needed to serve the project. If the applicant connected to the SoCalGas pipeline along I-10, the connection would also likely be longer than the 0.8 miles needed for the proposed site. If the applicant connected to the EPNG interstate, high-pressure pipeline system in Arizona, the length of pipeline would roughly double, from 11.5 miles for the proposed site to more than 20 miles for a site near the prison. The environmental impacts associated with power plant linears (transmission lines and pipelines) typically increase with the length of the linears.

CONCLUSIONS AND RECOMMENDATION

Staff has determined that the proposed site is preferred to the alternative sites considered and to the “no project” alternative. Staff does not believe that energy

efficiency measures and alternative technologies (geothermal, solar, wind, and hydroelectric) present feasible alternatives to the proposed project.

With regard to the natural gas pipeline options, staff believes either is suitable because no significant environmental impacts have been identified associated with either proposed pipeline.

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AIR QUALITY

Testimony of Gabriel D. Behymer

INTRODUCTION

This analysis evaluates the expected air quality impacts of the emissions of criteria air pollutants due to the construction and operation of the proposed Blythe Energy Project (BEP). Criteria air pollutants are defined as those for which a state or federal ambient air quality standard has been established to protect public health. They include nitrogen dioxide (NO2), sulfur dioxide (SO2), carbon monoxide (CO), ozone (O3), volatile organic compounds (VOC) and particulate matter less than 10 microns in diameter (PM10).

In carrying out this analysis, the California Energy Commission staff evaluated the following major points:

12. Whether the project is likely to conform with applicable Federal, State and Mojave Desert Air Quality Management District air quality laws, ordinances, regulations and standards, as required by Title 20, California Code of Regulations, section 1742.5 (b);
13. Whether the project is likely to cause significant air quality impacts, including new violations of ambient air quality standards or contributions to existing violations of those standards, as required by Title 20, California Code of Regulations, section 1742 (b); and
14. Whether the mitigation proposed for the project is adequate to lessen the potential impacts to a level of insignificance, as required by Title 20, California Code of Regulations, section 1744 (b).

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

FEDERAL

Under the Federal Clean Air Act (42 U.S.C. §7401 et seq.), there are two major components of air pollution law, New Source Review (NSR) and Prevention of Significant Deterioration (PSD). NSR is a regulatory process for evaluation of those pollutants that violate federal ambient air quality standards. Conversely, PSD is a regulatory process for evaluation of those pollutants that do not violate federal ambient air quality standards. The NSR analysis has been delegated by the Environmental Protection Agency (EPA) to the Mojave Desert Air Quality Management District. The EPA determines conformance with the PSD regulations. The PSD requirements apply only to those projects (known as major sources) that exceed 100 tons per year for any pollutant.

STATE

The California State Health and Safety Code, section 41700, requires that “no person shall discharge from any source whatsoever such quantities of air

contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property."

LOCAL

The proposed facility is subject to the following Mojave Desert Air Quality Management District (District or MDAQMD) rules and regulations:

RULE 102 - DEFINITION OF TERMS

Prohibits any person from circumventing any applicable section of rules and regulations.

RULE 201 – PERMITS TO CONSTRUCT

Requires the District's authorization prior to construction of a new facility.

RULE 203 – PERMIT TO OPERATE

Requires the District's authorization before a new facility commences operations.

RULE 401 – VISIBLE EMISSIONS

Limits the discharge of air contaminants that affect ambient visibility.

RULE 402 – NUISANCE

Protects the public's health and welfare from the emission of air contaminants that may constitute a nuisance.

RULE 403 – FUGITIVE DUST

Regulates operations that may cause fugitive dust emissions into the atmosphere.

RULE 406 – SPECIFIC CONTAMINANTS

Limits the emissions of sulfur compounds to no greater than 500 parts per million by volume (ppmv), and a number of other contaminants (such as bromine, hydrogen chloride and fluorine) to specific ppmv levels.

RULE 407 – LIQUID AND GASEOUS AIR CONTAMINANTS

Limits CO emissions to 2,000 parts per million (ppm) over a 15-minute averaging period.

RULE 409 – COMBUSTION CONTAMINANTS

Limits discharging of combustion contaminants (PM10) to no greater than 0.1 grains per dry standard cubic foot (gr/dscf).

RULE 431 – SULFUR CONTENT OF FUELS

Limits sulfur content of gaseous fuel to 800 ppm, and liquid or solid fuel to 0.5 percent by weight.

RULE 475 – ELECTRIC POWER GENERATING EQUIPMENT

Limits the oxides of nitrogen (NOx) emissions of any electric power generating equipment to no more than 80 ppm if using gaseous fuel, 160 ppm if using liquid fuel and 225 ppm if using solid fuel.

RULE 476 – STEAM GENERATING EQUIPMENT

Limits the emissions of any fuel combustion equipment to no more than 200 pounds per hour of oxides of sulfur (SOx), 140 pounds per hour of NOx, or 10 pounds per hour of combustion contaminants.

RULE 900 – STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES (NSPS)

Establishes requirements for general definitions, monitoring, records, and administrative requirements applicable to the federal New Source Performance Standard (NSPS).

Also establishes limits for NO2 and SO2 from new or modified stationary gas turbines with a designed heat rate input of 10 MMBtu/hr or more. The proposed turbines' NOx concentrations shall not exceed 75 ppm dry at 15% oxygen, and SO2 concentrations shall not exceed 150 ppm dry at 15% oxygen.

RULE 1000 – NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Establishes the general definitions, monitoring and administrative requirements applicable to the federal National Emission Standards for Hazardous Air Pollutants (NESHAP).

RULE 1158 – ELECTRIC UTILITY OPERATIONS

Establishes NOx emission standards and other requirements for electric utility operations including installation of an approved continuous emission monitoring (CEM) system, reporting and an approved emission control plan.

RULE 1200 – GENERAL (TITLE V)

Establishes administrative requirements for obtaining a federal operating permit (Title V operating permit).

RULE 1300 – GENERAL (NSR)

Provides general discussions of the New Source Review (NSR) purposes, applicability, exemption, and interaction with other Federal, State and District rules, regulations and plans. The NSR applies to all new and modified stationary sources that are required to have permits to construct and operate within the District.

RULE 1301 – DEFINITIONS (NSR)

Provides various definitions for the NSR regulations.

RULE 1302 – PROCEDURES (NSR)

Provides administrative procedures for the processing of applications for permits to construct and operate of new and modified stationary sources.

Section 1302 (C)(3) "Determination of Offsets", part (b) states "upon receipt of the notification [from the district regarding specific amount and type of offset required], the applicant shall provide the Air Pollution Control Officer (APCO) a proposed Offset package which contains evidence of Offset eligibility for use pursuant to the provisions of District Rule 1305."

Section 1302 (C)(3)(b)(iii) also states "after determining that the Offsets are real, enforceable, surplus, permanent and quantifiable and after any permit modifications required pursuant to District Rule 1305 or Regulation XIV have been made, the APCO shall approve the use of the Offsets subject to the approval of California Air Resources Board (CARB) and EPA during the comment period required pursuant to subsection (D)(2) below."

RULE 1303 - REQUIREMENTS

Provides specific requirements for new or modified stationary sources including Best Available Control Technology (BACT) and offsets.

RULE 1304 - EMISSIONS CALCULATIONS

Provides methods to calculate emissions changes from a new or modified stationary source.

RULE 1305 - EMISSIONS OFFSETS

Provides the procedures and formulas for quantifying and determining the eligibility of emission reduction credits (ERC) available for use as offsets in accordance to Rule 1303.

Rule 1305(B)(5) allows for the use of interbasin offsets from upwind air districts that are outside the Mojave Desert Air Basin. Rule 1305(B)(6) allows for the use of interpollutant offset trading as long as there is technical justification for such a trade and the combined emissions increase from the proposed project and the reductions from the interpollutant offsets do not cause or contribute to a violation of an ambient air quality standard. Both sections directly relate to the proposed offset package, discussed in the Mitigation section below.

RULE 1306 - ELECTRIC ENERGY GENERATING FACILITIES

Provides administrative requirements for new or modified power plants that are required to obtain licensing from the California Energy Commission.

RULE 1401 – DEFINITIONS (ERC)

Provides various definitions for the banking rules.

Section (N) defines the historic actual emissions of a facility to be its average emissions over the past two year period, or of any two years of the previous five years, prior to the date of application for ERC.

RULE 1402 – EMISSION REDUCTION CREDIT REGISTRY

Provides administrative procedures for the registry of ERC for stationary sources. The requirements include the specific timing of an application for an ERC and criteria for approval of the ERC.

Section (A)(1)(e)(ii) defines emission reductions to be eligible for ERC if such reductions are actual emission reductions and either recognized by the District in writing or were included in the emission inventory after the shutdown or modification occurred.

RULE 1404 – EMISSION REDUCTION CREDIT CALCULATIONS

Provides methods to calculate the ERC available.

Section (A)(2)(c) indicates that the ERC shall be the difference between the historical actual emissions and the proposed emissions.

ENVIRONMENTAL SETTING

METEOROLOGICAL CONDITIONS

The city of Blythe is located on the border of the Mojave Desert and the Sonoran Desert regions. Hot, dry summers and mild winters with relatively small amounts of precipitation typically dominate the climate. The semi-permanent Pacific High over the eastern Pacific Ocean during the summer months, blocks low pressure systems from passing through the area. This results in warm summers, with average daily maximum temperatures during the summer months in excess of 105°F. Daily maximum temperatures during the winter months average a relatively warm 68°F, with lows averaging approximately 43°F. At the Blythe Airport weather station, a record high of 123°F and record low of 18°F was measured. These temperatures are used in determining the maximum possible emissions from the project and the maximum emission impacts in the air dispersion modeling analysis.

During the winter months, the Pacific High weakens and migrates to the south allowing Pacific storms into California. In addition, the area receives some moisture during the summer monsoon season from the wind flowing up the Colorado River Valley from the Gulf of California. However, due to the rain shadow effect of the terrain west and south of the Blythe region, the average annual rainfall in the area is only 3.7 inches.

Analysis of the local wind rose diagrams (a graph showing the average wind speed and direction in the location) provided by the applicant in the AFC indicate that the surface winds in the area are strongly influenced by the southwest-northeast orientation of the Colorado River directly to the east of the project site. During the summer months, winds are predominately from the southwest, while during the winter months winds are predominately from the northeast. The winds are calm approximately 15% of the time.

Along with the winds, another climatic factor is atmospheric stability and mixing height. Atmospheric stability is an indicator of the air turbulence and mixing. During the daylight hours of the summer, when the earth is heated and air rises, there is more turbulence, more mixing and thus less stability. During these conditions there is more air pollutant dispersion and therefore usually fewer air quality impacts from a single air pollution source like BEP. During the winter months between storms, very stable atmospheric conditions occur, resulting in very little mixing. Under these conditions, little air pollutant dispersion occurs, and consequently higher impacts result from stationary source emissions. Both mixing heights and wind speeds are generally lower during the winter.

EXISTING AIR QUALITY

The United States Environmental Protection Agency (EPA) and the California Air Resource Board (CARB) both establish allowable maximum ambient concentrations of air pollutants, called ambient air quality standards (AAQS). The state AAQS, established by CARB, are typically lower (more protective) than the federal AAQS, established by EPA. The state and federal air quality standards are listed in AIR QUALITY Table 1. As indicated in AIR QUALITY Table 1, the averaging times for the various air quality standards (the duration over which they are measured) range from one hour to one year (annual). The standards are read as a concentration, in parts per million (ppm), or as a weighted mass of material per a volume of air, in milligrams or micrograms of pollutant in a cubic meter of air (mg/m3 and μg/m3).

AIR QUALITY Table 1
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O3)	1 Hour	0.12 ppm (235 $\mu g/m^3$)	0.09 ppm (180 $\mu g/m^3$)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO2)	Annual Average	0.053 ppm (100 $\mu g/m^3$)	
	1 Hour		0.25 ppm (470 $\mu g/m^3$)
Sulfur Dioxide (SO2)	Annual Average	0.03 ppm (80 $\mu g/m^3$)	
	24 Hour	0.14 ppm (365 $\mu g/m^3$)	0.04 ppm (105 $\mu g/m^3$)
	3 Hour	0.5 ppm (1300 $\mu g/m^3$)	
	1 Hour		0.25 ppm (655 $\mu g/m^3$)
Respirable Particulate Matter (PM10)	Annual Geometric Mean		30 $\mu g/m^3$
	24 Hour	150 $\mu g/m^3$	50 $\mu g/m^3$
	Annual Arithmetic Mean	50 $\mu g/m^3$	
Sulfates (SO_4)	24 Hour		25 $\mu g/m^3$
Lead	30 Day Average		1.5 $\mu g/m^3$
	Calendar Quarter	1.5 $\mu g/m^3$	
Hydrogen Sulfide (H_2S)	1 Hour		0.03 ppm (42$\mu g/m^3$)
Vinyl Chloride (chloroethene)	24 Hour		0.010 ppm (26 $\mu g/m^3$)
Visibility Reducing Particulates	1 Observation		In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

In general, an area is designated as attainment for a specific pollutant if the concentrations of that air contaminant do not exceed the standard. Likewise, an area is designated as non-attainment for an air contaminant if that standard is violated. Where not enough ambient data are available to support designation as either attainment or non-attainment, the area can be designated as unclassified. Unclassified areas are normally treated the same as attainment areas for regulatory purposes. An area can be attainment for one air contaminant while non-attainment for another, or attainment for the federal standard and non-attainment for the state standard for the same contaminant. The entire area within the boundaries of a district is usually evaluated to determine the district's attainment status.

The Blythe Energy Project is located in the Riverside County portion of the Mojave Desert Air Basin and is under the jurisdiction of the Mojave Desert Air Quality Management District. All state and federal ambient air quality designations are presented in AIR QUALITY Table 2 below (EPA 1999 & CARB 1999). Only ozone and PM10 are designated as nonattainment under the state's standards.

AIR QUALITY Table 2
Local Air Quality Classifications

Pollutant	State Designation	Federal Designation
NO2	Attainment	Unclassified
CO	Unclassified	Unclassified
PM10	Nonattainment	Unclassified
SO2	Attainment	Unclassified
Ozone	Nonattainment	Unclassified/Attainment

Ambient air quality data has not been collected in Blythe since 1992 (BEP 2000a, AFC page 7.7-23, §7.7.7). At that time, a single year of hourly ambient ozone concentration data was collected that indicated maximum ambient ozone levels equal to, but not exceeding, the state standard. In the AFC, Blythe Energy submitted ambient air quality data from the Twentynine Palms monitoring station, approximately 90 miles west-northwest of the project site, indicating violations of the state 24 hour PM10 standard and both the state and federal 1 hour ozone standard. The ambient air quality data from Twentynine Palms is presented below in AIR QUALITY Table 3 below.

AIR QUALITY Table 3
Maximum Concentrations of PM10, NO2, CO and O3 Ambient Air Quality Data Collected at Twentynine Palms (mg/m^3)

Pollutant	Averaging Time	1993	1994	1995	1996	1997	1998	Most Restrictive Ambient Air Quality Standard
PM10	24 hours	39	79	85	47	30	30	50
	Annual	20.4	20.9	19.3	22.5	16.9	15.9	30
NO2	1 hour	75	88	137	66	70	68	470
	Annual	15	11	11	11	11	17	100
CO	1 hour	-	9,006	5,700	2,166	2,280	-	23,000
	8 hour	-	3,648	2,280	1,482	1,140	-	10,000
O3	1 hour	255	243	215	237	225	231	180

Twentynine Palms and Blythe are similar sized towns, located at a fair distance from large urban areas. The quantities of emissions originating from these two communities should be similar, primarily from motor vehicles; therefore the ambient air quality for these localized pollutants should be similar between these two communities. Thus, staff concludes that the PM10, NO2 and CO ambient data from Twentynine Palms does represent similar ambient levels in Blythe.

AMBIENT OZONE

Ozone is not directly emitted from stationary or mobile sources; rather it is formed as the result of chemical reactions in the atmosphere between directly emitted air pollutants. Nitrogen oxides (NOx) and hydrocarbons (Volatile Organic Compounds [VOCs]) react with oxygen in the presence of sunlight to form ozone. Collected air quality data indicates that ambient ozone tends to be a regional issue and that violations occur primarily during the period of May through October.

The most recent CARB report on the contributions of various districts to ozone violations in other districts (CARB 1996) recognizes both the San Joaquin Valley Air Basin and the South Coast Air Basin as contributing to the Mojave Desert Air Basin. However, the couples (the geographic areas that were analyzed for pollutant transport) are between locations more then 150 miles from the project site.

Based on this information and the information originally provided in the AFC, staff was unable to conclude that the ambient ozone data collected at Twentynine Palms represents the ozone levels at Blythe, approximately 90 miles to the east-southeast. The ambient ozone levels in Blythe could be either higher or lower due to the distance and possible influence from other urban regions. Staff requested that the applicant obtain more reliable data to establish the ambient ozone levels in Blythe. In a public workshop on July 11th, 2000, Blythe Energy agreed to prepare a statistical estimation of the current ambient ozone levels in Blythe based on the 1992 data and currently available data from surrounding ambient air monitoring stations within approximately 200 miles of the project site (applicant response to data request #201, August 10th, 2000).

The applicant's ambient ozone analysis presents and analyzes ambient ozone data from numerous monitoring stations divided into three upwind transport path groups, the Southern Mojave Desert Air Basin Path, the I-10 Corridor Path, and the Salton Sea Air Basin Path. Over the past decade both the Southern Mojave Desert Air Basin Path and the I-10 Corridor Path show decreasing average maximum 1 hour ozone levels and decreasing numbers of days per year in which a state 1 hour violation was registered. The data presented from the Salton Sea Air Basin Path is inconclusive, however the applicant contends that influence from this path on the Blythe area is unlikely due to the intervening Chocolate Mountains. Staff has reviewed the data and agrees with the applicant's analysis for all three pathways.

The two pathways most likely influencing the Blythe area are the Southern Mojave Desert Air Basin Path and the I-10 Corridor Path. In 1992 both pathways had higher maximum ambient ozone levels than Blythe and over the past decade both show a clear pattern of improvement. Staff is confident that these facts support the assumption that the ambient ozone levels in Blythe are now equal to or lower than they were in 1992. Finally, the 1992 data from Blythe shows no violations of the State ozone standard; thus staff believes that the Blythe area currently does not experience any violations of the State standard for ozone.

AMBIENT PM10

PM10 can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. Gaseous emissions of pollutants like NOx, SOx and VOC from turbines, and ammonia (NH3) from NOx control equipment can, given the right meteorological conditions, form particulate matter known as nitrates, sulfates, and organics. These pollutants are known as secondary particulates, because they are not directly emitted but are formed through complex chemical reactions in the atmosphere.

PROJECT DESCRIPTION AND EMISSIONS

CONSTRUCTION

The Blythe Energy Project main facility will include the following major components:

- Two 170 MW Siemens V84.3A combustion turbine generators (CTGs),
- Two heat recovery steam generators (HRSGs) with duct burners,
- One 180 MW steam turbine generator (STG),
- An eleven cell mechanical draft wet cooling tower, and
- An additional seven cell mechanical draft wet cooling tower if an electric chiller system is selected for inlet air-cooling.

In addition, the project will include the following major ancillary facilities:

- Either an 11.5 mile long natural gas pipeline to connect with El Paso Natural Gas Company, or a 0.8 mile natural gas pipeline to connect with Southern California Gas Company, or both;
- Two eight acre evaporation ponds;
- A 267 brake horse power (bhp) diesel fire water pump;
- Three on site water supply wells; and
- An on-site septic system and leach field.

The construction of these facilities will generate air emissions, primarily fugitive dust from earth moving activities and combustion emissions from construction equipment and vehicles (discussed in greater detail in the “Project Site” section below). The projected highest daily emissions, based on the highest monthly emissions over the 16-20 month construction period, are shown in AIR QUALITY Table 4. Note that these maximums do not necessarily occur during the same month (e.g. the maximum fugitive PM10 occurs during month eight, while the maximum CO emissions occur during month nine, BEP 1999a, AFC page 7.7-15).

AIR QUALITY Table 4
Maximum Daily Construction Emissions (lb/day)

	NOx	VOC	CO	PM10	Fugitive PM10
Maximum Daily Emissions	1465.1	118.7	531.4	114.5	1063.5
Note: Estimate based on an eight hour workday and a five day work week.					

PROJECT SITE

The power plant itself will take approximately 16-20 months to construct. The power plant project construction consists of three major areas of activity: 1) the civil/structural construction 2) the mechanical construction, and 3) the electrical construction. The largest air emissions are generated during the civil/structural activity, where work such as grading, site preparation, foundations, underground utility installation and building erection occur. These types of activities require the

use of large earth moving equipment, which generate considerable combustion emissions themselves, along with creating fugitive dust emissions. The mechanical construction includes the installation of the heavy equipment, such as the combustion and steam turbines, the heat recovery steam generators, condenser, pumps, piping and valves. Although not a large fugitive dust generation activity, the use of large cranes to install such equipment generates significantly more emissions than other construction equipment onsite. Finally, the electrical equipment installation occurs, involving such items as transformers, switching gear, instrumentation and wiring, and is a relatively small source of emissions in comparison to the early construction activities.

Not surprisingly, the largest percentage of the total construction emissions from AIR QUALITY Table 4 will be emitted during the project site activity, most of it due to earth moving, grading activities and large crane operations.

NATURAL GAS SUPPLY PIPELINE

The construction of the natural gas supply pipeline includes the activities of clearing and grading, trenching, microboring, stringing the pipes and fittings, lining and connecting, welding, backfill and clean-up.

OPERATION

EQUIPMENT OPERATION

The CTGs will burn only natural gas; there are no provisions for an alternative back-up fuel.

The highest emissions from the turbines occur in transient states when the turbine is either starting up or shutting down. The specific length of each startup event depends on the length of time the turbine has been shutdown and the temperatures and pressures on the steam turbine side of the power generation block (i.e. the longer the turbine has been shutdown, the more it cools off and thus the longer it takes to restart). The usual practice is to define a startup as either a hot start, a warm start or a cold start, with the startup period being defined as the length of time until the gas turbine is fully loaded, that is, producing baseload electrical power. A hot start would occur after a short turbine shutdown and would take approximately one hour to complete. A warm startup would occur after a typical weekend shutdown (approximately 60 to 72 hours) and would take approximately one and one half to two hours. A cold start would be very rare, occurring only after the turbines have been under extended shutdown (such as an annual maintenance inspection), and takes approximately two and one half hours. Because of the thermal efficiency of the project, it is highly likely that the Blythe Energy Project will operate extensively, with few extended shutdown periods.

Blythe Energy has requested that the project be analyzed assuming 10 cold starts, 50 warm starts, 100 hot starts and 160 shutdowns per year. Staff believes that the more likely scenario is that, barring major mechanical malfunction of the equipment itself, cold startups may occur once or twice a year, most likely during the annual

maintenance and inspection. Staff expects that the vast majority of startups would be hot or warm starts, thus minimizing startup periods of time.

The applicant plans to augment the generating capacity with duct firing in the HRSGs. Duct firing is a process where additional natural gas is burned within the steam generator in order to generate additional steam and thus generate additional electrical energy with the steam turbine. This is a common practice and is generally only cost effective when demand is high and turbine energy is low due to high ambient temperatures. This process will produce significant additional emissions.

The applicant has stated that steam injection power augmentation will not be considered (response to data request #8, May 26th, 2000). Steam injection power augmentation is where steam is injected into the gas turbine itself along with additional fuel. This additional mass flow through the turbine and additional heat from the added fuel yields additional electrical energy. The process puts a strain on the turbine assembly, however, and is also less efficient than normal operation. Thus, this technique is also only cost effective during times of particularly high demand.

EMISSION CONTROLS

The exclusive use of an inherently clean fuel, natural gas, will limit the formation of SO2, PM10 and CO. Natural gas contains very small amounts of a sulfur compound known as mercaptan, which when combusted, results in sulfur dioxide emissions. However, in comparison to other fuels used in power plants, such as fuel oil or coal, the sulfur dioxide emissions from the combustion of natural gas are very low.

Like SO2, the emissions of PM10 from natural gas combustion are also very low compared to the combustion of fuel oil or coal. Natural gas contains very little noncombustible gas or solid residue and is thus a relatively clean-burning fuel. A maximum sulfur content of 0.5 grains (gr) of sulfur per 100 standard cubic feet (scf) of natural gas will be required for the project and is assumed for the SO2 emissions calculations.

After combustion, the flue gases pass through the heat recovery steam generator (HRSG) to extract residual energy and a catalyst system to further reduce NOx emissions. Blythe Energy is proposing to use a Selective Catalytic Reduction system to reduce NOx emissions. The applicant proposes to not use an oxidizing catalyst installed in the HRSG to further reduce CO and VOC emissions, but will be required to install such a device should the facility fail to meet either its permitted CO or VOC limits after going on line.

PROJECT OPERATING EMISSIONS

Staff estimated the project's emissions based on Siemens/Westinghouse (the CTG vendor) supplied data (Greystone environmental Consultants, Inc.; "Blythe Energy Project Air Emissions – Siemens V84.3A CT/HRSG Configuration, Appendix A"; April 2000).

The proposed project's criteria air pollutant emissions during short periods of time (approximately one hour or less) are shown in AIR QUALITY Table 5. As this table shows, the NOx, VOC and CO emissions during startup and shutdown are significantly higher than during steady state, full load operation. These higher emissions occur because the turbine combustor technology is designed for maximum efficiency during full load steady state operation. During startup and shutdown, combustion temperatures and pressures change rapidly, resulting in less efficient combustion and higher emissions. Also, the flue gas controls, the catalysts discussed above, operate most efficiently when the turbine operates near or at full load. Those flue gas controls are not as effective during the transitory temperature changes that occur during startup and shutdown.

AIR QUALITY Table 5
Individual Equipment Maximum Short-Term Emissions
(pounds per hour [lb/hr] except where noted)

Operational Profile	Units	NOx	SO2	PM10	VOC	CO
1 CTG Cold Startup (221 min.)	Lb	376	8	22	20	403
1 CTG Warm Startup (121 min.)	Lb	278	4	12	12	253
1 CTG Hot Startup (74 min.)	Lb	260	3	7	9	172
1 CTG Shutdown (30 min.)	Lb	340	2	6	8	96
1 CTG Steady State, 100% load *without* duct firing @ 20°F	Lb/hr	19.8	2.7	11.5	2.7	
1 CTG Steady State, 100% load *with* duct firing @ 95°F	Lb/hr	17.6	2.7	11.5	2.9	35.2
Main Cooling Tower (11 cells)	Lb/hr	-	-	0.51	-	-
Chiller Cooling Tower (7 cells)	Lb/hr	-	-	0.036	-	-
Diesel Fire Water Pump	Lb/hr	4.6	0.1	0.05	0.6	5.7
Emissions estimates updated with information from the turbine vendor since the PSA.						

The estimated maximum daily emissions from the project are shown in AIR QUALITY Table 6. The table assumes continuous operation with one cold start and one hot start for NOx, CO & VOC. For PM10 the calculations assume 24 hours of 100% load operations at 95°F with duct firing and for SO2 the assumptions are 24 hours of 100% load operations at 20°F without duct firing.

AIR QUALITY Table 6
Project Maximum Daily Emissions
(pounds per day [lb/day])

	NOx	SO2	PM10	VOC	CO
Two Combustion Turbines	5762	130	552	239	3808
Main Cooling Tower (11 cells)	-	-	12.2	-	-
Chiller Cooling Tower (7 cells)	-	-	0.86	-	-
Total (lb/day)	**5,762**	**130**	**565**	**239**	**3,808**

Annual emissions for the two CTGs combined are summarized in AIR QUALITY Table 7. The first line of this table represents a scenario of the maximum number of startups and shutdowns of the CTGs per year, with the balance of hours of

operation at full load steady state without duct firing. The second line shows the CTGs operating throughout the year at full load (baseload). Sixty minutes per week of testing for the diesel fire water pump is also included (52 hours per year). Not surprisingly, startup emissions make up a considerable portion of the annual emissions liability.

AIR QUALITY Table 7
Project Annual Emissions
(tons per year [ton/year])

Operational Profile	NOx	SO2	PM10	VOC	CO
10 cold starts, 50 warm starts, 100 hot starts, 160 shutdowns for each CTG. Remainder of year at steady state[a]	202	23.6	76.6	53.0	526
Steady state operation, two CTGs, 1 full year	144.6	24.5	103	22.8	170.9
Diesel Fire Water Pump (52 hours per year)	0.194	0.0026	0.0014	0.0164	0.017
Cooling Towers (one 11 cell & one 7 cell)	--	--	2.4	--	--

Note:
[a] Assume 36.8 hr cold start, 100.8 hr warm start, 123.3 hr hot start, 80 hr shutdown and 8425 hr steady state

As can be seen from the table, SO2 and PM10 are produced in proportion to fuel consumption. Thus, worst case scenarios for those pollutants would be year round 100% operation.

AMMONIA EMISSIONS

Due to the large combustion turbines used in this project and the need to control NOx emissions, significant amounts of ammonia will be injected into the flue gas stream as part of the Selective Catalytic Reduction (SCR) system. Not all of this ammonia mixes in the flue gases to reduce NOx; a portion of the ammonia passes through the SCR and is emitted unaltered, out the stacks. These ammonia emissions are known as ammonia slip. Blythe Energy has proposed an ammonia slip no greater than 10 ppm, which is the current lowest ammonia slip level being achieved and permitted in California. On a daily basis, ammonia slip of 10 ppm from both turbines combined is equivalent to approximately 1020 lbs emitted to the atmosphere. It should also be noted that ammonia slip of 10 ppm usually only occurs after significant degradation of the SCR catalyst, usually five years or more after commencing operation. At that point, the SCR catalysts are removed and replaced with new catalysts. During most of the operational life of the SCR system ammonia slip emissions would be approximately 1 to 2 ppm, corresponding to a mass emissions of 100 to 200 pounds per day.

INITIAL COMMISSIONING PHASE OPERATION AND EMISSIONS

New power generation facilities must go through an initial firing and commissioning phase before going fully on line. This period can last upwards of 4 months. During this period, emissions may exceed permitted levels due to startups, shutdowns, extended periods of low load operation and periods of time when the low-NOx burners and SCR systems are fine tuned for optimum performance.

The applicant has prepared impact modeling of the probable ground level impact during initial commissioning activities. This modeling indicates that, given certain restrictions, the initial commissioning activities will not cause ground level violations of state or federal standards. The results of this analysis and modeling are presented in AIR QUALITY Table 8 below.

AIR QUALITY Table 8
Maximum Initial Commissioning Impacts (mg/m^3)

Pollutant	Averaging Time	Total Impact	Limiting Standard	Percent of Standard
NO2	1 hour	468	470	99.6 %
	Annual	17.2	100	17.2 %
CO	1 hour	5551	23,000	24.1 %
	8 hour	2354	10,000	23.5 %

In order to ensure that no significant air quality impacts occur during the initial commissioning phase of the Blythe Energy Project, staff proposes a number of conditions of certification specifically for this period of operation (AQ-C3 through AQ-C10).

PROJECT INCREMENTAL IMPACTS

MODELING APPROACH

Blythe Energy performed an air dispersion modeling analysis to evaluate the project's potential impacts on the existing ambient air pollutant levels, during both construction and operation. An air dispersion modeling analysis usually starts with a conservative screening level analysis. Screening models use very conservative assumptions and meteorological conditions, which may or may not actually occur in the area. The impacts calculated by screening models, therefore, can be significantly higher than the actual or expected impacts. If the screening level impacts are significant, refined modeling analysis is performed. A major difference in the refined modeling is that hour-by-hour meteorological data collected in the vicinity of the project site is used. Blythe Energy used the Industrial Source Complex Short Term model, Version 3, known as the ISCST3 model, for the refined modeling analysis of the Blythe Energy Project.

CONSTRUCTION IMPACTS

Blythe Energy performed air dispersion modeling analyses of the potential construction impacts at the project site using the Fugitive Dust Model (FDM) and meteorological data from 1990 through 1993. The analyses included fugitive dust generated from the construction activity (modeled as an area source) and combustion emissions from the equipment (modeled as four stationary point sources). The 1 hour NO2 impact was calculated using the Ozone Limiting Method (OLM). The 24 hour impacts were assessed using the emission rates for the month of maximum activity and annual impacts were assessed using the average emissions for the entire construction period. Most of the highest emissions are

estimated to occur about halfway through the 16 to 20 month construction period. The results of this modeling effort are shown in AIR QUALITY Table 9.

AIR QUALITY Table 9
Maximum Construction Impacts (mg/m^3)

Pollutant	Averaging Time	Maximum Impact	Limiting Standard	Percent of Standard
NO2	1 hour	409	470	87 %
	Annual	47.8	100	48 %
CO	1 hour	624	23,000	3 %
	8 hour	309	10,000	3 %
SO2	3 hour	139	1,300	11 %
	24 hour	54.5	105	52 %
	Annual	4.57	80	6 %
PM10	24 hour	196.4	50	393 %
	Annual Mean (Geometric)	31.8	30	106 %

The construction of the Blythe Energy Project may result in short-term ambient air quality impacts (mostly for PM10), which the general public could be exposed to. Staff believes that the emissions from the construction of the project could thus have a significant impact and should be mitigated to the extent feasible. This is addressed under the “Staff Proposed Mitigation” section below.

PROJECT OPERATION IMPACTS

The air quality impacts of project operation under fumigation meteorological conditions, during combustion turbine startup and during steady-state operations, are discussed in the following sections.

FUMIGATION IMPACTS

Surface air is usually very stable during the early morning hours before sunrise. During such meteorological conditions, emissions from elevated stacks rise through this stable layer and are dispersed and diluted. When the sun first rises, the air at ground level is heated resulting in turbulent vertical mixing (both rising and sinking) of air for a few hundred feet or so. Emissions from a stack that enter this turbulent layer of air will also be vertically mixed, bringing some of those emissions down to ground level before significant dispersion occurs and possibly causing abnormally high impacts. Later in the day, as the sun continues to heat the ground, this vertical mixing layer becomes thicker and thicker, and the emissions plume becomes better dispersed. The early morning air pollution event, called fumigation, usually lasts approximately 30 to 90 minutes.

The applicant used the EPA approved SCREEN3 model for the calculation of fumigation impacts. AIR QUALITY Table 10 shows the modeled fumigation impacts in comparison with the 1 hour NO2, CO and SO2 standards. Since fumigation impacts will not typically occur for more than a 1 hour period, only the impacts on

the 1 hour standards are shown. The results of the modeling analysis show that fumigation impacts will not violate either the NO2, CO or SO2 1 hour standards.

AIR QUALITY Table 10
CTG Fumigation Modeling
Maximum 1 hour Impacts (mg/m^3)

Pollutant	Fumigation Impacts	Limiting Standard	Percent of Standard
NO2	108	470	23 %
CO	387	23,000	2 %
SO2	1.32	655	0.2 %

REFINED MODELING ANALYSIS

Blythe Energy provided a refined modeling analysis, using the ISCST3 model to quantify the potential impacts of the project during both steady state operation and startup conditions. Because no ambient air quality data is available from the Blythe area, the Background numbers presented here are from the city of Twentynine Palms (1997 figures). The worst case (maximum) results of this modeling analysis are shown in AIR QUALITY Table 11.

AIR QUALITY Table 11
Combustion Turbine Refined Modeling Maximum Impacts (mg/m^3)

Pollutant	Averaging Time	Background	Project Impact	Total Impact	Limiting Standard	Percent of Standard
NO2	1 hour	68	368	431	470	92%
	Annual	16.2	0.5	17	100	17%
CO	1 hour	2280	1295	3575	23,000	16%
	8 hour	1140	345	1485	10,000	15%
SO2	1 hour	7.8	2.4	10.2	655	2%
	3 hour	10.4	1.4	12	1300	1%
	24 hour	5.2	0.2	5	130	4%
	Annual	2.9	0.03	3	80	4%
PM10	24 hour	30	3.1	33	50	66%
	Annual	15.9	0.4	16	30	53%

This table shows that during normal operation of the combustion turbines, the project's emissions would not cause a surface level violation of any ambient air quality standards.

The startup circumstances of the project are such that the combustion turbines will be started sequentially (i.e. there will be no simultaneous startup of the two turbines). A startup sequence of a turbine will only occur when the other turbine is operating at steady state or the other turbine is not operating at all. Startup circumstances can be troublesome for significant air quality impacts for a number of reasons. First, emissions (particularly NOx and CO) can be high and often uncontrolled because emissions control equipment is not operating at optimum

temperature ranges. Second, low volumetric flow rates and exhaust gas temperatures can result in low exhaust plume rise and consequently higher ground level impacts. It is assumed that the above maximum impacts for NO2 and CO occur during startup.

The highest SO2 and PM10 impacts, both short-term and long term, occur during full load steady state operation. Startup impacts on these pollutants are usually less because emissions of SO2 and PM10 are primarily a function of the volume of fuel burned. During startup much less fuel is burned per unit time than at full load, hence the impacts are lower.

Since the project's impacts do not cause a violation of any NO2, CO, SO2 or PM10 ambient air quality standards, staff considers the project impacts for those pollutants to be insignificant.

SECONDARY POLLUTANT IMPACTS

The project's gaseous emissions, primarily NOx, SO2 and VOC, can contribute to the formation of secondary pollutants, primarily ozone and PM10, particularly ammonium nitrate PM10. Regulatory air dispersion models can be used to quantify ozone impacts, but they are used for regional planning efforts where hundreds or even thousands of sources are input into the model to determine ozone impacts. There are no regulatory agency approved models for assessing single source ozone impacts. However, because of the known relationship of NOx and VOC emissions to ozone formation, it can be said that the emissions of NOx and VOC from the Blythe Energy Project have the potential (if left unmitigated) to contribute to higher ozone levels in the region. The potential range of impacts from a project of this size will be approximately 1 to 3 ppb, compared to an ambient standard of 90 ppb.

Similarly, there is a known relationship between emissions of NOx and ammonia and the formation of ammonium nitrate PM10. Whether the NOx and ammonia impacts are significant depends on the likelihood of ambient PM10 violations. However, the generally dry conditions in the Blythe area will slow the reaction of NOx and ammonia to ammonium nitrate PM10, and thus reduce the potential for such impact. Though staff is unable to numerically evaluate the project's contribution to secondary particulates due to a lack of acceptable data and techniques on which to base such an analysis, staff believes that such an impact is unlikely to be significant due to the meteorological conditions and the existing agricultural use of anhydrous ammonia in the area.

CUMULATIVE IMPACTS

To evaluate reasonably foreseeable future projects as part of a cumulative impact analysis, staff needs specific information. The time in which a probable future project is well enough defined to have the information necessary to perform a modeling analysis is usually when that project applicant has submitted an application to the District for a permit. Air dispersion modeling required by the District would necessitate that the applicant develop the necessary modeling input parameters to perform a modeling analysis. Therefore, we evaluate those future

projects that are currently under construction, or are currently under District review in our cumulative impact analysis. Projects located up to six miles from the proposed facility site usually need to be included in the analysis.

The applicant was required to identify all potential new sources within six miles of the project. No potential new stationary sources were identified. Thus, no cumulative impact analysis is necessary.

VISIBILITY IMPACTS

A visibility analysis of the project's gaseous emissions is required under the Federal Prevention of Significant Deterioration (PSD) permitting program. The analysis includes the effects of gaseous emissions (primarily NOx and SO2) and particulate (PM10) emissions on visibility impairment in the nearest Class I PSD areas, which are national parks and national wildlife refuges. The nearest Class I area to the Blythe Energy Project is the Joshua Tree National Park, approximately 60 miles to the northwest. Blythe Energy used the EPA model CALPUFF to assess the project's visibility impacts. The results from the CALPUFF modeling analysis indicate that the project's maximum visibility impacts within the Joshua Tree National Park would be approximately 3.28%, which is below the significance criteria of 5%. The project's visibility impacts on Class I areas is therefore considered insignificant.

MITIGATION

APPLICANT'S PROPOSED MITIGATION

CONSTRUCTION MITIGATION

There are a series of District rules under District Regulation IV that limit fugitive dust during the construction phase of a project. Because they are required by District rules, Blythe Energy will employ appropriate fugitive dust mitigation measures to limit their construction related PM10 emissions. Specifically, the applicant proposes water and/or chemical application during construction activities to suppress fugitive dust. The applicant assumes that such efforts will reduce fugitive dust generation by 50%.

OPERATIONS MITIGATION

Blythe Energy proposes to reduce their project's air pollutant emissions impacts by using emission control equipment on the project and by providing emission offsets.

PM10 AND SO2 CONTROLS

PM10 emissions will be limited by the use of a clean burning fuel (natural gas) and the efficient combustion process of the Siemens-Westinghouse V84.2A CTGs. The use of natural gas with a maximum sulfur content of 0.5 gr/100 scf as the only fuel will limit SO2 emissions.

NOx Controls

The primary NOx control method will be the use of turbines equipped with dry-low NOx combustors. This term refers to various CTG combustor design innovations that control NOx generation within the turbine combustor, without the addition of water or steam.

The CTG exhaust will also be treated with selective catalytic reduction (SCR) before release to the atmosphere. Selective catalytic reduction refers to a process that chemically reduces NOx to elemental nitrogen and water vapor by injecting ammonia into the flue gas stream in the presence of a catalyst and excess oxygen. The process is termed selective because the ammonia preferentially reacts with NOx rather than oxygen. The performance and effectiveness of SCR systems is directly related to operating temperature, which may vary with catalyst designs. Flue gas temperatures from a combustion turbine are typically between 950 to 1100°F. Catalysts generally operate between 600 to 750°F (CARB 1992), and are normally placed inside the HRSG where the flue gas temperature has cooled. Below 600°F the ammonia reaction rate may start to decline, resulting in increased ammonia emissions called ammonia slip. At temperatures above approximately 800°F the catalyst may be damaged. The catalyst material most commonly used is titanium dioxide, but materials such as vanadium pentoxide, zeolite, or noble metals are also used. Newer catalysts (versus the older alumina-based catalysts) are more resistant to fuel sulfur fouling at temperatures below 770°F (EPRI 1990). Regardless of the type of catalyst used, efficient conversion of NO_x to nitrogen and water vapor requires uniform mixing of ammonia into the exhaust gas stream. Also, the catalyst surface has to be large enough to ensure sufficient time for the reaction to take place.

Blythe Energy proposes to use an SCR system in conjunction with the dry-low NOx technology of the Siemens/Westinghouse V84.3A combustion turbines chosen for the project. This will limit the NOx emissions from the two CTGs to 2.5 ppm @ 15% O_2. The applicant proposes an averaging time of one (1) hour. In addition, the applicant proposes a maximum ammonia slip rate of 10 ppm.

CO and VOC Controls

The applicant proposes only efficient combustion controls to control the project's potential CO and VOC emissions.

Cooling Towers

Cooling tower drift consists of small water droplets, which contain particulate matter that originate from the total dissolved solids in the circulating water. To limit these particulate emissions, drift eliminators are installed in the cooling tower to capture these water droplets. Blythe Energy intends to use drift eliminators on the cooling towers with a design efficiency of 0.0006 percent. Similar cooling tower designs have been used successfully by a number of other projects licensed by the Energy Commission in recent years.

EMISSION OFFSETS

District Regulation XIII requires that Blythe Energy provide emission offsets, in the form of banked Emission Reduction Credits (ERC), for the project's emissions increases of NOx and PM10. The projected emissions of VOC and SO2 are below the thresholds requiring offsets. Blythe Energy has secured a number of offsets in the South Coast Air Quality Management District (SCAQMD) to offset their emissions liability. In addition, the applicant proposes to use VOC emissions credits to offset their NOx liability. The district has determined an interpollutant and interbasin trading ratio of 1.6:1 (i.e. for every one ton of NOx emissions from Blythe Energy, 1.6 tons of VOC emission reduction credits from SCAQMD would be provided). To offset the project's PM10 emissions liability, the applicant proposes paving approximately 1.57 miles of local dirt road. By doing so, the dust generated by vehicular traffic would be reduced, thus providing offsets for the project's emissions. A summary of the secured and pending credits proposed by Blythe Energy (District FDOC pg. 11-12, October 25th, 2000) is presented in AIR QUALITY Table 12.

AIR QUALITY Table 12
Emissions Offsets Balance (tons/year)

Source	Location – ERC certificate #	VOC	PM10
International Light Metals Corporation	SCAQMD – AQ002663	15.3	-
National Offsets, Inc.	SCAQMD – AQ002750	55.8	-
National Offsets, Inc.	SCAQMD – AQ003056	18.1	-
National Offsets, Inc.	SCAQMD – AQ003036	31.4	-
National Offsets, Inc.	SCAQMD – AQ003007	37.0	-
Mobil Oil Corporation (Torrance, CA)	SCAQMD – AQ002698	63.9	-
Ocean Air Environmental (Ventura, CA)	SCAQMD – AQ003052	30.7	-
Pacific Texas Pipeline	SCAQMD – AQ000168	6.4	-
National Offsets, Inc.	SCAQMD – AQ003052	64.6	-
Buck Boulevard	MDAQMD (pending)	-	77.2
South Solano Street	MDAQMD (pending)	-	26.5
Total Emissions Offsets		**323.2**	**103.7**
Total Emissions Liability		**323.2**	**103**

The district will issue the pending ERC certificate numbers for the two PM10 offsets as soon as the road paving is completed and the appropriate application is approved.

ADEQUACY OF PROPOSED MITIGATION

CONSTRUCTION MITIGATION

Blythe Energy is required to comply with District Regulation IV for limiting emissions during construction.

OPERATIONS MITIGATION

On August 28th, 2000, the CEC received a comment letter regarding the BEP from the United States Department of the Interior (DOI). The letter indicates that the DOI has reviewed the project and has technical concerns with the large distance between the proposed emissions reduction offsets and the project site. The DOI suggests investigation of possible alternatives to the proposed offsets from the SCAQMD, specifically identifying opportunities at the Joshua Tree National Park.

EMISSION CONTROLS

The Mojave Desert Air Quality Management District (District or MDAQMD) recently filed their Final Determination of Compliance (FDOC) for the Blythe Energy Project (October 25th, 2000), including a determination for Best Available Control Technology (BACT). In addition, the California Air Resources Board's adopted guidance for district permitting decisions entitled "Guidance for Power Plant Siting and Best Available Control Technology", contains recommendations for BACT (CARB 1999). AIR QUALITY Table 13 presents the District's proposed BACT levels and the CARB recommendations from their guidance document.

AIR QUALITY Table 13
Comparison of Proposed Mitigation Levels (@ 15% O_2)

Emissions Source	Pollutant	District Proposed	CARB Recommended BACT
CT/HRSG	NOx	2.5 ppmvd, 1 hour average	2.5 ppmvd, 1 hour average
CT/HRSG	CO	5 ppmvd @ CTG loads >80%, 8.4 ppmvd w/ duct firing @ CTG loads of 70-80%, 24 hour average	6 ppmvd, 3 hour average
CT/HRSG	PM10	Fuel sulfur ≤0.5 gr/100 scf	Fuel sulfur ≤1 gr/100 scf
CT/HRSG	SO2	Fuel sulfur ≤ 0.5 gr/100 scf	Fuel sulfur ≤ 1 gr/100 scf
CT/HRSG	VOC	1.0 ppmvd, 1 hour average	2.0 ppmvd, 3 hour average
Cooling Towers	PM10	0.0006% Drift Rate	N/A

PM10 AND SO2 CONTROLS

The sole use of natural gas fuel with a certified sulfur content not greater 0.5 gr/100 scf is considered BACT for both PM10 and SO2. Thus, the applicant's proposed control levels for these pollutants are acceptable.

NOx CONTROLS

The NOx control level of 2.5 ppmvd averaged over one hour is consistent with state wide BACT for similar size turbines. The level will be reached by using a Selective Catalytic Reduction technique with injected aqueous ammonia. As shown in AIR QUALITY Table 12 above, the District agrees with ARB guidelines on this issue.

CO AND VOC CONTROLS

To reduce the turbine carbon monoxide (CO) emissions, an oxidizing catalyst, similar in concept to catalytic converters used in automobiles, can be installed in the HRSG. The catalyst is usually coated with a noble metal, such as platinum, which will catalyze the oxidation of unburned hydrocarbons and CO to water vapor and carbon dioxide (CO2) respectively.

As discussed earlier, the applicant is proposing to meet the CO and VOC emission levels without the use of an oxidizing catalyst. Most of the recent power plant projects of similar design are installing an oxidizing catalyst to meet these low emission levels. The District has included a permit condition in the FDOC that requires the installation of an oxidizing catalyst should the project fail to meet either the CO or VOC limits after commencement of operation.

COOLING TOWERS

Blythe Energy's use of drift eliminators with an efficiency of 0.0006 percent on the two proposed cooling towers represents the state-of-the-art of drift eliminator design. The District has determined that BACT for the cooling tower is 0.0006 percent efficiency, thus the proposed control for PM10 emissions from the cooling tower is adequate.

OFFSETS

Staff is satisfied that, given implementation of the proposed Conditions of Certification below, the project's emissions will not cause or contribute to a violation of the state or federal ambient air quality standards.

STAFF PROPOSED MITIGATION

CONSTRUCTION MITIGATION

As stated above, there are a number of rules in the District's Regulation IV intended to control construction emissions. Those rules allow for some latitude and flexibility as to how to demonstrate compliance. Blythe Energy is obligated to meet the requirements of these rules, and staff believes they should demonstrate specifically how they intend to meet the requirements of these rules to minimize fugitive dust emissions during construction. Staff proposes that prior to the commencement of construction, Blythe Energy provide a Fugitive Dust Mitigation Plan (FDMP) that specifically spells out the mitigation measures that Blythe Energy will employ to limit fugitive dust during construction and comply with the applicable Rules under District Regulation IV. This proposal is presented in Condition of Certification AQ-C1.

The construction equipment emissions estimations originally provided by the applicant indicated a significant ground level violation of the state NO2 ambient air quality standard. However, since the publication of the PSA, the applicant has provided a more detailed analysis of the NOx impact indicating no violations will occur. Though staff is satisfied with the technical validity of the applicant's most recent analysis, the possibility of an impact requires that all feasible mitigation measures be put in place. The most feasible mitigation measure to limit construction emissions of NOx is to have well maintained and properly tuned internal combustion engines. Staff proposes that Blythe Energy require their contractors and subcontractors to maintain records of proper engine maintenance and tune-ups for all major construction equipment. This would include (but not be limited to) equipment such as bulldozers, backhoes, compactors, loaders, motor graders, trenchers, cranes, dump trucks and other heavy duty construction related trucks. This proposal is presented in Condition of Certification AQ-C2.

OPERATIONS MITIGATION

EMISSION CONTROLS

Staff does not recommend any additional emission controls for the combustion turbines or the cooling towers.

Staff is concerned that the project will be unable to meet the District proposed CO and VOC control levels with combustion controls alone. In previous projects, emission levels set at similar low levels have required the use of an oxidizing catalyst. This project is the first before the Commission to commit to reaching such low CO and VOC levels without the use of an oxidation catalyst. Nevertheless, the applicant has accepted that risk, and has committed to providing sufficient space in their HRSG design such that a CO catalyst could be retrofitted if the facility is unable to meet the permitted CO level (BEP 2000l, response to Data Request #6, May 26th, 2000). Proposed Condition of Certification AQ-18 below requires such a retrofit if either the CO or VOC limit is violated.

EMISSION OFFSETS

The applicant is responsible for providing all offset documentation to the District and the CEC prior to the start of construction. Staff recognizes that the existing background levels for ozone are likely below the state 1 hour standard, thus staff believes that there is no significant air quality impact from this project on ambient ozone levels and therefore recommends no additional ozone precursor emission reductions.

FACILITY CLOSURE

Eventually the Blythe Energy Project will close, either as a result of the end of its useful life, or through some unexpected situation such as a natural disaster or catastrophic facility breakdown. When the facility closes, all sources of air emissions would cease and thus all impacts associated with those emissions would cease as well.

A Permit to Operate, issued by the District under Rule 203, is required for operation of the facility. If the applicant chooses to close the facility and not pay the permit fees, then the Permit to Operate would be cancelled. In that event, the project could not restart and operate unless the applicant paid the fees to renew the Permit to Operate.

When Blythe Energy decides to dismantle the project, there will potentially be fugitive dust emissions associated with the dismantling effort. District Rule 403 requires that during demolition the fugitive dust emissions be limited "by every reasonable precaution". The Facility Closure Plan to be submitted to the Energy Commission Compliance Project Manager should include the specific details regarding how Blythe Energy plans to comply with the District Rule 403.

COMPLIANCE WITH LORS

FEDERAL

As of this writing, the EPA expects to issue a Draft PSD permit for this project in mid to late December.

STATE

With the anticipated full mitigation (emissions offsets and controls) discussed herein, staff anticipates compliance with Section 41700 of the California State Health and Safety Code.

LOCAL

The Mojave Desert Air Quality Management District completed a Final Determination of Compliance on October 25th, 2000, and found that the proposed project is in compliance with all District rules and regulations.

CONCLUSIONS AND RECOMMENDATIONS

Staff has reviewed the Applicant's documentation and the District's FDOC and concludes that the project will not cause any significant impact on any ambient air quality standard, provided the following proposed Conditions of Certification are strictly adhered to. Staff recommends approval of the Blythe Energy Project.

CONDITIONS OF CERTIFICATION

CONSTRUCTION & COMMISSIONING CONDITIONS OF CERTIFICATION

AQ-C1 Prior to breaking ground at the project site, the project owner shall prepare a Fugitive Dust Mitigation Plan that will specifically identify fugitive dust mitigation measures that will be employed for the construction of the Blythe

Energy Project and related facilities. The Fugitive Dust Mitigation Plan shall specifically identify measures to limit fugitive dust emissions from construction of the project site and linear facilities. Measures that should be addressed include the following:

1. The identification of the employee parking area(s) and the surface composition of those parking area(s);
2. The frequency of watering of unpaved roads and disturbed areas;
3. The application of chemical dust suppressants;
4. The use of gravel in high traffic areas;
5. The use of paved access aprons;
6. The use of posted speed limit signs;
7. The use of wheel washing areas prior to large trucks leaving the project site; and,
8. The methods that will be used to clean up mud and dirt that has been tracked-out from the project site onto public roads.

Verification: At least thirty (30) days prior to breaking ground at the project site, the project owner shall provide the CEC Compliance Project Manager (CPM) with a copy of the Fugitive Dust Mitigation Plan (FDMP) for approval. Ground breaking shall not commence until the project owner receives written approval of the FDMP from the CPM.

AQ-C2 The project owner shall require as a condition of its construction contracts that all contractors/subcontractors ensure that all heavy earthmoving equipment, including but not limited to bulldozers, backhoes, compactors, loaders, motor graders, trenchers, cranes, dump trucks and other heavy duty construction related trucks, have been properly maintained and the engines tuned to the engine manufacturer's specifications. The project owner shall further require as a condition of its construction contracts, that all heavy construction equipment shall not remain running at idle for more than 5 minutes, to the extent practical.

Verification: The project owner shall submit to the CPM, via the Monthly Compliance Report, a list of all heavy equipment used on site during that month including the owner of that equipment responsible for its maintenance and a letter from each owner indicating that the heavy equipment in question is properly maintained and tuned to manufacturer's specifications. The project owner shall maintain construction contracts on-site for six months following the start of commercial operation.

AQ-C3 During an initial commissioning period of no more than 120 days, commencing with the first firing of fuel in this equipment, NOx, CO, VOC and ammonia concentration limits shall not apply. The project owner shall minimize emissions of NOx, CO, VOC and ammonia to the maximum extent possible during the initial commissioning period.

Verification: During the initial commissioning period, the project owner shall submit a detailed record of all commissioning activities in the Monthly Compliance Report.

AQ-C4 The project owner shall submit a commissioning plan to the District and the CEC at least four weeks prior to the first firing of fuel in this equipment. The commissioning plan shall describe the procedures to be followed during the commissioning of the CTGs, HRSGs and steam turbine. The commissioning plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not be limited to, the timing of the dry low NOx combustors, the installation and testing of the CEMS, and any activities requiring the firing of the CTGs and HRSGs without abatement by an SCR system.

Verification: At least four (4) weeks prior to the first firing of natural gas in either turbine, the project owner shall submit a detailed Initial Commissioning Plan to the District and the CPM. This plan should provide detailed technical information regarding initial commissioning in a format that facilitates technical verification.

AQ-C5 The project owner shall tune each CTG and HRSG to minimize emissions of criteria pollutants at the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor.

Verification: During the initial commissioning period, the project owner shall submit a detailed record of all commissioning activities in the Monthly Compliance Report.

AQ-C6 The project owner shall install, adjust and operate each SCR system to minimize emissions of NOx from the CTG and HRSG at the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor. The NOx and ammonia concentration limits shall apply coincident with the steady state operation of the SCR systems.

Verification: During the initial commissioning period, the project owner shall submit a detailed record of all commissioning activities in the Monthly Compliance Report.

AQ-C7 The total number of firing hours of each CTG and HRSG without abatement of NOx by the SCR shall not exceed 350 hours during the initial commissioning period. Such operation without NOx abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR system in place and operating. Upon completion of these activities, the project owner shall provide written notice to the District and CEC and the unused balance of the unabated firing hours shall expire.

Verification: During the initial commissioning period, the project owner shall submit a detailed record of all commissioning activities in the Monthly Compliance Report.

AQ-C8 During a period that includes a portion of the initial commissioning period, emissions from this facility shall not exceed the following emission limits (verified by CEMS):

a. CO – 421 tons/year (rolling 12 month summary), 44,000 pounds/calendar day and 2000 pounds/hour

Verification: During the initial commissioning period, the project owner shall submit a detailed record of all commissioning activities in the Monthly Compliance Report. In addition, after the end of the initial commissioning period the project owner shall continue to report the above data in the Quarter Operations Report for as long as monitoring period includes a portion of the initial commissioning period.

AQ-C9 During a period that includes a portion of the initial commissioning period, prior to the steady state operation of the SCR system, emissions from this facility shall not exceed the following emission limits (verified by CEMS):

b. NO_x – 273 tons/year (rolling 12 month summary), 22,000 pounds/calendar day and 1000 pounds/hour

Verification: During the initial commissioning period, the project owner shall submit a detailed record of all commissioning activities in the Monthly Compliance Report. In addition, after the end of the initial commissioning period the project owner shall continue to report the above data in the Quarter Operations Report for as long as monitoring period includes a portion of the initial commissioning period.

AQ-C10 Within sixty (60) days after achieving the maximum firing rate at which each turbine will be operated, but not later than 180 days after the first firing of fuel in each turbine, the operator shall perform an initial compliance test. This test shall demonstrate that each turbine is capable of operation at 100% load in compliance with the emission limits in AQ-5. The results of the initial compliance test shall be used to prepare a supplemental health risk analysis. The initial compliance test shall include tests for the following.

a. Formaldehyde;

b. Certification of CEMS and CERMS (or stack gas flow calculation method) at 100% load, startup modes and shutdown mode;

c. Characterization of cold startup VOC emissions;

d. Characterization of warm startup VOC emissions;

e. Characterization of hot startup VOC emissions; and

f. Characterization of shutdown VOC emissions.

Verification: Within sixty (60) days of achieving the maximum firing rate at which the facility will be operated, but not later then 180 days after the first firing of fuel in each turbine, the project owner shall perform an Initial Compliance Test. The results of this test and a supplemental health risk analysis shall be submitted to the District and the CPM within thirty (30) days.

OPERATIONS CONDITIONS OF CERTIFICATION

AQ-1 The project owner shall submit to the Mojave Desert Air Pollution Control District (District) Air Pollution Control Officer (APCO), the United States Environmental Protection Agency (EPA) Region IX and the California Energy Commission (CEC) a Quarterly Operations Report for the preceding calendar quarter by January 30, April 30, July 30 and October 30 of each year this permit is in effect. Each January 30 submittal shall include a summary of the reported information for the previous year. This information shall be maintained on site for a minimum of five (5) years and shall be provided to District or CEC personnel on request.

Verification: The project owner shall submit a Quarterly Operations Report for the preceding calendar quarter by January 30, April 30, July 30 and October 30 of each year. The January 30 report shall include an annual summary of the Quarterly Operations Reports for the preceding year. The reports shall be submitted to the Mojave Desert Air Pollution Control District (District), the United States Environmental Protection Agency (EPA) and the California Energy Commission Compliance Project Manager (CPM).

THE FOLLOWING CONDITIONS OF CERTIFICATION APPLY TO THE TWO INDIVIDUAL GAS TURBINE GENERATORS (DISTRICT PERMIT NUMBERS: B007953, B007954)

AQ-2 The turbines shall be exclusively fueled with pipeline quality natural gas with a sulfur content not exceeding 0.5 grains per 100 dscf on a rolling twelve month average basis. The turbines shall be operated and maintained in strict accord with the recommendations of its manufacturer and/or sound engineering principles.

Verification: The project owner shall incorporate into the Quarterly Operations Report either a monthly laboratory analysis showing the fuel sulfur content, a monthly fuel sulfur content report from the fuel supplier(s), or the results from a custom fuel monitoring schedule approved by USEPA for compliance with the fuel monitoring provisions of 40 CFR 60 Subpart GG.

AQ-3 The turbines are subject to the federal NSPS codified at 40 CFR Part 60, Subparts A (General Provisions) and GG (Standards of Performance for Stationary Gas Turbines). This equipment is also subject to the Prevention of Significant Deterioration (40 CFR 51.166) and Federal Acid Rain (Title IV) programs. Compliance with all applicable provisions of these regulations is required.

Verification: At least ninety (90) days prior to the first firing of fuel in either turbine, the project owner shall provide the District, the ARB and the CPM copies of the federal PSD and Acid Rain permits.

AQ-4 Emissions of NOx, CO, oxygen and ammonia slip shall be monitored using a Continuous Emissions Monitoring System (CEMS). Turbine fuel consumption shall be monitored using a continuous monitoring system. Stack gas flow rate shall be monitored using either a Continuous Emission Rate Monitoring System (CERMS) meeting the requirements of 40 CFR Part 75 Appendix A or a stack flow rate calculation method. The operator shall

install, calibrate, maintain, and operate these monitoring systems according to a District-approved monitoring plan and MDAQMD Rule 218, and they shall be installed prior to initial equipment startup.

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, EPA and CEC.

AQ-5 Emissions from the turbines (including its associated duct burner) shall not exceed the following emission limits at any firing rate, except for CO, NO_x and VOC during periods of startup, shutdown and malfunction:

a. Hourly rates, computed every 15 minutes, verified by CEMS and annual compliance tests:

i. NO_x as NO_2 – 19.80 lb/hr (based on 2.5 ppmvd corrected to 15% O_2 and averaged over one hour)
ii. CO – 35.20 lb/hr (based on 5.0 ppmvd (8.4 ppmvd with duct firing or when between 70 and 80 percent of full load) corrected to 15% O2 and averaged over 3 hours)
iii. Ammonia Slip – 10 ppmvd (corrected to 15% O2 and averaged over three hours)

b. Hourly rates, verified by annual compliance tests or other compliance methods in the case of SOx:

i. VOC as CH4 – 2.9 lb/hr (based on 1 ppmvd corrected to 15% O2)
ii. SOx as SO2 – 2.7 lb/hr (based on 0.5 grains/100 dscf fuel sulfur)
iii. PM10 – 11.5 lb/hr

Verification: The project owner shall submit the following in each Quarterly Operations Report: All continuous emissions data reduced and reported in accordance with the District approved CEMS protocol; a list of maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NO_x, CO, PM_{10}, VOC and SO_x (including calculation protocol); and a log of all excess emissions, including the information regarding malfunctions/breakdowns required by District Rule 430. Operating parameters of emission control equipment, including but not limited to ammonia injection rate, NO_x emission rate and ammonia slip. Any maintenance to any air pollutant control system (recorded on an as-performed basis). Any permanent changes made in the plant process or production that could affect air pollutant emissions, and when the changes were made.

AQ-6 Emissions from the turbines, including the duct burner, shall not exceed the following emission limits, based on a calendar day summary:

a. NOx – 5762 lb/day, verified by CEMS

b. CO – 3808 lb/day, verified by CEMS

c. VOC as CH4 – 239 lb/day, verified by compliance tests and hours of operation in mode

d. SOx as SO2 – 130 lb/day, verified by fuel sulfur content and fuel use data

e. PM10 – 565 lb/day, verified by compliance tests and hours of operation

Verification: The project owner shall submit the following in each Quarterly Operations Report: All continuous emissions data reduced and reported in accordance with the District approved CEMS protocol; a list of maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NO_x, CO, PM_{10}, VOC and SO_x (including calculation protocol); and a log of all excess emissions, including the information regarding malfunctions/breakdowns required by District Rule 430. Operating parameters of emission control equipment, including but not limited to ammonia injection rate, NO_x emission rate and ammonia slip. Any maintenance to any air pollutant control system (recorded on an as-performed basis). Any permanent changes made in the plant process or production that could affect air pollutant emissions, and when the changes were made.

AQ-7 Emissions from this facility, including the cooling towers, shall not exceed the following emission limits, based on a rolling 12 month summary:

a. NOx – 202 tons/year, verified by CEMS

b. CO – 306 tons/year, verified by CEMS

c. VOC as CH4 – 24 tons/year, verified by compliance tests and hours of operation in mode

d. SOx as SO2 – 24 tons/year, verified by fuel sulfur content and fuel use data

e. PM10 – 103 tons/year, verified by compliance tests and hours of operation

Verification: The project owner shall submit the following in each Quarterly Operations Report: All continuous emissions data reduced and reported in accordance with the District approved CEMS protocol; a list of maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NO_x, CO, PM_{10}, VOC and SO_x (including calculation protocol); and a log of all excess emissions, including the information regarding malfunctions/breakdowns required by District Rule 430. Operating parameters of emission control equipment, including but not limited to ammonia injection rate, NO_x emission rate and ammonia slip. Any maintenance to any air pollutant control system (recorded on an as-performed basis). Any permanent changes made in the plant process or production that could affect air pollutant emissions, and when the changes were made.

AQ-8 Emissions of CO and NO_x from the turbines shall only exceed the limits contained in AQ-5 during startup and shutdown periods as follows:

a. Startup is defined as the period beginning with ignition and lasting until the equipment has reached operating permit limits. Cold startup is defined as a startup when the CTG has not been in operation during the preceding 48 hours. Hot startup is defined as a startup when the CTG has been in operation during the preceding 8 hours. Warm startup is defined as a startup

that is not a hot or cold startup. Shutdown is defined as the period beginning with the lowering of equipment from base load and lasting until fuel flow is completely off and combustion has ceased.

b. Transient conditions shall not exceed the following durations:

i. Cold startup – 3.7 hours
ii. Warm startup – 2.0 hours
iii. Hot startup – 1.2 hours
iv. Shutdown – 0.5 hour

c. During a cold startup emissions shall not exceed the following, verified by CEMS:

i. NOx – 376 lb
ii. CO – 403 lb

d. During a warm startup emissions shall not exceed the following, verified by CEMS:

i. NOx – 278 lb
ii. CO – 253 lb

e. During a hot startup emissions shall not exceed the following, verified by CEMS:

i. NOx – 260 lb
ii. CO – 172 lb

f. During a shutdown emissions shall not exceed the following, verified by CEMS:

i. NOx – 170 lb
ii. CO – 48 lb

Verification: The project owner shall include a detailed record of each startup and shutdown event in the Quarterly Operations Report. Each record shall include, but not be limited to, duration, fuel consumption, total emissions of NOx and CO, and the date and time of the beginning and end of each startup and shutdown event. Additionally, the project owner shall report the total plant operation time (hours), number of startups, hours in cold startup, hours in warm startup, hours in hot startup, hours in shutdown, and average plant operation schedule (hours per day, days per week, weeks per year).

AQ-9 Particulate emissions from this equipment shall not exceed an opacity equal to or greater than twenty percent (20%) for a period aggregating more than three (3) minutes in any one (1) hour, excluding uncombined water vapor.

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, EPA and CEC.

AQ-10 The turbines shall exhaust through a stack at a minimum height of 130 feet.

Verification: Prior to the first firing of natural gas in either turbine the owner/operator shall provide as built drawings of the stack or other suitable proof of the minimum stack height to the District and the CEC CPM.

AQ-11 The project owner shall not operate the turbines after the initial commissioning period without the selective catalytic NOx reduction system with valid District permit installed and fully functional.

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, EPA and the CEC.

AQ-12 The project owner shall provide stack sampling ports and platforms necessary to perform source tests required to verify compliance with District rules, regulations and permit conditions. The location of these ports and platforms shall be subject to District approval.

Verification: Prior to the first firing of natural gas in either turbine the owner/operator shall provide to the District and the CEC CPM as built drawings of the stack or other suitable documentation of the correct and complete installation of all necessary sampling ports and access platforms.

AQ-13 The project owner shall conduct all required compliance/certification tests in accordance with a District-approved test plan.

Verification: Thirty (30) days prior to the compliance/certification tests the operator shall provide a written test plan for District review and approval. Written notice of the compliance/certification test shall be provided to the District ten (10) days prior to the tests so that an observer may be present. A written report with the results of such compliance/certification tests shall be submitted to the District within forty-five (45) days after testing.

AQ-14 The project owner shall perform the following annual compliance tests in accordance with the MDAQMD Compliance Test Procedural Manual:

a. NOx as NO2 in ppmvd at 15% O2 and lb/hr (measured per USEPA Reference Methods 19 and 20).

b. VOC as CH4 in ppmvd at 15% O2 and lb/hr (measured per USEPA Reference Methods 25A and 18).

c. SOx as SO2 in ppmvd at 15% O2 and lb/hr.

d. CO in ppmvd at 15% O2 and lb/hr (measured per USEPA Reference Method 10).

e. PM10 in mg/m3 at 15% O2 and lb/hr (measured per USEPA Reference Methods 5 and 202 or CARB Method 5).

f. Flue gas flow rate in scfmd.

g. Opacity (measured per USEPA reference Method 9).

h. Ammonia slip in ppmvd at 15% O2.

Verification: The annual source test report shall be submitted to the District and CPM no later than six (6) weeks prior to the expiration date of the District permit.

AQ-15 The project owner shall, at least as often as once every five years (commencing with the initial compliance test), include the following supplemental source tests in the annual compliance testing:

a. Characterization of cold startup VOC emissions;

b. Characterization of warm startup VOC emissions;

c. Characterization of hot startup VOC emissions; and

d. Characterization of shutdown VOC emissions.

Verification: Each annual source test report shall either include the results of these tests for the current year or document the date and results of the last such tests.

AQ-16 Continuous monitoring systems shall meet the following acceptability testing requirements from 40 CFR 60 Appendix B:

a. For NOx, Performance Specification 2.

b. For O2, Performance Specification 3.

c. For CO, Performance Specification 4.

d. For stack gas flow rate, Performance Specification 6 (if CERMS is installed).

e. For ammonia, a District approved procedure that is to be submitted by the project owner.

Verification: The project owner shall discuss compliance with these specifications in each Quarterly Operations Report.

AQ-17 The project owner must surrender to the District sufficient valid Emission Reduction Credits for the turbines before the start of construction of any part of the project for which this equipment is intended to be used. In accordance with Regulation XIII the operator shall obtain 202 tons of NOx and 103 tons of PM10 offsets (VOC ERCs from SCAQMD may be substituted for NOx ERCs at a rate of 1.6:1).

Verification: The project owner must submit all ERC documentation to the District and the CPM prior to the start of construction.

AQ-18 The project owner shall provide sufficient space and appurtenances within the Heat Recovery Steam Generator to allow the subsequent installation of a high temperature oxidation catalyst. A high temperature oxidation catalyst shall be installed if any VOC or CO limit specified by the above conditions is violated.

Verification: If any VOC or CO limit specified by the above conditions is violated, within six (6) weeks the project owner shall submit a plan to install an

oxidation catalyst. The catalyst shall be installed and operational within six (6) months of the violation.

THE FOLLOWING CONDITIONS OF CERTIFICATION APPLY TO THE TWO (2) INDIVIDUAL NATURAL GAS DUCT BURNERS (DISTRICT PERMIT NUMBERS: B007954, B007955)

AQ-19 The duct burners shall be exclusively fueled with natural gas and shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, EPA and the CEC.

AQ-20 The duct burners shall not be operated unless the combustion turbine generator with valid District permit B007953 (or B007954), selective catalytic NOx reduction system with valid District permit C007959 (or C007960), and oxidation catalyst (if installed) are in operation.

Verification: A summary of fuel use and equipment operation for each duct burner shall be included in each Quarterly Operations Report.

AQ-21 Fuel use by this equipment shall be recorded and maintained on site for a minimum of five (5) years and shall be provided to District personnel on request.

Verification: The above information shall be recorded and maintained on site for a minimum of five (5) years and shall be provided to District or CEC personnel on request.

THE FOLLOWING CONDITIONS OF CERTIFICATION APPLY TO THE TWO INDIVIDUAL SELECTIVE CATALYTIC NO_x REDUCTION SYSTEMS (DISTRICT PERMIT NUMBERS: C007959, C007960)

AQ-22 This equipment shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.

Verification: A summary of significant operation and maintenance events for each selective catalytic reduction system shall be included in the Quarterly Operations Reports.

AQ-23 This equipment shall be operated concurrently with the combustion turbine generator with valid MDAQMD permit B007953 (or B007954).

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, EPA and CEC.

AQ-24 Ammonia shall be injected whenever the selective catalytic reduction system has reached or exceeded 550° Fahrenheit. Except during periods of startup and shutdown, ammonia slip shall not exceed 10 ppmvd (corrected to 15% O2), averaged over three hours.

Verification: The project owner shall maintain a log of the SCR temperatures and the commencement of ammonia injection times. This information shall be

recorded and maintained on site for a minimum of five (5) years and shall be provided to District and CEC personnel on request.

AQ-25 Ammonia injection by this equipment in pounds per hour shall be recorded and maintained on site for a minimum of five (5) years and shall be provided to District personnel on request.

Verification: The above information shall be recorded and maintained on site for a minimum of five (5) years and shall be provided to District and CEC personnel on request.

THE FOLLOWING CONDITIONS OF CERTIFICATION APPLY TO THE TWO INDIVIDUAL COOLING TOWERS *(DISTRICT PERMIT NUMBERS:* B007957, B007958*)*

AQ-26 The cooling towers shall be operated and maintained in strict accord with the recommendations of their manufacturer or supplier and/or sound engineering principles.

Verification: A summary of significant operation and maintenance events for each cooling tower shall be included in the Quarterly Operations Reports.

AQ-27 The operator shall conduct all required cooling tower water quality tests in accordance with a District-approved test and emissions calculation protocol. Thirty (30) days prior to the first such test the operator shall provide a written test and emissions calculation protocol for District review and approval.

Verification: Thirty (30) days prior to the first such test the operator shall provide a written test and emissions calculation protocol for District and CPM review.

AQ-28 The drift rate shall not exceed 0.0006 percent with a maximum circulation rate of 146,000 gallons per minute (gpm) for the Main Cooling Tower and 22,000 gpm for the Chiller Cooling Tower. The maximum hourly PM10 emission rate shall not exceed 0.546 pounds per hour from both cooling towers, as calculated per the written District approved protocol.

Verification: Compliance documentation in accordance with the written District approved protocol shall be submitted to the District and the CPM.

AQ-29 The operator shall perform weekly tests of the blow-down water quality. The operator shall maintain a log that contains the date and result of each blow-down water quality test, and the resulting mass emission rate. This log shall be maintained on site for a minimum of five (5) years and shall be provided to District personnel on request.

Verification: A summary of the results of the weekly blow-down water quality tests and the results of the mass emission rate calculations shall be submitted in the Quarterly Operations Report.

AQ-30 A maintenance procedure shall be established that states how often and what procedures will be used to ensure the integrity of the drift eliminators. This procedure shall be submitted to the District for approval at least thirty (30) days prior to construction and shall be kept on-site and available to District personnel on request.

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB, EPA and CEC.

THE FOLLOWING CONDITIONS OF CERTIFICATION APPLY TO THE EMERGENCY DIESEL IC ENGINE (DISTRICT PERMIT NUMBER: E007961)

AQ-31 This equipment shall be installed, operated and maintained in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions of contaminants.

Verification: A summary of significant operation and maintenance events for the emergency diesel IC engine shall be included in the Quarterly Operations Reports.

AQ-32 The project owner shall maintain a log for this unit, which, at a minimum, contains the information specified below. This log shall be maintained current and on-site for a minimum of five (5) years and shall be provided to District personnel on request. At a minimum, the log shall include:

a. Date of each use or test;

b. Duration of each test, in minutes;

c. Fuel consumed during each calendar year, in gallons; and

d. Fuel sulfur concentration (the project owner may use the supplier's certification of sulfur content if it is maintained as part of this log).

Verification: The above information shall be maintained on-site for a minimum of five (5) years and shall be provided to District and/or CEC personnel on request.

AQ-33 This unit shall be limited to use for emergency fire fighting, and as part of a testing program that does not exceed 60 minutes of testing operation per week.

Verification: The above information shall be maintained on-site for a minimum of five (5) years and shall be provided to District and/or CEC personnel on request.

AQ-34 The project owner shall use only diesel fuel whose sulfur concentration is less than or equal to 0.05% on a weight per weight basis in this unit.

Verification: The above information shall be maintained on-site for a minimum of five (5) years and shall be provided to District and/or CEC personnel on request.

ACRONYMS

APCO	Air Pollution Control Officer
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
BEP	Blythe Energy Project
bhp	Brake Horse Power
CARB	California Air Resources Board
CEC	California Energy Commission
CO	Carbon Monoxide
CPM	Compliance Project Manager (at the CEC)
DOC	Determination Of Compliance
DOI	United States Department of the Interior (National Park Service)
EPA	[United States] Environmental Protection Agency
EPRI	Electrical Power Research Institute
ERC	Emission Reduction Credit
FDM	Fugitive Dust Model
FDOC	Final Determination Of Compliance
FSA	Final Staff Analysis
gr	Grains (1 gr $\cong$ 0.0648 grams)
HRSG	Heat Recovery Steam Generator
ISCST3	Industrial Source Complex Short Term
KCAPCD	Kern County Air Pollution Control District
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
MW	Megawatts (1,000,000 Watts)
NH3	Ammonia
NO2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
PDOC	Preliminary Determination Of Compliance
PM10	Particulate Mater under 10 microns in diameter
ppm	Parts Per Million
ppmv	Parts Per Million by Volume
ppmvd	Parts Per Million by Volume, Dry
PSA	Preliminary Staff Analysis
PSD	Prevention of Significant Deterioration
SCAQMD	South Coast Air Quality Management District
scf	Standard Cubic Feet
SO2	Sulfur Dioxide
VOC	Volatile Organic Compounds

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BIOLOGICAL RESOURCES

Testimony of Dr. Jeff Kaufmann, Natasha Nelson, Richard Anderson, and Ileene Anderson

INTRODUCTION

This section provides the Energy Commission staff's analysis of potential impacts to biological resources from the construction and operation of the Blythe Energy Project (BEP). This analysis addresses potential impacts to state and federally listed species, species of special concern, and areas of critical biological concern. This analysis also describes the biological resources of the project site and at the locations of ancillary facilities. It also determines the need for mitigation, the adequacy of mitigation proposed by the applicant, and where necessary, specifies additional mitigation measures to reduce identified impacts to less than significant levels. It also determines compliance with applicable laws, ordinances, regulations and standards (LORS), and recommends conditions of certification.

This analysis is based, in part, upon information provided in the BEP Application for Certification (AFC) (BEP 1999a, AFC Section 7.12), addenda to the AFC (BEP 1999a, Appendix 7.12), response to staff data requests (BEP 2000c), workshops, site visits, project description clarifications (BEP 2000s and 2000w), and discussions with various agency representatives.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The applicant BEP will need to abide by the following laws, ordinances, regulations, and standards during project construction and operation.

FEDERAL

SECTION 10 OF THE RIVERS AND HARBORS ACT OF 1899

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. §403) prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The Secretary's approval authority has since been delegated to the Chief of Engineers.

ENDANGERED SPECIES ACT OF 1973

Title 16, United States Code, section 1531 et seq., and Title 50, Code of Federal Regulations, part 17.1 et seq., designate and provide for protection of threatened and endangered plant and animal species, and their critical habitat.

MIGRATORY BIRD TREATY ACT

Title 16, United States Code, sections 703 - 712, prohibits the take of migratory birds.

STATE

CALIFORNIA ENDANGERED SPECIES ACT OF 1984

Fish and Game Code sections 2050 et seq. protects California's rare, threatened, and endangered species.

NEST OR EGGS – TAKE, POSSESS, OR DESTROY

Fish and Game Code section 3503 protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs or any bird.

BIRDS OF PREY OR EGGS – TAKE, POSSESS, OR DESTROY

Fish and Game Code section 3503.5 protects California's birds of prey and their eggs by making it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird.

MIGRATORY BIRDS – TAKE OR POSSESS

Fish and Game Code section 3513 protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame bird.

FULLY PROTECTED SPECIES

Fish and Game Code sections 3511, 4700, 5050, and 5515 prohibits take of animals that are classified as Fully Protected in California.

SIGNIFICANT NATURAL AREAS

Fish and Game Code section 1930 et seq. designates certain areas such as refuges, natural sloughs, riparian areas and vernal pools as significant wildlife habitat.

NATIVE PLANT PROTECTION ACT OF 1977

Fish and Game Code section 1900 et seq. designates state rare, threatened, and endangered plants.

CALIFORNIA CODE OF REGULATIONS

Title 14, sections 670.2 and 670.5 list animals of California designated as threatened or endangered.

STREAMBED ALTERATION AGREEMENT

Fish and Game Code section 1600 et. seq., requires California Department of Fish and Game (CDFG) to review project impacts to waterways, including impacts to vegetation and wildlife from sediment, diversions and other disturbances.

REGIONAL WATER QUALITY BOARD

To verify that the federal Clean Water Act permitted actions comply with state regulations, the Colorado River Basin Regional Water Quality Control Board issues a Section 401 certification. The Regional Board provides its certification after reviewing the federal Nationwide Permit(s) that is provided by the U. S. Army Corp of Engineers. The use of evaporation ponds would also need to be approved by the Colorado River Basin Regional Water Quality Control Board under Section 13050 of Division 7 of the California Water Code (see Soils and Water Resources Section).

WILDLIFE OF SPECIAL CONCERN IN ARIZONA

Arizona Game and Fish converted their 1988 list of Threatened Native Wildlife of Arizona to a list of Wildlife Species of Concern in 1996 (AGFD 1996). The list provides guidance to agencies, private industry, and the public on the Department's management priorities for a variety of species, but has no regulatory status. The final version of the list has never been released.

LOCAL

RIVERSIDE COUNTY, CALIFORNIA GENERAL PLAN

ENVIRONMENTAL HAZARDS AND RESOURCES

Goal 6 is to recognize and protect rare, threatened and endangered species of wildlife and vegetation as important County resources and a source of natural diversity.

Goal 8 is to recognize and promote the conservation of unique species of wildlife and vegetation found within a locale as an important County resource.

RIVERSIDE COUNTY, AIRPORT LAND USE PLAN

The Airport Land Use Plan is being prepared for the Airport Land Use Commission (ALUC) and is intended to protect and promote the safety and welfare of residents in the airport vicinity and users of the airport while ensuring continued operation of the airport. The Public Utilities Code of the State of California, Section 21675 requires the ALUC to formulate a comprehensive land use plan for the area surrounding each public use airport.

CITY OF BLYTHE, CALIFORNIA GENERAL PLAN

BIOLOGICAL RESOURCES GOALS

Goal 1 is to preserve and protect the City and regional biological resources, especially those of sensitive, rare, threatened, or endangered species of wildlife and their habitat and to encourage a balance between nature and human development.

BIOLOGICAL RESOURCES POLICY

Policy 1 is that the City shall coordinate and cooperate with State and Federal agencies to preserve and enhance the recreational opportunities for fishermen and conserve habitat in the Colorado River.

Policy 2 is that the City shall require or insist that responsible County, State and Federal agencies assure the provision of ample natural and enhanced open-space setbacks from the Colorado River's edge in conjunction with any development near

Policy 4 is that the Palo Verde Mesa habitat area extending from Interstate 10 to 20th Avenue and desert land immediately west shall be designated as Open Space on the General Plan land use map to assure their protection as valuable and important wildlife habitat.

Policy 8 is that the City shall encourage and/or if appropriate, require the use of native trees and vegetation, including palo verde, mesquite, cottonwood, ocotillo, and screwbean, in public areas, private common areas, street dividers, and other landscape areas where Planning Division control can be exercised.

OPEN SPACE AND CONSERVATION GOAL

Goal 5 is the preservation of riparian and ruderal habitats as important breeding and foraging habitat for native and migratory birds and animals.

LA PAZ COUNTY, ARIZONA

ZONING

La Paz County has zoned the El Paso Natural Gas Company Terminal Area where the directional drill would be initiated as General Commercial. According to the La Paz County Department of Community Development, the interconnect with the El Paso Natural Gas Pipeline is a permitted use in the zone and no special permits are required (LC 2000a). The construction in this highly disturbed area would not require a conformance analysis for biological resources.

SETTING

REGIONAL DESCRIPTION

The proposed project site is located west of the100-year floodplain of the Colorado River Basin, which is made up of river bottoms and terraces. The Palo Verde Valley was seasonally inundated by the Colorado River before several large dams were constructed upstream of Blythe. Since the installation of the dams and subsequent irrigation canals and drains, the Palo Verde Valley, and the surrounding terraces, have been transformed into a large agricultural area. The remnant plant communities outside the agricultural and residential areas include: creosote bush (*Larra tridentata*) scrub, disturbed desert areas, and riparian plant communities along the Colorado River and various canals and drains.

A variety of sensitive species are found in the project region. Sensitive species known to occur in the project region include desert tortoise (*Gopherus agassizii*), southwestern willow flycatcher (*Empidonax traillii extimus*), Yuma clapper rail (*Rallus longirostris yumanensis*), mountain plover (*Charadris montanus*), and razorback sucker (*Xyrauchen texanus*).

The following is a complete list of the sensitive species the applicant considered for this proposed project:

BIOLOGICAL RESOURCES - Table 1
Sensitive Species
(BEP, 1999a; Skinner and Pavlik, 1994, BEP 2000w)

Sensitive Plants	Status*
Harwood's milkvetch (*Astragalus insularis* var. *harwoodii*)	CNPS List 2
Foxtail cactus (*Escobaria vivipara* var. *alversonii*)	FSC/CNPS List 1B
Glandular daisy (*Ditaxis clariana*)	CNPS List 2
Cove's cassia (*Senna covesii*)	FSC/CNPS List 1B
Wiggin's cholla (*Opuntia wigginsii*)	FC3b/CNPS List 3
Crucifixion thorn (*Castela emoryi*)	CNPS List 2
Sensitive Wildlife	**Status***
California leaf-nosed bat (*Macrotus californicus*)	FSC/CSC
Cave myotis (*Myotis velifer*)	FSC/CSC
Occult little brown bat (*Myotis lucifugus occultus)*	FSC/CSC
Yuma myotis (*Myotis yumanensis*)	FSC/CSC
Greater western mastiff bat (*Eumops perotis californicus*)	FSC/CSC/WSCA
Pale Townsend's big-eared bat (*Plecotus townsendii pallescens*)	FSC/CSC/WSCA
Pallid bat (*Antrozous pallidus*)	CSC
Spotted bat (*Euderma maculatum*)	FSC/CSC
Colorado River cotton rat (*Sigmodon arizonae plenus*)	FSC/CSC
Yuma puma (Felis concolor browni*)*	FSC/CSC
Brown pelican (*Pelicanus occidentalis*)	FE/CE
Western least bittern (*Ixobrychus exilis hesperis*)	FSC/CSC/WSCA
White-faced ibis (*Plagadis chihi*)	FSC/CSC
Yuma clapper rail (*Rallus longirostris yumanensis*)	FE/CT/WSCA
California black rail (*Laterallus jamaicensis coturniculus)*	FSC/CT/CFP/WSCA
Western snowy plover (*Charadrius alexandrinus nivosus*)	FT/CSC
Mountain plover (*Charadrius montanus*)	FPT/CSC
Golden eagle (*Aquila chrysaetos*)	CSC/CFP
Bald eagle (*Haliaeetus leucocephalus*)	FPD/CE/WSCA
Ferruginous hawk (*Buteo regalis*)	FSC/CSC/WSCA
Merlin (*Falco columbarius*)	CSC
Prairie falcon (*Falco mexicanus*)	CSC
American peregrine falcon (*Falco peregrinus anatum*)	CE
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	CE/WSCA
Short-eared owl (*Asio flammeus*)	CSC
Burrowing owl (*Athene cunicularia*)	FSC/CSC
California horned lark (*Eremophila alpestris actia*)	CSC
Gila woodpecker (*Melanerpes uropygialis*)	CE
Gilded northern flicker (*Colaptes chrysoides*)	CE
Vermilion flycatcher (nesting) (*Pyrocephalus rubinus*)	CSC
Southwestern willow flycatcher (*Empidonax traillii extimus*)	FE/ST/WSCA
Loggerhead shrike (*Lanius ludovicianus*)	FSC/CSC
Crissal thrasher (*Toxostoma crissale*)	CSC
LeConte's thrasher (*Toxostoma lecontei*)	CSC
Bell's vireo (*Vireo bellii arizonae*)	FE/CE

Sonoran yellow warbler (*Dendroica petechia sonorana*)	CSC
Yellow-breated chat (*Icteria virens*)	CSC
Northern cardinal (*Cardinalis cardinalis*)	CSC
Large-billed savannah sparrow (*Passerculus sandwichensis rostatus*)	FSC/CSC
Summer tanager (*Piranga rubra*)	CSC
Desert tortoise (*Gopherus agassizii*)	FT/ST/WSCA
Chuckwalla (*Sauromalus obesus*)	FSC
Desert rosy boa (*Charina trivirgata gracia*)	FSC
Colorado river toad (*Bufo alvarius*)	CSC/CP
Couch's spadefoot (*Scaphiopus couchii*)	CSC
Lowland leopard frog (*Rana yavapaiensis*)	FSC/CSC/WSCA
Razorback sucker (*Xyrauchen texanus*)	FE/CE/WSCA
Bonytail Chub (*Gila elegans*)	FT/WSCA
California McCoy snail (*Eremarionta rowelli mccoiana*)	FSC
Cheeseweed owlfly (*Oliarces clara*)	FSC
Mojave desert blister beetle (*Lytta insperata*)	FSC

* STATUS – FE = Federally listed Endangered; FT = Federally listed Threatened; FSC = Federal Species of Special Concern; FPT = Federal proposed Threatened; FPD = Federal proposed (Delisting); FC3b = Taxonomically invalid; CNPS List 1B = California Native Plant Society Inventory of Rare and Endangered Plants, Rare and Endangered Plants of California and elsewhere (California Native Plant Society 1994); CE = California listed Endangered, CT = California listed Threatened; CSC = California Species of Special Concern; CP= California protected, cannot be taken without a permit from CDFG;CFP = California Fully Protected; WSCA = Wildlife of Special Concern in Arizona (never adopted as a final list)

A complete list of all the species of plants and wildlife that were recorded during the biological resource surveys are provided as an appendix to the data request (BEP 2000w).

SITE VICINITY HABITAT DESCRIPTIONS

The proposed power plant is located in eastern Riverside County, just west of the Colorado River flood plain. Prior to agricultural cultivation and urbanization, the proposed power plant site and surrounding area was likely dominated by Sonoran creosote bush scrub and desert dry wash woodland communities with extensive desert riparian habitat along the Colorado River.

POWER PLANT SITE AND CONSTRUCTION LAYDOWN AREA

The 76-acre parcel proposed for the power plant is vacant, level land, located on the first level of a mesa elevated 70-feet above the Palo Verde Valley. A paved road runs along the southern boundary and a dirt road along the eastern boundary. The land is open to the north and west. The vegetation community for the proposed power plant site and construction laydown area is Sonoran creosote bush scrub (74 acres) that is dominated by creosote and white bursage (*Ambrosia dumosa*) on sandy and gravelly soils. The site has some off-road tracks on it and some illegal dump sites present, but is functioning ecologically with recent (last 2-10 years) recruitment of both dominant species. Sonoran creosote bush scrub is habitat for desert tortoise, a federal and state-listed species.

A small area on the south end of the site has historically been used as a residence and includes approximately 2 acres of packed earth roads and building foundations

that are disturbed and support little vegetation. One clump of fan palms (*Washingtonia filifera*) had been planted presumably as landscaping and still persist in this area.

TRANSMISSION LINE

The project proposes to interconnect with the regional electrical transmission grid at the Blythe Substation owned by the Western Area Power Administration (Western), a federal entity. The Substation is located within 600 feet of the proposed power plant site. The Blythe Substation would require upgrades to accommodate the new power generation, but it is likely that any upgrades would be within the existing footprint. A new project switchyard would be constructed adjacent to the proposed power plant on the 76-acre parcel. Three tie-ins would be constructed for a combined length of 1,650 feet, but other lines would be removed resulting in a net loss of transmission line. The vegetation within the 76-acre project site parcel is described above, and the only other vegetation type between the proposed project site and the Blythe substation is cultivated citrus.

NATURAL GAS SUPPLY PIPELINE

There are two proposed routes for the natural gas supply line. One interconnection would connect with the El Paso Natural Gas Company interstate pipeline system on the Arizona side of the Colorado River approximately 11.5 miles east of the project site. The other interconnection would involve connecting to the Southern California Gas Company (SoCalGas) pipelines located 0.80 mile south of the project side on the south side of Interstate 10. The applicant is seeking certification for both routes.

The El Paso route would exit the northeast corner of the power plant and follow the existing road footprint to Hobsonway, where it would continue in the roadbed as Hobsonway descends east down the mesa bank to Arrowhead Boulevard. The route then runs south, crossing under I-10, to 16th Avenue. The pipeline follows 16th Avenue east to Intake Boulevard where it heads north again until Riviera Drive (a frontage road to I-10). At Riviera Drive, the route travels east again until the directional drill site at the Colorado River.

The El Paso route would cross nineteen canals and drains, including Rannells Drain (Note, Goodman Drain has been filled at one crossing location, and Borrow Pit Drain is no longer in active use). Rannells Drain, and several others, are unlined canals that are vegetated by cattails (*Typha latifolia*), saltcedar (*Tamarix ramosissima* and *Tamarix* sp.), willows (*Salix gooddingii*), arrow-weed (*Pluchea sericea*), and saltbush/quailbush (*Atriplex lentiformis*). These species can form dense thickets such as on the banks of Rannells Drain. However, the vegetation is periodically removed from the canal banks and channels throughout the Palo Verde Valley, including Rannells Drain, by the Palo Verde Irrigation District. At the time of the staff field visit (June 16 and October 3, 2000), Rannells Drain was cleared north of Hobsonway, and no vegetation was apparent in the channel or on the banks.

The roads traversed by the proposed natural gas pipeline are surrounded mostly by agricultural land uses (alfalfa, cotton, lemons and melons) within the floodplain. The vegetation directly adjacent to the roads is disturbed, ruderal vegetation including

puncture vine (*Tribulus terrestris*), sunflower (*Helianthus annuus*), pigweeds (*Chenopodium* sp.), Bermuda grass (*Cynodon dactylon*) (in moist areas), saltbush, and Russian thistle (*Salsola tragus*). Near the intersection of Intake Boulevard and Riviera Drive, the pipeline cuts into a highly disturbed area, adjacent to a fallow agricultural field. The vegetation in this disturbed area is ruderal, as described above.

The receiving end of the pipeline that would be drilled under the Colorado River, is proposed in Caltrans right-of way adjacent to Riviera Drive and the Ehrenberg Bridge, and is currently vegetated by drought-tolerant exotic species including oleander (*Nerium oleander*) and eucalyptus (*Eucalyptus* sp.). The riparian zone adjacent to the Colorado River on the California side is moderately disturbed from recreational activities associated with the river. Plant species present include arrow-weed, tamarisk, willows, and mulefat (*Baccharis salicifolia*). The bore site on the Arizona side is a cleared, packed-earth, and fenced industrial plot.

The interconnection under the SoCalGas route travels directly south from the site and crosses under the I-10 corridor. South of Hobsonway, the pipeline would cross an area of disturbed Sonoran creosote bush scrub between Hobsonway and the I-10. This area appears to have been historically cleared of vegetation and is currently undergoing successional processes, where some creosote bushes have resprouted and white bursage has re-established, although the overall cover of the area is reduced. South of the I-10, the pipeline would cross currently disturbed agriculture fields. The pipeline then connects into the SoCalGas line in the center of a field.

IMPACTS

PROJECT SPECIFIC DIRECT IMPACTS

The California Environmental Quality Act Guidelines define direct impacts as those impacts that are the result of the project and occur at the same time and place. Indirect impacts are caused by the project, but can occur later in time or farther removed in distance, but are still reasonably foreseeable and related to the project. Indirect impacts are discussed in a separate section below.

Loss of sensitive species habitat is the primary concern of staff since conversion of habitat to agriculture and urban development is so prevalent in this area. The following table (Biological Resources Table 2) identifies the BEP direct acreage impacts to wildlife habitat or sensitive plant community.

BIOLOGICAL RESOURCES - Table 2
ACREAGE IMPACTS
(BEP, 1999a)

Project facility	Permanent Impacts Acreage	Temporary Impacts Acreage
Proposed Power Plant Site		
Construction laydown area[1]	--	--

Evaporation ponds	16	--
Power Plant	15	--
Fenced Exclusion Area	45	--
Transmission Line[2]	0	0
Natural gas pipeline (El Paso)[2]	0	0
Natural gas pipeline (SoCalGas)	0	1.15[3]
IMPACT ACREAGE TOTALS	**76-acres**	**1.15-acres**

1. The construction laydown area is the same area as the power plant site and does not represent additional losses

2. The transmission line and natural gas pipeline corridor for the El Paso route are not impacting any biological resources, thus no acreage has been assigned

3. This loss is from the 1,000 feet of pipeline that is placed between Hobson Way and I-10 assuming a 50-foot corridor of disturbance from construction equipment

To address any concerns about the potential impacts to sensitive species, the applicant has proposed a variety of mitigation measures they intend to employ to minimize or totally avoid impacting individual sensitive species (BEP 1999a). The final list of mitigation measures and implementation methods will be completed in consultation with the California Department of Fish and Game (CDFG), the U.S. Fish and Wildlife Service (USFWS), and Arizona Game and Fish (AGF), and will be included in the project's Biological Resources Mitigation Implementation and Monitoring Plan. For more information about specific mitigation measures and the project's Biological Resources Mitigation Implementation and Monitoring Plan, refer to Biological Resources Conditions of Certification **BIO-16**.

POWER PLANT SITE AND LAYDOWN AREA

Because the entire 76-acre power plant site would be fenced to exclude wildlife, construction of the power plant, substation, and two evaporation ponds would permanently impact the Sonoran creosote scrub habitat that is present at the site. Sonoran creosote bush scrub is habitat for desert tortoise, a federal and state-listed species. It is staff's opinion that even though desert tortoise were not seen during protocol surveys, the area is desert tortoise habitat. To address this issue, staff recommends habitat losses be compensated by the purchase of desert tortoise habitat and the establishment of an endowment in perpetuity for management, maintenance, and administration costs for the purchased habitat. The preliminary details regarding the amount and location of the habitat compensation are included in this Final Staff Assessment. The final details of the habitat compensation package will be worked out prior to certification and include all conditions contained in the Biological Opinion issued by the USFWS. For more information about staff proposed compensation levels refer to Biological Resources Conditions of Certification **BIO-13.**

Although the general vegetation mapping was done on April 8-9, 1999 (BEP 2000c) the special-status species surveys were conducted on June 30 and July 1,1999 (Section 7.12.1.6.3) and on April 24 and June 2-5, 2000 (BEP 2000w). Because the foxtail cactus is a succulent perennial, it could be identified in that time period, but was not located. However, Harwood's milkvetch is an annual species, not a perennial, and this species flowers from January to May and would not have been detectable during the 1999 or 2000 special-status species surveys timeframe. The surveys in 1999 followed an exceptionally mild spring and the surveys in 2000 had poor winter rainfall (BEP 2000w, Appendix pg. 15). Additionally, Harwood's

milkvetch is known to occur close to the facility site (3 miles east of the project site on the I -10 alignment) and is known to grow in areas such as the proposed power plant site (sandy or gravelly areas in Sonoran creosote bush scrub; Abrams 1944, Munz 1974, Hickman 1993, Skinner and Pavlick 1994). The project applicant proposes to mitigate for Harwood's milkvetch, since construction scheduling may not allow for additional spring-time surveys.

The evaporation ponds could attract bird and other wildlife (e.g. waterbirds, bats, etc.). The water directed to these ponds will contain some level of contaminants, including lead, arsenic and selenium (BEP 2000e; Table 7.13-11). Due to evaporation, the concentration of contaminants will increase in suspension and at the bottom of the ponds over time. The direct loss of birds, bats, and/or other wildlife could result from ingesting these contaminants. The Blythe area is an agricultural region within a desert environment. Standing, open-water sources include agricultural canals and drains, the Colorado River and associated sloughs and backwater areas, and numerous small irrigation reservoirs on the Mesa. Birds are attracted to open water and they forage in the more than 100,000 acres of farmed fields. Within this regional and local setting it is likely that some birds will forage in the 16-acre evaporation ponds, which could cause health problems in these individuals. Many of these species are protected under the Migratory Bird Treaty Act and other state and federal laws. Another concern regarding the evaporation ponds is the potentially undesirable result of attracting birds to the power plant site which is close to the Blythe airport.

TRANSMISSION LINE

Construction of the transmission line is from the proposed power plant and substation, east across the citrus orchard (BEP 2000l, revised maps) and into the existing Blythe Substation, operated and maintained by Western. The construction of the transmission line tower pads would have no biological consequences.

Each of the transmission tie-ins would have only one or two spans. Lines would be built following Avian Power Line Interaction Committee Guidelines (BEP 1999a, Appendix 7.12) so the potential for electrocution of large perching birds and avian species collision is low. Because the applicant is also removing power lines when they install their connection to the substation, there would be no net increase in the amount of lines in the area, so the potential for collision and electrocution of birds would not increase, and no adverse impacts are anticipated.

NATURAL GAS PIPELINE

The El Paso pipeline would utilize the footprint of existing roads, and because no vegetation occurs within these areas, no direct impacts are expected. Although the route includes nineteen canal and drain crossings, the proposed method of crossing is to bore underneath which has little or no impact to the riparian plant communities. In addition, these communities are artificially maintained, and periodically cleared by the Palo Verde Irrigation District reducing the habitat value for wildlife.

No significant impacts to native vegetation are anticipated to occur at the receiving site from the drilling under the Colorado River because the receiving area is

vegetated with exotic landscape species as described above. No impacts are expected to occur to the riparian corridor adjacent to the river from the drilling process because the drilling is expected to be below the root zone of the plant species that occur in the riparian strip along the river.

The CDFG will be issuing a Streambed Alteration Agreement for the directional drill under the Colorado River, and for the boring of the drains and sloughs associated with the El Paso natural gas pipeline route. Because of past experiences with failed directional drills along the Colorado River, the CDFG is concerned about the potential for release of bentonite clay into Colorado River waters, or other biologically sensitive areas. The release of clay is known as a frac-out, and can occur when the high pressure of the drill forces the clay to the surface through a fissure or crack in the materials above. The release of clay results in high turbidity and coats the surface of rocks and debris which lowers habitat value to fish and other aquatic species at a minimum and could cause death to species at its extreme. The CDFG typically recommends a minimum depth for the directional drill (e.g., 50 feet below the river's lowest point) which can reduce the probability of a frac-out. Other proactive measures may be part of the Streambed Alteration Agreement conditions, these conditions will be included as conditions of certification (see Biological Resources Condition for Certification **BIO-15**).

The SoCalGas pipeline would utilize the footprint of the existing road to the east of the project site, where no vegetation occurs, so no direct impacts would occur. South of Hobson Way, the impacts to the disturbed Sonoran Creosote bush scrub would be temporary and adverse, but not significant based on the current disturbance level existing on the site. The disturbance of 1.15 acres of low quality Desert Tortoise habitat south of Hobson Way during pipeline construction will be mitigated by the Desert Tortoise Habitat Compensation package for this project (see Biological Resources Condition of Certification **BIO-13**). South of the I-10 corridor, the current disturbance from agriculture precludes any native vegetation from occurring, so no impacts would occur in this area.

INDIRECT IMPACTS

Indirect effects on biological resources (including desert tortoise) would result from increased human activity in the project site area, noise, lighting, and traffic. These effects are not by themselves considered significant and would be mitigated satisfactorily by the recommended habitat compensation condition of certification.

The permanent and temporary earth disturbance adjacent to native habitats increases the potential for exotic, invasive plant and animal species to establish and disperse into native plant communities, which leads to community and habitat degradation. Both the State and Federal governments have recognized and taken action on the threat that exotic species pose to native habitats and agriculture. As exotic plants replace native habitat, many species of birds, insects, fish and other wildlife may be lost. It has been estimated that invasive pest plants cost California hundreds of millions of dollars annually (CalEPPC 1999). California's Governor Davis signed and funded Assembly Bill 1168 - Noxious Weeds Management Program late last year (1999), indicating the State's commitment to manage noxious

weeds. At the federal level, Executive Order 13112 was also signed in 1999, to "prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause". Staff is supportive of the current administration's position. Indirect impacts to adjacent native plant communities on the north and west side of the power plant site, and adjacent to the Colorado River can be minimized and staff has made several recommendations (see Biological Conditions of Certification **BIO-11** and **BIO-12**).

CUMULATIVE IMPACTS

The California Environmental Quality Act defines cumulative impacts as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” (CEQA Guidelines, Cal. Code Regs., Title 14, §15355). Cumulative impacts can occur when individually minor but collectively significant projects take place at nearly the same time frame or compound over time.

The BEP would add to continuing habitat losses in the project area. The power plant, the proposed Blythe Airport Industrial Park, and the recently completed truck stop, cumulatively reduce habitat for biological resources in the area, including listed species such as desert tortoise. These projects cumulatively represent significant impacts to biological resources. The proposed conditions of certification have factored the cumulative (as well as direct and indirect impacts) impact component of the BEP into the mitigation/compensation recommendations, so the cumulative impacts would be satisfactorily mitigated by the recommended conditions of certification.

For the installation of the El Paso natural gas pipeline the applicant has proposed to place the pipeline close to the Interstate bridge, an existing corridor across the Colorado River. Implementation of this strategy would reduce the likelihood that a new utility corridor would be designated, reducing the continued loss of riparian habitat along the Colorado River.

FACILITY CLOSURE

Sometime in the future, the BEP power plant and ancillary facilities would either experience a planned closure, or may be unexpectedly (either temporarily or permanently) closed. The BEP’s AFC did not include a discussion of the impacts facility closure could have on biological resources, and this is an important issue needing resolution. When facility closure occurs, it must be done in such a way as to protect the environment and public health and safety. To address facility closure, an “on-site contingency plan” will be developed by the project owner, and approved by the Energy Commission Compliance Project Manager.

PLANNED OR UNEXPECTED PERMANENT FACILITY CLOSURE

The region surrounding the proposed project site is either agricultural or open desert. Since the proposed project area currently provides habitat for desert tortoise, staff recommends that the facility closure plan address habitat restoration

measures to be implemented in the case of a planned or an unexpected permanent closure. Habitat restoration measures, if any, will be addressed as provided in the General Conditions of Facility Closure. If site restoration is included in the final Facility Closure Plan, restoration could include such tasks as the removal of power plant site structures, removal of the evaporation ponds, and the implementation of habitat restoration measures to re-establish native plant species and native habitat types (e.g., Sonoran creosote bush scrub). In addition, planned or unexpected permanent facility closure may also trigger the removal of the transmission facilities, since birds are known to collide with transmission conductors.

UNEXPECTED TEMPORARY CLOSURE

Staff does not have any biological resource facility closure recommendations for an unexpected temporary closure of the BEP power plant. However, in the event that the Energy Commission CPM determines that the facility is permanently closed, the above-mentioned facility closure measures shall be followed.

MITIGATION

APPLICANT'S PROPOSED MITIGATION

The applicant has developed a mitigation strategy that seeks to maximize avoidance of impacts to sensitive species and their habitat (BEP 1999a and BEP 2000s and 2000w). BEP's proposed mitigation measures include items such as avoiding riparian vegetation, implementing a worker environmental awareness program, and designing features to protect species from harm. For a list of mitigation measures proposed by staff, see Staff's Recommended Mitigation Measures and Biological Resources Conditions for Certification.

IMPACT AVOIDANCE MEASURES

The applicant has implemented or suggested that the following wildlife impacts avoidance measures will be taken:

1. Site selection of the proposed power plant included the following criteria:
   - The site was as close as possible to an existing substation to minimize the need for new transmission lines that would present collision and electrocution hazards or provide predator perch sites
   - The site was remote from sensitive and high-biodiversity areas of the Colorado River and desert washes where sensitive species are more likely to occur.
2. The proposed natural gas pipelines were sited to avoid direct impact to any riparian habitat by utilizing the existing permanent right-of-way road easement where practicable.
3. The applicant has proposed to directional drill under the Colorado River to avoid other methods that would potentially disturb sensitive riparian habitat and wildlife species.
4. Site transmission poles and lines will be built following Avian Power Line Interaction Committee Guidelines to minimize the potential for collision.

5. The applicant will have a biologist monitor those areas of the pipeline route that are adjacent to creosote bush scrub if construction occurs from March 1 through November 15 (tortoise activity periods). If construction is between November 15 and March 1, the biologist will search the construction area and adjacent 200 feet immediately prior to construction to insure that no burrowed or minimally active tortoises are harmed. Any tortoises found will be avoided by temporary fencing and monitoring. If a tortoise cannot be avoided, it will be translocated as specified by desert tortoise handling protocol.
6. The applicant will fence the 76-acre power plant site prior to construction. The fence will be of chainlink, approximately six feet in height, with three strands of barbed wire extending from the top. A section of desert-tortoise proof fence (half-inch to one-inch mesh hardware cloth) three-feet tall will be extended below ground at least two feet or alternatively it will be bent to extend outwards, just below the ground surface, about two feet from the fence perimeter. Gate(s) shall be desert tortoise proof by attaching to the gate two feet of hardware cloth that drops to the ground. Gate(s) shall remain closed except for the immediate passage of vehicles. High use gate(s) will be maintained and have monthly examinations.
7. Any equipment storage areas or staging areas outside the fenced plant site will be temporarily fenced to exclude tortoises.
8. Collection, holding, and translocation of tortoises (see Designated Biologist below) will comply with the following protocol:
   - Tortoises will be translocated to a shaded burrow immediately following their capture if the daily surface temperature maxima remains below 109° F(43° C)
   - If temperatures are warmer than 109° F(43° C), then tortoises shall be held in the shade, at air temperatures between 77° and 86°F (25° and 30° C). In the late afternoon, on the day of capture, after ground temperatures have dropped below 108° F (42° C) the tortoises will be released to a shaded burrow within 1,640 feet (500 meters) of the point of capture
   - If a tortoise is still in a burrow (e.g., found in winter), the tortoise will be removed by carefully excavating the burrow from the mouth to the tortoise and then removing the tortoise
   - Juvenile tortoises will not be released at dusk, but will be held and released at dawn
   - If no adequate translocation site is found, an artificial burrow will be dug, but this should be a last resort
   - Tortoises shall be handled smoothly, quickly, and with clean techniques. Clean techniques will include the use of disposable surgical gloves and all instrumentation coming into contact with tortoises will be disinfected with either bleach or alcohol.
   - If held, the tortoises will be put in a sterilized tub. Tubs should be padded and vehicle speed minimized on dirt roads if tortoises need to be transported by vehicle.
9. Annual surveys of the fence for integrity will be conducted and the fence will be repaired as needed (see Condition of Certification **BIO-9** for a change in this measure).

10. Monitoring for bird/wildlife fatalities will be conducted as part of weekly environmental inspections of key facilities including evaporation ponds. Power plant personnel will note any dead or injured wildlife observed at the evaporation ponds. The type of animal (bird, lizard, etc.) will be recorded, along with the distance from the wildlife to the nearest facility, date of observation, time and name of observer.
11. Selected electrical equipment with the potential to electrocute wildlife within the substation will be covered to reduce contact exposure with appropriate UV resistant material.
12. Construction at drainages and canals shall be conducted during the daylight hours to avoid mortalities of special-status amphibians and mammals.
13. Survey for burrowing owl activities 30 days prior to project construction at the power plant site and along the natural gas pipeline routes to assess owl presence and need for further mitigation. If owls are present within 250 feet of construction, during any season, and are outside of actively cultivated lands (not including levees and ditch banks), they will be monitored during construction for any changes in behavior. If owls are nesting, nest should be avoided by a minimum of a 250-foot buffer until fledging has occurred (February 1 through August 31). Following fledging, owls may be passively relocated. Non-nesting birds will be allowed to relocate without passive relocation, and construction will be limited to no more than a single 24-hour day within 250 feet of an unpaired resident bird.
14. Only seasonal construction (September 1 to April 1) will take place at Borrow Pit Drain, Goodman Drain at Intake Boulevard, and the Colorado River to avoid disturbance of nesting riparian bird species.

WORKER EDUCATION PROGRAM

A worker education program will be developed and administered to all personnel involved in the project. Construction workers will receive training on special -status species potentially occurring in the project area. Information will include species and habitat identification, techniques to avoid harm, and reporting procedures if species are located during construction activities. Workers will be educated as to the natural history, endangerment factors for all sensitive species, and appropriate protocol for dealing with this species when encountered in and around the power plant site or the natural gas pipeline corridor.

DESIGNATED BIOLOGIST

Consistent biological compliance monitoring throughout project design and construction is a fundamental aspect of the project. A qualified biologist will monitor all construction activities at slough and drain crossings containing riparian habitat. A trained desert tortoise biologist (per USFWS guidelines) will survey the power plant site after completion of the fencing. Tortoises found within the fenced enclosure site will be removed and relocated a short distance away (1,640 feet [500 meters]) and monitored during construction to ensure their safety (see Impact Avoidance Measures above for the protocol relating to handling of tortoises). Alternatively, tortoises could be temporarily removed to a climate-controlled area until construction is complete.

SENSITIVE PLANT AND WILDLIFE SURVEYS

The Applicant has performed 100-percent USFWS protocol clearance surveys for desert tortoise, and special-status species surveys for Harwood's milkvetch and foxtail cactus, at the proposed power plant site, along the proposed natural gas and transmission line corridors, and along 1,000-foot buffers around the corridors. Pre-construction surveys for special-status bird species will be required for construction of the pipeline connection to El Paso Natural Gas Company in proximity of the water features.

SECTION 7 CONSULTATION

A Biological Assessment (BA) has been prepared as part of the Section 7 consultation with the USFWS on the federally-listed species found in Biological Resources Table 1. Western, as the lead federal agency had responsible for the BA preparation and consultation. The consultation will address potential impacts to the desert tortoise and designated special-status bird species.

STAFF'S RECOMMENDED MITIGATION

IMPACT AVOIDANCE MEASURES

The applicant's recommended sensitive species impact avoidance measures have gone far in reducing potential impacts. Due to potential significant impacts attributable to the project, however, staff would like to see additional measures implemented to prevent bird and wildlife deaths in the evaporation ponds. Staff suggests any specimens found dead at the evaporation ponds shall be placed in suitable bags, logged into a database, and then frozen for future identification and potential tissue analysis. The specimens shall be identified by the Designated Biologist or their designee once a month (see Biological Resources Condition of Certification **BIO-6**).

Live bird counts will also be necessary to determine the amount and type of bird use at the evaporation ponds. The approved method for data collection is a 10-minute variable point count, from between or near the ponds, once per hour (one hour apart), from sun-up to sun-down. This shall be done every two weeks for one day (26 days/year) after filling/use of the ponds begins. This data shall be made available and an annual reporting of the findings shall be provided to the Federal Aviation Administration, City of Blythe, Blythe Airport staff, ALUC, CDFG, USFWS, and the CPM (see Biological Resources Condition of Certification **BIO-7**).

At a minimum, the water and brine at the evaporation ponds should be tested monthly for the following components that are known toxins to wildlife:

- Arsenic
- Selinium
- Lead
- Cadmium
- Mercury

Collections of invertebrates shall be taken from the evaporation ponds at the same time, and these samples preserved (e.g., alcohol and water in sealed glass containers labeled with date and location). The Designated Biologist shall hold these specimens for potential bioaccumulation analysis which would be necessary only if levels of water contamination were found to be higher than the human consumption levels published by the Environmental Protection Agency or another approved list of thresholds (see Biological Resources Condition of Certification **BIO-8**).

SENSITIVE PLANT AND WILDLIFE SURVEYS

Staff supports the survey efforts to date on the proposed project. However, there is a potential that Harwood's milkvetch was missed during the early summer surveys. Staff recommends that surveys for Harwood's milkvetch be performed during the time of year that they are detectable and identifiable (January to May). If this is infeasible due to construction schedules, the Applicant will compensate at an acceptable level as if Harwood's milkvetch is being lost due to construction of the project. Examples of compensation would be: 1) the collection of wild seeds and the propagation/establishment of new or supplementing existing populations, or 2) providing funds (amount yet to be determined, although it will be less than $25,000.) to an acceptable botanical gardens for seed collection, propagation and planting in the wild. See Biological Resources Condition of Certification **BIO-14**.

The applicant has proposed surveys and monitoring for burrowing owls at the power plant site and along the natural gas pipeline routes (see Biological Resources Condition of Certification **BIO-1**). After surveys are completed, and if burrowing owls are found, the amount of habitat compensation necessary to mitigate losses for burrowing owls will be evaluated. CDFG requires a mitigation plan be developed in conjunction with their "1995 Guidance for Burrowing Owl Mitigation." A burrowing owl mitigation plan will need to be made part of BEP's BRMIMP

SECTION 7 CONSULTATION

Western, as the lead Federal agency, is pursuing a Section 7 consultation on the project. Staff recommends that a copy of the final Biological Assessment and resulting Biological Opinion be provided to the Energy Commission staff prior to certification. All conditions in the Biological Opinion will be included in the BRMIMP.

HABITAT COMPENSATION

The BEP site consists of desert tortoise habitat and if the BEP is constructed, this habitat will be eliminated along with the future potential of the site to support desert tortoises. Since the habitat at the site and along the pipeline is of low quality for desert tortoise, staff feels that a low replacement ratio is adequate. Staff recommends this habitat loss be compensated at a 1:1 ratio. The compensation goal will be the protection of high conservation value lands for desert tortoise, that fit into a plan for regional conservation. This compensation will be funded by the project owner. In addition to funds for land protection (purchase or conservation easement) an endowment fund will be established, that is sufficient to cover short- and long-term administration, management, monitoring, and operating costs in

perpetuity. The most desirable option would be for the compensation funds to go to a credible nonprofit land management/conservation organization (such as the Desert Tortoise Preserve Committee) to be used for conservation of lands in the project region. Other conservation options will be considered based on merit and benefit.

Discussions with California Department of Fish and Game and the U.S. Fish and Wildlife Service (October 3, 2000) indicate that habitat compensation for 77.15 acres of desert tortoise habitat (76 acres for power plant site and 1.15 acres for natural gas pipeline) is needed to compensate losses to the desert tortoise. Compensation would be required at a ratio of 1:1. Discussions with Desert Tortoise Preserve Council (Dr. Kristin H. Berry, personnel communication) indicate they are willing to set up a preserve in Chuckwalla Basin, which the USFWS and CDFG find preferable to compensation farther from the project area. General estimates of cost are $500/acre for land purchase, and $1200/acre endowment, for about $1700/acre; this equals $131,155. This amount should be adequate to mitigate direct, indirect, and cumulative desert tortoise losses for the project. The exact costs will be determined prior to certification in consultation with CDFG and USFWS, and be based on the Desert Tortoise Preserve Committee's proposal package. The costs are not expected to be greater than the above estimates.

WEED REDUCTION PROGRAM

The indirect effects of the proposed project on the surrounding natural communities were not fully addressed by the Applicant. Staff recommends the following to reduce impacts:

1. Design a comprehensive exotic plant control program for the power plant site and the directional drill areas adjacent to the Colorado River. At the power plant site, the exotic control program will target noxious weeds, as defined by the California Department of Agriculture, and the List A (Most Invasive Wildland Pest Plants; documented as aggressive invaders that displace natives and disrupt natural habitats), B (Wildland Pest Plants of Lesser Invasiveness; invasive pest plants that spread less rapidly and cause a lesser degree of habitat disruption; may be wide-spread or regional) and Red Alert species (Pest plants with potential to spread explosively; infestations currently small or localized) as defined by the California Exotic Pest Plant Council (Cal EPPC). These species are recognized as being a threat to the native habitats and agriculture. At the power plant site, this exotic control program will be implemented during the life of the project as long as native habitat or agriculture is adjacent to the project site. At the Colorado River directional drill areas, the program will be implemented as feasible, until successful re-landscaping of the site is complete.
2. Landscaping of the project site and the "receiving" site should use only native vegetation, suitable to the site, in compliance with the City of Blythe's General Plan

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS AND STANDARDS

To be in compliance with applicable laws, ordinances, regulations and standards, BEP must obtain two biological opinions- (1) a Biological Opinion under Section 7 of the ESA, being undertaken by the federal-lead, Western; and (2) a CDFG Section 2081.1 Biological Opinion or Letter of Concurrence. These documents will identify the mitigation measures required by each agency.

A U.S. Army Corps of Engineers Section 10 permit and a CDFG Streambed Alteration Agreement must be obtained prior to construction at the Colorado River for the El Paso Natural Gas Pipeline (ACOE, 2000a). These documents will identify the mitigation measures required by each agency.

To make certain the project owner complies with all laws, ordinances, regulations, and standards and the biological resource mitigation measures associated with this project, the applicant must designate a biological resource specialist, prior to the beginning of any project-related ground disturbance, who is familiar with the biological resource issues of the BEP project. This specialist, identified as the Designated Biologist, will help ensure that all biological resources mitigation measures are complied with during project construction and operation. For more information about the roles and responsibilities of the Designated Biologist, see Biological Resources Conditions of Certification **BIO-2, BIO-3,** and **BIO-4**.

UNRESOLVED ISSUES, CONCLUSIONS, AND RECOMMENDATIONS

UNRESOLVED ISSUES

FEDERAL BIOLOGICAL OPINION

Since the project may impact federally listed species, in particular desert tortoise, the consultation and resulting biological opinion under Section 7 of the Federal Endangered Species Act must be completed prior to BEP construction. Staff will continue to work closely with the USFWS in order to address all of their biological resource concerns.

CDFG BIOLOGICAL OPINION/LETTER OF CONCURRENCE

Since the project may impact state listed species, in particular desert tortoise, the progress of the state Section 2081 Biological Opinion or Letter of Concurrence must be complete prior to BEP construction. The Section 2081documentation will be issued within 30 days after the CDFG obtains a copy of the Federal Biological Opinion. Staff will continue to work closely with CDFG staff in order to address all of their biological resource concerns.

SECTION 10 OF THE RIVERS AND HARBORS ACT

Since the BEP El Paso Natural Gas Pipeline will need to cross the Colorado River, the applicant must acquire a permit from the Army Corps of Engineers (see Soil and

Water Resources Section). As currently proposed, it appears the project would be issued a Section 10 permit for which the Army Corps of Engineers could issue a Letter of Permission (ACOE, 2000). Permit provisions will be incorporated into the BEP BRMIMP.

STREAMBED ALTERATION AGREEMENT

For the directional drill crossing under the Colorado River CDFG will require a containment plan to reduce the likelihood of an impact to vegetation and wildlife from sediment. The conditions of the Streambed Alteration Agreement were not available prior to release of this Final Staff Assessment, and containment plans have not been submitted by the Applicant. Streambed Alteration Agreement conditions will be incorporated into the BEP BRMIMP.

BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN (BRMIMP)

The Applicant is pursuing the creation of a BRMIMP. The applicant has compiled many recommended mitigation measures in the AFC (BEP 1999a) and project description clarifications (BEP 2000s) into a Draft BRMIMP. The draft BRMIMP submitted to the Energy Commission covers the mitigation measures recommended by the Applicant, the permits they expect to obtain, the responsibilities of the parties involved, and the lines of communication. The approved worker environmental awareness program will be included in the BRMIMP. The draft BRMIMP will be reviewed by the USFWS and CDFG, and finalized prior to certification.

CONCLUSIONS

Staff and various agencies have come to general agreement with the Applicant on the mitigation and compensation that will be necessary to ensure the project is constructed and operated in compliance with various state and federal laws, ordinances, regulations, and standards. Staff concludes that if the mitigation measures discussed above are made conditions of certification, the project will not result in a significant impact on biological resources. Based on this analysis, and discussions with representatives of other agencies, staff recommends that the Energy Commission committee adopt the following Biological Resources Conditions of Certification.

CONDITIONS OF CERTIFICATION

In addition to the following Conditions of Certification, additional conditions may result from the USFWS Biological Opinion and incidental take permit, CDFG's Concurrence Determination and Streambed Alteration permit. The USFWS Biological Opinion and Incidental Take permit will provide mitigation requirements that must be followed prior to project construction, and during construction and operation. Once the CDFG receives a copy of the Biological Opinion and Incidental Take Permit, the CDFG will complete its review and provide a Concurrence Determination. The CDFG Streambed Alteration permit must be issued prior to gas pipeline construction activities. These actions must be completed before construction can begin.

The following Biological Resources Conditions of Certification are proposed by Energy Commission staff.

BIO-1 The project owner shall implement the following mitigation measures identified in Section 7.12.2.4 found on page 7.12-24 of the BEP Application for Certification (BEP 1999a), Attachment 1 of the Biological Assessment Blythe Energy Project (BEP 1999a, AFC Appendix 7.12), project description clarification (BEP 2000s), and response to comments (BEP 2000l and BEP 2000w). The project owner's mitigation measures shall also be incorporated into the final BRMIMP (see Condition of Certification **BIO-16** below) unless the mitigation measures conflict with mitigation required by the USFWS or CDFG as contained within their respective biological opinion or consistency determination.

For the proposed 76-acre power plant site, the project owner shall ensure the following:

1. Fence the project site with desert-tortoise-proof fencing prior to construction. Gate(s) shall be desert tortoise proof as well. Gate(s) shall remain closed except for the immediate passage of vehicles. High use gate(s) will be maintained and have monthly examinations.
2. Following fencing, a trained tortoise biologist shall search the interior of the fenced area for tortoises. Tortoise found on the construction site shall be removed and relocated using USFWS approved handling techniques (see #3 below).
3. Collection, holding, and translocation of tortoises shall comply with USFWS handling protocol that ensures their health and safety.
4. Monitor for bird/wildlife fatalities and collecting data will be a part of environmental inspections of key facilities including evaporation ponds (see also BIO-6 below).
5. Selected electrical equipment with the potential to electrocute wildlife within the substation shall be covered with appropriate UV resistant material.
6. Power lines shall be installed following Avian Power Line Interaction Committee Guidelines.
7. Survey for burrowing owl activities will be conducted prior to project construction to assess owl presence and need for further mitigation.
8. If burrowing owls are found on the site or along the natural gas pipelines, off-site compensation for losses will be required, unless the sighting was on actively cultivated lands.

For the El Paso natural gas pipeline connection, the project owner shall:

15. Avoid direct impact to any riparian habitat by utilizing the existing permanent ROW road easement, where practicable.
16. Schedule and conduct all construction activities at Borrow Pit Drain, Goodman Drain at Intake Boulevard, and the Colorado River outside of

the spring nesting season to minimize potential impacts to bird species. Construction at drainages and canals will be conducted during the daytime to avoid impacts to special-status amphibians and mammals.

17. 3. Have a biologist monitor those areas of the pipeline route that are adjacent to tortoise habitat (creosote bush scrub).

4. Develop a worker education program and administer it to all construction and operations personnel involved in the project.

5. Have a qualified biologist monitor all construction activities within drainages and canals associated with the natural gas pipeline.

For the SoCalGas natural gas pipeline the project owner shall:

1. Have a biologist monitor the pipeline route between Hobson Way and Interstate 10 for the presence of desert tortoises.

Verification: At least 30 days prior to the start of any project related ground disturbance activities, the project owner shall provide the Energy Commission Compliance Project Manager (CPM) with the final version of the BEP BRMIMP for approval. The CPM will determine the plan's acceptability within 15 days of receipt of the final plan. Implementation of the above measures shall be included in the BRMIMP.

DESIGNATED BIOLOGIST

BIO-2 Construction site and/or ancillary facilities preparation (described as any ground disturbing activity other than Energy Commission approved geotechnical work) shall not begin until an Energy Commission CPM approved Designated Biologist is available to be on site.

Protocol: The Designated Biologist must meet the following minimum qualifications:

1. A Bachelor's Degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. At least three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society;
3. At least one year of field experience with biological resources found in or near the project area; and
4. An ability to demonstrate to the satisfaction of the CPM the appropriate education and experience for the biological resources tasks that must be addressed during project construction and operation, including experience with the particular species associated with the BEP site.

If the CPM determines the proposed Designated Biologist to be unacceptable, the project owner shall submit another individual's name and qualifications for consideration. If the approved Designated Biologist needs to be replaced, the project owner shall obtain approval of a new Designated Biologist by submitting to the CPM the name, qualifications, address, and

telephone number of the proposed replacement. No disturbance will be allowed in any designated sensitive areas until the CPM approves a new Designated Biologist and the new biologist is on site.

Verification: Thirty (30) days prior to the start of any ground disturbance activities, or a lesser time period as mutually agreed, the project owner shall submit to the CPM for approval, the name, qualifications, address and telephone number of the individual selected by the project owner as the Designated Biologist. If a Designated Biologist is replaced, the information on the proposed replacement, as specified in the condition, must be submitted in writing at least ten working days prior to the termination or release of the preceding Designated Biologist.

BIO-3 The CPM approved Designated Biologist shall perform the following during project construction and operation:

1. Advise the project owner's Construction Manager on the implementation of the Biological Resource Conditions of Certification;

2. Supervise or conduct mitigation, monitoring and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as, wetlands and special status species; and

3. Notify the project owner and the CPM of non-compliance with any Biological Resources Condition of Certification.

Verification: During project construction, the Designated Biologist shall maintain written records of the tasks described above, and summaries of these records shall be submitted along with the Monthly Compliance Reports to the CPM. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report.

BIO-4 The project owner's Construction Manager shall act on the advice of the Designated Biologist to ensure conformance with the Biological Resources Conditions of Certification.

Protocol: The project owner's Construction Manager shall halt, if directed by the Designated Biologist, all construction activities in areas specifically identified by the Designated Biologist as sensitive to assure that potentially significant biological resource impacts are avoided.

The Designated Biologist shall:

1. Inform the project owner of any remedial measures necessary,

2. Inform the project owner and the Construction Manager when to resume construction, and

3. Advise the Energy Commission CPM what remedial measures are needed or have been instituted.

Verification: Immediately upon the Designated Biologist notification to halt construction, the project owner shall notify the CPM by telephone of the circumstances and actions being taken to resolve the problem. For any necessary remedial action taken by the project owner, a determination of success or failure will be made by the Designated Biologist as soon as possible, but not later than five (5) working days after receipt of notice that corrective action is completed, or the project owner and CPM will be notified by the Designated Biologist that coordination with other agencies will require additional time before a determination can be made.

WORKER ENVIRONMENTAL AWARENESS PROGRAM

BIO-5 The project owner shall develop and implement a CPM approved Worker Environmental Awareness Program in which each of its employees, as well as employees of contractors and subcontractors who work on the project site or related facilities during construction and operation, are informed about the sensitive biological resources associated with the project area.

Protocol: The Worker Environmental Awareness Program must:

1. Be developed by the Designated Biologist and consist of an on-site or training center presentation in which supporting written material is made available to all participants;

2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas;

3. Present the reasons for protecting these resources;

4. Present the purpose of various temporary and permanent habitat protection measures; and

5. Identify whom to contact if there are further comments and questions about the material discussed in the program.

The specific program can be administered by the Designated Biologist or a competent individual(s) authorized by the Designated Biologist.

Each participant in the on-site Worker Environmental Awareness Program shall sign a statement declaring that the individual understands and shall abide by the guidelines set forth in the program materials. The person administering the program shall also sign each statement. New workers shall receive training within 15 days of their first day of employment.

Verification: Thirty (30) days prior to the start of ground-disturbance activities or the directional drilling at the Colorado River or a lesser period as mutually agreed, the project owner shall provide copies of the Worker Environmental Awareness Program and all supporting written materials prepared by the Designated Biologist and the name and qualifications of the person(s) administering the program to the CPM for approval. The project owner shall state in the Monthly Compliance Report

the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. The signed statements for the construction phase shall be kept on file by the project owner and made available for examination by the CPM for a period of at least six (6) months after the start of commercial operation. During project operation, signed statements for active project operational personnel shall be kept on file for the duration of their employment and for six (6) months after their termination.

BIRD AND WILDLIFE PROTECTION AT EVAPORATION PONDS

BIO-6 The evaporation ponds shall be monitored by plant personnel for bird and wildlife losses (see **BIO-1**). If a substantial number of bird and wildlife are found dead during any year, as determined by the CPM or Designated Biologist, then measures shall be identified and implemented that will substantially reduce or eliminate the problem. This monitoring shall continue for the first three years of plant operations, and depending on the results, could be discontinued at that time.

Verification: In the Annual compliance report, the project owner shall submit records of all monitoring dates, data collected, annual report, and any corrective actions taken in the Annual Compliance Report to the CPM.

BIO-7 The evaporation ponds shall be monitored twice monthly (once every two weeks--two weeks apart) by the Designated Biologist and records taken of the type of birds (e.g., waterfowl, shorebird, etc.), number of birds, and behavior.

Verification: In the Annual compliance report, the project owner shall submit records of all monitoring dates, data collected, annual report, and any corrective actions taken in the Annual Compliance Report to the Federal Aviation Administration, City of Blythe, Blythe Airport staff, ALUC, CDFG, USFWS, and the CPM.

BIO-8 The water quality in the evaporation ponds shall be monitored monthly for the first three years of operation. Collections of invertebrates shall be taken from the evaporation ponds at the same time, and these samples preserved (e.g., alcohol and water in sealed glass containers labeled with date and location).

Verification: In the Annual compliance report, the project owner shall submit records of all monitoring dates, data collected, annual report, and any corrective actions taken in the Annual Compliance Report to the CPM.

DESERT TORTOISE FENCING

BIO-9 The project owner shall conduct maintenance monitoring of the desert tortoise exclusion fencing on a monthly basis and complete repairs within one week of a problem being identified.

Verification: The project owner shall submit records of all monitoring dates, identify the locations that required repair, and any corrective actions taken in the Annual Compliance Report.

BIO-10 A trained tortoise biologist shall search any gaps or laydown points created in the site's fence (e.g., for the passage of equipment or material onto the construction site) for the presence of desert tortoise and take appropriate action if a desert tortoise is found. Temporary fencing must be installed at any gaps if it will remain open overnight.

Verification: The project owner shall submit records of any desert tortoises relocated or discovered, dates, identify the locations, and any corrective actions taken in the Annual Compliance Report.

WEED REDUCTION PROGRAM

BIO-11 A comprehensive exotic control program for California Department of Agriculture List A, List B, and Red Alert weeds, shall be implemented at the 76-acre power plant site. This program should be implemented until such time that the adjacent land use on the north and west sides is no longer a natural community or agriculture, or until the plant is permanently closed. At the Colorado River, this exotic control program should be implemented as feasible until the Caltrans ROW is replanted and established. The natural vegetation adjacent to the BEP site shall be monitored to determine if it has been modified or degraded, if so, these changes to the adjacent sites should be documented by the project's Designated Biologist in a report which includes photos of the adjacent land uses.

Verification: The project owner shall provide a progress/activity report regarding exotic weed control efforts and document changes (as needed) to the surrounding areas in the annual Compliance report.

BIO-12 If any landscaping must be removed from the directional drill site or laydown areas, the preferred method of revegetation is to follow the Blythe General Plan.

Verification: The Designated Biologist shall supervise the selection and installation of landscaping material and inform the CPM of any non-conforming plantings within 2 weeks of the action. If a state (Caltrans) mandated plant palette is on record, then these species can be used in lieu of the Blythe General Plan species. The success of the landscaping shall be monitored for 5 years after installation and corrective actions taken to sustain a survivorship rate of greater than 60% for all plantings. The Designated Biologist shall submit records of all monitoring dates, identify areas needing repair, and any corrective actions taken in the Annual Compliance Report

HABITAT COMPENSATION

BIO-13 To compensate for permanent impact to desert tortoise habitat, the project owner shall provide compensation funds in the amount of $131,155 to the Desert Tortoise Preserve Committee for the improvement or acquisition of desert tortoise habitat in the Chuckwalla Bench area. The compensation funds include land or conservation purchase costs and endowment funds for

administration, management, maintenance, monitoring, operation, and research costs.

Verification: Not less than 30 days prior to the start of any construction activities (including exclusion fencing), the project owner will provide the check made out to the Desert Tortoise Preserve Committee (DTPC) to the DTPC and a copy of the check verifying the funds were paid, to the CPM.

BIO-14 To compensate for permanent impacts to Harwood's milkvetch, the project owner shall revegetate an appropriate area with Harwood milkvetch. The minimum number of viable plants to be installed will be one hundred. Appropriate locations for the plantings will be under the supervision of a botanist with desert restoration experience, or the Designated Biologist, if they have the appropriate botanical background, and be approved by CDFG. If a conservation site cannot be established due to other constraints, a donation in the amount of $25,000 shall be given to the Rancho Santa Ana Botanical Gardens for the collection and preservation of Harwood's milkvetch seeds. The funds or an approved alternate plan should be agreed to prior to certification.

Verification: Within 30 days of the start of construction, the project owner shall submit a plan to the CPM for review and approval. Or, the project owner will provide a check to the Rancho Santa Ana Botanical Garden and a copy of the check made out to the Rancho Santa Ana Botanical Garden to the CPM.

EMERGENCY CONTAINMENT PLAN FOR THE DIRECTIONAL DRILL SITES

BIO-15 Before initiating the directional drill at the Colorado River, the Applicant will develop a comprehensive Emergency Containment Plan for any discharge of bentonite clay that may occur during the directional drill. This containment plan shall be reviewed and modified as needed for approval by the CDFG. Or, all conditions in CDFG's Streambed Alteration Agreement shall be implemented prior to directional drilling.

Verification: Thirty (30) days prior to the start of the directional drill, or a lesser period as mutually agreed, the project owner shall provide the CPM with a final Emergency Containment Plan and a copy of any correspondence regarding the plan from the CDFG. The CPM will determine the plan's acceptability within 15 days of receipt of the final plan. Any modifications to the approved Emergency Containment Plan will be made in consultation with Energy Commission staff, CDFG, and the USFWS as appropriate.

BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONIORITING PROGRAM

BIO-16 The project owner shall submit to the CPM for review and approval, prior to any project related ground disturbance activities, a copy of the final Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and shall implement the measures identified in the plan.

Protocol: The final BRMIMP shall identify:

1. All biological resources mitigation, monitoring, and compliance conditions included in the Energy Commission's Final Decision;
2. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation and closure;
3. All mitigation measures identified in the USFWS Section 7 Biological Opinion;
4. All mitigation measures identified in the CDFG Section 2081 Biological Opinion (if applicable) or Letter of Concurrence;
5. Terms and conditions contained in the project's federal Section 10 permit;
6. Terms and conditions contained in the project's Streambed Alteration Agreement;
7. Required habitat compensation funds and strategy, including provisions for acquisition, enhancement and management, for any permanent or cumulative loss of sensitive biological resources;
8. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
9. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
10. All performance standards and remedial measures to be implemented if performance standards are not met; and
11. A process for proposing plan modifications to the Energy Commission CPM and appropriate agencies for review and approval

Verification: Thirty (30) days prior to start of any project-related ground disturbance (including exclusion fencing installation) activities or a lesser time period as mutually agreed, the project owner shall provide the CPM with the final version of the BRMIMP, and the CPM will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved BRMIMP must be made only after consultation with Energy Commission staff, CDFG, and the USFWS as appropriate. The project owner shall notify the CPM five (5) working days before implementing any modifications to the BRMIMP.

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___ 2000e. Data Adequacy Supplement #4, dated March 15, 2000.

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GENERAL CONDITIONS
INCLUDING
COMPLIANCE MONITORING AND CLOSURE PLAN

Testimony of Steve Munro

INTRODUCTION

The project General Conditions Including Compliance Monitoring and Closure Plan (Compliance Plan) have been established as required by Public Resources Code section 25532. The plan provides a means for assuring that the facility is constructed, operated and closed in conjunction with air and water quality, public health and safety, environmental and other applicable regulations, guidelines, and conditions adopted or established by the California Energy Commission (Energy Commission) and specified in the written decision on the Application for Certification or otherwise required by law.

The Compliance Plan is composed of the following elements:

1. General conditions that:

   a) set forth the duties and responsibilities of the Compliance Project Manager (CPM), the project owner, delegate agencies, and others;

   b) set forth the requirements for handling confidential records and maintaining the compliance record;

   c) state procedures for settling disputes and making post-certification changes;

   d) state the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all Energy Commission approved conditions; and

   e) establish requirements for facility closure plans.

2. Specific conditions of certification:

   Specific conditions of certification that follow each technical area contain the measures required to mitigate any and all potential adverse project impacts associated with construction, operation and closure to an insignificant level. Each specific condition of certification also includes a verification provision that describes the method of verifying that the condition has been satisfied.

GENERAL CONDITIONS OF CERTIFICATION

COMPLIANCE PROJECT MANAGER (CPM) RESPONSIBILITIES

A CPM will oversee the compliance monitoring and shall be responsible for:

1. ensuring that the design, construction, operation, and closure of the project facilities is in compliance with the terms and conditions of the Commission Decision;
2. resolving complaints;
3. processing post-certification changes to the conditions of certification, project description, and ownership or operational control;
4. documenting and tracking compliance filings; and,
5. ensuring that the compliance files are maintained and accessible.

The CPM is the contact person for the Energy Commission and will consult with appropriate responsible agencies and the Energy Commission when handling disputes, complaints and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal required by a condition of certification requires CPM approval, it should be understood that the approval would involve all appropriate staff and management.

The Commission has established a toll free compliance telephone number of **1-800-858-0784** for the public to contact the Commission about power plant construction or operation-related questions, complaints or concerns.

PRE-CONSTRUCTION AND PRE-OPERATION COMPLIANCE MEETING

The CPM may schedule pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. The purpose of these meetings will be to assemble both the Energy Commission's and the project owner's technical staff to review the status of all pre-construction or pre-operation requirements contained in the Energy Commission's conditions of certification to confirm that they have been met, or if they have not been met, to ensure that the proper action is taken. In addition, these meetings shall ensure, to the extent possible, that Energy Commission conditions will not delay the construction and operation of the plant due to oversight or inadvertence and to preclude any last minute, unforeseen issues from arising. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes.

ENERGY COMMISSION RECORD

The Energy Commission shall maintain as a public record, in either the Compliance file or Docket file, for the life of the project (or other period as required):

1. all documents demonstrating compliance with any legal requirements relating to the construction and operation of the facility;
2. all monthly and annual compliance reports filed by the project owner;
3. all complaints of noncompliance filed with the Energy Commission; and,

4. all petitions for project or condition changes and the resulting staff or Energy Commission action taken.

PROJECT OWNER RESPONSIBILITIES

It is the responsibility of the project owner to ensure that the general compliance conditions and the conditions of certification are satisfied. The general compliance conditions regarding post-certification changes specify measures that the project owner must take when requesting changes in the project design, compliance conditions, or ownership. Failure to comply with any of the conditions of certification or the general compliance conditions may result in reopening of the case and revocation of Energy Commission certification, an administrative fine, or other action as appropriate.

ACCESS

The CPM, responsible Energy Commission staff, and delegate agencies or consultants, shall be guaranteed and granted unrestricted access to the power plant site, related facilities, project-related staff, and the records maintained on site, for the purpose of conducting audits, surveys, inspections, or general site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time.

COMPLIANCE RECORD

The project owner shall maintain project files on-site or at an alternative site approved by the CPM, for the life of the project. The files shall contain copies of all "as-built" drawings, all documents submitted as verification for conditions, and all other project-related documents for the life of the project, unless a lesser period is specified by the conditions of certification.

Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files.

COMPLIANCE VERIFICATIONS

Each condition of certification is followed by a means of "verification". The verification describes the Energy Commission's procedure(s) to ensure post-certification compliance with adopted conditions. The verification procedures, unlike the conditions, may be modified, as necessary by the CPM, and in most cases without full Energy Commission approval.

Verification of compliance with the conditions of certification can be accomplished by:

18. reporting on the work done and providing the pertinent documentation in monthly and/or annual compliance reports filed by the project owner or authorized agent as required by the specific conditions of certification;
19. appropriate letters from delegate agencies verifying compliance;

20. Energy Commission staff audits of project records; and/or
21. Energy Commission staff inspections of mitigation and/or other evidence of mitigation.

Verification lead times (e.g., 90, 60 and 30-days) associated with start of construction may require the project owner to file submittals during the certification process, particularly if construction is planned to commence shortly after certification.

A cover letter from the project owner or authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. **The cover letter subject line shall identify the involved condition(s) of certification by condition number and include a brief description of the subject of the submittal**. The project owner shall also identify those submittals **not** required by a condition of certification with a statement such as: "This submittal is for information only and is not required by a specific condition of certification." When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal.

The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed by the project owner or an agent of the project owner.

All submittals shall be addressed as follows:

Compliance Project Manager
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

If the project owner desires Energy Commission staff action by a specific date, they shall so state in their submittal and include a detailed explanation of the effects on the project if this date is not met.

COMPLIANCE REPORTING

There are two different compliance reports that the project owner must submit to assist the CPM in tracking activities and monitoring compliance with the terms and conditions of the Commission Decision. During construction, the project owner or authorized agent will submit Monthly Compliance Reports. During operation, an Annual Compliance Report must be submitted. These reports, and the requirement for an accompanying compliance matrix, are described below. The majority of the conditions of certification require that compliance submittals be submitted to the CPM in the monthly or annual compliance reports.

COMPLIANCE MATRIX

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly and annual compliance report. The compliance matrix is intended to

provide the CPM with the current status of all compliance conditions in a spreadsheet format. The compliance matrix must identify:

1. the technical area,
2. the condition number,
3. a brief description of the verification action or submittal required by the condition,
4. the date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.),
5. the expected or actual submittal date,
6. the date a submittal or action was approved by the Chief Building Official (CBO), CPM, or delegate agency, if applicable, and
7. the compliance status for each condition (e.g., "not started", "in progress" or

Completed or satisfied conditions do not need to be included in the compliance matrix after they have been identified as completed/satisfied in at least one monthly or annual compliance report.

PRE-CONSTRUCTION MATRIX

Prior to commencing construction a compliance matrix addressing only those conditions that must be fulfilled before the start of construction shall be submitted by the project owner to the CPM. This matrix will be included with the project owner's **first** compliance submittal. It will be in the same format as the compliance matrix referenced above.

TASKS PRIOR TO START OF CONSTRUCTION

Construction shall not commence until the pre-construction matrix is submitted, all pre-construction conditions have been complied with, and the CPM has issued a letter to the project owner authorizing construction. Project owners frequently anticipate starting project construction as soon as the project is certified. In some cases it may be necessary for the project owner to file submittals prior to certification if the required lead-time for a required compliance event extends beyond the date anticipated for start of construction. It is also important that the project owner understand that pre-construction activities that are initiated prior to certification are performed at the owner's own risk. Failure to allow specified lead-time may cause delays in start of construction.

Various lead times for verification submittals to the CPM for conditions of certification are established to allow sufficient staff time to review and comment, and if necessary, allow the project owner to revise the submittal in a timely manner. This will ensure that project construction may proceed according to schedule.

MONTHLY COMPLIANCE REPORT

The first Monthly Compliance Report is due the month following the Energy Commission business meeting date on which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include

an initial list of dates for each of the events identified on the Key Events List. The Key Events List is found at the end of this section.

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and five copies of the Monthly Compliance Report within 10 working days after the end of each reporting month. Monthly Compliance Reports shall be clearly identified for the month being reported. The reports shall contain at a minimum:

1. a summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;
2. documents required by specific conditions to be submitted along with the Monthly Compliance Report. Each of these items must be identified in the transmittal letter, and should be submitted as attachments to the Monthly Compliance Report;
3. an initial, and thereafter updated, compliance matrix which shows the status of all conditions of certification (fully satisfied and/or closed conditions do not need to be included in the matrix after they have been reported as closed);
4. a list of conditions which have been satisfied during the reporting period, and a description or reference to the actions which satisfied the condition;
5. a list of any submittal deadlines that were missed accompanied by an explanation and an estimate of when the information will be provided;
6. a cumulative listing of any approved changes to conditions of certification;
7. a listing of any filings with, or permits issued by, other governmental agencies during the month;
8. a projection of project compliance activities scheduled during the next two months. The project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of certification;
9. a listing of the month's additions to the on-site compliance file; and
10. any requests to dispose of items that are required to be maintained in the project owner's compliance file.
11. a listing of complaints, notices of violation, official warnings, and citations received during the month; a description of the resolution of any complaints which have been resolved, and the status of any unresolved complaints.

ANNUAL COMPLIANCE REPORT

After the air district has issued a Permit to Operate, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports. The reports are for each year of commercial operation and are due to the CPM each year at a date agreed to by the CPM. Annual Compliance Reports shall be submitted over

the life of the project unless otherwise specified by the CPM. Each Annual Compliance Report shall identify the reporting period and shall contain the following:

an updated compliance matrix which shows the status of all conditions of certification (fully satisfied and/or closed conditions do not need to be included in the matrix after they have been reported as closed);

1. a summary of the current project operating status and an explanation of any significant changes to facility operations during the year;
2. documents required by specific conditions to be submitted along with the Annual Compliance Report. Each of these items must be identified in the transmittal letter, and should be submitted as attachments to the Annual Compliance Report;
3. a cumulative listing of all post-certification changes approved by the Energy Commission or cleared by the CPM;
4. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;
5. a listing of filings made to, or permits issued by, other governmental agencies during the year;
6. a projection of project compliance activities scheduled during the next year;
7. a listing of the year's additions to the on-site compliance file, and
8. an evaluation of the on-site contingency plan for unexpected facility closure, including any suggestions necessary for bringing the plan up to date [see General Conditions for Facility Closure addressed later in this section].
9. a listing of complaints, notices of violation, official warnings, and citations received during the year; a description of the resolution of any complaints which have been resolved, and the status of any unresolved complaints.

CONFIDENTIAL INFORMATION

Any information, which the project owner deems confidential shall be submitted to the Energy Commission's Docket with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information, which is determined to be confidential, shall be kept confidential as provided for in Title 20, California Code of Regulations, section 2501 et. seq.

DEPARTMENT OF FISH AND GAME FILING FEE

Pursuant to the provisions of Fish and Game Code Section 711.4, the project owner shall pay a filing fee in the amount of eight hundred and fifty dollars ($850). The payment instrument shall be provided to the Commission's Project Manager at the time of project certification and shall be made payable to the California Department of Fish and Game. The Commission's Project Manager will submit the payment to the Office of Planning and Research at the time of filing of the notice of decision pursuant to Public Resources Code Section 21080.5.

REPORTING OF COMPLAINTS, NOTICES, AND CITATIONS

Prior to the start of construction, the project owner must send a letter to property owners living within one mile of the project notifying them of a telephone number to contact project representatives with questions, complaints or concerns. If the telephone is not staffed 24 hours per day, it shall include automatic answering, with

date and time stamp recording. The telephone number shall be posted at the project site and easily visible to passersby during construction and operation.

In addition to the monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies of all complaint forms, notices of violation, notices of fines, official warnings, and citations, within 10 days of receipt, to the CPM. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the **NOISE** conditions of certification. All other complaints shall be recorded on the complaint form on the following page.

COMPLAINT REPORT/RESOLUTION FORM

PROJECT NAME:
AFC Number:

COMPLAINT LOG NUMBER _____
Complainant's name and address:

Phone number:

Date and time complaint received:

Indicate if by telephone or in writing (attach copy if written):
Date of first occurrence:

Description of complaint (including dates, frequency, and duration):

Findings of investigation by plant personnel:

Indicate if complaint relates to violation of a CEC requirement:
Date complainant contacted to discuss findings:

Description of corrective measures taken or other complaint resolution:

Indicate if complainant agrees with proposed resolution:
If not, explain:

Other relevant information:

If corrective action necessary, date completed:
Date first letter sent to complainant: _____(copy attached)
Date final letter sent to complainant: _____(copy attached)

This information is certified to be correct.
Plant Manager's Signature: _____ Date:

(Attach additional pages and supporting documentation, as required.)

FACILITY CLOSURE

At some point in the future, the project will cease operation and close down. At that time, it will be necessary to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts. Although the project setting for this project does not appear, at this time, to present any special or unusual closure problems, it is impossible to foresee what the situation will be in 30 years or more when the project ceases operation. Therefore, provisions must be made which provide the flexibility to deal with the specific situation and project setting which that exist at the time of closure. LORS pertaining to facility closure are identified in the sections dealing with each technical area. Facility closure will be consistent with LORS in effect at the time of closure.

There are at least three circumstances in which a facility closure can take place, planned closure, unexpected temporary closure and unexpected permanent closure**.**

PLANNED CLOSURE

A planned closure occurs at the end of a project's life, when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence.

UNEXPECTED TEMPORARY CLOSURE

An unplanned unexpected temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster, or an emergency.

UNEXPECTED PERMANENT CLOSURE

An unplanned unexpected permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unexpected closure where the owner remains accountable for implementing the on-site contingency plan. It can also include unexpected closure where the project owner is unable to implement the contingency plan, and the project is essentially abandoned.

GENERAL CONDITIONS FOR FACILITY CLOSURE

PLANNED CLOSURE

In order to ensure that a planned facility closure does not create adverse impacts, a closure process that provides for careful consideration of available options and applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of closure, will be undertaken. To ensure adequate review of a planned project closure, the project owner shall submit a proposed facility closure plan to the Energy Commission for review and approval at least twelve months prior to commencement of closure activities (or other period of time agreed to by the

CPM). The project owner shall file 120 copies (or other number of copies agreed upon by the CPM) of a proposed facility closure plan with the Energy Commission. The plan shall:

1. identify and discuss any impacts and mitigation to address significant adverse impacts associated with proposed closure activities and to address facilities, equipment, or other project related remnants that will remain at the site.

2. identify a schedule of activities for closure of the power plant site, transmission line corridor, and all other appurtenant facilities constructed as part of the project;

3. identify any facilities or equipment intended to remain on site after closure, the reason, and any future use; and

4. address conformance of the plan with all applicable laws, ordinances, regulations, standards, local/regional plans in existence at the time of facility closure, and applicable conditions of certification.

Also, in the event that there are significant issues associated with the proposed facility closure plan's approval, or the desires of local officials or interested parties are inconsistent with the plan, the CPM shall hold one or more workshops and/or the Commission may hold public hearings as part of its approval procedure.

In addition, prior to submittal of the proposed facility closure plan, a meeting shall be held between the project owner and the Commission CPM for the purpose of discussing the specific contents of the plan.

As necessary, prior to, or during the closure plan process, the project owner shall take appropriate steps to eliminate any immediate threats to public health and safety and the environment, but shall not commence any other closure activities, until Commission approval of the facility closure plan is obtained.

UNEXPECTED TEMPORARY CLOSURE

In order to ensure that public health and safety and the environment are protected in the event of an unexpected temporary facility closure, it is essential to have an on-site contingency plan in place. The on-site contingency plan will help to ensure that all necessary steps to mitigate public health and safety, and environmental impacts, are taken in a timely manner.

The project owner shall submit an on-site contingency plan for CPM review and approval. The plan shall be submitted no less that 60 days (or other time agreed to by the CPM) prior to commencement of commercial operation. The approved plan must be in place prior to commercial operation of the facility and shall be kept at the site at all times.

The project owner, in consultation with the CPM, will update the on-site contingency plan as necessary. The CPM may require revisions to the on-site contingency plan

over the life of the project. In the annual compliance reports submitted to the Energy Commission, the project owner will review the on-site contingency plan, and recommend changes to bring the plan up to date. Any changes to the plan must be approved by the CPM.

The on-site contingency plan shall provide for taking immediate steps to secure the facility from trespassing or encroachment. In addition, for closures of more than 90 days (unless other arrangements are agreed to by the CPM), the plan shall provide for removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment and the safe shutdown of all equipment (also see specific conditions of certification for the technical areas of Hazardous Materials Management and Waste Management).

In addition, consistent with requirements under unexpected permanent closure addressed below, the nature and extent of insurance coverage, and major equipment warranties must also be included in the on-site contingency plan. In addition, the status of the insurance coverage and major equipment warranties must be updated in the annual compliance reports.

In the event of an unexpected temporary closure, the project owner shall notify the PM, as well as other responsible agencies, by telephone, fax, e-mail, etc., within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the circumstances and expected duration of the closure.

If the CPM determines that a temporary closure is likely to be permanent, or for a duration of more than twelve months, a closure plan consistent with that for a planned closure shall be developed and submitted to the CPM within 90 days of the CPM's determination (or other period of time agreed to by the CPM).

UNEXPECTED PERMANENT CLOSURE

The on-site contingency plan required for unexpected temporary closure shall also cover unexpected permanent facility closure. All of the requirements specified for unexpected temporary closure shall also apply to unexpected permanent closure.

In addition, the on-site contingency plan shall address how the project owner will ensure that all required closure steps will be successfully undertaken in the unlikely event of abandonment.

In the event of an unexpected permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, e-mail, etc., within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the status of all closure activities.

A closure plan consistent with that for a planned closure shall be developed and submitted to the CPM within 90 days of the permanent closure (or other period of time agreed to by the CPM).

DELEGATE AGENCIES

To the extent permitted by law, the Energy Commission may delegate authority for compliance verification and enforcement to various state and local agencies that have expertise in subject areas where specific requirements have been established as a condition of certification. If a delegate agency does not participate in this program, the Energy Commission staff will establish an alternative method of verification and enforcement. Energy Commission staff reserves the right to independently verify compliance.

In performing construction and operation monitoring of the project, the Energy Commission staff acts as, and has the authority of, the Chief Building Official (CBO). The Commission staff retains this authority when delegating to a local CBO. Delegation of authority for compliance verification includes the authority for enforcing codes, the responsibility for code interpretation where required, and the authority to use discretion, as necessary, in implementing the various codes and standards.

Whenever an agency's responsibility for a particular area is transferred by law to another entity, all references to the original agency shall be interpreted to apply to the successor entity.

ENFORCEMENT

The Energy Commission's legal authority to enforce the terms and conditions of its Decision is specified in Public Resources Code sections 25534 and 25900. The Energy Commission may amend or revoke the certification for any facility, and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Commission Decision. The specific action and amount of any fines the Commission may impose would take into account the specific circumstances of the incident(s). This would include such factors as the previous compliance history, whether the cause of the incident involves willful disregard of LORS, inadvertence, unforeseeable events, and other factors the Commission may consider.

Moreover, to ensure compliance with the terms and conditions of certification and applicable laws, ordinances, regulations, and standards, delegate agencies are authorized to take any action allowed by law in accordance with their statutory authority, regulations, and administrative procedures.

NONCOMPLIANCE COMPLAINT PROCEDURES

Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint will be subject to review by the Energy Commission pursuant to Title 20, California Code of Regulations, section 1230 et. seq., but in many instances the noncompliance can be resolved by using the informal dispute resolution process. Both the informal and formal complaint procedure, as described in current State law and regulations, are described below. They shall be followed unless superseded by current law or regulations.

INFORMAL DISPUTE RESOLUTION PROCEDURE

The following procedure is designed to informally resolve disputes concerning interpretation of compliance with the requirements of this compliance plan. The project owner, the Energy Commission, or any other party, including members of the public, may initiate this procedure for resolving a dispute. Disputes may pertain to actions or decisions made by any party including the Energy Commission's delegate agents.

This procedure may precede the more formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1230 et. seq., but is not intended to be a substitute for, or prerequisite to it. This informal procedure may not be used to change the terms and conditions of certification as approved by the Energy Commission, although the agreed upon resolution may result in a project owner, or in some cases the Energy Commission staff, proposing an amendment.

The procedure encourages all parties involved in a dispute to discuss the matter and to reach an agreement resolving the dispute. If a dispute cannot be resolved, then the matter must be referred to the full Energy Commission for consideration via the complaint and investigation process. The procedure for informal dispute resolution is as follows:

REQUEST FOR INFORMAL INVESTIGATION

Any individual, group, or agency may request the Energy Commission to conduct an informal investigation of alleged noncompliance with the Energy Commission's terms and conditions of certification. All requests for informal investigations shall be made to the designated CPM.

Upon receipt of a request for informal investigation, the CPM shall promptly notify the project owner of the allegation by telephone and letter. All known and relevant information of the alleged noncompliance shall be provided to the project owner and to the Energy Commission staff. The CPM will evaluate the request and the information to determine if further investigation is necessary. If the CPM finds that further investigation is necessary, the project owner will be asked to promptly investigate the matter and within seven (7) working days of the CPM's request, provide a written report of the results of the investigation, including corrective measures proposed or undertaken, to the CPM. Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request the project owner to provide an initial report, within forty-eight (48) hours, followed by a written report filed within seven (7) days.

REQUEST FOR INFORMAL MEETING

In the event that either the party requesting an investigation or the Energy Commission staff is not satisfied with the project owner's report, investigation of the event, or corrective measures undertaken, either party may submit a written request to the CPM for a meeting with the project owner. Such request shall be made within fourteen (14) days of the project owner's filing of its written report. Upon receipt of such a request, the CPM shall:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;

2. secure the attendance of appropriate Energy Commission staff and staff of any other agency with expertise in the subject area of concern as necessary;

3. conduct such meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner; and,

4. after the conclusion of such a meeting, promptly prepare and distribute copies to all in attendance and to the project file, a summary memorandum which fairly and accurately identifies the positions of all parties and any conclusions reached. If an agreement has not been reached, the CPM shall inform the complainant of the formal complaint process and requirements provided under Title 20, California Code of Regulations, section 1230 et. seq.

FORMAL DISPUTE RESOLUTION PROCEDURE-COMPLAINTS AND INVESTIGATIONS

If either the project owner, Energy Commission staff, or the party requesting an investigation is not satisfied with the results of the informal dispute resolution process, such party may file a complaint or a request for an investigation with the Energy Commission's General Counsel. Disputes may pertain to actions or decisions made by any party including the Energy Commission's delegate agents. Requirements for complaint filings and a description of how complaints are processed are in Title 20, California Code of Regulations, section 1230 et. seq.

The Chairman, upon receipt of a written request stating the basis of the dispute, may grant a hearing on the matter, consistent with the requirements of noticing provisions. The Commission shall have the authority to consider all relevant facts involved and make any appropriate orders consistent with its jurisdiction (Title 20, California Code of Regulations, sections 1232 - 1236).

POST CERTIFICATION CHANGES TO THE COMMISSION DECISION: AMENDMENTS, INSIGNIFICANT PROJECT CHANGES AND VERIFICATION CHANGES

The project owner must petition the Energy Commission, pursuant to Title 20, California Code of Regulations, section 1769, to 1) delete or change a condition of certification; 2) modify the project design or operational requirements; and 3) transfer ownership or operational control of the facility.

A petition is required for **amendments** and for **insignificant project changes**. For verification changes, a letter from the project owner is sufficient. In all cases, the petition or letter requesting a change should be submitted to the Commission's Docket in accordance with Title 20, California Code of Regulations, section 1209.

The criteria that determine which type of change process applies are explained below.

AMENDMENT

A proposed change will be processed as an amendment if it involves a change to the requirement or protocol (and in some cases the verification) portion of a condition of certification, an ownership or operator change, or a potential significant environmental impact.

INSIGNIFICANT PROJECT CHANGE

The proposed change will be processed as an insignificant project change if it does not require changing the language in a condition of certification, have a potential for significant environmental impact, and cause the project to violate laws, ordinances, regulations or standards.

VERIFICATION CHANGE

The proposed change will be processed as a verification change if it involves only the language in the verification portion of the condition of certification. This procedure can only be used to change verification requirements that are of an administrative nature, usually the timing of a required action. In the unlikely event that verification language contains technical requirements, the proposed change must be processed as an amendment.

KEY EVENT LIST

PROJECT _____ DATE ENTERED

DOCKET # _____ PROJECT MANAGER

EVENT DESCRIPTION	***DATE ASSIGNED***
Date of Certification	
Start of Construction	
Completion of Construction	
Start of Operation (1st Turbine Roll)	
Start of Rainy Season	
End of Rainy Season	
Start T/L Construction	
Complete T/L Construction	
Start Fuel Supply Line Construction	
Complete Fuel Supply Line Construction	
Start Rough Grading	
Complete Rough Grading	
Start of Water Supply Line Construction	
Completion of Water Supply Line Construction	
Start Implementation of Erosion Control Measures	
Complete Implementation of Erosion Control Measures	

CULTURAL RESOURCES

Testimony of Mary Barger and Nick Chevance

INTRODUCTION

This analysis discusses cultural resources, which can be defined as the remains of human "…behavior, products of its behavior, and systems of thought that affect its behavior" (King, Hickman and Berg 1977). By that definition, cultural resources include not only material items, such as artifacts, structures or other physical evidence of human activities, but also items, places or things that are or were important to a group of persons now or in the past. Some cultural resources may be found on the ground surface or may be found at varying depths beneath the ground. Others may be features of the terrain that play an important part of a system of belief. Predictions on the type and location of cultural materials in any area are dependent upon what is known about the cultures that occupied the area; they may be tightly grouped or widely dispersed.

Cultural resources are important to our understanding of our history and heritage. Critical to the understanding and interpreting cultural resources are their spatial relationship and the context in which they are found. These relationships and context provide information that can be used to piece together the sequence of human occupation of an area, and begin to interpret the behavior that went into that occupation.

The primary concern in cultural resource analysis for this project is to ensure that all potential impacts are identified and that conditions are set forth that ensures no significant adverse impacts will occur. There are three types of cultural resources that will be addressed in this analysis: prehistoric resources, historic resources, and ethnographic resources.

Prehistoric archaeological resources are materials associated with human occupation and use of an area prior to the existence of written materials. These can be sites, structures, artifacts, rock art, trails, and other traces of Native American human behavior before the entrance of Euro-Americans and their material culture in a particular area.

Historic resources are materials associated with human occupation and use of an area following the introduction of Euro-American materials and/or settlement and the beginning of a written historical record. These materials include archaeological sites, structures, trails, artifacts, documents, or other evidence of human activity of both Native American and Euro-American cultures.

Ethnographic resources are those materials that relate to a particular ethnic or cultural group, such as Native Americans, African, European, or Asian immigrants. They may include traditional resource collecting areas, ceremonial sites, topographic features, shrines, or other physical remains of a particular group's belief system.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

The following laws, ordinances, regulations, standards, and policies apply to the protection of cultural resources in California. Certain provisions of these laws may apply to projects licensed by the Energy Commission and reviewed by Western Area Power Administration (Western).

FEDERAL

- Antiquities Act of 1906 (Title 16, United States Code, Sections 431-433). This act authorized the Secretaries of Interior, Agriculture and Defense to control the excavation and removal of historic and prehistoric materials and objects of antiquity on federal lands and provided for criminal sanctions for violations of the act.
- National Historic Preservation Act of 1966, as amended (Title 16, United States Code, Sections 470-470w-6). This act expresses the general policy of the federal government that supports and encourages the preservation of prehistoric and historic resources for present and future generations. It established the National Register of Historic Places, established the President's Advisory Council on Historic Preservation, established procedures for actions taken by federal agencies that may affect historic resources, and established a fund for preservation. Pertinent to this project, Section 106 of this act requires federal agencies to take into account the effects of their undertakings on historic properties through consultations beginning at the early stages of project planning.
- 36 Code of Federal Regulations Part 800. These procedures of the Advisory Council on Historic Preservation, most commonly referred to as the Section 106 process, established a process to ensure that federal agencies have taken into account the impacts of their undertakings on significant cultural resources. An agency is strongly encouraged to consult with various parties, including the State, private parties, and Indian Tribes as they determine the presence or absence of cultural resources, the eligibility of resources for nomination to the National Register of Historic Places, and the effect the federal action may have on those resources. Very similar criteria and procedures are used by the State of California in identifying cultural resources eligible for listing in the California Register of Historical Resources.
- National Environmental Policy Act of 1969 (NEPA; Title 42, United States Code, Sections 4321-4347). This act requires federal agencies to consider impacts of their projects on the human environment, whether the action is funded or permitted by the agency. Part of the human environment includes the cultural environment.
- 10 Code of Federal Regulations Part 1021. These are the procedures of the Department of Energy that implement the provisions of the National Environmental Policy Act.

- Executive Order 11593, “Protection of the Cultural Environment,” May 13, 1971 (3 Code of Federal Regulations Part 154) provides for federal leadership in the preservation, restoration and maintenance of the cultural environment.
- Federal Register, Volume 48, No. 190, pp. 44716-44740 (September 29, 1983), Archeology and Historic Preservation: Secretary of the Interior’s Standards and Guidelines: These Standards and Guidelines provide technical advice on the proper conduct and methodologies of professionals in historic preservation activities. The California Historic Preservation Office refers to these standards in its requirements for selection of qualified personnel and in the mitigation of potential impacts to cultural resources on public lands in California.
- American Indian Religious Freedom Act (Title 42, United States Code, Section 1996). This act established a federal policy of respect for and protection of Native American religious practices.
- Native American Graves Protection and Repatriation Act of 1990 (Title 25, United States Code, Section 3001, et seq.). This act provided for the repatriation of certain items from the federal government and certain museums to the native groups to which they once belonged. The act also define “cultural items”, “sacred objects,” and “objects of cultural patrimony”; and it establishes a means for determining ownership of these items. However, the provisions for repatriation only apply to items found on federal lands or Indian lands.
- Executive Order 13007 (Federal Register Volume 61, No. 104, pp. 26771-26772). This order requires federal agencies with land management responsibilities to allow access and use of Indian sacred sites on public lands, and avoid adversely affecting these sites.
- Executive Order 13084 (Federal Register Volume 63, No. 96, pp. 27655-27657). This order reaffirms the government-to-government relationship between the federal government and recognized Indian tribes, and requires agencies to establish procedures for consultation with tribes.

STATE

- Public Resources Code, Section 5020.1 defines several terms, including the following:

  (j) “historical resource” includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.

  (q) “substantial adverse change” means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired.
- Public Resources Code, Section 5024.1 establishes a California Register of Historic Places; sets forth criteria to determine significance; defines eligible properties; and lists nomination procedures.

- Public Resources Code, Section 5097.5 states that any unauthorized removal or destruction of archaeological or paleontological resources on sites located on public land is a misdemeanor. As used in this section, “public lands” means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.
- Public Resources Code, Section 5097.98 defines procedures for notification of discovery of Native American artifacts or remains and for the disposition of such materials.
- Public Resources Code, Section 5097.99 prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn and sets penalties for these actions.
- Public Resources Code, Section 5097.991 states that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated.
- Public Resources code, Section 21000, et seq, California Environmental Quality Act (CEQA). This act requires the analysis of potential environmental impacts of proposed projects and requires application of feasible mitigation measures.
- Public Resources Code, Section 21083.2 states that the lead agency determines whether a project may have a significant effect on “unique” archaeological resources; if so, an EIR shall address these resources. If a potential for damage to unique archaeological resources can be demonstrated, the lead agency may require reasonable steps to preserve the resource in place. Otherwise, mitigation measures shall be required as prescribed in this section. The section discusses excavation as mitigation; limits the applicant’s cost of mitigation; sets time frames for excavation; defines “unique and non-unique archaeological resources”; and provides for mitigation of unexpected resources.
- Public Resources Code, Section 21084.1 indicates that a project may have a significant effect on the environment if it causes a substantial adverse change in the significance of a historic resource; the section further defines a “historical resource” and describes what constitutes a “significant” historical resource.
- CEQA guidelines, Title 14, California Code of Regulations, Section 15126.4 “Consideration and Discussion of Mitigation Measures Proposed to Minimize Significant Effects” sub-section (b) discusses impacts of maintenance, repair, stabilization, restoration, conservation, or reconstruction of a historical resource. Subsection (b) also discusses mitigation through avoidance of damaging effects on any historical resource of an archaeological nature, preferably by preservation in place, or by data recovery through excavation if avoidance or preservation in place is not feasible. Data recovery must be conducted in accordance with an adopted data recovery plan.
- CEQA Guidelines, Title 14, California Code of Regulation, Section 15064.5 “Determining the Significance of Impacts to Archaeological and Historical Resources”. Subsection (a) defines the term “historical resources.” Subsection (b) explains when a project may be deemed to have a significant effect on

historical resources and defines terms used in describing those situations. Subsection (c) describes CEQA's applicability to archaeological sites and provides a bridge between the application of the terms "historical" resources and a "unique" archaeological resource."

- CEQA Guidelines, Title 14 California Code of Regulations, Section 15064.7 "Thresholds of Significance." This section encourages agencies to develop thresholds of significance to be used in determining potential impacts and defines the term "cumulatively significant."
- CEQA Guidelines, Appendix "G" Issue V: Cultural Resources. Lists four questions to be answered in determining the potential for a project to impact archaeological, historical, and paleontological resources.
- California Penal Code, Section 622.5. Anyone who willfully damages an object or thing of archaeological or historical interest can be found guilty of a misdemeanor.
- California Health and Safety Code, Section 7050.5. If human remains are discovered during construction, the project owner is required to contact the county coroner.
- Public Resources Code, Section 5097.98. If the county coroner determines that the remains are Native American, the coroner is required to contact the Native American Heritage Commission, which is then required to determine the "Most Likely Descendant" to inspect the burial and to make recommendations for treatment or disposition of the remains and any associated burial items.

LOCAL

The General Plans of Riverside County and the City of Blythe are addressed below.

RIVERSIDE COUNTY

- Riverside County's General Plan identifies two objectives for Historic and Prehistoric Resources. The first objective requires that significant historic and prehistoric resources are identified and documented, and that there are provisions for the preservation of representative and worthy examples. The second objective recognizes the value of these resources and requires that land uses be assessed for impacts to these resources.
- In addition, Riverside County's Ordinance 578, which was intended to create and protect historic districts within the county, does address the desire on the part of the County to preserve the County's heritage. The Ordinance does not specifically address archeological resources or historic resources outside designated districts.

CITY OF BLYTHE

The General Plan of the City of Blythe establishes four goals for cultural resources (BEP 1999a, AFC Table 7.1-2):

1. To protect and preserve important and unique resources of the City and region, thereby maintaining the City residents and Palo Verde Valley's cultural heritage.

2. Review and evaluate proposals for development to determine the potential for impacts to known and suspected cultural resources of importance, in order to determine mitigation where necessary.

3. Treat archaeological resource information as confidential in order to prevent vandalism and other threats to those resources.

4. Requires a professional archaeologist be employed to examine and document any resources discovered during construction, and to develop appropriate mitigation measures.

ENVIRONMENTAL SETTING

REGIONAL DESCRIPTION

The region can be seen as broad flat desert valleys punctuated by north-south trending, highly eroded mountain ranges. This region is a transition between the high elevation Mojave Desert and the lower elevation Colorado Desert. The Palo Verde Mesa is a broad and flat alluvial fan with the Palo Verde Mountains to the west and the Colorado River to the east. The mesa and valley are on very gently to moderately sloping alluvial fans and nearly level floodplain. The elevation of the region ranges about 250 to 800 feet (BEP 1999a, AFC pages 7.5-1, 2).

The mountains within the region are rugged and rocky, and rise sharply from the adjacent basins. Desert scrub vegetation is dominant, and typically very sparse. A few riparian tree species occur along the drainages. These drainages form steep canyons dissecting the ranges. Mountain ranges in the region are the McCoy Mountains to the west, the Big Maria Mountains to the north, and the Dome Rock Mountains to the east of the project site. Palo Verde Mesa is typical desert landscape. It is broad and relatively flat terrain and sparsely vegetated.

The climate of the region can be described as arid, and water is a critical resource. Average rainfall in the area is very uneven but most rain falls in the winter and summer months. Winter storms provide light showers that can last for days while summer showers are highly localized and can be violent. The mean rainfall for Ehrenberg, Arizona, which is approximately 9 miles east of the proposed BEP site, is 3.5 inches and on average 180 days of the year are above 90 degrees (McGuire and Schiffer 1982). The mean annual temperature in Ehrenberg is 73 degrees (Pigniolo, Baksh and Dietler 1999, page 6).

Regional natural vegetation include creosote bush scrub and alkali sink communities. The Palo Verde Mesa is dominated by creosote bush (Larrea tridentata), with burro bush (Ambrosia dumosa) and seasonal grasses. Much of the Palo Verde Valley has been altered by agriculture, but once would have been considered an alkali sink. Other important resources in the region would include

deer, fox, skunk, bobcats, coyotes, rabbits, and various rodent, reptile, and bird species. Small game, dominated by rabbits and reptiles, would have been relatively abundant. Riparian resources along the Colorado River would include bird and fish species (Pigniolo, Baksh and Dietler 1999, page 7).

The Colorado River is the dominant water resource in the region. The Colorado River typically flooded between May and July. The river carried large loads of silt and at flood stage it often overflowed it banks depositing massive amounts of silt along its lower course (Pigniolo, Baksh and Dietler 1999, page 6).

PROJECT VICINITY DESCRIPTION

The project as proposed would be located on the Palo Verde Mesa adjacent to the Blythe Airport, approximately five miles west of the City of Blythe. The project site consists of relatively flat terrain that is sparsely vegetated with the desert scrub. The project consists of a 76-acre site that will contain the proposed power plant and associated facilities. The project site is currently private land bordered on the east by a citrus grove, and on the south by Hobsonway, a county road. Presently, several electric transmission lines, consisting of wood pole H-frame structures, cross the property. In addition, the Blythe Substation, an existing facility belonging to Western, is located about 2,000 feet east of the project site (BEP 1999a, AFC page 7.5-2).

Refer to the **PROJECT DESCRIPTION** section of this document for additional information and maps of the region and the project area.

PREHISTORIC SETTING

PALEO-INDIAN PERIOD

The first well-dated Native American occupation of the Colorado River Valley is the San Dieguito complex, dating between 7,000 and 12,000 years before present (BP). It is assumed from the material culture remains that these people employed a hunter-gatherer adaptation based on small mobile bands exploiting game and collecting seasonally available wild plants. Settlement patterns indicate sites typically located on mesas and terraces overlooking larger washes and around the edges of lakes. Early San Dieguito tools include bifacial and unifacially reduced choppers and chopping tools, concave-edged scrapers, bilateral-notched pebbles, and scraper planes. Later, finely made blades, smaller bifacial points, and a variety of scraper and chopper types were introduced. Finally, fine pressure flaking techniques, including pressure-flaked blades, leaf-shaped projectile points, scraper planes, plano-convex scrapers, crescenties (amulets), and elongated bifacial knives become part of the inventory (Pigniolo, Baksh and Dietler 1999, pages 7-8).

ARCHAIC PERIOD

Few Archaic period sites have been dated in the desert on either side of the Colorado River but sites from this time period date between about 7,000 and 1,000 years BP. The economy can be seen as exploitation of a variety of food resources, including large and small animals. Generally, the Archaic period in the Western

United States saw a diversification of artifact assemblages, including the introduction of the widespread use of ground stone technology to exploit seasonally available seeds and nuts. However, evidence is lacking in the Lower Colorado River area (Pigniolo, Baksh and Dietler 1999, pages 9-10).

LATE PREHISTORIC PERIOD

The Late Prehistoric period in the lower Colorado River Region has been referred to as "Patayan" first recognized with the introduction of pottery approximately 1,200 years ago. The presence of Desert Side-notched and Cottonwood type projectile points at about 1,500 years BP may indicate an early pre-ceramic phase. The introduction of floodplain agriculture, the bow and arrow, and a change in burial practices characterizes this period. Population growth, along with more sedentary villages, resulted from a heavy reliance on grown foods rather than wild foods. An extensive trail system across the desert was established that linked the Lower Colorado River peoples with related groups in the greater Southwest, the Gulf of California and the Pacific Ocean. Trails are often associated with ceramic "pot-drops," shrines, and other evidence. Many of the Colorado Desert pictographs, petroglyphs, and bedrock grinding surfaces are also associated with the Patayan pattern. Away from the Colorado River, higher elevations were used for desert resource collection, particularly during periods of flooding. Wild foods are estimated to have accounted for 40 to 70 percent of the diet (Pigniolo, Baksh and Dietler 1999, pages 10-12).

ETHNOGRAPHIC BACKGROUND

Several ethnohistoric and contemporary Yuman and Numic speaking peoples are known for the lower Colorado River region. Yuman groups included the Mojave, Quechan, Hualapai, Havasupai, Yavapai, Kamia, Maricopa, Halchidhoma, Cocopa, and Paipai. Numic groups include the Chemehuevi and the closely-related Southern Paiute. Warfare and migration characterized this period and population boundaries shifted regularly. Before about 1700, the exact group occupying the project area is unknown but it is likely that it was the Maricopa. Sometime after 1700, the Halchidhoma settled the area, living tenuously between the powerful and militant Quechan to the south and the Mojave to the north.

Halchidhoma and Maricopa may be regarded as closely related; two groups interacted extensively and spoke similar dialects. These two groups were also similar in many ways to the Quechan and the Mojave. The Quechan lived in dispersed rancherias along the Colorado River north and south of the confluence with the Gila River. Like the Mojave, large permanent semi-subterranean houses were occupied in the winter, and ramadas or brush shades were, used in the summer. Under constant attack by the Quechan and Mojave, the Halchidhoma fled the area for northern Mexico and then the Gila River around 1828. The aggressive Mojave followed them into their former territory and occupied it briefly. The "core" area of the Mojave was the Mojave Valley but did extend north to Old Cottonwood Island, about 15 miles north of Davis Dam, and as far south as the Colorado River Indian Reservation when they were first encountered by the Juan de Oñate expedition in 1604. Occasionally and intermittently they controlled areas as far

south as Palo Verde. The Mojave later invited another of their confederates, the Numic speaking Chemehuevi, to settle the area.

The Chemehuevi (and Southern Paiute) were organized into small, mobile groups whose settlement patterns were influenced heavily by seasonal availability of plant resources. Chemehuevi groups moved throughout the desert to exploit plant resources as they became available. They fragmented into nuclear families when food was scant or dispersed but also came together on occasion for game drives. They resided in the Chemehuevi Valley and the Colorado River Valley by 1859. When Chemehuevi groups gained access to land on the Colorado River, they quickly adopted floodwater farming. This group dominated until displaced by Euro-American settlement.

The Halchidhoma, Maricopa, Mojave, Quechan, Chemehuevi, and other groups of the lower Colorado River region shared traits including patrilateral or bilateral descent, an emphasis on personal dreams, cremation of the dead, and floodwater agriculture. They typically lived in settlements widely scattered over the floodplain and adjacent low terraces of the Colorado River. Adjacent higher terraces were used for hunting and gathering wild desert foods. Annual flooding deposited layers of rich silt and provided for the growing of crops such as maize, tepary beans, pumpkins, gourds, and sunflowers. Later, Euro-American introduced wheat, barley, muskmelons, and cowpeas. People relied to some extent on stored supplies of maize and beans, as well as wild foods of the desert. Important wild foods included mesquite, screwbean, tule roots and sprouts, chia, yucca fruits, and agave. Rabbits, squirrels, chipmunks, gophers, woodrats, quail, duck, mudhen, and pigeon were hunted for meat, as well as large game such as deer and mountain sheep. Fishing was also common in the late summer when the river receded.

In addition to local resources, people relied to some degree on regional exchange of goods. The Quechan traded pumpkins, beans, melons, gourds, and maize and received rabbitskin blankets, baskets, buckskins, mescal and finished leather goods from the Yavapai, woven blankets from the Hopi, acorns from the Kumeyaay and Cahuilla, eagle feathers from the Mojave, and tobacco from the Kamia or eastern Kumeyaay.

Yuman contact with Europeans first occurred in 1540 when Hernando de Alacron sailed up the Colorado River to near present-day Yuma, Arizona. However, missions were not established in the region until the late eighteenth century. Once European settlement occurred, conflicts increased in scale and frequency (Pigniolo, Baksh and Dietler 1999, pages 12-19).

HISTORIC SETTING

Europeans first entered what is now southeastern California in 1540 when Hernando de Alacron sailed up the Colorado River from the Gulf of California to the vicinity of present day Yuma, Arizona. They met and interacted with the Yuman speaking Native Americans who had occupied the area for some time. Contact between these groups continued over the next two centuries, but the Spanish largely focused their colonizing efforts on areas to the south and east. It was not

until missions were established in the region in the late eighteenth century that Yuman cultures were directly affected by Spanish incursion. Conflicts increased in scale and frequency, but the Yumans resisted Spanish domination (BEP 2000l, data response #27)

Anglo-American settlers entered the region following the Mexican War and the Gold Rush in the late 1840's. Fort Yuma was established in 1852 and six years later, the U.S. Army defeated the combined forces of the Mojave and Quechan. Following the pacification of the region, miners, farmers, and cattle ranchers arrived in increasing numbers (BEP 2000l, data response #27).

In 1874, San Francisco millionaire Thomas H. Blythe applied for land rights in the Palo Verde Valley under California's Swamp and Overflow Act of 1868, which gave land that was perennially swamp or subject to flooding to anyone who would fill, drain, or put the land to good use. Blythe later obtained 35,971 additional acres under the Federal Desert Land Act in 1877, becoming the dominant private land owner in the valley. Blythe applied for 190,000 miner's inches of Colorado River Water on July 17,1877, increasing the amount to 385,000 miner's inches by February 15,1883. In 1879, civil engineer Oliver P. Callaway, partner of Blythe, began digging canals and set up an experimental farm, known as the Colorado Colony. This marked the beginnings of irrigated agriculture in the Palo Verde Valley. By 1904, the town of Palo Verde was a small hamlet, and a store and post office were established. Steamboats along the Colorado River were the primary means of transportation to and from Blythe until 1908, when the Laguna Dam was built above Yuma. Stages handled the need to move people and goods thereafter. However, despite growth, flooding of the Colorado River continued to impede agricultural efforts. It was not until the mid-1930's and the construction of Hoover Dam that flooding was finally controlled (BEP 2000l, data response #27).

Transportation routes were continually improved. The railroad had never entered the valley so overland transportation was dominated by roads and trails. Finally, a railroad spur was built to Blythe Junction, and it was extended to Blythe itself in 1915. Most early roads followed the railroad tracks or old wagon roads. The federal highway, now Interstate 10, was paved from Indio to Blythe in 1936.

During the Depression of the 1930s, most of the immigrants looked for work in agriculture, while some worked in mining. Several large water projects, such as the All-American Canal, were undertaken with the help of the large pool of inexpensive labor. At the start of World War II, the Blythe Municipal Airport was taken over by the U.S. Army and designated Morton Air Academy; 650 buildings and 8,000 foot long runways were constructed. The airport became the home to the 390th Bomb Group, consisting of four squadrons of B-17 Flying Fortresses. The Air Academy served about 8,000 men and several hundred WACs. Wives and families of servicemen swelled the population of Blythe to over 4,000, many living in box cars, sheds, spare rooms, and empty buildings.

During the same period, the U.S. Army Ground Forces established the Desert Training Center (DTC) and was renamed the California-Arizona Maneuver Area (C-AMA) in 1943. The DTC/C-AMA was an armored training facility for the preparation

of troops for the invasion of North Africa. The facility covered over 18,000 square miles and served in excess of one million troops. The Blythe Army Air Base, in the middle of DTC/C-AMA, was likely used for transportation and supply purposes. Training at the DTC/C-AMA continued until 1944, and the Morton Air Academy ceased military training operations in the same year. The airfield returned to its former role as municipal airport, with much improved runway and support buildings. The facility has been used by Palo Verde Valley High School, and later Palo Verde College. The barracks were used as dormitories by the male college students until the college found new facilities (BEP 2000l, data response #27).

RESOURCES INVENTORY

LITERATURE AND RECORDS SEARCH

Tierra Environmental Services searched the existing records covering the project area. Records at the Eastern Information Center (EIC) located at the University of California, Riverside, the Arizona State Museum at the University of Arizona (ASM), and the Department of Anthropology of Arizona State University were consulted (ASU). The EIC records search indicated that three cultural resources inventories have been conducted within portions of the project area, but no sites had been recorded. The EIC records indicated three other surveys and one cultural resource site were known within one mile of the project. The ASM records search identified four surveys and nine sites within one mile of the Arizona portion of the project (Pigniolo, Baksh and Dietler 1999, pages 20-22).

The single prehistoric site in the vicinity of the California portion of the project area was recorded as a "…light, dispersed scatter of potsherds and lithic flake materials…" within a 75 meter square area. The lithic materials included one scraper and quartzite, chert and chalcedony flakes. The sherds included one rim, represented at least three vessels, and appeared to be the Salton Brown variety of Tizon Brown Ware (Pigniolo, Baksh and Dietler 1999, page 20).

The nine sites in the vicinity of the Arizona portion of the project are located on the terraces and washes outside the Colorado River flood plain. Sites include ceramics scatters, quarries, what appears to be a habitation site, rock features, and a historic refuse site. None are near the project location (Pigniolo, Baksh and Dietler 1999, page 22).

FIELD SURVEYS

An intensive-level pedestrian inventory was conducted of the entire project, including natural gas pipelines, by Tierra Environmental Services on September 15-17, 1999, with follow-up field surveys on September 23, 1999, and again on June 27, 2000. The additional field surveys addressed changes in the proposed natural gas pipeline alignments. The intensive survey used parallel transects with 10-15 meter (30-45 feet) intervals throughout the project site and along the proposed pipeline routes (Pigniolo, Baksh and Dietler 1999, page 23).

The survey of the 76-acre plant site revealed four historic sites and three isolated prehistoric artifacts. An additional historic site was recorded outside the property boundaries. The four historic sites were small refuse scatters or dumps, dating before 1950. The site outside the property boundaries is a large historic refuse deposit associated with the World War II military activity at the Blythe Airport. The three isolated prehistoric artifacts found on the plant site consist of a single flake, a scraper tool, and core of chert. The inventory of the proposed pipeline routes recorded a single mano (grinding stone) in the backdirt berm formed from the cleaning of an irrigation ditch (Pigniolo, Baksh and Dietler 1999, pages 24-31). The additional inventory of pipeline route changes recorded a single pottery sherd along the edge of a canal, and a modern scatter of trash (BEP 2000s, Appendix C).

NATIVE AMERICAN CONTACTS

In September of 1999, Tierra Environmental Services initiated contact with Indian Tribes who may have interests in the project area. Letters to Tribal Chairmen and tribal cultural leaders were sent to the Colorado River Indian Tribes in Parker, Arizona; the Fort Yuma Quechan Tribe in Yuma, Arizona; the Fort Mojave Indian Tribe in Needles, California and Mojave Valley, Arizona; the Hualapai Tribe in Peach Springs, Arizona; the Yavapai-Prescott Tribe in Prescott, Arizona; the Havasupai Tribe in Supai, Arizona; the Chemehuevi Tribe in Chemehuevi Valley, California; the Salt River Pima-Maricopa Tribe in Scottsdale, Arizona; the Tohono O'dham Nation in Sells, Arizona; and the Cocopah Tribe in Somerton, Arizona. A reply was received from the AhaMaKav Cultural Society of the Fort Mojave Indian Tribe indicating that this area was of interest to the Fort Mojave, but that no specific resources were known to be present in this area.

Western mailed informational letters in May of 2000 to the above mentioned groups but also included letters to the Torres-Martinez Desert Cahuilla Indians in Thermal, California, and the Hopi Tribe in Kykotsmovi, Arizona. The Council staff had been contacted by a representative of the Cahuilla Indians, and Western has an informal agreement to contact the Hopi Tribe concerning any activity in its Desert Southwest Region. The Hopi Tribe responded to the information letter in June of 2000 with a concern over the amount of water proposed for use by the project, but with no other specific concerns. Western responded to the Hopi letter by providing information about the water sources and use at the plant. In July, August, and September, Western followed up the information letter with phone calls to each of the tribal representatives for all the tribes on the mailing lists. None of the tribes contacted have expressed concerns with the project, or provided information on potentially sensitive resources in the Project area. Western will continue to provide information about the project to any interested tribes or individual Native Americans upon request, and will consider any comments that may come to light when this analysis is opened to public comment. At this time, there appear to be no concerns with the project.

SIGNIFICANCE CRITERIA FOR CULTURAL RESOURCES

The laws, ordinances and regulations discussed above deal with the consideration of impacts to cultural resources. In nearly every case, cultural resources must meet some set of criteria for significance before agencies direct some effort to preserve

the values these resources represent. Under the National Historic Preservation Act and the regulations at 36 CFR 800, only historical or prehistoric sites, objects, or features, or architectural resources that are determined “significant” by a federal agency need to be considered for potential impacts. Significance of any cultural resources is determined following the criteria for eligibility for nomination to the National Register of Historic Places, as defined in 36 CFR 60.4. If resources are determined to be eligible for listing on the National Register, and the State Historic Preservation Officer agrees with the agency’s determination, these resources are then considered significant, and efforts must be made to avoid or lessen the impacts to them by the project. Indian Tribes, state and local agencies, the public and the Advisory Council on Historic Preservation are given opportunities to influence how those resources are treated by the agency making the determination. Sites within California that are eligible for the National Register are eligible for the California Register.

The National Register criteria state (36 CFR 60.4):

> The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, building, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and
>
> (a) That are associated with events that have made a significant contribution to the broad patterns of our history; or
> (b) That are associated with the lives of persons significant in our past; or
> (c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
> (d) That have yielded, or may be likely to yield, information important to history or prehistory.

Effective January 1, 1999, the California State Resources Agency adopted revisions to the regulations implementing CEQA. These changes affected the language applicable to the analysis of cultural resources. Much of the language is now found in Title 14, California Code of Regulations, Sections 15064.5 and 15126.4. The CEQA Guidelines state:

> Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852) including the following:

(a) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
(b) Is associated with the lives of persons important in our past;
(c) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
(d) Has yielded, or may be likely to yield, information important in prehistory or history.

In addition to the provisions of regulations, California has introduced the concept of “unique” and “nonunique” archeological resources, which are defined at PRC Section 21083.2:

(g) As used in this section, "unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

(h) As used in this section, "nonunique archaeological resource" means an archaeological artifact, object, or site which does not meet the criteria in subdivision (g). A nonunique archaeological resource need be given no further consideration, other than the simple recording of its existence by the lead agency if it so elects.

IMPACTS

Projects such as the Blythe Energy Project will certainly involve considerable surface and subsurface disturbances, with a potential to adversely affect both known and unknown resources. Impacts can be direct, those resulting from the actual construction, operation or maintenance activities, indirect, those resulting from increased erosion, inadvertent damage, or vandalism due to new or improved access, or cumulative, those resulting from long term development or other surface disturbing activities in the same area as the project. The potential for any project to cause impacts to cultural resources is related to the likelihood that such resources are present. Although the existence of known cultural resources increases the potential for additional resources, the absence of known resources does not mean that impacts will not occur to resources that are not known to be present. Simply,

the more that is known about how people in the past positioned themselves over the landscape (settlement patterns), the better one can make predictions about whether resources are likely to be present in the project area.

POTENTIAL FOR PROJECT IMPACTS

Because the development and construction of the Blythe Energy Project involves surface and subsurface disturbance, the project has the potential to adversely affect cultural resources. Although development has previously occurred or currently exists on portions of the land where these new facilities would be built, the new facilities may cause ground disturbance to areas (and cultural resources) that have not been previously disturbed. Therefore the new facilities have the potential to cause impacts to cultural resources.

Inventories for cultural resources for the plant site and associated features, such as the transmission lines and natural gas pipelines, have revealed some evidence of prehistoric and historic cultural resources. Five historic trash dumps (refuse scatters) and five prehistoric isolated artifacts were found during the inventory. Four of the refuse scatters are in the area of the power plant, while the fifth site, BE-S-6, is outside of the Area of Potential Effect (APE). Three of the isolated artifacts were located on the plant site and two along alternatives of the gas pipeline route. The Blythe Airport was also recommended as an eligible property for the National Register (BEP 1999a).

POWER PLANT SITE AND LAYDOWN AREA

The 76-acre plant site will contain the power island (e.g., the gas turbines, HRSG's), the electrical substation, the evaporation ponds, three water wells, and other associated facilities. The applicant intends to utilize most of the plant site for construction and equipment laydown during the construction phase, though the final configuration of the plant will have facilities concentrated toward the north end of the site. A record search was conducted for the plant site to identify existing or known resources, and then the entire site was inventoried for cultural resources.

The inventory for the plant site recorded four trash dumps (refuse scatters) and three isolated artifacts. In addition, a fifth trash dump was recorded on the edge of the property. The applicant's archeological consultant has recommended that the refuse scatter sites BE-S-1 through BE-S-4 would not be considered eligible for the National Register or California Register. The consultant provided additional information on the possible cultural affiliations of these small scatters and on whether the information contained in them could be significant in understanding the relatively recent history (BEP 2000; Data Responses #215, 216, and 217). Western and the Commission staff agree these sites are not significant resources needing additional mitigative measures.

The applicant's consultant also recommended that the large historic refuse dump, BE-S-6, associated with World War II is potentially eligible. Western and the Commission staff agree that the historic dump associated with World War II may be eligible but is not within the project's area of potential effect.

The applicant's archeological consultant recommended the Blythe Airport as potentially eligible for the National Register of Historic Places. Western and the Commission staff were concerned that the construction of the Project could impact the historic setting and integrity of the airport as it is related to the World War II era. Based upon information supplied by the consultant (BEP 2000; Data Responses # 218 and 219), the airport may retain some degree of historic integrity. However, the vast majority of the original buildings and other structures associated with the World War II occupation and use of the airport have been demolished. Other impacts, such as center-pivot irrigated fields, the construction of the Interstate, and the addition of a residential area nearby, have also had impacts on the historic setting of the airport. Because of these facts, Western and the Commission staff agree that the proposed project will not have a significant impact on the historic setting that may make the airport eligible for the National Register of Historic Places.

Finally, Western and the Commission staff agree that the isolated artifacts recorded on the project inventories are not eligible for the National Register or California Register.

NATURAL GAS PIPELINE

The applicant had the proposed pipeline route inventoried for cultural resources, as well as alternatives to the proposed route. The proposed pipeline alternatives were various ways of getting gas from the El Paso Natural Gas facility in Ehrenberg, Arizona to the plant site. The proposed route would involve a directional bore under the Colorado River from the El Paso facility to a location along the edge of Interstate 10. One isolate and a recent municipal waste site were located. Western and the Commission agree that neither the isolate nor the waste site is eligible for the National Register or the California Register (BEP, 2000s).

The proposed pipeline route included several parallel routes with minor alterations that were inventoried for cultural resources. These alternative routes included two different crossings of the Colorado River and two different approaches to the plant site on the west end. Two isolated artifacts were recorded along the pipeline route. Western and the Commission staff agree that the isolated artifacts are not eligible for the National Register or the California Register. No eligible cultural resources were found within the pipeline corridor. Therefore there will not be a significant impact to know cultural resources in this portion of the project.

The applicant's consultant did recommend monitoring the pipeline construction routes since they felt that ethnographic information about the use of the river floodplain indicated that there was a possibility of buried archaeological sites along the routes. However, the area has been leveled for agriculture, sloughs have been filled and natural levees lowered. Geomophological information and the paucity of surface artifacts in areas where there has been subsurface disturbance suggested that there is little chance to discover buried cultural resources in the pipeline corridor. The applicant's consultant later withdrew that recommendation (BEP 2000; Data Response #140). Western and the Commission staff agree that monitoring the pipeline construction is not necessary.

ALTERNATE NATURAL GAS PIPELINE

The applicant offered an alternate to the proposed pipeline route. This pipeline would connect the plant site to the existing interstate pipeline belonging to Southern California Gas that lies less than an mile south of the plant on the south side of Interstate 10. The applicant confirmed (BEP 2000; Data Responses #222-225) that their consultant conducted an inventory of this alternative, but the applicant's consultant inadvertently omitted that from their survey report. The inventory of the short pipeline segment was conducted at the same time as the inventory of the first pipeline alternative, and assumed an area of potential effects of 100 feet wide for the length of the pipeline (0.8 mile). No cultural resources were recorded on this inventory.

TRANSMISSION LINE INTERCONNECTOR

In order to interconnect the power generated at the power island to Western's transmission system, BEP will reroute minor portions of Western's transmission lines as they pass the plant site and enter the Blythe Substation (see BEP 1999a, Figures 8.0-4, 5 and 6). Two Western lines enter from the north (Parker-Blythe No. 1 and Parker-Headgate Rock-Blythe No. 2) and a third (Blythe-Knob) leaves the substation and heads to the south. These three transmission lines consist of wood pole H-frame structures with three conductors and two overhead shield wires.

Short segments of the two northern lines will be realigned. The line directly from Parker Dam will be removed at a point approximately 250 feet north of the plant site, and rerouted into the proposed substation on the plant site. The line from Parker Dam through Headgate Rock will be removed from a point approximately 700 feet east and north of the plant site and rerouted into the proposed substation; the remainder of the line to the Blythe Substation will be removed. A new line, approximately 400 feet long, will be constructed from the new substation to the remaining portion of the old line from Parker and then project power will flow into the Blythe Substation along that old line.

The applicant has considered increasing the voltage of the existing system from 161-kilovolt (kV) to 230-kV. Under that condition, small segments of the Blythe-Knob line and the adjacent Imperial Irrigation District (IID) transmission line would be rerouted through the proposed substation on the plant site.

The applicant did not inventory the transmission line segments for cultural resources. However, Western has completed inventories of entire lengths of these three Western lines, including the Blythe Substation (Lennon 1995a, Lennon 1995b, Schaefer 1998). No cultural resources were found along these lines in the area of the interconnection. In addition, all of the realignments will take place within the existing citrus orchard, which is heavily disturbed with a considerably modified surface. There are no cultural resources present in the area of the proposed interconnection for the transmission lines.

The power lines themselves are part of the Parker-Davis Project, which combined two existing dam projects into one in 1954. Parker Dam project was begun by the

Bureau of Reclamation (BOR) in 1934 to provide water for the Los Angeles basin, and to provide electricity for Los Angeles and southern Arizona. The Davis Dam project was begun in 1942 to provide water regulation on the lower Colorado River below Hoover Dam, flood control, irrigation and municipal water supplies, power generation, recreation, and to facilitate water delivery to Mexico as required by international law. The transmission lines from Parker Dam to the south were originally slated for construction in the 1940's, but only one line, the Parker-Gila No. 1 (161-kV) line that runs south from Parker Dam through western Arizona was actually constructed. The Parker-Gila No. 2 line that was proposed for the California side of the Colorado River was not constructed.

Following World War II, the BOR began expansion of their existing projects through out the western United States to meet the growing needs for water. In the project area, a second transmission line between Parker and Gila Substation (near Yuma, Arizona) was constructed and energized in 1951 as three distinct segments; the Parker- Blythe No. 1, the Blythe-Knob and the Gila-Knob transmission lines. The Bureau of Indian Affairs requested additional electrical service for its service area along the Colorado River, and in 1965, a substation was constructed at Headgate Rock Diversion Dam to supply that power. In 1970, BOR recognized the need for additional power resources in southern Arizona and constructed the Parker-Blythe No. 2 transmission line. These three lines were transferred from the BOR to Western in 1977 when the Department of Energy was created (Schweigert 2000, personal communication; Water and Power Resources Services 1981; pages 767-772; BEP 2000; Data Responses #226-227).

Over the years, these lines have been subjected to maintenance activities, including routine and emergency equipment change-outs, pole changes, and other minor modifications. For example, the BOR records indicate that during the second year following the construction of the Parker-Blythe No. 1 line, all anchor plates and some anchor rods had to be replaced due to corrosion, especially those closest to the Colorado River (Schweigert 2000, personal communication). Wind storms and flash flood events have taken their toll on all of the lines, causing sections of the lines to be replaced. Some aerial markers have been installed, short sections moved to accommodate other crossings by roads and other utilities, poles have been treated for pest control, and some structures replaced due to various types of rot. Western currently has these lines scheduled for complete replacement with durable lightweight steel H-frame structures within the next 5 years due to their rapid deterioration. A conservative estimate would be that at least 20 percent of the line structures and equipment are no longer original, based upon Western's records. Deterioration is not as serious for the Parker-Blythe No. 2 line, which was built and energized in 1970. The percentage may be higher but complete information is not available at this time.

In summary, the Parker-Blythe No. 1 and Blythe-Knob transmission lines were constructed in 1951 as elements of the Parker Dam Project. The lines were built as a counterpart to the Parker-Gila 161-kV transmission line, which had been built in 1943, and transmitted electricity from Parker Dam for irrigation projects and other general usage in southwestern Arizona and southeastern California. Southern California Edison and other utilities obtain power by means of connections to these

transmission lines. Parker-Blythe No. 1 transmission line was eventually interconnected with lines from Hoover, Davis, and Glen Canyon dams as part of the Bureau of Reclamation/Western Area Power Administration system in the Southwest. The Parker-Blythe No. 2 line was constructed in 1970 to further support the supply of bulk electricity south of Parker Dam.

In order to be considered a significant property, sites must meet certain criteria, which are discussed above. Under the Federal criteria, properties are not usually considered for significance until they have reached 50 years of age. The Parker-Blythe No. 2 line is only 30 years old and would not be considered a significant property under that criterion.

The Parker-Blythe No. 1 and Blythe-Knob lines have reached an age that would allow them to be considered for significance. In order to be considered significant, the lines would need to retain the integrity of location, design, setting, materials, workmanship, feeling, and association. These lines were built with standard wood-pole, H-frame structures and other standard materials and design that had been in use for many years prior to 1951 and continued to be used until today. As such they retain their integrity of location, design, setting, feeling and association. The lines, however, have been subjected to routine maintenance since they were built, affecting their physical integrity of materials and workmanship.

In addition to integrity, the lines would need to meet one of the four remaining criteria common to both the State and Federal regulations. While it is true that these lines contributed to a broad pattern of history, such as the development of the west and the development of electrical transmission, there is no evidence that the lines themselves contributed significantly to the post-World War II industrial and agricultural expansion of the region. They are marginally associated with the development of water in the Western United States, but evidence has not been found that the lines significantly affected or influenced any historic event or pattern.

None of the transmission lines associated with the Blythe Substation are distinctive for architectural or engineering features. The Bureau of Reclamation began using standardized designs for transmission structures as early as 1938. Nearly all wood pole transmission lines constructed by BOR before 1978 followed standard BOR specifications (Schweigert 1998). Western currently operates and maintains nearly 17,000 miles of transmission lines in the Western United States of which nearly half are wood pole lines very much like these. The lines do not represent distinctive characteristics of a type, period or method of construction, nor did they include features that might be considered innovative or otherwise significant in the history of engineering or the narrower context of electrical transmission.

Based upon the information above, the Parker-Blythe No. 1 and No. 2 lines and the Blythe-Knob line are not considered eligible for the National Register or California Register.

ELECTRICAL SUBSTATION, EVAPORATION PONDS, AND WATER WELLS

The applicant will construct an electrical substation on the proposed project site in order to connect the power generated by the power island to the existing transmission system. This substation will be located in the extreme northeast corner of the plant site. In addition, the project will require evaporation ponds to treat the wastewater generated by the power generation process. Two triangular evaporation ponds will be constructed in the southern portion of the 76-acre plant site. Finally, water wells will be drilled within the project site to supply the project will cooling water. A raw water storage tank will be connected to each well by a water pipeline. These pipelines will be within the project site. See the discussion above on the Power Plant Site and Laydown Area for a discussion of the potential for impacts to cultural resources by the development of these features.

CUMULATIVE IMPACTS

The potential for cumulative impacts is directly associated with the amount of development and agriculture in the Blythe area, and the amount of prehistoric and historic resources. The inventory data from this project and all previous inventories, including Western's inventories of the transmission lines out of the Blythe Substation, indicate that there is considerable information on the prehistoric and historic use of the Palo Verde Valley. It can be assumed that some cultural resources have been disturbed or destroyed by agricultural activities in the Valley, as well as development in and out of the Valley. There is not likely to be additional development in the plant site area because of the nature of the facility. The land use plan for the airport mentions small tourist-related commercial development and light-to-medium industrial development at the airport, with the potential for limited residential development south of the airport (Coffman Associates 1992: 2-18). This development could effect the Blythe Airport by providing additional electrical power in the area thus allowing growth-inducing potential for light-to-medium industrial development at the airport. If mitigation measures such as avoidance, recordation, or data recovery are conducted when the developments are approved, the potential cumulative impacts will be mitigated below a level of significance.

COMPLIANCE WITH APPLICABLE LORS

Connecting the power plant to existing transmission lines makes it necessary to obtain approval from the Western Area Power Administration (Western). Obtaining this approval triggers the compliance requirements of Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, set forth in 36 CFR 800 and the National Environmental Policy Act. Western will consult with the State Historic Preservation Officer to fulfill their responsibilities under the NHPA

In regard to local LORS, any cultural resources work within the County will follow the requirements in the Riverside General Plan and Riverside County Ordinance 578. If activities affecting resources within the City of Blythe are necessary, the goals set forth in the City of Blythe General Plan will be followed. Staff's proposed conditions of certification (see below) will ensure compliance with other applicable LORS.

MITIGATION

For cultural resources, the preferred method of mitigation is avoidance of all cultural resources wherever possible. Mitigation measures are normally developed to reduce impacts to significant cultural resources.

APPLICANT'S PROPOSED MITIGATION

As discussed under the potential for impacts above, BEP recommended monitoring the pipeline construction in the Colorado River floodplain. They reasoned that because ethnographic information suggests a focus on river resources, with the expectation of habitation and resource collection sites, monitoring the pipeline construction through the floodplain would be necessary. Western has pointed out in discussions on mitigation that monitoring for resources may not achieve the required results. Geomorphologic and surface archeological information, as well as data from elsewhere in the Colorado River valley suggests that there are no intact resources in the floodplain. The applicant subsequently revised their recommendation, no longer recommending monitoring of the pipeline.

STAFF'S PROPOSED MITIGATION MEASURES

Western and Commission staffs do not believe that monitoring is necessary to prevent significant impacts to cultural resources based on the information provided by the consultant and Western. Sites BE-S-1 through BE-S-4 have been evaluated for their eligibility to the National Register and the California Register. These sites are not considered significant or unique resources and no further consideration of these sites is necessary.

BEP also recommended that the Blythe Airport might be eligible for the National Register but it has been determined that the vast majority of the physical integrity has been removed over the years following World War II. In addition, other developments in and near the airport have also affected the historic setting. The Project will not have an impact on the historic setting of the airport.

Despite the lack of information on the presence of significant cultural resources in the project area of potential effects there remains the remote possibility that significant resources may be present but could not be detected by surface inspection. Western and the Commission staff agree that the possibility is extremely remote, given the disturbed nature of the project area. However, it is prudent to make BEP aware that resources may be present where they could not be seen, and they should be prepared in the event such resources are discovered. Therefore, Western and the Commission staff have recommended minor conditions, presented below in Conditions CUL-1 through CUL-8, for the rather unlikely event that resources are discovered.

FACILITY CLOSURE

The project is expected to be in operation at least thirty years. Upgrades or modifications might extend the life of the plant. Closure would be caused by either

(1) a natural or manmade disaster or economic difficulty, or (2) planned orderly closure that will occur when the plant becomes economically non-competitive.

PLANNED CLOSURE

At the time of planned closure, all then-applicable LORS will be identified and the Energy Commission-required closure plan will address compliance with these LORS. Generally, if no additional land were needed during closure, no impacts to cultural resources would be expected. However, actual potential impacts are more likely to depend upon the final location of project structures in relation to existing resources, and then upon the procedures used for the removal of project structures. The spatial relationship between the closure and removal of project structures and sensitive resources can not be determined at this time with respect to the impact of permanent facility closure on cultural resources.

TEMPORARY CLOSURE

Depending on the length of shutdown necessary, a contingency plan for the temporary cessation of operations will be implemented. The contingency plan will assure conformance with all applicable LORS. A temporary closure should have no impacts on cultural resources as long as no additional lands are needed for the closure.

UNEXPECTED PERMANENT CLOSURE

If a site were abandoned, impacts to cultural resources would be unlikely because there would be no immediate soil disturbance. Over time, depending on possible soil disturbance, some impacts on cultural resources might occur.

RESPONSE TO PUBLIC AND AGENCY COMMENTS

Kim Jarrell Johnson of the Riverside County Regional Park and Open-Space District commented on the impacts of the project on cultural resources in February of 2000 (RC 2000a). The concerns were centered around the diffuse scatters of historic materials on the surface of the plant site. Specifically Ms. Johnson felt that additional information on the use of the project area during World War II was needed, suggested the historic affiliation of the scatters could be associated with the World War II era, and recommended subsurface testing of these scatters.

Both staff of Western and the Commission visited the sites in question and made additional data requests of the applicant concerning the affiliation of these sites. The history of the project area has been expanded to include the World War II era. It is reasonable to conclude, based upon an analysis of the site materials, that the site affiliation pre-dates World War II, though the occupation periods of these sites may overlap several decades. Finally, it would appear the scatters are surface manifestations with little or no deposition. Subsurface testing would not be productive. The responses to these comments have been incorporated into the discussions above.

CONCLUSIONS AND RECOMMENDATION

There are a total of four historic refuse locations and three prehistoric isolated artifacts located on the plant site, with two additional prehistoric isolated artifacts and a modern trash scatter located along the pipeline routes. There is one historic refuse dump located outside the property boundary that will not be impacted by this project. None of the sites that will be impact directly by the project have been shown to be significant resources, following the definition of significant or unique resources defined by either Federal or State standards.

The type of identified cultural resources indicates that project construction is unlikely to encounter significant cultural resources. However, Western and the Commission staff believe that there is a remote chance that significant resources could be discovered by construction activities. Therefore, if the following conditions of certification are properly implemented, the project will comply with applicable laws, ordinances, regulations, and standards, and no significant adverse direct, indirect, or cumulative impacts to cultural resources will occur.

RECOMMENDATION

Western and Commission staff recommend that the Commission adopt the following proposed conditions of certification.

PROPOSED CONDITIONS OF CERTIFICATION

CUL-1 Prior to the start of construction-related vegetation clearance, or earth-disturbing activities or project site preparation; or the movement or parking of heavy equipment onto or over the project surface, the project owner shall provide the California Energy Commission (Energy Commission) Compliance Project Manager (CPM) with the name and statement of qualifications for its designated cultural resource specialist and alternate cultural resource specialist, if an alternate is proposed, who will be responsible for implementation of all cultural resources conditions of certification.

Protocol: The statement of qualifications for the designated cultural resource specialist and alternate shall include all information needed to demonstrate that the specialist meets at least the minimum qualifications specified by the National Park Service, Heritage Preservation Services. Alternatively, the archaeologist shall be qualified by the Register of Professional Archaeologists (RPA). The minimum qualifications include the following:

1. a graduate degree in archaeology, cultural resource management, or a comparable field;
2. at least three years of archaeological resource evaluation, management, impact mitigation and field experience in California; and
3. at least one year's experience in each of the following areas:

a. leading archaeological resource field surveys;

b. leading site and artifact mapping, recording, and recovery operations;

c. marshaling and use of equipment necessary for cultural resource recovery and testing;

d. preparing recovered materials for analysis and identification;

e. determining the need for appropriate sampling and/or testing in the field and in the laboratory;

f. directing the analyses of mapped and recovered artifacts of both Native American and historical origin;

g. completing the identification and inventory of recovered cultural resource materials; and

h. preparing appropriate reports to be filed with the receiving curation repository, the State Historic Preservation Officer (SHPO), and all appropriate regional information center(s) CHRIS.

The statement of qualifications for the designated cultural resource specialist shall include:

1. a list of specific projects the specialist has previously directed;
2. the role and responsibilities of the specialist for each project listed; and
3. the names and phone numbers of contacts familiar with the specialist's work on these referenced projects.

If the designated specialist does not intend to personally supervise all surveys, studies, monitoring, or excavations, the principal shall designate the name and qualifications of a comparably qualified alternate cultural resource specialist. The specialist shall also provide the names and qualifications of any potential consultants such as historian or architectural historian who may participate.

Verification: At least ninety (90) days prior to the start of construction-related vegetation clearance, or earth-disturbing activities or project site preparation, or the movement or parking of heavy equipment onto or over the project surface, the project owner shall submit the name and statement of qualifications of its designated cultural resource specialist and alternate cultural resource specialist, if an alternate is proposed, to the CPM for review and approval.

At least ten (10) days but no more than thirty (30) days prior to the start of any ground-disturbing action, the project owner shall confirm in writing to the CPM that the approved designated cultural resource specialist will be available at the start of earth-disturbing activities and is prepared to implement the cultural resources conditions of certification.

At least ten (10) days prior to the termination or release of a designated cultural resource specialist or field director, the project owner shall obtain CPM approval of the replacement professionals by submitting to the CPM the name and resume of the proposed new designated individuals.

Cul-2 Prior to the start of vegetation clearance or earth disturbing activities or project site preparation, the project owner shall provide the designated cultural resources specialist and the CPM with maps and/or drawings showing the footprint of the power plant and all linear facilities. Maps provided will include USGS 7.5-minute topographic quadrangle maps. If the designated cultural resource specialist requests enlargements or strip maps for linear facility routes, the project owner shall provide them. In addition, the project owner shall provide a set of these maps to the CPM at the same time that they are provided to the specialist. If the footprint of the power plant or linear facilities changes, the project owner shall provide maps and drawings reflecting these changes, to the cultural resources specialist and the CPM within five days. Maps shall show the location of all areas where surface disturbance may be associated with project-related access roads, and any other project components.

Verification: At least seventy-five (75) days prior to the start of vegetation clearance or earth disturbing activities or project site preparation, the project owner shall provide the designated cultural resources specialist and the CPM with the maps and drawings. Copies of maps or drawings reflecting changes to the footprint of the power plant and/or linear facilities shall be submitted to the cultural resources specialist and the CPM within five days of the changes.

CUL- 3 Prior to the start of vegetation clearance or earth disturbing activities or project site preparation, the designated cultural resource specialist shall prepare an employee training program. The project owner shall submit the cultural resources training program to the CPM for review and written approval. If a video is used as part of the training program, the owner shall submit the script to the CPM for review and written approval.

Protocol: The training program shall discuss the potential to encounter cultural resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources.

The training program shall also include the set of resource reporting procedures and work curtailment procedures that workers are to follow if previously unknown cultural resources are encountered during project activities. The training program shall be presented by the designated cultural resource specialist or qualified member of the cultural resources team(s) approved by the CPM and may be combined with other training programs prepared for biological resources, paleontologic resources, hazardous materials, or any other areas of interest or concern.

Verification: At least sixty (60) days prior to the start of vegetation clearance or earth disturbing activities or project site preparation, the project owner shall submit to the CPM for review and written approval, the proposed employee training program, the set of reporting procedures, and the work curtailment procedures that the workers are to follow if previously unknown cultural resources are encountered during construction. The project owner shall provide the name and resume of the individual(s) performing the training.

CUL- 4 Prior to the start of vegetation clearance or earth disturbing activities or project site preparation, and throughout the project construction period as needed for all new employees, the project owner shall ensure that the designated cultural resource trainer(s) provide(s) the CPM-approved cultural resources training to all project managers, construction supervisors, and workers. The project owner shall ensure that the designated trainer provides the workers with the CPM-approved a set of procedures for reporting any sensitive resources that may be discovered during project-related ground disturbance. In addition, the project owner shall communicate the work curtailment procedures that the workers are to follow if previously undiscovered cultural resources are encountered during construction.

Verification: Within seven (7) days after the start of project construction, the project owner shall provide the CPM with documentation that the designated cultural resources trainer(s) has/have provided the CPM-approved cultural resource training and the set of reporting and work curtailment procedures to all project managers, construction supervisors, and workers hired before the start of vegetation clearance or earth disturbing activities or project site preparation.

In each Monthly Compliance Report, after the start of vegetation clearance or earth disturbing activities or project site preparation the project owner shall provide the CPM with documentation that the designated cultural resource trainer(s) has/have provided to all project managers, construction supervisors, and workers hired in the month to which the report applies, the CPM-approved cultural resources training and the set of resource reporting and work curtailment procedures.

CUL-5 The designated cultural resource specialist shall be available at all times to respond within 24 hours after pre-construction or construction activities have been halted due to the discovery of a cultural resource(s). The specialist, or representative of the project owner shall have the authority to halt or redirect construction activities if previously undiscovered cultural resource materials are encountered during vegetation clearance or earth disturbing activities or project site preparation or construction.

If such resources are discovered, the designated cultural resource specialist shall be notified and the project owner or project owner's representative shall halt construction in the immediate area in order to protect the discovery from further damage; project construction may continue elsewhere on the project.

If such resources are found, the specialist shall contact the CPM and Western's archeologist as soon as possible for a determination of significance.

If such resources are found and the CPM and/or Western's archeologist determines that they are or may be significant, the halting or redirection of construction shall remain in effect until:

1. the specialist, the project owner, and the CPM have conferred and determined what, if any, data recovery or other mitigation is needed; and

~~2.~~• any needed data recovery and mitigation has been completed.

The designated cultural resources specialist, the project owner, and the CPM shall confer within five working days of the notification of the CPM to determine what, if any, data recovery or other mitigation is needed.

If data recovery or other mitigation measures are required, the designated cultural resource specialist and team members shall monitor construction activities and implement the agreed upon data recovery and mitigation measures, as needed.

All required data recovery and mitigation shall be completed expeditiously unless all parties agree to additional time

Western will report any discovery to the State Historic Preservation Officer as part of Western's responsibilities under Section 106.

Verification: Thirty (30) days prior to the start of vegetation clearance or earth disturbing activities or project site preparation, the project owner shall provide the CPM with a letter confirming that the designated cultural resources specialist has the authority to halt construction activities in the vicinity of a cultural resources finds.

CUL-6 Following the discovery of significant resources, the project owner shall ensure that the designated cultural resources specialist prepares a research design and a scope of work for any necessary data recovery or additional mitigation. The project owner shall submit the proposed research design and scope of work to Western's archeologist and the CPM for review and approval.

Protocol: The proposed research design and scope of work shall include (but not be limited to):

1. a discussion of the methods to be used to recover additional information and any needed analysis to be conducted on recovered materials;
2. a discussion of the research questions that the materials may address or answer by the data recovered from the project; and
3. discussion of possible results and findings.

Verification: The project owner shall ensure that the designated cultural resources specialist prepares the research design and scope of work within 7 days following the determination that significant materials have been discovered. After completion of the research design and scope of work, the project owner shall submit it to Western and the CPM for review and written approval. Western shall submit the research design and scope of work to the State Historic Preservation Officer as part of consultation under Section 106.

CUL-7 The project owner shall ensure that the designated cultural resources specialist prepares a report on any discovery of cultural resources. The

project owner shall submit the report to Western and the CPM for review and written approval.

Protocol: The Cultural Resources Report shall include (but not be limited to) the following:

1. A brief description of pre-project literature search and surveys;
2. a description of the discovery;
3. a description of the process used to arrive at a determination of significance;
4. a discussion of the research questions that the recovered data could address or answer;
5. a description of the methods employed in the field and laboratory to complete data recovery efforts;
6. a description (including drawings and/or photos) of recovered cultural materials;
7. an inventory list of recovered cultural resource materials;
8. results and findings of any special analyses conducted on recovered cultural resource materials, including an interpretation of the site in regards to any research design prepared prior to the data recovery;
9. conclusions and recommendations;
10. maps (7.5 minute USGS topographic map) showing the area involved in the data recovery;
11. copies of completed state site forms, including photos, maps, and drawings; and
12. the name and location of the public repository that has agreed to receive the recovered cultural resources for curation.

Verification: The project owner shall ensure that the designated cultural resource specialist completes the Cultural Resources Report within ninety (90) days following completion of the analysis of the recovered cultural materials. Within seven (7) days after completion of the report, the project owner shall submit the Cultural Resources Report to Western and the CPM for review and written approval. Western will submit the report, when approved, to the State Historic Preservation Officer in order to complete consultation under Section 106.

CUL-8 If there is a discovery of a cultural resource(s), the project owner shall ensure that the cultural resource specialist performs the recovery, preparation for analysis, analysis, preparation for curation, and delivery for curation of all cultural resource materials The project owner shall provide a copy of a curation agreement from a public repository that meets the requirements set out in 36 CFR 79 for the curation of cultural resources.. In addition, the project owner shall ensure that all cultural resource materials, maps, and data collected during data recovery and mitigation for the project

are delivered to the repository following the approval of the Cultural Resources Report. The project owner shall pay any fees for curation required by the repository unless determined unreasonable by the CPM.

The project owner shall provide Western and the CPM with a copy of a curation agreement no more than thirty (30) days following the discovery of cultural materials. The project owner shall also provide an inventory of all materials curated at the facility and documentation that they have been accepted for curation.

For the life of the project, the project owner shall maintain in its of compliance files, copies of signed agreements with the public repository to which the project owner has delivered cultural resource materials for curation.

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POWER PLANT EFFICIENCY

Testimony of Steve Baker

INTRODUCTION

The Energy Commission makes findings as to whether energy use by Blythe Energy Project (BEP) will result in significant adverse impacts on the environment, as defined in the California Environmental Quality Act (CEQA). If the Energy Commission finds that the BEP's consumption of energy creates a significant adverse impact, it must determine whether there are any feasible mitigation measures that could eliminate or minimize the impacts. In this analysis, staff addresses the issue of inefficient and unnecessary consumption of energy.

In order to support the Energy Commission's findings, this analysis will:

- determine whether the facility will likely present any adverse impacts upon energy resources;
- determine whether these adverse impacts are significant; and if so,
- determine whether feasible mitigation measures exist that would eliminate the adverse impacts, or reduce them to a level of insignificance.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

FEDERAL

No federal laws apply to the efficiency of this project.

STATE

CALIFORNIA ENVIRONMENTAL QUALITY ACT GUIDELINES

CEQA Guidelines state that the environmental analysis "shall describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy" (Cal. Code Regs., tit. 14, § 15126.4(a)(1)). Appendix F of the Guidelines further suggests consideration of such factors as the project's energy requirements and energy use efficiency; its effects on local and regional energy supplies and energy resources; its requirements for additional energy supply capacity; its compliance with existing energy standards; and any alternatives that could reduce wasteful, inefficient and unnecessary consumption of energy (Cal. Code regs., tit. 14, § 15000 et seq., Appendix F).

LOCAL

No local or county ordinances apply to power plant efficiency.

SETTING

Blythe Energy, LLC (Blythe) proposes to construct and operate a (nominal) 520 MW combined cycle power plant to generate baseload and load-following power, selling on the spot market or by long-term contract (BEP 1999a, AFC §§ 1.1, 1.1.1, 1.1.4, 2.1, 2.2.3, 2.2.5.2, 2.2.5.3, 2.2.16.1, 2.4.2.1, 6.7.1, 8.3.2, 8.4). The BEP will consist of two Siemens-Westinghouse V84.3A F-class combustion turbine generators with inlet air coolers producing approximately 170 MW each, two triple pressure heat recovery steam generators (HRSGs) with duct burners, and one 180 MW reheat steam turbine generator, arranged in a two-on-one combined cycle train, totaling approximately 520 MW. The gas turbines and HRSGs will be equipped with dry low-NOx combustors and selective catalytic reduction to control air emissions and steam bypasses to the condenser to allow either gas turbine to operate without the steam turbine (BEP 1999a, AFC §§ 1.1, 1.1.1, 2.1, 2.2.3, 2.2.4, 2.2.5.1, 2.2.5.2, 2.2.5.3, 2.2.16.3, 2.4.2.1; Figure 2.0-3; BEP 2000h).

ANALYSIS

ADVERSE IMPACTS ON ENERGY RESOURCES

The inefficient and unnecessary consumption of energy, in the form of non-renewable fuels such as natural gas and oil, constitutes an adverse environmental impact. An adverse impact can be considered significant if it results in:

- adverse effects on local and regional energy supplies and energy resources;
- a requirement for additional energy supply capacity;
- noncompliance with existing energy standards; or
- the wasteful, inefficient and unnecessary consumption of fuel or energy.

PROJECT ENERGY REQUIREMENTS AND ENERGY USE EFFICIENCY

Any power plant large enough to fall under Energy Commission siting jurisdiction will consume large amounts of energy. The BEP will burn natural gas at a nominal rate up to 84 billion Btu per day LHV[1] (BEP 1999a, AFC § 2.2.8). This is a substantial rate of energy consumption, and holds the potential to impact energy supplies.

Under expected project conditions, electricity will be generated at a full load efficiency approaching 57.7 percent LHV (BEP 1999a, AFC § 8.4; GTW 1998); compare this to the average fuel efficiency of a typical utility company baseload power plant at approximately 35 percent LHV.

ADVERSE EFFECTS ON ENERGY SUPPLIES AND RESOURCES

The applicant has described its sources of supply of natural gas for the BEP (BEP 1999a, AFC § 1.1.1). The project will burn natural gas from an existing El Paso

[1] Lower heating value.

Natural Gas pipeline. The gas supply infrastructure is extensive, offering access to vast reserves of gas from the Southwest. This source represents far more gas than would be required for a project this size. It is therefore highly unlikely that the BEP could pose a substantial increase in demand for natural gas in California.

ADDITIONAL ENERGY SUPPLY REQUIREMENTS

Natural gas fuel will be supplied to the project by either, or both, of two alternative means. The first will be an 11.5-mile long pipeline connecting with the El Paso Natural Gas interstate pipeline east of the Colorado River near Ehrenberg, Arizona. The second will be an 0.8-mile long line connecting with the Southern California Gas Company transmission line south of Interstate 10 (BEP 1999a, AFC §§ 1.1.1, 2.2.2, 2.2.8, 6.4, 8.3.1). Either line should provide adequate access to natural gas fuel; if both lines are constructed, this will further enhance certainty of supply. There is no real likelihood that the BEP will require the development of additional energy supply capacity.

COMPLIANCE WITH ENERGY STANDARDS

No standards apply to the efficiency of the BEP or other non-cogeneration projects.

ALTERNATIVES TO REDUCE WASTEFUL, INEFFICIENT AND UNNECESSARY ENERGY CONSUMPTION

The BEP could be deemed to create significant adverse impacts on energy resources if alternatives existed that would reduce the project's use of fuel. Evaluation of alternatives to the project that could reduce wasteful, inefficient or unnecessary energy consumption first requires examination of the project's energy consumption. Project fuel efficiency, and therefore its rate of energy consumption, is determined by the configuration of the power producing system and by the selection of equipment used to generate power.

PROJECT CONFIGURATION

The BEP will be configured as a compound-train combined cycle power plant, in which electricity is generated by two gas turbines, and additionally by a reheat steam turbine that operates on heat energy recuperated from the gas turbines' 1.1.1, 2.1, 2.2.3, 2.2.4, 2.2.5). By recovering this heat, which would otherwise be lost up the exhaust stacks, the efficiency of any combined cycle power plant is increased considerably from that of either gas turbines or steam turbines operating alone. Such a configuration is well suited to the large, steady loads met by a baseload plant, intended to supply energy efficiently for long periods of time.

The number of turbines further contributes to efficiency at part load. Gas turbine generators operate most efficiently at one particular output level, typically at full load. Whenever desired output is less than full load, the unit must be throttled back. Rather than being forced to throttle back one large turbine, with the consequent reduction in efficiency, the power plant operator will have the option of shutting off one gas turbine. This allows the plant to generate at less than full load while maintaining optimum efficiency, suitable for a plant meant for flexible generation,

such as load-following duty. Loads down to 50 percent of full load allow one gas turbine, operating at full load, and the steam turbine to maintain peak efficiency.

In addition, the applicant plans to include steam bypass piping that would allow either HRSG's steam to be dumped to the condenser (BEP 1999a, AFC §§ 2.2.3, 2.2.5.2, 2.2.5.3, 2.2.16.1, 2.2.16.3, 2.2.16.4, 2.4.2.1). This would allow one gas turbine generator to operate even when the steam turbine is not operating, providing yet more flexibility in power output.

EQUIPMENT SELECTION

Modern gas turbines embody the most fuel-efficient electric generating technology available today. The F-class gas turbines to be employed in the BEP represent some of the most modern and efficient such machines now available. The applicant will employ a Siemens-Westinghouse V84.3A combined cycle power train (BEP 1999a, AFC §§ 1.1.1, 2.1, 2.2.3, 2.2.5.1, 2.2.5.1.2, 6.6; Figure 2.0-3; BEP 2000h). Offered in a two-on-one configuration as the GUD2.84.3A, this machine is nominally rated at 530 MW and 57.7 percent efficiency LHV at ISO[2] conditions (GTW 1998).

One possible alternative machine is the General Electric (GE) Frame 7FA, an F-class gas turbine nominally rated at 530 MW and 56.5 percent efficiency at ISO conditions in a two-on-one combined cycle configuration (GTW 1999b).

Another alternative is the Siemens-Westinghouse 501F, nominally rated in a two-on-one combined cycle at 550 MW and 55.8 percent efficiency LHV at ISO conditions. This machine is functionally equivalent to the GE Frame 7FA.

Another possible alternative to the GE and Siemens-Westinghouse machines is the ASEA Brown-Boveri (ABB) KA-24, still another F-class machine. While the KA-24 promises slightly higher fuel efficiency (57.6 percent at ISO conditions) (GTW 1999b) than the other F-class machines, any differences among the three in actual operating efficiency will be insignificant. Selecting among these machines is thus based on other factors, such as generating capacity, cost, ability to meet air pollution limitations, and commercial availability. The ABB machine, for instance, is available only in one-on-one power trains, with one gas turbine and one steam turbine paired on a single shaft, generating a nominal 271 MW (Orsini 1999, pers. comm.). The GE and Siemens-Westinghouse machines, which can be configured more flexibly, offer an advantage here.

EFFICIENCY OF ALTERNATIVES TO THE PROJECT

The project objectives include the flexibility to generate baseload and load following power for sale on the spot market or via bilateral contracts. The plant will be expected to operate from 30 percent to 100 percent of full load (BEP 1999a, AFC §§ 1.1, 1.1.4, 2.2.3, 2.2.16.1, 2.4.1, 6.7, 6.7.1, 8.3.2, 8.4).

[2] International Standards Organization (ISO) standard conditions are 15°C (59°F), 60 percent relative humidity, and one atmosphere of pressure (equivalent to sea level).

Alternative Generating Technologies

The applicant addresses alternative generating technologies in its application (BEP 1999a, AFC § 6.7.2). Oil-, natural gas- and coal-burning, nuclear, solar, ocean energy conversion, hydroelectric, biomass and geothermal technologies are all considered. One of the project's stated objectives is to compete as a merchant 1.1, 1.1.4, 2.2.16.1, 6.7, 6.7.1, 8.3.2). Given the project objectives, location and air pollution control requirements, staff agrees with the applicant that only natural gas-burning technologies are feasible.

Natural Gas-Burning Technologies

Fuel consumption is one of the most important economic factors in selecting an electric generator; fuel typically accounts for over two-thirds of the total operating costs of a fossil-fired power plant (Power 1994). Under a competitive power market system, where operating costs are critical in determining the competitiveness and profitability of a power plant, the plant owner is thus strongly motivated to purchase fuel efficient machinery.

Capital cost is also important in selecting generating machinery. Recent progress in the development of large, stationary gas turbines, aided by the incorporation into these machines of technological advances made in the development of aircraft jet engines, has created a situation in which several large manufacturers compete vigorously to sell their machines. This, combined with the cost advantages of assembly-line manufacturing, has driven down the prices of these machines. Thus, the power plant developer can purchase a turbine generator that not only offers the best available fuel efficiency, but at the same time sells for the lowest per-kilowatt capital cost.

One possible alternative to an F-class gas turbine is a G-class machine, such as the Siemens-Westinghouse 501G gas turbine generator, which employs partial steam cooling to allow slightly higher temperatures, yielding greater efficiency. While the 501G is rated at 58 percent efficiency (GTW 1999b), 0.3 percentage points higher than the V84.3A, the G machine in a one-on-one combined cycle produces 365 MW to the V84.3A's two-on-one configuration at 530 MW. A 520 MW power plant would thus be impractical; a 365 MW power plant, without redundant gas turbines, would restrict operating flexibility. Additionally, the 501G is brand new; the first such machine has only recently begun operating at a site in Florida owned by Lakeland Electric and Water (Power 1999), and a second such machine is in construction at PG&E Generating's Millennium project in Charlton, Massachusetts. Given the minor efficiency improvement promised by the G-class turbine, the likelihood that the plant may frequently be dispatched at less than full load, and the lack of a proven track record for the 501G, the applicant's decision to purchase F-class machines is a reasonable one.

Another possible alternative to the F-class gas turbine is an H-class machine. The first such plant is now in the permitting stage; Sithe Energies will build an 800 MW facility in Scriba, New York, based on two General Electric Frame 7H gas turbine generators in a two-on-one configuration (GTW 1999a). Claimed fuel efficiency is 60 percent LHV at ISO conditions (GTW 1999b). This high efficiency is achieved

through a higher pressure ratio and higher firing temperature, made possible by cooling the initial turbine stages with steam instead of air. This first Frame 7H application is not expected to enter service until the end of 2002. Given the lack of proven performance, and the reduction in operating flexibility from fewer gas turbines (one 7H combined cycle would produce 400 MW), staff agrees with the applicant's decision to employ F-class machines.

A further choice of alternatives involves the selection of gas turbine inlet air cooling methods. The two commonly used techniques are the evaporative cooler and the chiller; both devices increase power output by cooling the gas turbine inlet air. A mechanical chiller can offer greater power output than the evaporative cooler on hot, humid days, but consumes electric power to operate its refrigeration process, thus slightly reducing overall net power output and, thus, overall efficiency. An absorption chiller uses less electric power, but necessitates the use of a substantial inventory of ammonia. An evaporative cooler boosts power output best on dry days; it uses less electric power than a mechanical chiller, possibly yielding slightly higher operating efficiency.

The applicant proposes to use either evaporative cooling or a chiller (BEP 1999a, AFC §§ 2.2.4, 2.2.5.1.1). The difference in efficiency between these techniques is relatively insignificant. Given the climate at the project site and the relative lack of clear superiority of one system over the other, staff agrees that the applicant's approach will yield no significant adverse energy impacts.

In conclusion, the project configuration (two-train combined cycle) and generating equipment (F-class gas turbines) chosen appear to represent the most efficient feasible combination to satisfy the project objectives. There are no alternatives that could significantly reduce energy consumption.

CUMULATIVE IMPACTS

There are no nearby power plant projects that hold the potential for cumulative impacts when aggregated with the BEP. Staff knows of no other projects that could result in cumulative energy impacts.

Staff believes that construction and operation of the BEP will not bring about indirect impacts, in the form of additional fuel consumption, that would not have occurred but for the BEP. California's electric power will be generated by those power plants that bid most successfully to sell their output to the California Power Exchange.[3] Since no significantly more efficient power plants are envisioned to compete against the BEP, no indirect impacts are likely.

[3] Although the output of the BEP will be physically transmitted over Western lines, BEP plans to sell into the California market. Western's involvement will have no substantive impact on these conclusions (Mackin 2000, pers. comm.).

FACILITY CLOSURE

Closure of the facility, whether planned or unplanned, will not influence, nor will it be influenced by, project efficiency. Any efficiency impacts due to closure of the project would be on the electric system as a whole. Yet the vast size of the electric system serving California, the number of generating plants offering to sell power into it, and the existence of the California Independent System Operator and Power Exchange to ensure the efficient management of the system, all lend assurance that closure of this facility will not produce significant adverse impacts on efficiency.

RESPONSES TO PUBLIC AND AGENCY COMMENTS

No comments were received regarding Power Plant Efficiency.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The BEP, if constructed and operated as proposed, would generate 520 MW of electric power at an overall project fuel efficiency approaching 57.7 percent. While it will consume substantial amounts of energy, it will do so in the most efficient manner practicable. It will not create significant adverse effects on energy supplies or resources, will not require additional sources of energy supply, and will not consume energy in a wasteful or inefficient manner. No energy standards apply to the project. Staff therefore concludes that the BEP would present no significant adverse impacts upon energy resources.

No cumulative impacts on energy resources are likely. Facility closure would not likely present significant impacts on electric system efficiency.

RECOMMENDATION

From the standpoint of energy efficiency, staff recommends certification of the BEP. No Conditions of Certification are proposed.

REFERENCES

BEP (Blythe Energy, LLC). 1999a. Application for Certification, Blythe Energy Project (99-AFC-8). Submitted to the California Energy Commission, December 9, 1999.

BEP (Blythe Energy Project/Greystone/Reisman) 2000h. Final selection of combustion turbine configuration (Enclosure: "Blythe Energy Air Emissions – Siemens V84.3A CT/HRSG Configuration" 5 CDs). Submitted to CEC/Shaw on April 11, 2000.

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FACILITY DESIGN

Testimony of Steve Baker, Al McCuen and Kisabuli

INTRODUCTION

Facility Design encompasses the civil, structural, mechanical and electrical engineering aspects of the project. The purpose of the Facility Design analysis is to verify that the laws, ordinances, regulations and standards (LORS) applicable to the design and construction of the project have been identified; and that the project and ancillary facilities have been described in sufficient detail, including design criteria and analysis methods, to provide reasonable assurance that the project can be designed and constructed in accordance with all applicable LORS, and in a manner that protects environmental quality and assures public health and safety.

This analysis also examines whether special design features should be considered during final design to deal with conditions unique to the site which could influence public health and safety, environmental protection or the operational reliability of the project. This analysis further identifies the design review and construction inspection process and establishes conditions of certification that will be used to ensure compliance with the LORS and any special design requirements.

FINDINGS REQUIRED

The Warren Alquist Act requires the commission to "prepare a written Decision which includes (a) Specific provisions relating to the manner in which the proposed facility is to be designed, sited, and operated in order to protect environmental quality and assure public health and safety [and] (d)(1) Findings regarding the conformity of the proposed site and related facilities with public safety standards…and with other relevant local, regional, state and federal standards, ordinances, or laws" (Pub. Resources Code, §25523).

SUBJECTS DISCUSSED

Subjects covered in this analysis include:

- Identification of the LORS applicable to facility design;
- Evaluation of the applicant's proposed design criteria, including the identification of those criteria that are essential to ensuring protection of the environment and public health and safety;
- Proposed modifications and additions to the Application for Certification (AFC) that are necessary to comply with applicable LORS;
- Identification of the Energy Commission's design review and construction inspection process, which is used to ensure compliance with applicable LORS and protection of the environment and public health and safety; and
- Conditions of certification proposed by staff to ensure that the project will be designed and constructed to comply with all applicable LORS, and protect environmental quality and assure public health and safety.

SETTING

Blythe Energy, a Limited Liability Company (LLC), (Blythe) proposes to construct and operate the Blythe Energy Project (BEP). The project as proposed is a nominal 520-megawatt (MW), natural gas-fired, combined cycle, electric generation facility. The combined cycle configuration will consist of two 170 MW combustion turbine generators (CTGs), two heat recovery steam generators (HRSGs), and one 180 MW steam turbine generator (STG).

The applicant intends to locate the proposed project on a 15-acre site (within a 76-acre parcel) five miles west of the City of Blythe. This privately-owned property is located near Interstate 10 and the Blythe Airport. The main power facilities contain the Power Island, administrative buildings, chemical storage areas, cooling towers and other support facilities. For more information on the site and related project description, please see the **Project Description** section.

The project site and linear facilities are located in seismic zone 3, the second highest seismic shaking zone in the country. Additional engineering details of the proposed project are contained in the Application for Certification (AFC), in Appendices 8-A through 8-E (BEP 1999a).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

The applicable LORS for each engineering discipline, civil, structural, mechanical and electrical, are included in the application as part of the engineering appendices, Appendices 8-A through 8-E, and summarized in Section 3, Table 3 (Blythe 1999a). A summary of these LORS includes: Title 24, California Code of Regulations, which adopts the current edition of the California Building Code (CBC) as minimum legal building standards; the 1998 CBC for design of structures; American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code; and National Electrical Manufacturers Association (NEMA) standards.

ANALYSIS

The basis of this analysis is the applicant's proposed analysis methods, construction methods and list of LORS and design criteria set forth in the AFC and supporting documents. Applicable engineering sections include:

Section 1.1.2	Project Schedule
Section 1.1.3	Project Ownership
Section 2	Project Description
Section 3	Laws, Ordinances, Regulations and Standards (LORS)
Section 5	Facility Closure
Section 8.1	Facility Design
Section 8.2	Electrical Transmission
Section 8.5	Laws, Ordinances, Regulations and Standards
Section 8.6	Permits and Permitting Schedule

Appendices

1. Appendix 7.16 Geologic Hazards and Resources
2. Appendix 8-A Civil Engineering Design Criteria
3. Appendix 8-B Structural Engineering Design Criteria
4. Appendix 8-C Mechanical Engineering Design Criteria
5. Appendix 8-D Electrical Engineering Design Criteria
6. Appendix 8-E Control Engineering Design Criteria

SITE PREPARATION AND DEVELOPMENT

Staff has evaluated the proposed design criteria for grading, flood protection, erosion control, site drainage, and site access. Staff has assessed the criteria for designing and constructing linear support facilities such as a natural gas pipeline and electric transmission line. The applicant proposes to use accepted industry standards (see AFC Sections 3 and 8.5 for a list of the applicable industry standards), design practices, and construction methods in preparing and developing the site. The applicant's proposed methods follow industry standard practices. Staff concludes that the project, including its linear facilities, will likely comply with all applicable site preparation LORS, and proposes conditions of certification included below to ensure compliance.

MAJOR STRUCTURES, SYSTEMS AND EQUIPMENT

Major structures, systems and equipment are defined as those structures and associated components or equipment that are necessary for power production and are costly to repair or replace, or that require a long lead time to repair or replace, or those used for the storage, containment, or handling of hazardous or toxic materials. Major structures and equipment are listed in the conditions of certification (**GEN-2** below).

The AFC contains a list of the civil, structural, mechanical and electrical design criteria that demonstrate the likelihood of compliance with applicable LORS, and which staff believes are essential to ensuring that the project is designed in a manner that protects the environment and public health and safety.

PROPOSED MODIFICATIONS

The AFC (BEP 1999a, Section 8, and Appendices 8-A and 8-B) identifies LORS applicable to the project. The project should be designed and constructed to the 1998 edition of the CBC, and other applicable codes and standards in effect at the time design and construction of the project actually commence. In the event the design of BEP is submitted to the Chief Building Official (CBO)[1] for review and approval when the successor to the 1998 CBC is in effect, the 1998 CBC provisions, identified herein, shall be replaced with the applicable successor provisions.

[1]The CBO is the CEC's duly appointed representative, who may be the City or County Chief Building Official, or other appointed representative.

CBC LATERAL FORCE REQUIREMENTS

The procedures and limitations for the seismic design of structures, as specified in the 1998 CBC are determined considering seismic zoning, site characteristics, occupancy, structural configuration, structural system and height. Different design and analysis procedures are recognized in the 1998 CBC for determining seismic effects on structures. The dynamic lateral force procedure of Section 1631 is always acceptable for design. The static lateral force procedure of Section 1630 is allowed under certain conditions of regularity, occupancy and height as determined under Section 1629. Nonbuilding structures (such as cooling towers, tanks and heat recovery steam generators) are included in Section 1634. Most of the structures in powerplant projects are considered nonbuilding structures.

STATIC LATERAL FORCE PROCEDURE

In seismic Zones 3 and 4, the static lateral force procedure of Section 1630 may be used for the following:

22. Regular structures under 240 feet in height with lateral force resistance provided by systems, listed in Table 16-N, except where Section 1629.8.4, Item 4, applies. (Structures, regular or irregular, located on Soil Profile Type S_F, which has a period of vibration greater than 0.7 second require dynamic analysis.)
23. Irregular structures not more than five stories or 65 feet in height.

DYNAMIC LATERAL FORCE PROCEDURE

In seismic zones 3 and 4, the dynamic lateral force procedure of Section 1631 shall be used for all other structures, including the following:

1. Structures having a stiffness, weight or geometric vertical irregularity of Type 1, 2 or 3, as defined in Table 16-L, or structures having irregular features not described in Table 16-L or 16-M, except as permitted by Section 1630.4.2. (Where a combination of structural systems is included in the same structure, the structure can be analyzed as two independent structures for purposes of determining regularity.)
2. Structures over five stories or 65 feet, not having the same structural system throughout their height except as permitted by Section 1631.2. (An elastic design response spectrum constructed in accordance with Figure 16-3 of the 1998 CBC, using the values of Ca and Cv consistent with the specific site can be used.)
3. Structures, regular or irregular, located on Soil Profile Type S_F, that have a period greater than 0.7 seconds.

RIGID STRUCTURES LATERAL FORCE DESIGN

Rigid structures (those with a fundamental period of vibration less than 0.06 second) and their anchorage shall be designed using procedures consistent with

the requirements of Section 1634.3 and any other applicable provisions of Section 1634.

TANKS WITH SUPPORTED BOTTOMS

Flat bottom tanks or other tanks with supported bottoms founded at or below grade shall be designed consistent with Section 1634.4 and any other applicable provisions of Section 1634.

OTHER NONBUILDING STRUCTURES

Nonbuilding structures not covered by Sections 1634.3 and 1634.4 shall be designed consistent with the requirements of Section 1634.5 and any other applicable provisions of Section 1634.

NATURAL GAS PIPELINES

Natural gas pipeline will be designed, constructed, installed, operated and maintained in accordance with U.S. Department of Transportation (DOT), Title 49, Code of Federal Regulations (CFR) Chapter 1, Part 192 "Transportation of Natural and other Gas by Pipeline: Minimum Federal Safety Standards", and the California Public Utilities Commission, General Order 112-E (CPUC GO 112-E).

Compliance with the requirements of CPUC GO 112-E will help mitigate the impacts of pipeline rupture by ensuring proper construction of the line, safe location of the line, appropriate depth of burial, and shutoff of gas flow in the event of rupture. GO 112-E contains provisions for the design and construction of gas pipelines, which ensure that the pipelines can contain the pressures used. These provisions entail use of adequate wall thickness, proper weld design and welding procedures, corrosion protection, and automatic shutoff valves to shut off the gas in case of a rupture.

The requirements of the Occupational Safety and Health Act (OSHA), Subpart P, 29 CFR 1926.650, .651, and .652 shall be followed in the trenching and excavation for the gas pipeline and related facilities. A qualified engineer and an environmental specialist should monitor all field activities.

When crossing bodies of water, the pipeline shall be constructed to comply with the construction practices and mitigating measures established in 33 CFR 323.4 which sets forth the parameters of the "nationwide permit" required by section 404 of the Federal Water Pollution Control Act. If the proposed action exceeds the parameters of the nationwide permit, the project owner will obtain an "individual permit" from the Corps of Engineers prior to commencing actual construction.

Hydrostatic Testing: After the pipeline has been backfilled, the line shall be tested in accordance with the DOT standard, 49 CFR 192. Also, use the American Standard "Code for Gas Transmission and Distribution Piping Systems", ANSI B31.8, Chapter IV, Design, Installation and Testing as a recommended practice. Properly designed pipelines typically possess sufficient tensile strength that rupture of the pipeline because of stress due to shrinking and swelling imposed by expansive soils is unlikely. Therefore, no mitigation beyond a pipeline designed to applicable DOT-192 and CPUC GO.-112E, are necessary.

In order to meet the requirements of DOT-192 and CPUC GO-112E, the depth of cover for the pipeline shall be a minimum of three feet. Where there are plans to level the land or within the right-of-way of farmland, populated communities, the depth shall be adjusted to provide a minimum of five feet of cover. Where the pipeline crosses drainage ditches or canals, the pipeline shall be buried a minimum of five feet below the bottom of the canal or drainage ditch.

The depth of the pipeline at railroad and highway crossings shall conform to the appropriate regulations and governing authorities of those railroad or highway.

ENSURING THE APPROPRIATE LATERAL FORCE PROCEDURE

In order to ensure that structures are analyzed using the appropriate lateral force procedure, staff has included Proposed Condition of Certification **STRUC-1** below, which in part requires review and approval by the CBO of the project owner's proposed lateral force procedures prior to the start of construction.

CIVIL/STRUCTURAL FEATURES

SITE CONDITIONS

Site conditions are generally favorable for the construction of a power plant:

1. The surface and subsurface soils are satisfactory for foundations, construction materials and drainage.
2. The site is level and not in or near a 100-year floodplain.
3. The site is in a relatively stable tectonic region.
4. Groundwater was encountered at a depth of 86 feet below grade. This depth to the water table will not be a factor in the design or construction of the project.

A geotechnical assessment of the site, including core borings and laboratory analyses of the soil materials, is included in the AFC as appendix 7-16. This study confirms that there are no known geotechnical or geologic conditions that would preclude construction of the proposed project.

MEASURES TO IMPROVE ADVERSE SITE CONDITIONS

There are no adverse site conditions that will impact conventional construction practices for the proposed project. The design of foundations and structures will be conducted in accordance with requirements for design and construction in a Seismic Zone 3 area.

FINAL SITE DESIGN

Based upon the geotechnical evaluation, the final site design is expected to incorporate standard foundations, excavation, and backfill techniques, which can be accomplished with ordinary earth moving equipment. Piles incorporated into structurally rigid mat foundations will support foundations for the heavy units (e.g., CTG sets, HRSGs and steam turbine and cooling towers).

If any portion of the foundation bears on bedrock, the entire foundation should be deepened to bear on bedrock. The powerplant and related facilities shall be designed to meet the seismic requirements of the latest edition of the California Building Code.

MECHANICAL SYSTEMS

The major features of the 520 MW power plant are the two power trains with two natural gas fired, F-class combustion turbine generators (CTG), each 170 MW, operating in combined cycle mode. The CTGs will be installed in a two-on-one configuration with one steam turbine generator (STG) at 180 MW.

The heat from hot exhaust gas, which flows from each CTG through a heat recovery steam generator (HRSG), will be extracted to produce steam to power the STG. The BEP will use 24 cooling tower cells arranged in two tower banks. The cooling towers are expected to be standard, induced draft counter-flow type. The 64-foot towers will incorporate plume abatement coils and high efficiency drift eliminators.

Other features of the project include: water and wastewater treatment facilities; pressure vessels, inlet air chillers, piping systems and pumps; aqueous ammonia storage, handling and piping system; air compressors; fire protection systems; and heating, ventilation, air conditioning (HVAC), potable water, plumbing and sanitary sewage systems.

MECHANICAL LORS AND DESIGN CRITERIA

The application (BEP 1999a, Appendix 8-C) lists and describes the mechanical codes, standards and design criteria that will be employed in project design documents, procurement specifications and contracts. Design work will be performed in accordance with the appropriate LORS. This list indicates that the applicant is aware of the codes, standards, and design criteria appropriate for such a project. This approach will likely assure that the project's mechanical systems are designed to the appropriate codes and standards. Staff has proposed conditions of certification (**MECH-1** through **MECH-4**, below) to monitor compliance with this requirement.

ELECTRICAL SYSTEMS

Major electrical features of the project other than transmission include generators, power control wiring, protective relaying, grounding system, cathodic protection system and site lighting (BEP 1999a, Appendix 8-D).

Power and Control Wiring. In general, conductors will be insulated based on a normal maximum conductor temperature of 90ºC in 40ºC ambient air with a maximum emergency overload temperature of 130ºC and a short circuit temperature of 250ºC. In areas with higher ambient temperatures, larger conductors will be used or higher temperature rated insulation will be selected.

Protective Relaying. These relays protect equipment in the auxiliary power supply system, generator terminal systems, 230 kV system, 4.16 kV systems, turbine-

generator system, and the electrical loads powered from these systems. The protective relaying scheme will be designed to remove or alarm any of the abnormal occurrences.

Classification of Hazardous Areas. Areas where flammable and combustible liquids, gases, and dusts are handled and stored will be classified for determining the minimum criteria for design and installation of electrical equipment to minimize the possibility of ignition. The criteria for determining the appropriate classification are specified in Article 500 of the National Electrical Code's National Fire Protection Association/American National Standards Institute (NFPA/ANSI), Section C1.

Grounding. The station grounding system will be an interconnected network of bare copper conductors and copper clad ground rods. The system will be provided to protect plant personnel and equipment from hazard, which can occur during power system faults and lightning strikes. The station-grounding grid will be designed for adequate capacity to dissipate heat from ground current under the most severe conditions in areas of high ground fault current concentrations.

Site Lighting. The site lighting system will provide personnel with illumination for the performance of general yard tasks, safety, and plant security. Power used to supply outdoor roadway and area lighting will be 277 volts.

Freeze Protection. A freeze protection system will be provided for selected outdoor piping as required. Parallel circuit type heating cable will be utilized where possible.

Cathodic Protection System. Cathodic protection and other corrosion control measures for all plant structures, including the exterior surface of underground piping and bottoms of surface mounted steel tanks will be provided as required.

The AFC (BEP 1999a, Appendix 8-D) lists and describes the electrical codes, standards and design criteria that will be employed in project design documents, procurement specifications and contracts. Design work will be performed in accordance with the appropriate LORS. This list indicates that the applicant is aware of the codes, standards, and design criteria appropriate for such a project. This approach will likely assure the project's electrical systems are designed to the appropriate codes and standards.

Staff concludes that the applicant can design the electrical systems in accordance with all LORS and in a manner which protects the environment and public health and safety by complying with the applicable LORS and electrical design criteria (BEP 1999a, Appendix 8-D). Staff has proposed conditions of certification (**ELEC-1** and **ELEC-2**, below) to monitor this compliance.

ANCILLARY FACILITIES

Natural gas will be supplied to the project one of two ways or both. A connecting pipeline approximately 11.5 miles long, would extend into the state of Arizona, in La Paz County, near the City of Ehrenberg. This connecting pipeline would be bored under the Colorado River and would connect with a high-pressure gas line owned

by El Paso Natural Gas Company. The alternative connecting gas line would be approximately 0.8 miles long running south of the proposed plant site. This line would connect with a high-pressure gas line owned by Southern California Gas Company.

Three classes of water quality are applicable for the project. They are makeup water for the cooling water system, demineralized water for makeup to the steam system, and potable water for the plant sanitary services. All three classes of water required will be supplied by groundwater derived from wells located on the 76-acre property site, and will be properly processed on site. These wells will supply approximately 2,200 gallons of water per minute needed for the project when it is operating.

Discharged plant water will be sent to one of two on-site lined evaporation ponds. These two ponds will have zero liquid discharge. Sanitary wastewater used for drinking and other sanitary facilities will be discharged to an on-site septic system with leach fields. A storage tank with 600,000-gallon capacity will be provided for the demineralized water in the event that the demineralizing system is out of service.

Verification: The project proposes to interconnect with the regional electric transmission grid through ties to the existing transmission lines, which are within a few hundred feet of the project substation. This substation interconnects five existing 161 kV regional transmission lines. Three of the five transmission lines are owned and operated by the federal Western Area Power Administration (Western). One each of the two remaining power transmission lines is owned and operated by Southern California Edison (SCE), and Imperial Irrigation District (IID).

PROJECT QUALITY PROCEDURES

DESIGN CRITERIA AND STANDARDS

Each construction contractor will be required to develop a Quality Assurance/Quality Control (QA/QC) plan acceptable to the project owner, prior to the start of project construction. In addition to the QA/QC plan, all equipment suppliers will be required to demonstrate that they meet applicable codes for the fabrication of the equipment.

Any QA/QC program will be developed to maximize confidence that systems and components will be designed, fabricated, stored, transported, installed, and tested in accordance with the technical codes and standards appropriate for a powerplant. Compliance with design requirements will be verified through an appropriate program of inspections and audits. Employment of the QA/QC program will ensure that the project is designed, procured, fabricated and installed in accordance with all the applicable LORS.

COMPLIANCE MONITORING

THE ENERGY COMMISSION'S DESIGN REVIEW AND CONSTRUCTION INSPECTION PROCESS

Under Section 104.2 of the CBC, the building official is authorized and directed to enforce all the provisions of the CBC. For all energy facilities certified by the Energy Commission, the Energy Commission is the building official and has the responsibility to enforce the code. In addition, the Energy Commission has the power to render interpretations of the CBC and to adopt and enforce rules and supplemental regulations to clarify the application of the CBC's provisions.

The Energy Commission's design review and construction inspection process is developed to conform to CBC requirements and ensure that all facility design conditions of certification are met. As provided by Section 104.2.2 of the CBC, the Energy Commission appoints experts to carry out the design review and construction inspections and act as delegate CBO on behalf of the Energy Commission. These delegate agents typically include the local building official and independent consultants hired to cover technical expertise not provided by the local official. The applicant, through permit fees as provided by CBC Sections 107.2 and 107.3, pays the costs of the reviews and inspections. While building permits in addition to the Energy Commission certification are not required for this project, in lieu permit fees are paid by the applicant consistent with CBC Section 107, to cover the costs of reviews and inspections.

Engineering and compliance staff has completed, or will complete, the following to ensure the design review and construction inspection process is consistent with the applicant's timing of the project:

4. Staff will meet with the local building department to discuss the Energy Commission's compliance process and the potential involvement of the local building official as delegate agent.
5. Staff will propose a memorandum of understanding (MOU) with City of Blythe or Riverside County outlining the roles and responsibilities of the City or County and its subcontractors as delegate agents appointed by the Energy Commission to ensure compliance with the CBC and facility design conditions of certification.
6. Staff will meet with the City or County and its subcontractor (if applicable) to discuss the details of the design review and construction inspection process, fees, types of submittals required of the process and timing of the review.

Staff has developed conditions of certification (see the section below, titled "Proposed Conditions of Certification") to ensure compliance with LORS and protection of the environment and public health and safety. Some of these conditions address the roles, responsibilities and qualifications of BEP's engineers responsible for the design and construction of the project (proposed conditions of certification **GEN-1** through **GEN-8**). Engineers responsible for the design of the civil, structural, mechanical, and electrical portions of the project are required to be

registered in California, and to sign and stamp each submittal of design plans, calculations, and specifications submitted to the CBO. These conditions require that no element of construction proceed without prior approval from the CBO. They also require that qualified special inspectors be assigned to perform or oversee special inspections required by the applicable LORS.

While the Energy Commission and delegate CBO have the authority to allow some flexibility with construction activities, these conditions are written to require that no element of construction of permanent facilities, which is difficult to reverse, may proceed without prior approval of plans by the CBO. For those elements of construction that are not difficult to reverse and are allowed to proceed without approval of the plans, the applicant shall have the responsibility to fully modify those elements of construction to comply with all design changes that result from the CBO's plan review and approval process.

FACILITY CLOSURE

A facility closure was evaluated under three scenarios; Planned Closure, Unexpected Temporary Closure and Unexpected Permanent Closure.

PLANNED CLOSURE

The removal of a facility from service, or decommissioning, as a result of the project reaching the end of its useful life, may range from "mothballing" to removal of all equipment and appurtenant facilities. Future conditions that may affect the decommissioning decision are largely unknown at this time.

In order to assure that decommissioning of the facility will be completed in a manner that is environmentally sound, safe, and will protect public health and safety, the applicant shall submit a decommissioning plan to the Energy Commission and City of Blythe or Riverside County for review and approval prior to the commencement of decommissioning. The plan shall include a discussion of the following items:

7. Proposed decommissioning activities for the project and all appurtenant facilities constructed as part of the project;
8. All applicable LORS, local/regional plans, and a discussion of the conformance of the proposed decommissioning activities to the applicable LORS and local/regional plans;
9. The activities necessary to restore the site if the plan requires removal of all equipment and appurtenant facilities; and
10. Decommissioning alternatives, other than complete site restoration.

UNEXPECTED TEMPORARY CLOSURE

Under this scenario, it is expected that the facility is closed unexpectedly, on a short-term basis. Natural disasters, such as an earthquake or severe storm, can cause an unexpected temporary closure of the facility. If damage to the facilities is too great, the temporary closure may become permanent.

If the facility is closed on a temporary basis, the applicant shall secure the site in order to protect public health and safety. If temporary closure becomes permanent, the applicant shall follow the "Planned Closure" procedures outlined in the Planned Closure.

UNEXPECTED PERMANENT CLOSURE

Under this scenario, the project owner closes the facility unexpectedly on a permanent basis. In this case, the project owner shall implement the closure procedures outlined above for "Planned Closure."

The above requirements should serve as adequate protection, even in the unlikely event of project abandonment. Staff has proposed a Condition of Certification (**GEN-9**) to ensure that these measures are included in the Facility Closure Plan.

RESPONSE TO PUBLIC AND AGENCY COMMENTS

As of October 4, 2000, the Energy Commission staff has not received any public or agency comments regarding facility design.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

11. The laws, ordinances, regulations, and standards (LORS), identified in the AFC and supporting documents, are those applicable to the project.
12. Staff has evaluated the AFC, and the project LORS and design criteria in the record. Staff concludes that the design, construction and eventual closure of the project are likely to comply with applicable LORS. If properly implemented, design criteria, including staff proposed modifications, will ensure that LORS are met during the project design and construction phases.
13. The conditions of certification proposed will ensure that the proposed facilities are designed, constructed, operated, and eventually closed in accordance with applicable LORS. This will occur through the use of design review, plan checking and field inspections, which are to be performed by the local CBO or other commission delegate agent. Staff will audit the CBO to ensure satisfactory performance.
14. The Energy Commission design review and construction inspection process will be in place for the project and will allow construction to start as scheduled if the project is certified. The process will provide the necessary reviews to ensure compliance with applicable facility design LORS and conditions of certification.
15. Whereas future conditions that may affect decommissioning are largely unknown at this time, it can reasonably be concluded that if the project owner submits a decommissioning plan required by **GEN-9**, prior to the commencement of decommissioning, that the decommissioning procedure is likely to result in satisfactory decommissioning performance.

RECOMMENDATIONS

If the Energy Commission certifies the project, staff recommends that:

16. The Conditions of Certification proposed herein be adopted to ensure that the project is designed and constructed to comply with applicable LORS, and also to protect environmental quality, and assure public health and safety;
17. The project should be designed and built to the 1998 CBC (or successor standard, if such is in effect); and
18. The CBO shall review the final designs, conduct plan checking and perform field inspections during construction, and staff audit and monitor the CBO to ensure satisfactory performance.

CONDITIONS OF CERTIFICATION

GEN-1 The project owner shall design, construct and inspect the project in accordance with the 1998 California Building Code (CBC)[2] and all other applicable LORS in effect at the time initial design plans are submitted to the CBO for review and approval. The CBC in effect is that edition that has been adopted by the California Building Standards Commission and published at least 180 days previously. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification TSE-1, TSE-2 and TSE-3 in the **Transmission System Engineering** Section of this document.

Protocol: In the event that the BEP is submitted to the CBO when a successor to the 1998 CBC is in effect, the 1998 CBC provisions identified herein shall be replaced with the applicable successor provisions. *Where, in any specific case, different sections of the code specify different materials, methods of construction, or other requirements, the most restrictive shall govern.* Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

Verification: Within 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) after receipt of the Certificate of Occupancy, the project owner shall submit to the California Energy Commission Compliance Project Manager (CPM) a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation and inspection requirements of the applicable LORS and the Energy Commission's Decision have been met in the area of facility design. The project owner shall provide the CPM a copy of the Certificate of Occupancy within 30 days of receipt from the CBO [1998 CBC, Section 109 – Certificate of Occupancy.]

GEN-2 The project owner shall furnish to the CPM and to the CBO a schedule of facility design submittals, a Master Drawing List, and a Master Specifications

[2] The Sections, Chapters, Appendices and Tables, unless otherwise stated, refer to the Sections, Chapters, Appendices and Tables of the 1998 California Building Code (CBC).

List. The schedule shall contain a description of, and a list of proposed submittal packages for design, calculations, and specifications for major structures and equipment (see a list of major structures and equipment in **Table 1: Major Equipment List** below). To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested.

Table 1

***All capacities and sizes are approximate and may change during project final design.**

Verification: At least 60Thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the CBO and to the CPM. The project owner shall provide schedule updates in the Monthly Compliance Report.

GEN-3 The project owner shall make payments to the CBO for design review, plan check and construction inspection, equivalent to the fees listed in the 1998 CBC, Chapter 1, Section 107 and Table 1-A, Building Permit Fees; Appendix Chapter 33, Section 3310 and Table A-33-A, Grading Plan Review Fees; and Table A-33-B, Grading Permit Fees. If City of Blythe or Riverside County has adjusted the CBC fees for design review, plan check and construction inspection, the project owner shall pay the adjusted fees.

Verification: The project owner shall make the required payments to the CBO at the time of submittal of the plans, design calculations, specifications, or soil reports. The project owner shall send a copy of the CBO's receipt of payment to the CPM in the next Monthly Compliance Report indicating that the applicable fees have been paid.

GEN-4 Prior to the start of rough grading, the project owner shall assign a California registered architect, structural engineer or civil engineer, as a resident engineer (RE), to be in general responsible charge of the project [Building Standards Administrative Code (Cal. Code Regs., tit. 24, § 4-209, Designation of Responsibilities)]. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification TSE-1, TSE-2 and TSE-3 in the **Transmission System Engineering** Section of this document.

Protocol: The RE may delegate responsibility for portions of the project to other registered engineers. Registered mechanical and electrical engineers may be delegated responsibility for mechanical and electrical portions of the project respectively. A project may be divided into parts, provided each part is clearly defined as a distinct unit. Separate assignment of general responsible charge may be made for each designated part.

The RE shall:

1. Monitor construction progress to ensure compliance with LORS;
2. Ensure that construction of all the facilities conforms in every material respect to the applicable LORS, these Conditions of Certification, approved plans, and specifications;
3. Prepare documents to initiate changes in the approved drawings and specifications when directed by the project owner or as required by conditions on the project;

4. Be responsible for providing the project inspectors and testing agency(ies) with complete and up-to-date set(s) of stamped drawings, plans, specifications and any other required documents;
5. Be responsible for the timely submittal of construction progress reports to the CBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and
6. Be responsible for notifying the CBO of corrective action or the disposition of items noted on laboratory reports or other tests as not conforming to the approved plans and specifications.

The RE shall have the authority to halt construction and to require changes or remedial work, if the work does not conform to applicable requirements.

If the RE or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the name, qualifications and registration number of the RE and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the RE and other delegated engineer(s) within five days of the approval.

If the RE or the delegated engineer(s) are subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-5 Prior to the start of rough grading, the project owner shall assign at least one of each of the following California registered engineers to the project: A) a civil engineer; B) a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering; C) a design engineer, who is either a structural engineer or a civil engineer fully competent and proficient in the design of powerplant structures and equipment supports; D) a mechanical engineer; and E) an electrical engineer. [California Business and Professions Code section 6704 et seq., and sections 6730 and 6736 requires state registration to practice as a civil engineer or structural engineer in California]. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification TSE-1, TSE-2 and TSE-3 in the **Transmission System Engineering** Section of this document.

The tasks performed by the civil, mechanical, electrical or design engineers may be divided between two or more engineers, as long as each engineer is

responsible for a particular segment of the project (e.g., proposed earthwork, civil structures, powerplant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer.

The project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all engineers assigned to the project. [1998 CBC, Section 104.2, Powers and Duties of Building Official.]

If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

Protocol: A: The civil engineer shall:

1. Design, or be responsible for design, stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities. At a minimum, these include: grading, site preparation, excavation, compaction, construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads, and sanitary sewer systems; and
2. Provide consultation to the RE during the construction phase of the project, and recommend changes in the design of the civil works facilities and changes in the construction procedures.

Protocol: B: The geotechnical engineer or civil engineer, experienced and knowledgeable in the practice of soils engineering, shall:

1. Review all the engineering geology reports, and prepare final soils grading report;
2. Prepare the soils engineering reports required by the 1998 CBC, Appendix Chapter 33, Section 3309.5 – Soils Engineering Report, and Section 3309.6 – Engineering Geology Report;
3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the 1998 CBC, Appendix Chapter 33, section 3317, Grading Inspections;
4. Recommend field changes to the civil engineer and RE;
5. Review the geotechnical report, field exploration report, laboratory tests, and engineering analyses detailing the nature and extent of the site soils that may be susceptible to liquefaction, rapid settlement or collapse when saturated under load; and

6. Prepare reports on foundation investigation to comply with the 1998 CBC, Chapter 18 section 1804, Foundation Investigations.

This engineer shall be authorized to halt earthwork and to require changes; if site conditions are unsafe or do not conform with predicted conditions used as a basis for design of earthwork or foundations. [1998 CBC, section 104.2.4, Stop orders.]

Protocol: C: The design engineer shall:

1. Be directly responsible for the design of the proposed structures and equipment supports;
2. Provide consultation to the RE during design and construction of the project;
3. Monitor construction progress to ensure compliance with LORS;
4. Evaluate and recommend necessary changes in design; and
5. Prepare and sign all major building plans, specifications and calculations.

Protocol: D: The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the CBO, stating that the proposed final design plans, specifications, and calculations conform with all of the mechanical engineering design requirements set forth in the Energy Commission's Decision.

Protocol: E: The electrical engineer shall:

1. Be responsible for the electrical design of the project; and
2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all the responsible engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-6 Prior to the start of an activity requiring special inspection, the project owner shall assign to the project, a qualified and certified special inspector(s) who shall be responsible for the special inspections required by the 1998 CBC, Chapter 17, Section 1701, Special Inspections, Section, 1701.5 Type of Work (requiring special inspection), and Section 106.3.5, Inspection and observation program. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification TSE-1,

TSE-2 and TSE-3 in the **Transmission System Engineering** Section of this document.

Protocol: The special inspector shall:

1. Be a qualified person who shall demonstrate competence, to the satisfaction of the CBO, for inspection of the particular type of construction requiring special or continuous inspection;
2. Observe the work assigned for conformance with the approved design drawings and specifications;
3. Furnish inspection reports to the CBO and RE. All discrepancies shall be brought to the immediate attention of the RE for correction, then, if uncorrected, to the CBO and the CPM for corrective action; and
4. Submit a final signed report to the RE, CBO, and CPM, stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans and specifications and the applicable provisions of the applicable edition of the CBC.

A certified weld inspector, certified by the American Welding Society (AWS), and/or American Society of Mechanical Engineers (ASME) as applicable, shall inspect welding performed on-site requiring special inspection (including structural, piping, tanks and pressure vessels).

Verification: At least 15 days prior to the start of an activity requiring special inspection, the project owner shall submit to the CBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s), or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. The project owner shall also submit to the CPM a copy of the CBO's approval of the qualifications of all special inspectors in the next Monthly Compliance Report.

If the special inspector is subsequently reassigned or replaced, the project owner has five days in which to submit the name and qualifications of the newly assigned special inspector to the CBO for approval. The project owner shall notify the CPM of the CBO's approval of the newly assigned inspector within five days of the approval.

GEN-7 The project owner shall keep the CBO informed regarding the status of engineering and construction. If any discrepancy in design and/or construction is discovered, the project owner shall document the discrepancy and recommend the corrective action required. The discrepancy documentation shall be submitted to the CBO for review and approval. The discrepancy documentation shall reference this condition of certification and, if appropriate, the applicable sections of the CBC and/or other LORS.

Verification: The project owner shall submit monthly construction progress reports to the CBO and CPM. The project owner shall transmit a copy of the CBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days. If disapproved, the project owner shall advise the CPM,

within five days, the reason for disapproval, and the revised corrective action to obtain CBO's approval.

GEN-8 The project owner shall obtain the CBO's final approval of all completed work. The project owner shall request the CBO to inspect the completed structure and review the submitted documents. When the work and the "as-built" and "as graded" plans conform to the approved final plans, the project owner shall notify the CPM regarding the CBO's final approval. The marked up "as-built" drawings for the construction of structural and architectural work shall be submitted to the CBO. Changes approved by the CBO shall be identified on the "as-built" drawings [1998 CBC, Section 108, Inspections.]

Verification: Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM, (a) a written notice that the completed work is ready for final inspection, and (b) a signed statement that the work conforms to the final approved plans.

GEN-9 The project owner shall file a closure/decommissioning plan with City of Blythe or Riverside County and the CPM for review and approval at least 12 months (or other mutually agreed to time) prior to commencing the closure activities. If the project is abandoned before construction is completed, the project owner shall return the site to its original condition.

Protocol: The closure plan shall include a discussion of the following:

1. The proposed closure/decommissioning activities for the project and all appurtenant facilities constructed as part of the project;
2. All applicable LORS, all local/regional plans, and a discussion of the conformance of the proposed decommissioning activities to the applicable LORS and local/regional plans;
3. Activities necessary to restore the site if the BEP decommissioning plan requires removal of all equipment and appurtenant facilities; and
4. Closure/decommissioning alternatives, other than complete restoration of the site.

Verification: At least 12 months prior to closure or decommissioning activities, the project owner shall file a copy of the closure/decommissioning plan with City of Blythe or Riverside County and the CPM for review and approval. Prior to the submittal of the closure plan, a meeting shall be held between the project owner and the CPM for discussing the specific contents of the plan.

CIVIL-1 Prior to the start of site grading, the project owner shall submit to the CBO for review and approval the following:

1. Design of the proposed drainage structures and the grading plan;
2. An erosion and sedimentation control plan;

3. Related calculations and specifications, signed and stamped by the responsible civil engineer; and
4. Soils report as required by the 1998 CBC, Appendix Chapter 33, Section 3309.5, Soils Engineering Report and Section 3309.6, Engineering Geology Report.

Verification: At least 15 days prior to the start of site grading, the project owner shall submit the documents described above to the CBO for review and approval. In the next Monthly Compliance Report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.

CIVIL-2 The resident engineer shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible geotechnical engineer or civil engineer experienced and knowledgeable in the practice of soils engineering identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications and calculations to the CBO based on these new conditions. The project owner shall obtain approval from the CBO before resuming earthwork and construction in the affected area. [1998 CBC, Section 104.2.4, Stop orders.]

Verification: The project owner shall notify the CPM, within five days, when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions. Within five days of the CBO's approval, the project owner shall provide to the CPM a copy of the CBO's approval to resume earthwork and construction in the affected areas.

CIVIL-3 The project owner shall perform inspections in accordance with the 1998 CBC, Chapter 1, Section 108, Inspections; Chapter 17, Section 1701.6, Continuous and Periodic Special Inspection; and Appendix Chapter 33, Section 3317, Grading Inspection. All plant site-grading operations shall be subject to inspection by the CBO and the CPM.

Protocol: If, in the course of inspection, it is discovered that the work is not being done in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO, and the CPM. The project owner shall prepare a written report detailing all discrepancies and non-compliance items, and the proposed corrective action, and send copies to the CBO and the CPM.

Verification: Within five days of the discovery of any discrepancies, the resident engineer shall transmit to the CBO and the CPM a Non-Conformance Report (NCR), and the proposed corrective action. Within five days of resolution of the NCR, the project owner shall submit the details of the corrective action to the CBO and the CPM. A list of NCRs, for the reporting month, shall also be included in the following Monthly Compliance Report.

CIVIL-4 After completion of finished grading and erosion and sedimentation control and drainage facilities, the project owner shall obtain the CBO's approval of the final "as-graded" grading plans, and final "as-built" plans for the erosion and sedimentation control facilities [1998 CBC, Section 109, Certificate of Occupancy.]

Verification: Within 30 days of the completion of the erosion and sediment control mitigation and drainage facilities, the project owner shall submit to the CBO the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans, and that the facilities are adequate for their intended purposes. The project owner shall submit a copy of this report to the CPM in the next Monthly Compliance Report.

CIVIL-5 The project owner shall design and install the natural gas pipeline in accordance with the appropriate U.S. Department of Transportation (DOT), Title 49, Code of Federal Regulations (CFR) Chapter 1, Part 192 "Transportation of Natural and other Gas by Pipeline: Minimum Federal Safety Standards", and the California Public Utilities Commission, General Order 112-E (CPUC GO 112-E). Prior to the start of any increment of pipeline construction, the project owner shall obtain CBO approval of the proposed final design drawings, specifications, calculations, and applicable quality control procedures.

Protocol: The project owner shall ensure that:

1. The responsible engineer, registered to practice civil engineering in the State of California, shall submit a signed and stamped statement to the CBO that the proposed final designs, plans, specifications, and calculations conform with all of the piping requirements set forth in the Commission decision.
2. The depth of cover for the pipeline shall meet the requirements of the applicable DOT-192 and CPUC G.O.-112E, as necessary.
3. Upon completion of construction, the project owner shall request the CBO's inspection approval of said construction.

Verification: Thirty (30) days prior to the start of pipeline construction, the project owner shall submit to the CBO for review and approval, the final design plans, specifications, calculations and quality control procedures for the natural gas pipeline construction. The project owner shall include a copy of the signed and stamped engineer's certification of conformance with the applicable requirements. The project owner shall submit to the CEC CPM a copy of the signed and stamped engineer's certification of compliance with applicable LORS and standards in the Monthly Compliance following submittal of same to the CBO. The project owner shall submit to the CPM a copy of the CBO's inspection approvals in the Monthly Compliance Report following completion of construction inspection.

STRUC-1 Prior to the start of any increment of construction, the project owner shall submit to the CBO for review and approval the proposed lateral force

procedures for project structures and the applicable designs, plans and drawings for project structures. Proposed lateral force procedures, designs, plans and drawings shall be those for:

1. Major project structures;
2. Major foundations, equipment supports and anchorage;
3. Large field fabricated tanks;
4. Turbine/generator pedestal; and
5. Switchyard structures.

In addition, the project owner shall, prior to the start of any increment of construction, get approval from the CBO of the lateral force procedures proposed for project structures to comply with the lateral force provisions of the CBC.

Protocol: The project owner shall:

1. Obtain approval from the CBO of lateral force procedures proposed for project structures;
2. Obtain approval from the CBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If there are conflicting requirements, the more stringent shall govern (i.e., highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with the structure plans, calculations, and specifications [1998 CBC, Section 108.4, Approval Required];
3. Submit to the CBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures at least 90 days (or a lesser number of days mutually agreed to by the project owner and the CBO), prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation [1998 CBC, Section 106.4.2, Retention of plans and Section 106.3.2, Submittal documents.]; and
4. Ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations and specifications shall be signed and stamped by the responsible design engineer [1998 CBC, Section 106.3.4, Architect or Engineer of Record.]

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of any increment of construction, the project owner shall submit to the CBO, with a copy to the CPM, the responsible design engineer's signed statement that the final design plans, specifications and calculations conform with all of the requirements set forth in the Energy Commission's Decision.

If the CBO discovers non-conformance with the stated requirements, the project owner shall resubmit the corrected plans to the CBO within 20 days of receipt of the nonconforming submittal with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and are in conformance with the requirements set forth in the applicable LORS.

STRUC-2 The project owner shall submit to the CBO the required number of sets of the following:

1. Concrete cylinder strength test reports (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);
2. Concrete pour sign-off sheets;
3. Bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);
4. Field weld inspection reports (including type of weld, location of weld, inspection of non-destructive testing (NDT) procedure and results, welder qualifications, certifications, qualified procedure description or number (ref: AWS); and
5. Reports covering other structure activities requiring special inspections shall be in accordance with the 1998 CBC, Chapter 17, Section 1701, Special Inspections, Section 1701.5, Type of Work (requiring special inspection), Section 1702, Structural Observation and Section 1703, Nondestructive Testing.

Verification: If a discrepancy is discovered in any of the above data, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies to the CBO, with a copy of the transmittal letter to the CPM. The NCR shall reference the condition(s) of certification and the applicable CBC chapter and section. Within five days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the CBO and the CPM.

The project owner shall transmit a copy of the CBO's approval or disapproval of the corrective action to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action to obtain CBO's approval.

STRUC-3 The project owner shall submit to the CBO design changes to the final plans required by the 1998 CBC, Chapter 1, Section 106.3.2, Submittal documents, and Section 106.3.3, Information on plans and specifications, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give the CBO prior notice of the intended filing.

Verification: On a schedule suitable to the CBO, the project owner shall notify the CBO of the intended filing of design changes, and shall submit the required number of sets of revised drawings and the required number of copies of the other above-mentioned documents to the CBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the Monthly Compliance Report, when the CBO has approved the revised plans.

STRUC-4 Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in Chapter 3, Table 3-E of the 1998 CBC shall, at a minimum, be designed to comply with Occupancy Category 2 of the 1998 CBC. Chapter 16, Table 16–K of the 1998 CBC requires use of the following seismic design criteria: $I = 1.25$, $I_p = 1.5$ and $I_w = 1.15$.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of installation of the tanks or vessels containing the above specified quantities of highly toxic or explosive substances that would be hazardous to the safety of the general public if released, the project owner shall submit to the CBO for review and approval, final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.

The project owner shall send copies of the CBO approvals of plan checks to the CPM in the following Monthly Compliance Report. The project owner shall also transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

MECH-1 Prior to the start of any increment of piping construction, the project owner shall submit, for CBO review and approval, the proposed final design drawings, specifications and calculations for each plant piping system (excluding domestic water, refrigeration systems, and small bore piping, i.e., piping and tubing with a diameter less than two and one-half inches). The submittal shall also include the applicable QA/QC procedures. The project owner shall design and install all piping, other than domestic water, refrigeration, and small bore piping in accordance with the applicable edition of the CBC. Upon completion of construction of any piping system, the project owner shall request the CBO's inspection approval of said construction [1998 CBC, Section 106.3.2, Submittal documents, Section 108.3, Inspection Requests.]

Protocol: The responsible mechanical engineer shall submit a signed and stamped statement to the CBO when:

1. The proposed final design plans, specifications and calculations conform with all of the piping requirements set forth in the Energy Commission's Decision; and
2. All of the other piping systems, except domestic water, refrigeration systems and small bore piping have been designed, fabricated and installed in accordance with all applicable ordinances, regulations, laws and industry standards, including, as applicable:

- American National Standards Institute (ANSI) B31.1 (Power Piping Code);
- ANSI B31.2 (Fuel Gas Piping Code);
- ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code);
- ANSI B31.8 (Gas Transmission and Distribution Piping Code); and
- Specific City/County code.

The CBO may require the project owner to employ special inspectors to report directly to the CBO to monitor shop fabrication or equipment installation [1998 CBC, Section 104.2.2, Deputies.]

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of any increment of piping construction, the project owner shall submit to the CBO for approval, with a copy of the transmittal letter to the CPM, the above listed documents for that increment of construction of piping systems, including a copy of the signed and stamped engineer's certification of conformance with the Energy Commission's Decision. The project owner shall transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

MECH-2 For all pressure vessels installed in the plant, the project owner shall submit to the CBO and California Occupational Safety and Health Administration (Cal-OSHA), prior to operation, the code certification papers and other documents required by the applicable LORS. Upon completion of the installation of any pressure vessel, the project owner shall request the appropriate CBO and/or Cal-OSHA inspection of said installation [1998 CBC, Section 108.3 – Inspection Requests.]

The project owner shall:

1. Ensure that all boilers and fired and unfired pressure vessels are designed, fabricated and installed in accordance with the appropriate section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, or other applicable code. Vendor certification, with identification of applicable code, shall be submitted for prefabricated vessels and tanks; and
2. Have the responsible design engineer submit a statement to the CBO that the proposed final design plans, specifications and calculations conform to all of the requirements set forth in the appropriate ASME Boiler and Pressure Vessel Code or other applicable codes.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of on-site fabrication or installation of any pressure vessel, the project owner shall submit to the CBO for review and approval, final design plans, specifications and calculations, including a copy of the signed and stamped engineer's certification, with a copy of the transmittal letter to the CPM.

The project owner shall send copies of the CBO plan check approvals to the CPM in the following Monthly Compliance Report. The project owner shall also transmit a copy of the CBO's and/or Cal-OSHA inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

MECH-3 Prior to the start of construction of any heating, ventilating, air conditioning (HVAC) or refrigeration system, the project owner shall submit to the CBO for review and approval the design plans, specifications, calculations and quality control procedures for that system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

Protocol: The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the applicable edition of the CBC. Upon completion of any increment of construction, the project owner shall request the CBO's inspection and approval of said construction. The final plans, specifications and calculations shall include approved criteria, assumptions and methods used to develop the design. In addition, the responsible mechanical engineer shall sign and stamp all plans, drawings and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications and calculations conform with the applicable LORS [1998 CBC, Section 108.7, Other Inspections; Section 106.3.4, Architect or Engineer of Record.]

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of construction of any HVAC or refrigeration system, the project owner shall submit to the CBO the required HVAC and refrigeration calculations, plans and specifications, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the applicable edition of the CBC, with a copy of the transmittal letter to the CPM.

The project owner shall send copies of CBO comments and approvals to the CPM in the next Monthly Compliance Report. The project owner shall transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

MECH-4 Prior to the start of each increment of plumbing construction, the project owner shall submit for CBO's approval the final design plans, specifications, calculations, and QA/QC procedures for all plumbing systems, potable water systems, drainage systems (including sanitary drain and waste), toilet rooms, building energy conservation systems, and temperature control and ventilation systems, including water and sewer connection permits issued by the local agency. Upon completion of any increment of construction, the project owner shall request the CBO's inspection approval of said construction [1998 CBC, Section 108.3, Inspection Requests, Section 108.4, Approval Required.]

Protocol: The project owner shall design, fabricate and install:

1. Plumbing, potable water, all drainage systems, and toilet rooms in accordance with Title 24, California Code of Regulations, Division 5,

Part 5 and the California Plumbing Code (or other relevant section(s) of the currently adopted California Plumbing Code and Title 24, California Code of Regulations); and

2. Building energy conservation systems and temperature control and ventilation systems in accordance with Title 24, California Code of Regulations, Division 5, Chapter 2-53, Part 2.

The final plans, specifications and calculations shall clearly reflect the inclusion of approved criteria, assumptions and methods used to develop the design. In addition, the responsible mechanical engineer shall stamp and sign all plans, drawings and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications and calculations conform with all of the requirements set forth in the Energy Commission's Decision.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of construction of any of the above systems, the project owner shall submit to the CBO the final design plans, specifications and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the applicable edition of the CBC, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

The project owner shall transmit a copy of the CBO's inspection approval to the CPM in the next Monthly Compliance Report following completion of that increment of construction.

ELEC-1 For the 480 volts and higher systems, the project owner shall not begin any increment of electrical construction until plans for that increment have been approved by the CBO. These plans, together with design changes and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS [1998 CBC, Section 108.4, Approval Required, and Section 108.3, Inspection Requests.] All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification TSE-1, TSE-2 and TSE-3 in the **Transmission System Engineering** Section of this document.

Protocol: The following activities shall be reported in the Monthly Compliance Report:

1. receipt or delay of major electrical equipment;
2. testing or energization of major electrical equipment; and
3. the number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of each increment of electrical construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations for electrical equipment and systems 480 volts and greater, including a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance

with the applicable LORS, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

ELEC-2 The project owner shall submit to the CBO the required number of copies of items A and B for review and approval and one copy of item C [CBC 1998, Section 106.3.2, Submittal documents.] All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification TSE-1, TSE-2 and TSE-3 in the **Transmission System Engineering** Section of this document.

Protocol: A. Final plant design plans to include:

1. one-line diagrams for the 13.8 kV, 4.16 kV and 480 V systems;
2. system grounding drawings;
3. general arrangement or conduit drawings; and
4. other plans as required by the CBO.

Protocol: B. Final plant calculations to establish:

1. short-circuit ratings of plant equipment;
2. ampacity of feeder cables;
3. voltage drop in feeder cables;
4. system grounding requirements;
5. coordination study calculations for fuses, circuit breakers and protective relay settings for the 13.8 kV, 4.16 kV and 480 V systems;
6. system grounding requirements;
7. lighting energy calculations; and
8. other reasonable calculations as customarily required by the CBO.

Protocol: C. A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the Energy Commission Decision.

Verification: At least thirty (30) days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of each increment of electrical equipment installation, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations, for electrical equipment and systems 480 volts and greater enumerated above, including a copy of the signed and stamped statement from the responsible electrical engineer certifying compliance with the applicable LORS. The project owner shall send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

REFERENCES

BEP (Blythe Energy Project/Looper) 1999a. Submittal of Application for Certification - Blythe Energy Project, Volumes I and II. Submitted to the Energy Commission on December 9, 1999.

BEP (Blythe Energy Project) 2000b. Progress Report. Submitted to California Energy Commission/Docket on February 15, 2000.

BEP (Blythe Energy Project) 2000c. 1. New Volume 1A for all oversized figures. 2. Replacement text and replacement figures for Volume 1 and Volume 2 (issued in December 1999). 3. New Volume 2A binder with supplement appendices. Submitted to CEC/Smith on February 18, 2000.

BEP (Blythe Energy Project) 2000d. Inserts: Responses to CEC's Data Adequacy Determination Tables in volume 1A before the oversized images. Submitted to CEC/Docket on March 6, 2000.

BEP (Blythe Energy Project/Looper) 2000e. Submittal of Responses, Revisions and Supplemental Information in Response to the Commission's Data Adequacy Comments dated March 7, 2000. Pertaining to the Application for Certification. Submitted to CEC/Smith on March 17, 2000.

CEC (California Energy Commission/Therkelsen) 1999a. Notice of Receipt of AFC. Submitted to California Energy Commission/Docket on December 14, 1999.

CEC (California Energy Commission/Smith) 1999s. Data Adequacy 2. Submitted to CEC/Keese/Moore/Laurie/Pernell on March 8, 2000.

CEC (California Energy Commission/Staff) 1999t. Draft: Data Adequacy Responses – Transmission, March 13, 2000. Submitted to CEC/Docket on March 14, 2000.

CEC California Energy Commission/Therkelsen) 1999w. Transmittal Letter – Supplemental Information. Submitted to Agency Distribution List on March 22, 2000.

USDOT (Department of Transportation/Grimes) 1999a. Review of the documents for the proposed Blythe Energy Project, No Comments at this time. Submitted to CEC/Shaw on January 24, 2000.

HAZARDOUS MATERIALS MANAGEMENT

Testimony of Rick Tyler

INTRODUCTION

The purpose of this analysis is to determine if the proposed Blythe Energy Project (BEP) will result in the potential for a significant impact on the public as a result of the use, handling or storage of hazardous materials at the proposed facility. If significant adverse impacts on the public are identified, California Energy Commission (Energy Commission) staff must also evaluate the potential for facility design alternatives and additional mitigation measures to reduce impacts to the extent feasible. This analysis does not address potential exposure of workers to hazardous materials used at the proposed facility. Employers must inform employees of hazards associated with their work and thus employees accept a reasonable level of risk as a condition of employment. Workers are thus not afforded the same level of protection normally provided to the public. Further, workers are provided special protective equipment and training regarding such exposure (see staff's **Worker Safety and Fire Protection analysis).**

The only Acutely Hazardous Materials proposed for use at the BEP facility in quantities exceeding the reportable amounts defined in the California Health and Safety Code, section 25532 (j), are aqueous and anhydrous ammonia (refrigerant R717). The use of anhydrous ammonia poses the principal risk of off-site impacts in the event of a major accidental release associated with the project. Anhydrous ammonia is used in the inlet air refrigeration system where it exists as a liquefied gas at elevated pressure. In this state ammonia has high internal energy. The internal energy associated with the anhydrous form of ammonia can act as a driving force in an accidental release which can rapidly introduce large quantities of the material to the ambient air, where it can be transported in the atmosphere and result in high down-wind concentrations.

The use of aqueous ammonia and hydrochloric acid can also result in hazardous emissions in an accidental release. Emissions from accidental release of these materials are the result of mass transfer from the surface of the spilled liquid and are thus, much slower than those associated with anhydrous ammonia. While these materials can result in significant off-site concentrations, accidental release of these materials at the proposed facility would not cause significant concentrations at the public receptors considered in staff's evaluation of accidental anhydrous ammonia release.

Other hazardous materials stored in smaller quantities, such as mineral and lubricating oils, corrosion inhibitors, water conditioners and hydrogen, will be present at the proposed facility. However, these materials pose no significant potential for off-site impacts as a result of the quantities on site, their relative toxicity, and/or their environmental mobility.

Although no natural gas is stored, the project will also involve the construction and operation of natural gas pipelines and handling of large amounts of natural gas.

Natural gas poses risk of both fire and explosion. The natural gas pipeline is addressed in staff's **Facility Design** analysis.

The BEP will also require the transportation of anhydrous ammonia to the facility. Transportation hazards associated with truck routes used for delivery of hazardous materials in the project vicinity are addressed in staff's **Traffic and Transportation** analysis.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local laws generally apply to the protection of public health and hazardous materials management. Staff's analysis reflects the project's compliance with these requirements.

FEDERAL

The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III and Clean Air Act of 1990 established a nationwide emergency planning and response program, and imposed reporting requirements for businesses which store, handle, or produce significant quantities of extremely hazardous materials. The Act (codified in 40 C. F. R., § 68.110 et seq.) requires the states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility through preparation of Risk Management Plans. The requirements of these Acts are reflected in the California Health and Safety Code, section 25531 et seq.

STATE

The California Health and Safety Code, section 25534, directs facility owners who store or handle acutely hazardous materials in reportable quantities, to develop a Risk Management Plan (RMP) and to submit it to appropriate local authorities, the United States Environmental Protection Agency (EPA), and the designated local Administering Agency for review and approval. The plan must include an evaluation of the potential impacts associated with an accidental release, the likelihood of an accidental release occurring, the magnitude of potential human exposure, any pre-existing evaluations or studies of the material, the likelihood of the substance being handled in the manner indicated, and the accident history of the material.

Title 8, California Code of Regulations, section 5189, requires the owners of facilities that handle very large quantities of hazardous materials to develop and implement effective Process Safety Management (PSM) plans to insure safe handling of such materials. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process. Facilities that trigger PSM requirements are also automatically in the most stringent RMP program level.

California Health and Safety Code, section 41700, requires that "No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort,

repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."

California Government Code, section 65850.2, restricts the issuance of an occupancy permit to any new facility involving the handling of acutely hazardous materials until the facility has submitted an RMP to the administering agency with jurisdiction over the facility.

LOCAL AND REGIONAL

The Uniform Fire Code (UFC) contains provisions regarding the storage and handling of hazardous materials. These provisions are contained in Articles 79 and 80. The latest revision to Article 80 was in 1997 (UFC, 1997). These articles contain minimum setback requirements for the outdoor storage of ammonia.

The California Building Code also contains requirements regarding the storage and handling of hazardous materials. The Chief Building Official must inspect and verify compliance with these requirements prior to issuance of an occupancy permit. A further discussion of these requirements is provided in the **Facility Design** portion of this document.

SETTING

SITE AND VICINITY DESCRIPTION

Several factors associated with the area in which a project is to be located affect its potential to cause public health impacts from an accidental release of a hazardous material. These include:

- The local meteorology;
- Terrain characteristics; and
- The location of population centers and sensitive receptors relative to the project.

Staff considered these factors, as discussed below, in assessing the potential public health impacts of the project.

METEOROLOGICAL CONDITIONS

Meteorological conditions, including wind speed, wind direction and air temperature, affect the extent to which accidentally released hazardous materials would be dispersed into the air and the direction in which they would be transported. These affect the potential level of public exposure to such materials and the associated health risks. When wind speeds are low and the atmosphere is stable, dispersion is severely reduced and can lead to increased localized public exposure.

Recorded wind speeds and ambient air temperatures are described in the air quality section of the Application for Certification (AFC) (BEP1999a, Chapter 7.7). This data indicates that low wind speeds below one meter per second are not

uncommon for the project area. Therefore, staff suggested that the applicant use category F stability (stagnated air, very little mixing), one meter/second wind speed in its modeling analysis of an accidental release to reflect worst case atmospheric conditions. These conditions were reflected in the modeling used to estimate the potential worst case impacts associated with an accidental ammonia release. Additional modeling of more likely accident scenarios and less pessimistic meteorological conditions were also evaluated. These analyses reflect use of D and E stability and higher wind speeds. Stability classes D and E are representative of more common atmospheric conditions that result in greater dispersion and lower down-wind concentrations.

TERRAIN CHARACTERISTICS

The location of elevated terrain (terrain above the power plant stack height) is often an important factor to be considered in assessing potential exposure. An emission plume resulting from an accidental release may impact high elevations before impacting lower elevations. The principal risk of accidental release at this facility is associated with anhydrous ammonia. Accidental releases of anhydrous ammonia typically result in denser than air plumes. Thus, elevated terrain has no important effect on modeled results.

LOCATION OF EXPOSED POPULATIONS AND SENSITIVE RECEPTORS

The general population includes many sensitive subgroups that may be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses (Calabrese 1978). Also, the location of the population in the area surrounding a project site may have a large bearing on health risk. Figure 7.9-1 (BEP, 1999a) shows the locations of both populated areas and sensitive receptors in the project vicinity.

IMPACTS

The Energy Commission staff has determined that anhydrous ammonia and natural gas are the only hazardous materials to be handled that pose a risk of off-site impacts. The following is a project specific analysis of the potential impacts associated with the handling of each of these materials:

ANHYDROUS AMMONIA

Anhydrous ammonia will be used in refrigeration of inlet air to the gas turbine. The accidental release of anhydrous ammonia can result in hazardous down-wind concentrations of ammonia gas.

To assess the potential impacts associated with an accidental release of ammonia, staff typically evaluates where four “bench mark” exposure levels of ammonia gas occur off-site in parts per million (ppm). These include: 1) the lowest concentration posing a risk of lethality, 2,000 ppm; 2) the Immediately Dangerous to Life and Health level (IDLH) of 300 ppm; 3) the Emergency Response Planning Guideline (ERPG) level 2 of 200 ppm, which is also the RMP level 1 criterion used by EPA and California; and 4) the level considered by the Energy Commission staff to be

without serious adverse effects on the public for a one-time exposure of 75 ppm. (A detailed discussion of the exposure criteria considered by staff and their applicability to different populations and exposure-specific conditions is provided in Appendix A of this analysis.) If the exposure associated with a potential release would exceed 75 ppm at any public receptor, staff will presume that the potential release poses a risk of significant impact. However, staff may also assess the probability of occurrence of the release and/or the nature of the potentially exposed population. Staff may, based on such analysis, determine that the likelihood and extent of potential exposure are not sufficient to support a finding of potentially significant impact.

The responses to staff's data requests dated June 2, 2000 (BEP, 2000m), provided the results of modeling for a worst case accidental release of anhydrous ammonia from the refrigeration plant. The worst-case release scenario is associated with a postulated spontaneous catastrophic equipment failure and release of 20,000 pounds of ammonia. This modeling also reflects pessimistic meteorological conditions with wind speed of one meter per second and F stability. The analysis further reflects staff's request that the analysis be conducted utilizing a model that reflects dense gas behavior typical of ammonia dispersion from a liquefied gas release. The results indicate down wind concentrations of ammonia in parts per million (ppm) of 75 ppm @ 6.0 miles, 300 ppm @ 3.4 miles, 1000 ppm @ 1.5 miles and 2000 ppm @1.1miles. The applicant also provided modeling reflecting the same accidental release scenario with less pessimistic meteorological conditions with 3 meter per second wind speeds and D stability. These results indicate down wind concentrations of ammonia of 75ppm @ 3 miles, 300 ppm @ 1.5 miles, 1000 ppm @ .8 miles and 2000 ppm @ .5 miles.

Another potential mode of accidental release from the ammonia refrigeration system is associated with an aircraft crash at the site. This is a concern because the facility is in close proximity to the Blythe Airport. The proximity of the Blythe Project to the airport increases the probability of such an event. Staff evaluated a similar release scenario during the High Desert Project proceeding and determined that the probability of occurrence in that case was less than 1 in 10,000,000 (Tyler 1999).

The probability of such an event is proportional to the frequency of flights and the relative location of the target facility in relationship to the runway (Hodges et al 1993). The probability of such an incident based on the relative location for the Blythe Project is nearly the same as that associated with the High Desert facility. The frequency of flights used in the High Desert analysis was 3000 flights per year based on predicted full commercial development of the facility in the future. Staff, therefore, believes that the analysis for the Blythe facility is either similar or lower than the risk associated with the High Desert facility. It should also be noted that this risk analysis does not reflect the probability of concurrent air dispersion characteristics that would lead to potential public exposure. Staff contends that this risk does not significantly increase the overall risk associated with the Blythe project and did not consider it further in this case.

In addition to requesting analysis of atmospheric dispersion modeling in the event of a release, staff also requested analysis of the potential for such a release. The

Applicants results indicate a probability of accidental release ranging between 7.2 in 10,000 and 3.6 in 100,000 plant years of operation. However, these results were based on a range of assumptions regarding the population of refrigeration plants and do not reflect the extent of the accidental releases considered. Further evaluation by staff indicates that serious releases involving refrigeration plants occur at a frequency of about 1 in 100,000 per plant year of operation (Baldock, 1980). It should also be mentioned that most large refrigeration plants are in food processing plants or other facilities where many external hazards have caused accidental releases. Many of the factors leading to releases at these facilities are not applicable at the proposed facility.

Staff evaluated the potential for impacts on three specific receptor locations including Nicholls Warm Springs, the Blythe Airport and on Interstate 10. The modeling results indicate that significant impacts would occur at Nicholls Warm Springs, about 2 miles from the project, with winds from the east and north east direction with E or F stability. Staff's analysis indicates that winds in the direction of Nicholls Warm Springs with E or F stability occur with a frequency of about .021 (about two percent of the time)(BEP, 1999a). Thus, significant impacts on Nicholls Warm Springs would have a probability of occurrence of about 2 in 10,000,000 per year. Staff's analysis of the Blythe Airport, about 1.5 miles from the project, indicates the probability of impact with winds from the south east and with D, E and F stability. These meteorological conditions occur with a frequency of about .011 (about one percent of the time). Thus the risk of significant impact at the Blythe Airport is about 1 in 10,000,000. The modeling results indicate that impacts on Interstate 10, about .25 miles from the project, could be associated with winds from the north, north by north east, north east, east by north east, west by north west, north west and north by north west with D, E or F stability. These meteorological conditions occur with a frequency of about .203 (about 20 percent of the time). Thus the risk of significant impact on Interstate 10 is about 2 in 1,000,000. In general staff considers a risk above 1 in 1,000,000 per year significant with the potential of more than 100 serious injuries and or fatalities. Staff could not quantify the potential number of injuries or fatalities that could result from a release affecting Interstate 10. However, staff does believe that such an event has the potential to cause more than 100 injuries and or fatalities on Interstate 10. While this level of risk cannot be considered insignificant it is close to an insignificant level of risk. It is typical regulatory practice in such cases to impose mitigation to reduce risk to the lowest level that is reasonably practical (AIChE, 1998) (Lees F.P., 1996).

The potential for impacts on Interstate 10 exceeds staff's trigger level for significance. As a result, staff considered methods to mitigate the potential impacts on Interstate 10. In general mitigation of potential impacts associated with handling of hazardous materials can involve three general approaches. These include; 1) substitution of the material posing the risk with a non-hazardous or less hazardous alternative material, 2) use of engineered control measures and 3) implementation of administrative controls.

In considering the use of an alternative refrigeration system using a non-hazardous or less-hazardous material staff identified three alternative systems that appear to be theoretically feasible. These include systems utilizing CFCs, water, and air as

working fluids. Use of systems utilizing CFCs was rejected as a result of regulatory constraints on their use. While use of water based or air based systems appear to be theoretically feasible neither system has been widely used commercially and would impose significant technical and economic uncertainty in this application. Based on this evaluation staff does not believe that it is feasible to use an alternative working fluid or refrigeration system type in this application.

In considering engineered controls, staff identified two potential mitigation approaches 1) use of double containment and 2) use of an automatic fire suppression system. Staff does not believe that double containment is technically feasible on the heat exchanger portions of the refrigeration system and as a result cannot be expected to provide levels of risk reduction that would justify its added cost. It is further staff's belief that requiring the use of double containment would make the inlet air chiller economically infeasible. Requiring the use of an automatic fire suppression system is supported by the record of past releases from refrigeration plants that suggests a significant causal relationship between fires and accidental releases from such plants. Staff has proposed a condition of certification requiring installation of an automatic fire suppression system on the refrigeration plant.

The proposed refrigeration plant will be subject to regulations requiring participation in the State Risk Management Program (RMP) and Process Safety Management (PSM) program post certification. It is staff's opinion that participation in these programs will result in development and implementation of extensive administrative controls designed to improve the safety of the plant. It should be noted that participation in such programs is not reflected in the database used to establish risk of accidental release as RMP and PSM were not in existence in 1980 when the data was compiled. It should also be noted that the risks associated with this refrigeration plant are no greater than those that already exist as a result of hazardous materials transportation on Interstate 10.

Based on the analysis above staff concludes that the risk associated with the proposed refrigeration plant are acceptable and in all likelihood below significant levels with the mitigation measures described above.

NATURAL GAS

Natural gas, which will be used as a fuel by the project, poses a fire and/or explosion risk as a result of its flammability. While natural gas will be used in significant quantities, it will not be stored on-site. The risk of a fire and/or explosion from natural gas can be reduced to insignificant levels through adherence to applicable codes and the development and implementation of effective safety management practices. The National Fire Protection Association (NFPA) Code 85A requires: 1) the use of double block and bleed valves for gas shut-off; 2) automated combustion controls; and 3) burner management systems. These measures will significantly reduce the likelihood of an explosion in gas fired equipment. Additionally, start-up procedures will require air purging of the gas turbines prior to start-up, thus precluding the presence of an explosive mixture.

The facility will also require the installation of two natural gas pipelines that could result in accidental release of natural gas. The design of the natural gas pipeline is discussed in staff's **Facility Design** analysis. It is staff's belief that the distance separating the public from the gas line and equipment utilizing natural gas, precludes the potential for significant impact, in the event of an accidental release.

CUMULATIVE IMPACTS

As proposed, the facility will cause only a very small risk of off-site impacts. There are no other facilities handling hazardous materials in the project vicinity that pose risks at locations affected by the BEP. Due to the limited area affected by any releases, there will be no additive effects. Thus the direct impacts of the project will not add to any existing accidental release risks.

FACILITY CLOSURE

The requirements for handling of hazardous materials remain in effect until such materials are removed from the site regardless of facility closure. Therefore, the facility owners are responsible for continuing to handle such materials in a safe manner, as required by applicable laws. In the event that the facility owner abandons the facility in a manner which poses a risk to surrounding populations, staff will coordinate with the California Office of Emergency Services, Riverside County Environmental Health Department, and the California Department of Toxic Substances Control (DTSC) to ensure that any unacceptable risk to the public is eliminated. Funding for such emergency action can be provided by federal, state or local agencies until the cost can be recovered from the responsible parties (O.E.S. 1990).

MITIGATION

With the exception of potential impacts associated with using anhydrous ammonia, the proposed project poses no significant risk of public impact from accidental release of hazardous materials at the proposed facility. While the use of anhydrous ammonia may pose a risk slightly above staff's significance criteria, staff does not believe that the actual risk is significant with the proposed mitigation measures.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSION

Staff's evaluation of hazardous materials handling and use for the proposed project indicates that they pose minimal potential for significant impacts on the public. With adoption of the proposed conditions of certification, the proposed project will comply with all applicable LORS. In response to Health and Safety Code, section 25531 et seq., the applicant will be required to submit an RMP. The EPA, Riverside County Environmental Health Department and Energy Commission staff will evaluate the RMP. To insure adequacy of the RMP, Energy Commission staff's proposed conditions of certification require that the RMP be submitted for concurrent review

by the Riverside County Environmental Health Department and staff. In addition, Energy Commission staff 's proposed conditions of certification also require that confirmation of Riverside County Environmental Health Department's approval be submitted prior to delivery of any hazardous materials to the facility. In addition staff has also proposed as a condition of certification installation of an automatic fire suppression system on the refrigeration plant to reduce the potential for accidental release of anhydrous ammonia from this facility. With adoption of Energy Commission staff's proposed conditions of certification, the project will also comply with Health and Safety Code, section 41700, and it will not pose significant potential for impacts to the public from hazardous materials releases.

RECOMMENDATION

Staff recommends the Energy Commission impose the proposed conditions of certification, presented herein, to ensure that the project is designed, constructed and operated to comply with applicable LORS and to protect the public from significant risk of exposure to an accidental ammonia release.

PROPOSED CONDITIONS OF CERTIFICATION

HAZ-1 The project owner shall not use any hazardous material in reportable quantities, as specified in Title 40, C. F.R. Part 355, Subpart J, section 355.50, not listed in Appendix B unless approved in advance by the CPM.

Verification: The project owner shall provide to the CPM, in the Annual Compliance Report, a list of hazardous materials contained at the facility in reportable quantities.

HAZ-2 The project owner shall provide a Risk Management Plan and a Process Safety Management Plan to the Riverside County Environmental Health Department and the CPM for review at the time the plans are first submitted to the U.S. Environmental Protection Agency (EPA) and the California Occupational Safety and Health Administration (Cal-OSHA). The project owner shall ensure that the final plan reflects all recommendations of the Riverside County Environmental Health Department and the CPM. A copy of the final plans, reflecting all comments, shall be provided to the Riverside County Environmental Health Department and the CPM once accepted by EPA and Cal-OSHA.

Verification: At least sixty (60) days prior to the delivery of anhydrous ammonia to the facility, the project owner shall provide the final plans listed above to the CPM for approval.

HAZ-3 The project owner shall install an approved automatic fire suppression

Verification: At least sixty (60) days prior to delivery of anhydrous ammonia to the facility, the project owner shall provide final design drawings and specification for the fire protection system approved by a registered Safety Engineer to the CPM for review and approval..

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BASIS FOR STAFF'S USE OF 75 PPM AMMONIA EXPOSURE CRITERIA

Staff uses a criterion of 75 ppm to evaluate the significance of impacts associated with potential accidental releases of ammonia. While this criterion is not consistent with the 200 ppm criterion used by EPA and Cal EPA in evaluating such releases pursuant the Federal Risk Management Program and State Accidental Release Program, it is appropriate for use in staff's CEQA analysis. The Federal Risk Management Program and the State Accidental Release Program are administrative programs designed to address emergency planning and ensure that appropriate safety management practices are implemented and actions are taken in response to accidental releases. However, the regulations implementing these programs do not provide clear authority to require design changes or other major changes to a proposed facility. The preface to the Emergency Response Planning Guidelines (ERPGs) states that "these values have been derived as planning and emergency response guidelines, **not** exposure guidelines, they do not contain the safety factors normally incorporated into exposure guidelines. Instead they are estimates, by the committee, of the thresholds above which there would be an unacceptable likelihood of observing the defined effects." It is staff's contention that these values apply to healthy adult individuals and are levels that should not be used to evaluate the acceptability of avoidable exposures. While these guidelines are useful in decision making in the event that a release has already occurred (for example, prioritizing evacuations), they are not appropriate for and are not binding on discretionary decisions involving proposed facilities where many options for mitigation are feasible. CEQA requires permitting agencies making discretionary decisions to identify and mitigate potentially significant impacts through changes to the proposed project.

Staff has chosen to use the National Research Council's 30 minute Short Term Public Emergency Limits (STPELs) to determine the potential for significant impact. These limits are designed to apply to accidental unanticipated releases and subsequent public exposure. Exposure at these levels should not result in "serious sequelae" but would result in "strong odor, lacrimation, and irritation of the upper respiratory tract (nose and throat), but no incapacitation or prevention of self-rescue." It is staff's opinion that exposures of the general public to concentrations above these levels pose significant risk of adverse health impacts on sensitive members of the general public. It is also staff's position that these exposure limits are the best available criteria to use in gauging the significance of public exposures associated with potential accidental releases. It is, further, staff's opinion that these limits constitute an appropriate balance between public protection and mitigation of unlikely events, and are useful in focusing mitigation efforts on those release scenarios that pose real potential for serious impacts on the public. Table 1 provides a comparison of the intended use and limitations associated with each of the various criteria that staff considered in arriving at the decision to use the 75 ppm STPEL.

HAZARDOUS MATERIAL MANAGEMENT
APPENDIX A TABLE 1
Acute Ammonia Exposure Guidelines

Guideline	Responsible Authority	Applicable Exposed Group	Allowable Exposure Level	Allowable* Duration of Exposures	Potential Toxicity at Guideline Level/Intended Purpose of Guideline
IDLH[2]	NIOSH	Workplace standard used to identify appropriate respiratory protection.	300 ppm	30 min.	Exposure above this level requires the use of "highly reliable" respiratory protection and poses the risk of death, serious irreversible injury or impairment of the ability to escape.
IDLH/10[1]	EPA, NIOSH	Work place standard adjusted for general population factor of 10 for variation in sensitivity	30 ppm	30 min.	Protects nearly all segments of general population from irreversible effects
STEL[2]	NIOSH	Adult healthy male workers	35 ppm	15 min. 4 times per 8 hr day	No toxicity, including avoidance of irritation
EEGL[3]	NRC	Adult healthy workers, military personnel	100 ppm	Generally less than 60 min.	Significant irritation but no impact on personnel in performance of emergency work; no irreversible health effects in healthy adults. Emergency conditions one time exposure
STPEL[4]	NRC	Most members of general population	50 ppm 75 ppm 100 ppm	60 min. 30 min. 10 min.	Significant irritation but protect nearly all segments of general population from irreversible acute or late effects. One time accidental exposure
TWA[2]	NIOSH	Adult healthy male workers	25 ppm	8 hr.	No toxicity or irritation on continuous exposure for repeated 8 hr. work shifts
ERPG-2[5]	AIHA	Applicable only to emergency response planning for the general population (evacuation) (not intended as exposure criteria) (see preface attached)	200 ppm	60 min.	Exposures above this level entail** unacceptable risk of irreversible effects in healthy adult members of the general population (no safety margin)

1) (EPA 1987) 2) (NIOSH 1994) 3) (NRC 1985) 4) (NRC 1972) 5) (AIHA 1989)
* The (NRC 1979), (WHO 1986), and (Henderson and Haggard 1943) all conclude that available data confirm the direct relationship to increases in effect with both increased exposure and increased exposure duration.
** The (NRC 1979) describes a study involving young animals which suggests greater sensitivity to acute exposure in young animals. The (WHO 1986) warns that the young, elderly, asthmatics, those with bronchitis and those that exercise should also be considered at increased risk based on their demonstrated greater susceptibility to other non-specific irritants.

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ABBREVIATIONS

ACGIH, American Conference of Governmental and Industrial Hygienists
AIHA, American Industrial Hygienists Association
EEGL, Emergency Exposure Guidance Level
EPA, Environmental Protection Agency
ERPG, Emergency Response Planning Guidelines
IDLH, Immediately Dangerous to Life and Health Level
NIOSH, National Institute of Occupational Safety and Health
NRC, National Research Council
STEL, Short Term Exposure Limit
STPEL, Short Term Public Emergency Limit
TLV, Threshold Limit Value
WHO, World Health Organizatio

LAND USE

Testimony of Melinda M. Rivasplata, AICP

INTRODUCTION

The Blythe Energy Project (BEP) is a proposed 520 megawatt (MW) natural gas-fired thermal power plant. The primary purpose of the project is to develop a power plant that can produce electricity for sale to regional markets in southern California, Arizona and the surrounding region. The land use analysis of the BEP focuses on two main issues: the project's consistency with local land use plans, policies and ordinances; and the project's compatibility with existing and planned land uses. In general, an electrical generation project and its related facilities and infrastructure can be incompatible with existing and planned land uses due to the direct impacts of land conversion or the indirect impacts caused by dust, noise, visual change, traffic increases, public health hazards and nuisance. An undue restriction on existing or planned land uses may result from the indirect impacts of such a project. The major concerns with land use compatibility are the project's potential direct and indirect impacts on agricultural uses and potential for conflict with airport operations at the Blythe Airport located approximately one mile to the west of the project site.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

Staff reviewed the Riverside County Comprehensive General Plan (RCCGP) policies, the Riverside County Zoning Ordinance sections, the City of Blythe planning policies and the Blythe Airport Comprehensive Land Use Plan (CLUP) policies relevant to the BEP. A discussion of the project's conformity with applicable goals, policies, standards and regulations from each of these planning documents can be found in the subsection entitled Compliance With Laws, Ordinances, Regulations And Standards (LORS).

The project site for the proposed Blythe Energy Project is located in an unincorporated area of Riverside County that has recently received approval for annexation into the City of Blythe. The Riverside County Local Area Formation Commission (LAFCO) has approved the annexation and the Conducting Authority Hearing was held before the City Council of Blythe on October 10, 2000. The annexation was approved at that hearing by Resolution 00-694, and will become final in mid-November of 2000. Since the completion of the annexation process is pending, and the pipeline routes and Water Conservation Offset Program (WCOP) will involve properties in both the unincorporated County area and within the City limits of Blythe, the consistency of the project with the planning and zoning regulations of both Riverside County and the City of Blythe are addressed in this document. Once the annexation process is complete, the City of Blythe land use regulations will apply to the power plant site. The Riverside County General Plan and land use regulations would continue to apply to the portions of the natural gas pipeline linear facilities that are located in the unincorporated area.

RIVERSIDE COUNTY COMPREHENSIVE GENERAL PLAN

The project site for the Blythe Energy Project (BEP) is located in the unincorporated area of Riverside County, approximately five miles west of the City of Blythe and one mile east of the Blythe Airport (please refer to **LAND USE Figure 1**). The BEP is located in the Chuckwalla Land Use Planning Area of Riverside County. This planning area occupies approximately 3,629 square miles of the eastern most portion of Riverside County with boundaries defined by Joshua Tree National Monument on the west, the San Bernardino County line to the north, the Imperial County line to the south, and the Arizona State border on the east.

The Land Use Element of the Riverside County Comprehensive General Plan (RCCGP) is the primary policy statement for implementing the development and conservation goals of the County's General Plan. The Countywide policies for land use compatibility, population levels, public facility levels, environmental constraints and community policies are also contained within the General Plan. The County continuously updates the Land Use Element using data on current conditions to revise the General Plan's maps and diagrams.

Land use planning goals include: "orderly industrial development which includes a variety of types of industry and the promotion of adequate supplies of suitable and properly distributed industry;" and "the retention as open space of those lands containing important natural resources such as scenic beauty, sensitive vegetation, wildlife habitats and historic or prehistoric sites or which are subject to environmental hazards, such as seismic hazards, flooding, hazardous slopes and high fire risks."

OPEN SPACE AND CONSERVATION INVENTORY AND PLAN

The County maintains an open space and conservation inventory, which delineates those areas that have significant open space or conservation value. These areas may include agricultural lands, parks and recreation areas, vegetation resources, wildlife resources, scenic highways, historic resources, energy resources, fire hazard areas, seismic/geologic hazard areas, slope areas, flood hazard areas, noise impacted areas and other natural resources and hazards. The Open Space and Conservation Inventory indicates open space and resource areas for the preservation of natural resources, for the conservation and management of economically productive natural resources, for outdoor recreation, and for public health and safety. Land uses designated on the Open Space and Conservation Map are restricted to the permitted land uses and minimum lot sizes specified for each mapped item. Mapped land uses include open space, recreation, agriculture, mining, research and related compatible land uses (RCCGP, 1989, page 368).

The open space category applicable to the BEP power plant site is Agriculture. The policy for this land use category allows agriculture and associated uses (including limited commercial, industrial and single family residential); open space; farm labor housing; landfills; compatible resource development and associated uses; and governmental uses. The minimum lot size is 10 acres (RCCGP, 1989, page 370).

OPEN SPACE AND CONSERVATION OBJECTIVES

The RCCGP sets three broad objectives for all open space and conservation areas (RCCGP page 367):

- Open Space which will protect County environmental resources and maximize public health and safety in areas where significant environmental hazards exist shall be preserved and maintained.

- Open space considerations shall be incorporated into urban developments in order to enhance recreational opportunities and project aesthetics.

- The utilization of natural resources including soil, water, vegetation, air, wildlife, and mineral resources shall be carefully controlled and managed.

PALO VERDE VALLEY AREA LAND USE POLICIES

The RCCGP contains land use policies specific to the Palo Verde Valley Area. The overall land use policy for future land uses in this area is for continued agricultural land uses, with urban uses in the City of Blythe's Sphere of Influence. Industrial development should occur within the sphere of influence, south of Blythe along the Arizona and California Railroad line (formerly AT&SF) and adjacent to the Blythe Airport (RCCGP 1992, page 99). The City of Blythe is in the process of annexing 1,446 acres located between the existing City limits and the Blythe Airport (see **LAND USE Figure 1**). The power plant site is located within the annexation area.

AGRICULTURE PROGRAMS, POLICIES, AND STANDARDS

Agricultural objectives contained in the RCCGP encourage the retention of productive agricultural lands in agricultural use and discourage placing incompatible land uses adjacent to agricultural lands (RCCGP 1984 page 377. The County participates in the California Land Conservation Act of 1965 (Williamson Act) which reduces the tax assessment on agricultural land located within an Agricultural Preserve which has been voluntarily placed under contract (Gov. Code §51200 et seq.). Lands placed in agricultural preserve are restricted to agriculture and compatible uses (RCCGP 1984 page 378). Ordinance No. 509 of the County of Riverside enacted the Agricultural Preserve program within the County and describes uses consistent with the program. These uses include any use of the land for the purpose of producing an agricultural commodity; a stand for display and sale of agricultural commodities; gas, electric, water and communication utility facilities and public service facilities; public highways; fire protection works and facilities; flood control works; public works required for fish and wildlife enhancement and preservation; one family dwellings for the use of an owner or manager; farm labor camps; and packing or processing of commodities performed on the site where it is produced. Other uses may be considered consistent contingent upon a hearing before the Board of Supervisors.

Lands located on the Palo Verde Mesa, above the Palo Verde Valley are not in Williamson Act Agricultural Preserve (Blythe 2000a); however, a high proportion of

the agricultural lands in the Valley floor are in Williamson Act Agricultural Preserves and under Williamson Act contract.

The RCCGP also recognizes the State Department of Conservation Important Farmland Mapping Program farmland classifications (Prime Farmlands, Statewide Important Farmlands, Unique Farmlands and Local Important Farmlands) (RCCGP pages 379-380).

Prime Farmland is land that has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained yields of crops when treated and managed, including water management, according to current farming methods. Prime farmlands must have been in production of irrigated crops at some time during the update cycles prior to the mapping date.

Farmland of Statewide Importance is similar to Prime Farmland but with minor shortcomings, such as greater slope or less ability to hold and store moisture. Lands of Statewide Importance must have been in production of irrigated crops at some time during the update cycles prior to the mapping date.

Unique Farmland is land of lesser quality soils used for the production of specific high economic value crops (as listed in the California Department of Food and Agriculture California Agriculture publication) at some time during the update cycles prior to the mapping date. Examples of crops grown on Unique Farmlands include oranges, olives, avocados, rice, grapes, and cut flowers.

Farmland of Local Importance is land of importance to the local agricultural economy as determined by each County's board of supervisors and local advisory committees.

The State of California Important Farmlands Inventory map for the area classifies Mesa land as Prime Farmland and Farmland of Local Importance (BEP 2000p, DR #58). The BEP power plant site is classified as Farmland of Local Importance. The Farmland of Local Importance designation is applied where soil types would qualify as prime farmland if the land were irrigated.

The RCCGP Agricultural Protection Program requires use of buffers between agricultural uses and incompatible land uses and sets forth minimum lot size requirements in some areas.

Land use standards regarding agriculture, open space and conservation address the consideration of nonagricultural land uses located in agricultural areas shown on the Countywide Agricultural Resources Map. Conversion of agricultural lands to other uses requires a review in light of the historic and existing agricultural uses of the land, consideration of existing public services available to serve the area, soil conditions, water usage and distribution system and economic factors.

RIVERSIDE COUNTY LAND USE DESIGNATIONS

According to information received from the Riverside County Planning Department (McCoy 2000, Clark 2000) the northern 53 acres of the project site are designated Agriculture Open Space and the southern 22.88 acres are "Not Designated For Open Space" on the Open Space and Conservation Map. The Agriculture Open Space designation allows agriculture and associated uses (including limited commercial, industrial and single family residential); open space; farm labor housing; landfills; compatible resource development and associated uses; and governmental uses. The minimum lot size is 10 acres (RCCGP, 1989, page 370). Upon completion of the City of Blythe annexation of the project site, City land use designations will apply to the site.

Land use designations adjacent to the El Paso Natural Gas pipeline interconnection route are primarily Agriculture Open Space. The land use designation along the SoCal pipeline interconnect route is Not Designated As Open Space on the Open Space and Conservation Map.

The project also proposes a Water Conservation Offset Program (WCOP) to offset the power plant's water use by retiring agricultural lands from irrigation and production. Lands would be located within Palo Verde Irrigation District (PVID) boundaries on the Mesa, or alternatively, lands in the Palo Verde Valley would be fallowed on a rotating basis. An estimated total of 600 to 652 acres could be retired based on an assumed consumptive water use rate for Mesa lands of 4.6 to 5.0 acre-feet per acre. Lands potentially involved in the proposed Water Conservation Offset Program (WCOP) have not been specifically identified, therefore, land use designations cannot be identified at this time. For a detailed discussion of the WCOP refer to the **SOIL AND WATER RESOURCES** section of the FSA.

RIVERSIDE COUNTY ZONING

LAND USE Figure 2 shows Riverside County zoning at the site and for areas within one mile of the site and ¼ mile of the pipeline interconnection routes. Zoning on the power plant site is Controlled Development Area (W-2). The northern 53 acres of the site is zoned W-2-10 and the southern 22.88 acres is zoned W-2-5. Upon completion of the City of Blythe annexation of the project site, City land use designations will apply to the site.

The Controlled Development Area (W-2) zone, in accordance with Article 15 of the Riverside County Zoning Ordinance, allows public utility uses as follows: "Structures and the pertinent facilities necessary and incidental to the development and transmission of electrical power and gas such as hydroelectric power plants, booster or conversion plants, transmission lines, pipelines and the like." Height limitations in the W-2 zone development standards (Subsection 15.2) are 105 feet with possible exceptions according to Subsection 18.34 of the Zoning Ordinance.

Zoning designations within one mile of the power plant site are Light Agriculture (A-1-10) to the east; Controlled Development (W-2) to the north, south and immediate west; Medium Manufacturing to the west, adjacent to the Airport; Light Agriculture (A-1-1) to the southwest, between Hobsonway and I-10; and Watercourse,

Watershed and Conservation Area to the southwest of the site, immediately south of I-10 (Refer to **LAND USE Figure 2**).

Riverside County Zoning designations for the route of the proposed interconnection of the El Paso Natural Gas pipeline include Heavy Agriculture, Light Agriculture, Medium Manufacturing, Manufacturing-Service Commercial, Scenic Highway Commercial. Zoning in the area traversed by the SOCAL Gas pipeline is Controlled Development (W-2-5).

Agricultural zones allow public utility facilities subject to plot plan approvals (Sections 13.1 and 14.1 of the Riverside County Zoning Ordinance).

CITY OF BLYTHE GENERAL PLAN

In September of 1989, the City of Blythe approved a comprehensive general plan for the incorporated City and the Blythe Sphere of Influence. A much larger study area covering 63 square miles was addressed, but is not under the jurisdiction of the City. The Blythe General Plan applies only to those areas within the City's Sphere of Influence[1].

The BEP power plant site is located within a 1,446 acre area which is being annexed to the City. The area to be annexed extends from the City's present western boundary up to the eastern boundary of the Blythe Airport property. The final Conducting Authority hearing in the annexation process was held before the Blythe City Council on October 10, 2000. The annexation was approved and will become final in mid-November of 2000. Once final, the power plant site will be within the sphere of influence and the corporate boundaries of the City and subject to City planning regulations.

The pending City General Plan designation for the power plant site is Heavy Industrial (I-H) and the pending City Zoning Designation is General Industrial (I-G). According to the City of Blythe General Plan (1989), the Heavy Industrial General Plan designation (I-H) provides for the most intense industrial development to be contemplated in the City. Uses associated with this designation may include slaughter houses, rendering plants, metals smelting and/or manufacturing, refining oils and other flammable or hazardous materials, and other uses which may require extensive outdoor storage areas or materials handling.

The pending General Plan designations for properties adjacent to and within one mile of the Power Plant site is Agricultural Reserve. The pending General Plan land use designations adjacent to the pipeline route within the annexation area are Agricultural Reserve, Urban Reserve, Tourist Commercial and Light Industrial. The General Plan land use designation within the existing City limits is Urban Reserve in the vicinity of the power plant. In the area east of downtown Blythe, land use designations are Agricultural Reserve, Low Density Residential, Tourist Commercial, and General Commercial.

[1] Sphere of Influence is defined by Government Code §56076 as a "plan for the probable physical boundaries of a local agency as determined by the Commission (Local Area Formation Commission)."

The City of Blythe General Plan (1989) land use categories referenced in the above discussion are briefly described below.

- Agricultural Reserve consists of land in active or potentially active cultivation and sufficiently removed from urban development to warrant protection.
- Urban Reserve consists of land in the sphere of influence and outlying planning areas planned for future urban core development. Requires a specific plan.
- Open Space consists of areas of special resource value including recreation and biological areas.
- Low Density Residential consists of detached single family dwelling units (du) at a maximum density of 7 du/acre.
- Tourist Commercial consists of commercial uses geared to freeway travelers and area tourists.
- General Commercial consists of community-scale centers, grocery, specialty retail, and service business development.
- Light Industrial consists of uses which are non-intensive in nature with limited outdoor storage.
- Medium Industrial consists of industrial uses which are moderately intensive with potentially more extensive outdoor storage than in the light industrial designation.
- Heavy Industrial provides for industrial uses which are relatively intense and which may also include extensive outdoor storage.
- Public/Quasi-Public consists of schools, hospitals, city and county facilities, fire stations, parks and other public facilities.

INDUSTRIAL LAND USE GOALS AND POLICIES

Under the proposed annexation, the City of Blythe land use designation for the power plant site would be Heavy Industrial (I-H). The Heavy Industrial land use designation allows uses that are relatively intense and which may also include extensive use of outdoor storage. The Heavy Industrial designation implies the most intense industrial use with many attributes that make the use incompatible with most other land uses. According to the current City of Blythe General Plan, development in industrial land use designations is guided by performance standards associated with each class or category of industrial use (Blythe 1989 pp. III-19 and 20). However, according to City staff, there are no established performance standards that are applied to industrial development (Wellman 2000b). The Blythe General Plan indicates that issues that determine the appropriate location of the various types of industrial land uses are noise, smoke, odor, dust and dirt, noxious gases, glare and heat, transportation and traffic, and aesthetics. These issues are taken into consideration when reviewing industrial development plans (Blythe 1989 p. III-16).

Industrial goals relevant to the project are as follows (Blythe 1989 p. III-18):

- To provide lands and facilities for expansion of industrial development, which will enhance and broaden the economic base of the City and the region.
- To optimize the use of the interstate highway and rail systems passing through the City to the greatest extent possible, thereby building upon vital existing infrastructure and transportation systems.
- To enhance industrial development and assure its compatible integration with other non-industrial land uses.

Industrial policies relevant to the proposed project are as follows:

- The City should encourage the development of new industrial areas and the redevelopment of existing older or marginal industrial areas where appropriately designated on the Land Use Map of the General Plan.
- The City shall seek to attract industrial users for which the area is particularly well suited, and encourage those industries to take advantage of the local labor force.
- Development proposed in each industrial land use category shall substantially comply with the types and intensities of uses as set forth for each land use designation.
- All industrial sites shall be appropriately landscaped and all outdoor storage areas shall be screened from view from public rights-of-way and surrounding properties with a combination of fencing and landscaping.

Agricultural Land Use Goals And Policies

The A-R designation is assigned to lands which are in active or potentially active cultivation, and which are sufficiently removed from urban development to warrant protection and preservation. These lands are generally composed of larger holdings which make on-going cultivation viable. This designation also may be assigned to areas where farm structures and residences occur, but is not applicable to agriculture-related industrial land uses (Blythe 1989 p.III-26).

Agricultural Reserve Policies relevant to the project are as follows.

- The City shall protect agricultural lands from premature development by assuring the logical and coherent expansion of urban development in the City.
- The City shall encourage the continuation of agricultural activity on undeveloped land as a method of assuring their on-going use and function as rural open space areas.

Urban Reserve Land Use Designation

The Urban Reserve (U-R) designation provides for the preservation of agricultural lands and other existing land uses for future land uses compatible with those in existing urban core areas of the City. Urban core development is expected to continue along the Interstate 10 corridor. Future development of Urban Reserve

lands shall be controlled through the processing of Specific Plans (Blythe 1989 p. III-14).

CITY OF BLYTHE ZONING REGULATIONS

The City of Blythe has pre-zoned the power plant site General Industrial (I-G). The General Industrial zone allows a variety of manufacturing uses by right including public maintenance services, utility operations facilities, custom manufacturing, general manufacturing, and warehousing in accordance with §17.08 010 of the City of Blythe Zoning Ordinance. The proposed power plant would be allowed by right as a Utility Operations Facility in the Heavy Industrial zone in accordance with City of Blythe Zoning Ordinance §17.08.710 (Wellman 2000b). City of Blythe zoning designations to be applied to lands within one mile of the power plant site are Agriculture (A) to the north, east and west. Properties to the south of the site, between I-10 and Hobsonway are zoned Service Industrial (I-S).

The City of Blythe zoning designations adjacent to the pipeline route are Residential Reserve, Service Industrial, Agricultural Reserve, Low Density Residential, Medium Density Residential, General Commercial, and Specific Plan Reserve. The Zoning Ordinance Chapter 17.46 specifically addresses public utility and pipeline facilities and states as follows:

"The provisions of this title shall not be construed as to limit or interfere with the construction, installation, operation and maintenance of any use coming under the jurisdiction of the Public Utilities Commission, which uses are related to public utility purposes, of water and gas pipes, mains and conduits, electric light and power transmission and distribution lines, telegraph and telephone lines, sewers and sewer mains and incidental appurtenances. The location of such lines, mains and conduits shall be subject to city council review and approval."

The project is not under the jurisdiction of the Public Utilities Commission and the project applicant is not a public utility. Therefore, this ordinance does not appear to apply to the project.

LA PAZ COUNTY, ARIZONA LAND USE REGULATIONS

The interconnection with the El Paso Natural Gas Pipeline will take place on the east side of the Colorado River in La Paz County, Arizona. The point containment pit for the pipeline boring is located on a parcel zoned General Commercial (C-2). The existing El Paso Natural Gas facility is located on a parcel zoned Light Industrial. According to the La Paz County Department of Community Development the interconnect with the El Paso Natural Gas Pipeline is a permitted use in the zone and no special permits are required (LC 2000a).

BLYTHE AIRPORT COMPREHENSIVE LAND USE PLAN

The Blythe Airport is located approximately one mile west of the proposed BEP power plant site. The Blythe Airport is the largest airport serving eastern Riverside County and serves primarily general aviation demand in the Blythe area. The Airport is classified in the National Plan of Integrated Airport Systems as a general aviation transport airport, designed to accommodate business jets and transport

type aircraft. The Blythe Airport currently has two runways. The primary runway is Runway 8-26 which is oriented generally east-west and the power plant site is located one mile east of this runway. Additional detail regarding the operations and facilities at the Blythe Airport can be found in the **TRAFFIC AND TRANSPORTATION** section of the Final Staff Assessment (FSA).

The *Comprehensive Land Use Plan for Blythe Airport, Riverside County, California* was adopted by the Riverside County Airport Land Use Commission (ALUC) in August of 1992. The purpose of the Airport Comprehensive Land Use Plan (CLUP) is to protect and promote safety and welfare of residents of the airport vicinity and users of the airport while ensuring the continued operation of the airport. The ALUC is established under the authority of California Government Code Sections 21670 et. seq. and is charged with formulating a comprehensive land use plan for the area surrounding each public use airport in its jurisdiction. The ALUC is authorized to review proposed development actions to ensure consistency with the CLUP. Where local general plans or specific plans are not consistent with the CLUP, State law enables the ALUC to require the local agencies to submit all development actions, regulations, and permits to the ALUC for review.

The Blythe Airport has been designated as a County redevelopment area. The intent is to encourage expansion of airport facilities and commercial and industrial development at the airport. The County's redevelopment plans are described in the Riverside County *Redevelopment Plan for Redevelopment Project Airports*, County of Riverside Economic Development Agency 1988 (RCALUC 1992 pp. 2-18).

SETTING

REGIONAL SETTING

The region in which the proposed BEP is located is generally defined as the Chuckwalla Land Use Planning Area of Riverside County. The planning area is sparsely populated and exhibits low growth potential compared to the rest of the County (RCCGP 1991 page 95). Resources that may contribute to land use potential cited in the Comprehensive General Plan include: continued potential for pass-through tourist trade and recreation/destination traffic; rail service providing "piggy-back" loading; services provided by the Blythe Airport; and availability of irrigation water at relatively low prices.

The proposed BEP is located five miles west of the City of Blythe, on the Mesa above the Palo Verde Valley floor. Blythe is the only incorporated city within the Palo Verde Valley planning area. Unincorporated communities in the Palo Verde Valley Area include Mesa Verde (Nicholl's Warm Springs), located approximately 2.5 miles southwest of the project site; East Blythe, located east of the City of Blythe between the City and the Arizona border; and Ripley, located approximately 6 miles to the south of the City and the project site. The predominant land use in the area is irrigated agriculture and related enterprises. Other land uses include residential, and recreational development mainly focused on the Colorado River, which flows 3 miles to the east of the City of Blythe. Commercial land uses serve the needs of

agriculture, local residents, pass-through travelers, and recreational visitors. The Blythe Airport is a general aviation airport located six miles west of Blythe and Interstate 10 (I-10) is a major regional transportation corridor which extends east-west through the area.

AGRICULTURE

The predominant land use in the Palo Verde Valley area is irrigated agriculture. Riverside County has four agricultural districts: Riverside/Corona, San Jacinto/Temecula Valley, Coachella Valley, and the Palo Verde Valley area. In 1997, Riverside County ranked ninth in the state in total value of agriculture production. The total acreage in agriculture in Riverside County in 1998 was 326,591**. LAND USE Table 1** summarizes the gross value of agricultural crops in each district of Riverside County for 1996 through 1998.

Land Use Table 1
Gross Value of Agricultural Crops in Riverside County

District	1996	1997	1998
Riverside/Corona	$ 40,735,600	$ 29,046,200	$38,383,900
San Jacinto /Temecula Valley	$ 95,310,800	$ 97,820,700	$112,639,000
Coachella Valley	$319,613,700	$331,708,300	$398,156,700
Palo Verde Valley	$103,051,200	$102,904,800	$ 92,011,800
TOTAL	**$558,713,296.00**	**$561,481,997.00**	**$641,193,398.00**

Source: Palo Verde Valley Acreage and Agricultural Crop Report 1998, Riverside County Agricultural Commissioners Office

As shown in the preceding table, agricultural crop production in the Palo Verde Valley area comprised approximately 14 percent of the gross value for agricultural production in Riverside County in 1998.

Total harvested acreage in the Palo Verde Valley area in 1998 was 114,164. This acreage includes the portion of the Palo Verde Valley that is located in Imperial County as well as Riverside County (PVID 2000). Types of crops grown include citrus (lemons, oranges), tree and vine crops (dates, peaches etc.), vegetable, melon, miscellaneous crops (broccoli, lettuce, cantaloupe), and field and seed crops (cotton, grain, hay, irrigated pasture). **LAND USE Table 2** summarizes acreage and valuation for 1998.

As shown in **LAND USE Table 2**, citrus crops and tree and vine crops are the highest value crops in the area. Citrus crops comprise approximately 1 percent of the harvested acreage in the agricultural district but contribute approximately 10 percent to the gross crop value; tree and vine crops comprise less than 1 percent of harvested acres, but contribute about 13 percent to the gross crop value. By contrast, field and seed crops comprise approximately 89 percent of the harvested acreage while contributing 62 percent of the gross crop value. Citrus earned $6,171 per harvested acre and tree and vine crops earned $16,311 per acre while field and seed crops earned $563 per harvested acre.

Land Use Table 2
1998 Acreage and Value Summary

Crop	Harvested Acreage	Percent of Total Acres	Valuation	Percent of Total Value
Citrus	1,427	1.25	$8,810,100	9.57
Tree and Vine	108	0.09	$1,761,600	1.91
Vegetable, Melon and Misc.	11,045	9.67	$24,294,500	26.40
Field and Seed	101,584	88.98	$57,145,600	62.11
Total	**114,164**	**100.00**	**$92,011,800**	**100.00**

Source: Palo Verde Valley Acreage and Agricultural Crop Report 1998, Riverside County Agricultural Commissioners Office

The Palo Verde Irrigation District (PVID) provides irrigation water to 104,000 acres of agricultural land in the Palo Verde Valley at a relatively low cost (Rethwisch 2000, Henning 2000). PVID water is derived from the Colorado River and is gravity fed to agricultural lands on the valley floor. Lands on the Mesa receiving PVID water must pay additional pumping costs for bringing water up to the higher elevations. Currently PVID is providing irrigation water to approximately 2,500 acres of land on the Mesa, mostly for citrus production (Henning 2000). The total area eligible to receive PVID water on the Mesa is 16,000 acres (PVID 2000). Additional details regarding water use in the Palo Verde Valley are provided in the **SOIL AND WATER RESOURCES** section of the FSA.

The BEP power plant site is not currently used for agricultural production, nor does it appear to have been cultivated in the past. The site is classified as Farmland of Local Importance. Similar soil types occur on the lands immediately adjacent to the east of the site, which are designated Prime Farmlands. However, these lands, planted in lemons, are irrigated (BEP 2000l DR #50). Lands located on the Palo Verde Mesa, above the Palo Verde Valley are not in Williamson Act Agricultural Preserve (Blythe 2000a).

SITE VICINITY AND DESCRIPTION

POWER PLANT SITE

The project site consists of two undeveloped parcels with a total area of 76 acres. The site is situated on the north side of Hobsonway, a two-lane local arterial road that connects the Blythe Airport with the City of Blythe. The site is located approximately 1,000 feet north of I-10, a major regional transportation corridor extending east-west through the area. Three 161 kV transmission lines cross the project site: two in a southwest to northeast direction, and one in an east-west direction. All of these lines connect with the Blythe Substation, located 600 feet to the east. Refer to **LAND USE Figure 3**.

ADJACENT LAND USES

Properties immediately adjacent and to the west, north and south (across Hobsonway) are undeveloped. The property to the immediate east is cultivated with

a lemon grove. The Blythe Substation, owned by the Western Area Power Administration (Western), is located 600 feet east of the proposed power plant site. The substation occupies a site approximately 12 acres in size, surrounded on three sides by the lemon grove. The Blythe Substation connects five existing 161 kV transmission lines serving the region.

Except for agriculture and some scattered residences and industrial uses, the properties within one mile of the power plant site are largely undeveloped. The Blythe Airport is located one mile to the west and highway-serving commercial uses are located at the interchange south of the Airport on the north side of I-10. A residential development known as Mesa Verde (Nicholls Warm Springs) is located on the south side of I-10 in this area, approximately 2.5 miles southwest of the project site. **LAND USE Figure 4** depicts land uses in the vicinity of the project site.

BLYTHE AIRPORT

Blythe Airport is located approximately one mile to the west of the project site, situated at an elevation of 397 feet mean sea level (MSL) (RCALUC 1992), approximately 62 feet higher than the proposed site for the Blythe Energy Project power plant. Runway 8-26 is oriented east-west and is the primary runway. Please refer to the **TRAFFIC AND TRANSPORTATION** section of the FSA for details regarding Blythe Airport operations and facilities.

RESIDENTIAL

The largest concentration of residential land uses proximate to the proposed Blythe Energy Project power plant site are located 2.5 miles southwest of the site at Mesa Verde (Nicholl's Warm Springs). The nearest residence is located 3,645 feet southwest of the power plant site, 600 feet north of I-10 (BEP 1999c page 7.3-4).

LAND USES ADJACENT TO PIPELINE ROUTES

EL PASO NATURAL GAS PIPELINE INTERCONNECTION

LAND USE Figure 1 shows the route of the proposed interconnection with the El Paso Natural Gas Pipeline. Land uses adjacent to the proposed route for the interconnection with the El Paso Natural Gas Pipeline are described in **LAND USE Table 3** and shown in **LAND USE Figure 4**.

SOCAL GAS PIPELINE ROUTE

An additional pipeline interconnection with SoCal Gas is being considered. There is an existing SoCal Gas pipeline on the south side of I-10 near the project site. The route of this interconnecting pipeline would be directly south from the western edge of the power plant site, crossing under I-10, for a distance of 0.8 mile. Properties on the north side of I-10 are undeveloped. The route on the south side of I-10 follows an existing roadway located within a lemon orchard.

TRANSMISSION LINE

The transmission lines interconnecting the power plant with the existing substation will travel approximately 600 feet east of the power plant through an existing lemon orchard.

Land Use Table 3
Adjacent Land Uses Along El Paso Natural Gas Pipe Line Route

Route Segment	Location	Adjacent Land Uses
Project site at Hobsonway to Arrowhead Boulevard.	2.5 miles east in the right of way of Hobsonway.	North side of Hobsonway: citrus groves & undeveloped. South of Hobsonway: undeveloped. Residences and commercial structures at the intersection of Hobsonway/Neighbors Boulevard.
South on Arrowhead Boulevard to 16th Avenue.	1.5 miles south along Arrowhead Boulevard, crossing under I-10, then extending to 16th Avenue.	Irrigated agriculture on either side of Arrowhead Boulevard.
East on 16th Avenue to Intake Boulevard.	4.0 miles along the 16th Avenue right-of-way to Intake Boulevard.	From Arrowhead Boulevard to Lovekin Boulevard: agriculture with scattered farm residences and agriculture-related uses north and south of 16th Avenue. In the vicinity of the railroad between Lovekin Blvd. and Broadway: light industrial, City wastewater treatment plant. Remainder of segment to Intake Boulevard: agriculture and agriculture-related uses.
Intake Boulevard from 16th Avenue to Riviera Drive.	1.1 mile north along Intake Boulevard.	Agriculture and agriculture related uses on either side of Intake Boulevard.
Riviera Drive from Intake Boulevard to a point near the I-10 on-ramp where the pipeline will be located underground.	Pipeline will be located in right-of-way of Riviera Drive and Caltrans right-of-way.	I-10 parallels Riviera Drive on the north. Adjacent uses on the south side of Riviera Drive are agriculture and related uses. The microbore receiving area is in the right of way of Riviera Drive and Caltrans I-10 right-of-way. Nearby land uses are commercial.
West side of Colorado River in California to east side of River in Arizona.	Pipeline will be drilled from the El Paso Gas Company's metering yard in Ehrenberg, Arizona.	Lands adjacent to the metering yard are undeveloped.

LAND USE Figure 1
Blythe Energy Project Site

LAND USE Figure 2 (AFC FIGURE 7.2-3c)
Riverside County Zoning

LAND USE Figure 3 (AFC Figure 1.0-8a)

LAND USE Figure 4
Nearby Land Uses

IMPACTS

According to Appendix G of the Guidelines to the California Environmental Quality Act (CEQA), a project may have a significant effect on land use if the project will:

- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect;
- Physically divide an established community;
- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to a non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract;
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural uses.

A project may also have a significant impact on land use if it will create unmitigated noise, dust, public health hazard or nuisance, traffic, or visual impacts or when it precludes or unduly restricts existing or planned future uses.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS AND STANDARDS

Public Resources Code Section 25525 states that the Energy Commission shall not certify any facility when it finds "that the facility does not conform with any applicable state, local, or regional standards, ordinances, or laws, unless the commission determines that such facility is required for public convenience and necessity and that there are not more prudent and feasible means of achieving such public convenience and necessity." When determining if a project is in conformance with state, local or regional ordinances or regulations, the Energy Commission typically meets and consults with the applicable agencies to determine conformity and, when necessary, "to attempt to correct or eliminate any noncompliance" (Public Resources Code §25523(d)(1)). The laws, ordinances, regulations, standards (LORS) and policies applicable to the project have been analyzed below to determine the extent to which the BEP is consistent or at variance with each requirement or standard.

The project site for the proposed Blythe Energy Project is located in an unincorporated area of Riverside County that has recently been annexed into the City of Blythe. The Riverside County Local Area Formation Commission (LAFCO) approved the annexation and the final Conducting Authority Hearing was held before the City Council of Blythe on October 10, 2000. The annexation was approved at that hearing and will become final in mid-November of 2000. At that time, County of Riverside General Plan policies and land use regulations discussed here will no longer apply to the power plant site.

Portions of the pipeline routes and lands potentially affected by the proposed Water Conservation Offset Program (WCOP) are located in the unincorporated areas of Riverside County which are not subject to the annexation proposal. Since the completion of the annexation process is pending, and the pipeline routes and WCOP will involve properties in both the unincorporated County area and within the City limits of Blythe, the consistency of the project with the planning and zoning regulations of both Riverside County and the City of Blythe are addressed in this section of the FSA.

RIVERSIDE COUNTY COMPREHENSIVE GENERAL PLAN

LAND USE GOALS

The following land use goals are contained in the RCCGP.

Land Use Goal 4: The development of those areas where necessary public services can be provided and development is compatible with surrounding land uses.

Discussion:

If the site were to remain unincorporated, the proposed project would be consistent with Land Use Goal 4 in regard to availability of public services. The proposed BEP power plant will be located on a site that is undeveloped and where there are few existing public services; however, the project will develop public services such as water, sewer, and electrical on-site. The proposal includes development of on-site wells to supply water and development of on-site leachfield wastewater system for sanitary waste water disposal.

If the site were to remain unincorporated, emergency services would be provided by Riverside County. Two County fire stations are located in the vicinity of the power plant site. One station is located within the City limits of Blythe and the other is located at the Blythe Airport, within approximately one mile of the project site. Therefore adequate emergency services would be available to the site. Please refer to the **SOCIOECONOMICS** section of the FSA for additional details regarding public services. The site has adequate access since it fronts on an existing roadway, Hobsonway and access to I-10 is nearby at the Neighbors Road interchange southeast of the site and the Mesa Drive interchange southwest of the site (adjacent to Blythe Airport).

If the site were to remain unincorporated, the proposed project would be consistent with Land Use Goal 4 in regard to land use compatibility. It will not require a change in agricultural practices on the adjacent farmed area to the east. The project site is located one mile east of the Blythe Airport. The project is subject to review for consistency with the Blythe Airport Comprehensive Land Use Plan (CLUP) by the Riverside County Airport Land Use Commission (RCALUC). On October 19, 2000 the RCALUC determined that the proposed project would be consistent with the Blythe Airport CLUP, subject to certain conditions (RCALUC 2000). Additional discussion regarding the Blythe Airport CLUP follows in this

section. Please refer to the **TRAFFIC AND TRANSPORTATION** section of the FSA for additional discussion regarding Blythe Airport operations.

Land Use Goal 6: Orderly industrial development which includes a variety of types of industry and the promotion of adequate supplies of suitable and properly distributed industrial land.

Discussion:

If the site were to remain unincorporated, the project would be consistent with Goal 6. The proximity of the power plant site to the Blythe Airport, the electrical substation, and major transportation corridors would be consistent with orderly development of industrial uses in the area. The BEP will increase industrial uses in the area and would be consistent with this policy in providing for an adequate supply of industrial land. As described in the Land Use Goal 4 discussion above, the RCALUC determined that the proposed project would be compatible with the Blythe Airport CLUP, subject to certain conditions.

Land Use Goal 7: The retention as open space of those lands containing important natural resources, such as scenic beauty, sensitive vegetation, wildlife habitats and historic and prehistoric sites or which are subject to environmental hazards, such as seismic hazards, flooding, hazardous slopes and high fire risks.

Discussion:

If the site were to remain unincorporated, the project would be potentially inconsistent with this policy due to the loss of habitat for special status species. All 76 acres of the power plant site are considered by the United States Fish and Wildlife Service to be habitat for the desert tortoise, a federal and state listed special status species. The site is also potential habitat for a special status plant species, Hardwick's milkvetch (California Naive Plant Society (CNPS) List 2). Upon completion of the annexation process this goal will no longer apply to the project site. Please refer to the **BIOLOGICAL RESOURCES** section of the FSA for additional details.

OPEN SPACE AND CONSERVATION OBJECTIVES

The RCCGP sets three broad objectives for all open space and conservation areas (RCCGP page 367).

1. Open Space which will protect County environmental resources and maximize public health and safety in areas where significant environmental hazards exist shall be preserved and maintained.

Discussion:

If the power plant site were to remain unincorporated the project would be potentially consistent with the objective. Geologic hazards have been identified on the power plant site and in the project vicinity along the pipeline routes. Ground

shaking represents the most significant geologic hazard to the power plant, pipelines and electrical transmission lines. Slope stability and the potential for shrink-swell behavior in soil surrounding the power plant and ancillary facilities may also be present. The application of design and engineering measures required under the California Building Code Seismic Zone 3 requirements and by site specific soils and geologic studies should result in project consistency with this general objective. Please refer to the **GEOLOGY AND PALEONTOLOGY** section of the FSA for additional details.

2. Open space considerations shall be incorporated into urban developments in order to enhance recreational opportunities and project aesthetics.

Discussion:

If the power plant site were to remain unincorporated, the project would be potentially consistent with the objective. The project is an industrial use and recreational uses would not be compatible with its purpose, therefore the recreational aspect of the objective is not applicable to the project. The proposed power plant project would develop the northern one third of the project site with plant buildings and structures, and the remainder of the site would contain evaporation ponds. The existing transmission lines which cross the southern two thirds of the site would remain and additional lines would be installed to connect to the nearby substation. In order for the project to maintain consistency with this objective's aesthetics aspect, project design should include measures to reduce the negative visual characteristics of the project. The potential impacts of the project on visual resources was evaluated by Staff and it is not anticipated that the project would cause significant visual impacts providing the applicant's mitigation measures and the Conditions of Certification included in the **VISUAL RESOURCES** section of the FSA are implemented.

3. The utilization of natural resources including soil, water, vegetation, air, wildlife, and mineral resources shall be carefully controlled and managed.

Discussion:

The proposed project is potentially inconsistent with this general objective in that land suitable for agricultural use would be removed from production for the life of the project and the proposed project would prevent future use of the power plant site for agriculture. The project site has a potential for agricultural production, provided irrigation water could be supplied to the site. The site is also considered habitat for the desert tortoise and the project would eliminate its habitat. Upon completion of the annexation process this goal will no longer apply to the power plant site. See the **BIOLOGICAL RESOURCES** section of the FSA for additional details.

The proposed Water Conservation Offset Program (WCOP) would retire lands from agricultural use in order to offset the power plant's water use. See the **SOIL AND WATER RESOURCES** section of the FSA for additional details.

PALO VERDE VALLEY AREA LAND USE POLICIES

The overall land use policy for future land uses in this area is for continued agricultural land uses, with urban uses in the City of Blythe's Sphere of Influence. Industrial development should occur within the sphere of influence, south of Blythe along the Arizona and California Railroad (formerly AT&SF Railroad) line and adjacent to the Blythe Airport (Riverside County 1992, page 99).

Discussion:

Upon completion of the annexation process, the power plant site will be within the City of Blythe's Sphere of Influence. The annexation process will become final in mid-November of 2000, at which time these policies will no longer apply to the power plant site. The policies will apply to all project features that remain in the unincorporated County area. According to the Riverside County Planning Department, the project is consistent with the RCCGP Palo Verde Valley Area land use policies. These policies encourage industrial development adjacent to the Airport, however do not limit industrial uses to the areas cited in the policy (Riverside County/ Balys 2000).

AGRICULTURE PROGRAMS, POLICIES AND STANDARDS

Agricultural objectives applicable to this project are contained in the Riverside County Comprehensive General Plan (RCCGP page 377) as follows:

Agricultural objective 1: Agriculturally productive lands shall be encouraged to remain in agricultural uses.

Discussion:

Power Plant Site:

If the power plant site were to remain unincorporated, the project would be potentially consistent with this objective since the proposed BEP power plant site is not currently in agricultural production and would require delivery of irrigation water in order to become productive.

Natural Gas Pipeline:

The proposed extension of the El Paso Natural Gas pipeline will follow existing road right of way and canals, and therefore would not result in removal of lands from agricultural production. According to information provided to Energy Commission staff by the applicant at the Data Response Workshop of June 7, the SoCal natural gas pipeline interconnect will follow an existing roadway in a lemon orchard located south of I-10. This interconnection which is approximately 0.8 mile in length would not affect existing agriculture.

Water Conservation Offset Program:

The proposed water conservation offset program (WCOP) may result in retirement of approximately 652 acres of agricultural lands on the Mesa currently eligible to receive PVID irrigation water or alternatively, the fallowing on a rotating basis of an unspecified number of acres on the valley floor. The precise location of these lands has not been determined therefore there is a potential inconsistency with this policy with respect to agricultural resources (soils). Since a high proportion of agricultural land on the valley floor is under Williamson Act Contract, the fallowing program is potentially inconsistent with the Williamson Act Preserve Program. The Riverside County Planning Department, the agency administering the Williamson Act Preserve Program, should review any agreement that involves Williamson Act lands that are proposed for inclusion in the WCOP. Please refer to the discussion regarding the WCOP in the Compatibility With Existing and Planned Land Uses portion of this section.

Agricultural Objective 2: Incompatible urban development adjacent to agricultural lands shall be discouraged.

Discussion:

Power Plant:

The proposed BEP power plant site is not currently in agricultural use, and not classified as Prime Farmland or Farmland of Statewide Importance. Therefore, development of the power plant on the project site would not directly affect agricultural resources.

The adjacent property to the east of the proposed power plant site is a producing lemon orchard. Construction activities will create dust and long term operation will generate air emissions. The analysis of potential air quality effects of the project indicate that the project emissions will not result in significant adverse impacts to air quality. It is not anticipated that the project would cause adverse effects to agriculture due to dust and formation of ozone (Rethswisch 2000b). The project itself will not be adversely affected by agriculture and would not restrict agricultural practices on the adjacent property; therefore, a land use buffer area would not be required as described by the RCCGP Agricultural Protection Program (RCCGP 1984, p. 380). Upon completion of the annexation process, this objective will no longer apply to the power plant site.

Transmission Lines:

The interconnect with Blythe substation will require removal of a small number of trees from the adjacent lemon orchard. Obsolete poles will be removed, allowing trees to be replaced, however. This would not result in a major disturbance to the orchard. According to the AFC (BEP 2000c page 7.2-2), aerial spraying is not used in this orchard; therefore, the extension of additional transmission lines to interconnect with the substation would not result in conflicts with agricultural operations. Upon completion of the annexation process, this objective will no longer apply to the transmission line corridor.

RIVERSIDE COUNTY LAND USE DESIGNATIONS

If the power plant site were to remain in the unincorporated County, the land use designation would be Agriculture Open Space. This designation provides for *limited* industrial uses. According to Riverside County Planning Department staff, limited industrial uses in the Agriculture Open Space designation are generally interpreted as those industrial activities that are supportive of agriculture (e.g. food processing, fertilizer storage). The proposed BEP power plant, as an intensive industrial use would be inconsistent with the Agriculture Open Space designation on the northern portion of the site (Riverside County/Balys 2000). A general plan amendment would be required for the portion of the site designated Agricultural Opens Space. Upon completion of the annexation process, these land use designations will no longer apply to the power plant site.

RIVERSIDE COUNTY ZONING

If the power plant site were to remain in the unincorporated County area, the site would be subject to zoning regulations in the Controlled Development Area zone (W-2) in accordance with Article 15 of the Riverside County Zoning Ordinance. This zone allows public utility uses including power plants, transmission lines, and pipelines (Clark 2000b). The project is generally consistent with the Riverside County zoning designations; however, the development standards in the W-2 zoning district (Section 15.2.a Development Standards of Ordinance 348) state as follows: "One family residences shall not exceed 40 feet in height. No other building or structure shall exceed 50 feet in height, unless a height up to 75 feet for buildings, 105 feet for other structures or greater than 105 feet for broadcasting antennas is approved pursuant to Section 18.34 of this ordinance." The heights of structures included in the design of the proposed power plant that exceed the zoning district height limitations are listed below.

Generation Building	60 feet
CT Inlet Filter	60 feet
Air Intake Duct	60 feet
Heat Recovery Steam Generator (HRSG) Stack	130 feet
Heat Recovery Steam Generator	86 feet

According to the Riverside County Planning Department, structures as tall as 130 feet high are not normally permitted in the W-2 zone without an approved variance application. The application for a height exception to the 50 foot height limitation in the W-2 zone classification is restricted to the zone classification height limitation, which is 105 feet, for other structures (this would apply to the HRSG stack). However, height exceptions beyond those allowable pursuant to Section 18.34 of the Ordinance No. 348 may be requested pursuant variance procedures contained to Ordinance No. 348 (Riverside County/Balys 2000). A height exception would be discouraged because adjacent agricultural land to the east of the proposed project is zoned A-1-10 and there is no buffer proposed between the project and adjacent agricultural property. Upon completion of the annexation process these zoning regulations would not apply to the power plant site.

Riverside County Zoning designations for the route of the proposed extension of the El Paso Natural Gas pipeline include Heavy Agriculture, Light Agriculture, Medium Manufacturing, Manufacturing-Service Commercial, and Scenic Highway Commercial. An encroachment permit or other appropriate clearance from the Riverside County Transportation Department would be needed for installation of the pipeline in any County road right-of-way. If the pipeline were to be located outside the road right-of-way, a conditional use permit or other zoning entitlement would potentially be required in the Medium Manufacturing and Manufacturing-Service Commercial zones. The type of entitlement required is subject to a determination made by the Planning Director. Pipelines are allowed by right in Heavy Agriculture and Light Agriculture zones (Clark 2000b).

CITY OF BLYTHE GENERAL PLAN

The site for the proposed Blythe Energy Project power plant is located in an unincorporated area of Riverside County that has recently been approved for annexation into the City of Blythe. The annexation will become final in mid-November of 2000. Therefore, the consistency of the project with the City of Blythe zoning and regulations are addressed in this section in anticipation of the formal completion of the annexation process.

The City designated the BEP site Heavy Industrial (I-H) land use on its General Plan and pre-zoned the site General Industrial (I-G).

Discussion:

The City of Blythe has indicated that the Heavy Industrial land use designation is the appropriate designation for the project as evidenced by the City's proposed land use designation and zoning designation described in the proposed Annexation No. 50 (City of Blythe 2000). The proposed project is generally compatible with land uses immediately adjacent to the site, which consist of an orchard on the east side and vacant land on the remaining areas. The proposed power plant has been determined to be compatible with the Comprehensive Land Use Plan (CLUP) for the Blythe Airport by the Riverside County Airport Land Use Commission (RCALUC). The project's conformance with the Blythe Airport Comprehensive Land Use Plan (CLUP) is discussed later in this analysis.

The previously described industrial goals relevant to the project are (City of Blythe 1989 p. III-18):

To provide lands and facilities for expansion of industrial development, which will enhance and broaden the economic base of the City and the region.

Discussion:

The proposed project is consistent with the industrial goals contained in the General Plan to provide land for expansion of industrial development and broaden the economic base of the City and region.

To optimize the use of the interstate highway and rail systems passing through the City to the greatest extent possible, thereby building upon vital existing infrastructure and transportation systems.

Discussion:

The project is consistent with this objective. The project's proximity to I-10 will take advantage of the existing transportation system.

To enhance industrial development and assure its compatible integration with other non-industrial land uses.

Discussion:

As previously described, the project is compatible with other non-industrial uses in the immediate vicinity.

Industrial policies relevant to the proposed project are:

The City should encourage the development of new industrial areas and the redevelopment of existing older or marginal industrial areas where appropriately designated on the Land Use Map of the General Plan.

Development proposed in each industrial land use category shall substantially comply with the types and intensities of uses as set forth for each land use designation.

Discussion:

The project is generally consistent with these two related goals. The project will provide for a new industrial area; and as previously described, the City of Blythe has indicated the Heavy Industrial Designation is appropriate for the proposed use.

The City shall seek to attract industrial users for which the area is particularly well suited, and encourage those industries to take advantage of the local labor force.

Discussion:

Whether the project takes advantage of the local labor pool depends on the skills available locally. Construction of the Blythe Energy Project power plant and natural gas pipelines is expected to take place over a period of 18 months and peak period employment would number approximately 481 workers. Upon completion of construction a work force of 20 employees would be needed to operate the plant. The project would provide employment opportunities for local residents with appropriate skills.

All industrial sites shall be appropriately landscaped and all outdoor storage areas shall be screened from view from public rights-of-way and surrounding properties with a combination of fencing and landscaping.

Discussion:

It will be necessary for the development plans for the project to demonstrate consistency with this policy by providing for landscaping and screening of outdoor storage areas acceptable to the City of Blythe. The **VISUAL RESOURCES** section of the FSA includes a condition that the project owner submit a landscape plan to the Energy Commission for approval and to the City for review and comment.

CITY OF BLYTHE ZONING REGULATIONS

POWER PLANT

The General Industrial Zone allows a variety of manufacturing uses by right including public maintenance services, utility operations facilities, custom manufacturing, general manufacturing, and warehousing in accordance with §17.08 010 of the City of Blythe Zoning Ordinance. The proposed power plant would be considered a Utility Operations Facility as defined in §17.08.710 of the City of Blythe Zoning Ordinance (Wellman 2000b) and allowed by right in the Heavy Industrial zone. This zone, however, does contain a maximum height restriction of thirty-four (34) feet (§17.10.040 of the City of Blythe Zoning Ordinance). The heights of structures included in the design of the proposed power plant that exceed the zoning district height limitations are listed below.

Generation Building	60 feet
CT Inlet Filter	60 feet
Air Intake Duct	60 feet
Heat Recovery Steam Generator (HRSG) Stack	130 feet
Heat Recovery Steam Generator	86 feet

According to Robert Casias, City of Blythe Planning Director, a revision of the height limitations is pending for the General Industrial Zone to allow a structure height of up to 100 feet. With the revision to the zone, a variance would be required to allow the exception in height for the 130-foot tall HRSG stacks (City of Blythe/Casias 2000).

NATURAL GAS PIPELINE

The Zoning Ordinance Chapter 17.46 specifically addresses public utility and pipeline facilities and states these facilities are subject to review and approval by the City Council. The pipeline was reviewed by the Project Review Committee on August 9, 2000. The City planning staff provided the proposed conditions to the Energy Commission in a letter dated August 21, 2000 (City of Blythe 2000b). Those conditions are addressed in the appropriate sections of the FSA. None of the recommended conditions are relevant to land use issues.

BLYTHE AIRPORT COMPREHENSIVE LAND USE PLAN

As described in the *Comprehensive Land Use Plan (CLUP) for Blythe Airport,* five safety zones are defined around airports to promote the safety of persons on the ground while reducing risks of serious harm to crews and passengers of aircraft making forced landings in the immediate environs of the airport. The CLUP provides land use compatibility guidelines that apply to each of these zones. These zones are the Inner Safety Zone (ISA), the Outer Safety Zone (OSZ), the Emergency Touchdown Zone (ETZ), the Traffic Pattern Zone (TPZ), and the Extended Runway Centerline (ERC). The power plant site is within two of these safety zones: the Extended Runway Centerline (ERC) and the Traffic Pattern Zone (TPZ).

The ERC is 1,000 feet wide and extends 5,000 feet off of the end of the OSZ or in the case of Blythe Airport 10,000 feet from the end of Runway 26. Within the ERC, the CLUP land use compatibility guidelines state that land uses involving the manufacture, storage, or distribution of explosives or flammable materials should be prohibited. The TPZ is the area around the airport that is most frequently overflown by aircraft and within which the local traffic pattern is located. This zone extends approximately 10,000 feet off the ends and sides of runways.

The Land Use Compatibility Guidelines for Airport Safety Zones are contained in Table 3B of the Blythe Airport Comprehensive Land Use Plan (ALUC 1992) and state as follows:

TPZ – Traffic Pattern Zone: “Discourage uses involving, as the primary activity, manufacture, storage or distribution of explosives or flammable materials.”
ERC – Extended Runway Centerline: “No uses involving, as the primary activity, manufacture, storage or distribution of explosives or flammable materials.”

Land use compatibility guidelines in both zones state that structures should occupy no more than 50 percent of the gross development area or 65 percent of the net lot area, whichever is greater.

Special safety considerations in all zones prohibit particularly hazardous land uses including those that would cause smoke, water vapor, or light interference, thus impeding the pilot’s ability to see the airfield. Other uses that cause electrical interference with aircraft navigational and communications equipment also should be prohibited in the airport vicinity.

Additional details regarding Airport operations are provided in the **TRAFFIC AND TRANSPORTATION** section of the FSA.

<u>Discussion:</u>

A determination of consistency of the project with the CLUP is subject to review by the Riverside County ALUC. The proposed project was reviewed by the RCALUC on October 19 the project was determined to be consistent with the Blythe Airport CLUP, subject to conditions. The ALUC considered a number of issues including,

alternatives siting, aviation safety, height issues, the power plant plume effects on aircraft operations, hazardous materials and fuel storage in making its determination. Conditions related to Land Use are contained in the Conditions of Certification in this section of the FSA. Refer to the **TRAFFIC AND TRANSPORTATION, VISUAL RESOURCES,** and **PUBLIC HEALTH** sections of the FSA for conditions related to these other issue areas.

The key power plant structures would occupy approximately 15 acres of the northern 53-acre parcel. Thus, structures would occupy less than 50 percent of the gross lot area of the site and the project is consistent with the development area provisions of the TPZ and ERC.

The CLUP also contains airport vicinity height guidelines. These guidelines are based on standards developed by the Federal Aviation Administration (FAA) for determining obstructions in the navigable airspace. Federal Aviation Regulation Part 77 (F.A.R. Part 77) defines a variety of imaginary surfaces around the airport; each surface defined at a certain altitude. The proposed BEP power plant site is located below the Horizontal Surface, which covers generally the same area as the TPZ. The boundaries of the Horizontal Surface are set at a radius of 10,000 feet from Runway 8-26. The elevation of the Horizontal Surface height limitation is 150 feet above the airport elevation, at an elevation of 547 feet mean sea level (msl).

Any penetration of the F.A.R Part 77 surface is subject to review on a case-by-case basis by the FAA. The airport runway itself is located at an elevation that is 58 feet higher than the power plant site. The vertical distance between the top of the 130-foot tall HRSG stacks and the boundary of the Horizontal Surface is 82 feet. Therefore the project does not penetrate any of the F.A.R. Part 77 surfaces, does not require FAA review and would be considered consistent with FAA regulations. The airspace impact determination provided by F.A.A. in a letter dated November 11, 1999 (BEP Appendix 7.2 1999a) stated that the FAA would not consider the HRSG stack heights to be a hazard to air navigation. The airspace impact determination has been extended by F.A.A (F.A.A 2000a).

COMPATIBILITY WITH EXISTING AND PLANNED LAND USES

POWER PLANT SITE

The site for the proposed BEP power plant is located adjacent to a producing lemon orchard to the east. The remainder of the adjacent properties are undeveloped. Land uses that can be incompatible with agricultural uses are typically those that would restrict agricultural practices such as residential uses, due to their sensitivity to noise, aerial spraying and dust; uses that would affect productivity of agricultural crops by generating emissions of substantial amounts of dust or other air pollutants; or uses that would restrict access to fields or movements of agricultural equipment along roadways.

The proposed project would be compatible with nearby agricultural uses. The proposed project would not be sensitive to agricultural practices and would not restrict normal operations on the adjacent lemon orchard. No aerial spraying is

used on the lemon orchard; therefore the installation of the transmission lines would not affect existing agricultural practices.

Driving vehicles and equipment on unpaved roads during construction of the power plant would generate dust. Prevailing winds during the fall and winter months flow from southwest to northeast. Thus, dust from the project site could be carried over the adjacent orchard. Dust is not necessarily detrimental to crop productivity and in some cases dust can protect leaves from sunburn (Rethswisch 2000b). With the implementation of the conditions of certification contained in the **AIR QUALITY** section of the FSA that require control of fugitive dust, the project's construction activities would not adversely affect agricultural crops in the area.

The proposed power plant is also located within one mile of the Blythe Airport. The proposed project was reviewed by the RCALUC and on October 19 determined that the project would be consistent with the Blythe Airport CLUP, subject to conditions. Conditions related to Land Use are contained in the Conditions of Certification in this section of the FSA. Refer to the **TRAFFIC AND TRANSPORTATION, VISUAL RESOURCES,** and **PUBLIC HEALTH** sections of the FSA for conditions related to these other issue areas.

The airspace impact determination provided by F.A.A. stated that the F.A.A. would not consider the HRSG stack heights to be a hazard to air navigation. Refer to the discussion of the Blythe Airport Comprehensive Land Use Plan under the Consistency with Laws, Ordinances, Regulations and Standards (LORS) portion of this analysis for more details regarding compatibility of the project with Blythe Airport.

The proposed power plant will not physically divide an established community. The power plant is located in a largely nonurbanized area.

Other areas where potential land use incompatibilities could occur are related to any unmitigated noise, visual, traffic, or public health impacts on nearby land uses. Staff analyzed the potential health risks associated with the construction and operation of the BEP and concluded that with the implementation of the Conditions of Certification contained in the **PUBLIC HEALTH** section of the FSA, it is not expected that there would be any significant adverse cancer, or short-term or long-term non-cancer health effect from any project emissions. Staff analyzed the potential for air quality impacts to be caused by the project and concluded there would be no signifiant impacts to air quality. Refer to the **AIR QUALITY** section of the FSA. Staff analyzed the potential noise impacts associated with the construction and operation of the project and concluded that the BEP would likely present no significant adverse noise impacts. Refer to the **NOISE** section of the FSA. Staff does not expect the project to cause significant visual impacts that cannot be mitigated by the applicant's mitigation measures and the Conditions of Certification included in the **VISUAL RESOURCES** section of the FSA. Staff does not anticipate that the traffic generated by the project would result in significant adverse impacts. Refer to the **TRAFFIC AND TRANSPORTATION** section of the FSA.

ELECTRICAL TRANSMISSION LINES

The proposed electrical transmission lines will not physically divide an established community. The transmission lines will travel a short distance (600 feet) through an adjacent lemon orchard to connect with an existing substation.

The interconnect with the Blythe substation will require removal of a small number of trees from the adjacent lemon orchard. Obsolete poles will be removed, however, allowing trees to be replaced. This would not result in a significant disturbance to the orchard. According to the AFC, aerial spraying is not used in this orchard; therefore, the extension of additional transmission lines to interconnect with the substation would not result in conflicts with agricultural operations.

NATURAL GAS PIPELINE ROUTES

Construction of the El Paso Natural Gas pipeline would take place adjacent to, but not on agricultural lands following existing roadways and non-farmed areas. The SoCal Gas Natural Gas pipeline interconnect would follow a roadway and cross non-farmed lands. The following information was provided in the Response to Data Request #53.

> "Pipeline construction is a continuous moving operation of construction trenching, lowering of the pipe, and backfill. It is estimated that the construction of the El Paso Natural Gas pipeline will take approximately four months to complete. Approximately 90 to 100 feet of pipe would be installed in a day."

Some driveways may be temporarily blocked or roadways may experience restricted traffic operations for a period of up to a few hours during part of a day. The applicant proposes to inform residents and farmers along the right-of-way of the construction timetable for the pipeline via mailed notices and posted signage. Access areas will be backfilled or covered with steel plates during evenings and weekends to ensure that safe access is not restricted. Please refer to the **TRAFFIC AND TRANSPORTATION** section of the FSA for mitigation measures related to traffic and access.

The proposed natural gas pipeline will not physically divide an established community. The pipeline will be placed underground primarily in road rights-of-way and will not disrupt or divide the community.

WATER CONSERVATION OFFSET PROGRAM

For a detailed discussion of water resources and soil types in the Palo Verde Valley area please refer to the **SOIL AND WATER RESOURCES** section of the FSA.

The Palo Verde Irrigation District (PVID) provides irrigation water to a total of 104,000 acres in the Palo Verde Valley and 2,500 acres on the Mesa (Rethwisch 2000). PVID has Priority 1 and Priority 3 water rights from the Colorado River. Priority 1 rights are first rights and are delivered by gravity flow in the Valley and then returned to the river downstream (Henning 2000). Priority 3 water rights are rights that are shared with Imperial Irrigation District and the Coachella Valley Water

District (Henning 2000) and apply to a total of 16,000 acres in the PVID on the Mesa (PVID 2000). Economic factors govern the amount of acreage in agricultural production at any one time, therefore, the actual amount of acreage receiving irrigation water from PVID varies. Currently, approximately 2,500 acres are receiving irrigation water from PVID on the Mesa (Henning 2000).

According to the applicant (BEP 2000l, Data Response #121), the water conservation offset program will include the retirement from irrigation of lands within PVID boundaries on the Mesa. Selection of the lands will be subject to PVID approval, and will include lands that have been or could be irrigated under PVID's Priority 3 water rights to the Colorado River water which total 16,000 acres. Lands to be retired will fall within the Farmland of Local Importance classification according to soil type. Assuming a maximum water use of 3,000 acre-feet for the power plant, an estimated total of 600 to 652 acres will be retired based on an assumed consumptive water use rate for Mesa lands of 4.6 to 5.0 acre-feet per acre. This equates to approximately 0.6 percent of total irrigated farmland in PVID and 4 percent of lands eligible for irrigation with Priority 3 water.

Details regarding the location of lands under consideration for retirement on the Mesa, or for fallowing in the Valley, have not been made available by the applicant. Much of the lands on the Mesa that are in agricultural production are citrus orchards. Citrus represent one of the highest value crops in the area (10 percent of the total 1998 value) and represent the smallest acreage (1 percent of the total 1998 acreage) in the Palo Verde Valley agriculture district. The investment required to get a citrus orchard to the production stage is substantial (University of California Cooperative Extension 1998, Mauk 2000). Retirement of currently active citrus producing lands would be considered a significant impact to agriculture in the area.

None of the land located on the Mesa is in Williamson Act Preserves. In the Valley, the majority of lands are in Williamson Act Preserves. The water conservation offset program as described by the applicant (BEP 2000p, Data Response #58; BEP 2000l, Data Response #121) proposes to fallow lands on a rotating basis to reduce demand for agricultural irrigation. Because specific lands have not been identified, it is not known if this program would have a significant adverse impact on the Williamson Act Preserve Program and affect lands that are under contract. The Riverside County Planning Department administers the Williamson Act Land Conservation Program. According to Mike Harrod, the planner in charge of the program , the WCOP should be reviewed by the Planning Department, the UC Cooperative Extension Farm Advisor and the County Agricultural Commissioner (Harrod 2000). Because the WCOP potentially conflicts with the Williamson Act Preserve Program, the project would have a potentially significant impact on agriculture.

CUMULATIVE IMPACTS

In general, loss of productive agricultural lands is considered a significant cumulative impact. While 652 acres of producing agricultural lands represent only 0.6 percent of the total lands in production in the Palo Verde Valley agricultural district, loss of agricultural land is a region-wide and statewide issue of concern.

Loss of agricultural production is an incremental process, that eventually has an effect on the ability of a region to sustain agriculture and the agriculturally related service economy.

The staff's analysis of other land use impacts related to the potential public health risk associated with air quality emissions from the BEP found that the project would not contribute to significant cumulative impacts associated with public health. Please refer to **AIR QUALITY** and **PUBLIC HEALTH** sections of the FSA for additional discussion.

GROWTH INDUCING IMPACTS

This section addresses the potential for the project to induce growth in the area, either directly as a result of power plant construction, or indirectly as a consequence of the WCOP. To analyze whether the project would induce growth the following questions were addressed.

19. Would the proposed project foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment? Included in this are projects that would remove obstacles to population growth (a major expansion of a waste water treatment plant, as an example). Increases in population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects.
20. Does the project have characteristics that may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively?

The information on population and housing used here is derived from the **SOCIOECONOMICS** section of the FSA which provides a more detailed discussion of employment and population. Construction of the Blythe Energy Project power plant and natural gas pipelines is expected to take place over a period of 18 months and peak period employment would number approximately 481 workers. The project would require less than 1.5 percent of the labor force in Riverside County and could draw workers from adjoining areas in Los Angeles County, Las Vegas, and in the nearby communities of Yuma and Phoenix in Arizona. During operation, the plant would employ about 20 permanent workers.

Population estimates for the City of Blythe indicate a 1998 population of approximately 12,050 (excluding correctional facilities' populations) and the future growth rate is estimated at 3 percent. The addition of 20 workers on a permanent basis for plant operations would increase the estimated 1998 population by 0.17 percent. This is not considered a significant amount of growth for the area since this growth could be accommodated within the existing housing supply and service systems as described in the **SOCIOECONOMICS** section of the FSA.

It is not anticipated that construction of the power plant would induce construction of new housing in the region, since permanent housing is not considered in short supply in Blythe. Local realtors were polled by BEP to establish vacancy rates in

the City. Rental home vacancies were estimated at five to eight percent and apartments at ten percent (BEP 1999a, AFC, page 7.6-3). Blythe also has over 300 mobile home spaces. Not included in the permanent housing unit count are the many RV parks located in the vicinity of Blythe and motel rooms. During previous construction projects for the two state prisons, many workers were reported to have brought RVs with them and stayed in the RV parks during construction. Since the construction of the prisons, Blythe has added 5 motels. The City currently has 23 motels with approximately 1,100 rooms (BEP 1999a, AFC, p. 7.6-21).

Economic effects of the project on the local community would occur due to the influx of construction workers purchasing housing and other necessities. Some equipment and materials for the plant may be purchased locally as well. Energy Commission staff observed that there are a number of vacant commercial buildings within Blythe and there is a large amount of vacant land within the City limits (Riverside County LAFCO/Spiliotis 2000). The local economy may derive a benefit from the plant construction phase (refer to the **SOCIOECONOMICS** section of the FSA). Therefore, the project would not result in an adverse impact on the economy with respect to growth inducement.

Another aspect of the project is the WCOP, which would retire approximately 650 acres of land on the Mesa (Tier 3 lands) from irrigated agricultural production in order to offset the project's water use. The WCOP is designed to reduce the amount of land that could potentially receive irrigation water from the Colorado River through PVID. Acquisition of lands and/or irrigation rights would be accomplished through purchase or lease by BEP. An alternative to retirement of Mesa land would be a program of rotational fallowing of agricultural land in the Palo Verde Valley (Tier 1 lands). The lands selected for retirement or fallowing have not been identified, therefore the zoning and general plan designations of the properties involved are unknown.

The WCOP does not propose to monitor or restrict other uses of the land during life of the agreement. If only irrigation rights were acquired, then conceivably the property owner could put the land to uses that do not involve irrigated agriculture, but that would be compatible with the zoning. A well can be drilled with a permit from Riverside County Health Department, but pumping costs are high on the Mesa (Park 2000). It is, therefore, unlikely that other types of uses would occur on properties zoned for Agriculture or Controlled Development (County Zones A-1,A-2 and W-2; City Zone A) since uses allowed in these zones are limited. Other non-agricultural uses would be subject to permitting and review by Riverside County or by the City, depending on the location of the lands. Growth inducement is not anticipated on properties zoned for agricultural uses, because of the water pumping costs and the limited types of uses allowed. The WCOP could involve lands with other zoning designations that allow more intensive uses without review by the County or City. However, the project would not remove any obstacles to development that do not currently exist (i.e. provide new services and/or infrastructure, improve access) and therefore it is not anticipated that the WCOP would result in growth inducing impacts.

FACILITY CLOSURE

Closure of a facility like the Blythe Energy Project can be temporary or permanent. Temporary closure is defined as a shutdown for a period exceeding the time required for normal maintenance, including for overhaul or replacement of the combustion turbines. Causes for temporary closure include a disruption in the supply of natural gas or damage to the plant from earthquake, fire, storm, or other natural acts. Permanent closure is defined as a cessation in operation with no intent to restart operations because of plant age, damage to the plant beyond repair, economic conditions, or other reasons.

The information provided in the AFC did not specifically address the effects of project closure on land use issues and concerns.

For a temporary closure, where there is no release of hazardous materials, security of the facility will be maintained on a 24-hour basis, and the Energy Commission and other responsible agencies will be notified. Depending on the length of shutdown necessary, a contingency plan for the temporary cessation of operations will be implemented.

The proposed life of the Blythe Energy Project is a minimum of 30 years. However, if the generation facility were still economically viable, it could be operated longer. It is also possible that the facility could become economically noncompetitive earlier than 30 years, forcing early decommissioning. Whenever the facility is to be closed permanently, the closure procedure will follow a plan that is subject to Energy Commission review and approval.

At the time of permanent closure, all applicable LORS will be identified and the closure plan will discuss conformance of decommissioning activities with these LORS.

Staff has not identified any LORS from a land use perspective that the applicant would have to comply with in the event of unexpected temporary closure or unexpected permanent closure of the BEP.

MITIGATION

Staff has proposed conditions of certification to ensure compatibility with adjacent and nearby land uses and to ensure compliance with the general plan and zoning regulations in effect at the time the project's final design is complete.

It is expected that the annexation process will have been completed by the time the project is considered by the Energy Commission for certification. The project is consistent with the City of Blythe's General Plan and generally consistent with the City of Blythe's zoning, however, the project would exceed the City's 34-foot height restriction in the Heavy Industrial Zone. A revision to the height limitation in this zone is pending to allow a maximum height for structures of 100 feet above ground level. If the project were subject to discretionary authority of the City, a variance

would be required in order to allow the HRSG stack height of 130 feet. A major variance requires a 3/5 vote by the City Council for approval and a minor variance could be approved by the City staff.

The City has indicated that an advisory recommendation regarding a variance could be provided upon submittal of a variance application by the project applicant to the City. The advisory determination regarding the granting of a variance for height would be provided to the Energy Commission prior to the evidentiary hearing for land use. The applicant has been advised as of October 23, 2000 by Staff to submit the variance application to the City of Blythe.

The Riverside County Airport Land Use Commission (RCALUC) has determined that the project is consistent with the Riverside County Airport Comprehensive Land Use Plan for Blythe Airport, subject to conditions. Conditions related to Land Use are contained in the Conditions of Certification in this section of the FSA. Refer to the **TRAFFIC AND TRANSPORTATION, VISUAL RESOURCES,** and **PUBLIC HEALTH** sections of the FSA for conditions related to these other issue areas.

The Water Conservation Offset Program (WCOP) could potentially impact agriculture in the vicinity of the project. Details regarding the location of lands under consideration for retirement on the Mesa, or for fallowing in the Valley, have not been made available by the applicant. Much of the lands on the Mesa that are under production are citrus groves. Citrus represent one of the highest value crops in the area (10 percent of the total 1998 value) and represent the smallest acreage (1 percent of the total 1998 acreage) in the Palo Verde Valley agriculture district. Because the investment required to get a citrus grove to the production stage is substantial, retirement of currently active citrus producing lands is considered a significant impact to agriculture in the area.

If the WCOP involves lands in the Williamson Act Preserve Program, a conflict with contract conditions may occur. The Riverside County Planning Department administers the Williamson Act Land Conservation Program, therefore, lands under contract, that are proposed for inclusion in the WCOP, should be reviewed by the Riverside County Planning Department. Because the WCOP potentially conflicts with the Williamson Act Preserve Program, the project is considered to have a potentially significant impact on agriculture.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSION

With implementation of the conditions of certification, staff does not anticipate that the project will result in significant impacts related to land use.

At this time staff cannot conclude that the BEP will comply with all applicable land use laws, ordinances, regulations and standards of Riverside County. Staff has found the BEP to be consistent with the goals of the Riverside County General Plan, however the project would not be consistent with the County's Agriculture Open

Space General Plan designation. The power plant would not be consistent with the height restrictions in the Riverside County W-2 zone, as well. The project will not comply with the County's 105-foot height restriction in the Controlled Development (W-2) zone. However, annexation of the power plant site and surrounding area into the City of Blythe has been approved and will become final in mid-November of 2000. Upon completion of the annexation process, the Riverside County LORS will no longer apply to the power plant site.

The project is consistent with the City's General Plan and generally consistent with the City's zoning, however, the project would exceed the City's 34-foot height restriction in the Heavy Industrial Zone. A revision to the height limitation is pending to allow a maximum height of 100 feet for a structure in the Heavy Industrial zone. Ordinarily the City would require a variance to allow a structure height in excess of the height limit. The applicant has been advised by staff to request an advisory determination from the City. If the City supports the variance, the nonconformance with City LORS would be resolved.

The Water Conservation Offset Program (WCOP) has the potential to cause significant adverse impacts to agricultural resources in the area. The WCOP would affect agricultural land or land that can be used for agriculture, either on the Mesa or in the Palo Verde Valley. The major concerns with the WCOP is that it would have an adverse impact on agriculture by retiring lands with productive citrus orchards or other high value crops, or that the fallowing program would conflict with Williamson Act contracts. In order to avoid impacts to lands under Williamson Act contract, staff is requiring that the Riverside County Planning Department review any lands under contract that are included in the WCOP. Staff is also recommending that lands on the Mesa that are currently in active orchard crop production should not be eligible for the program.

With the implementation of the conditions of certification contained in the **AIR QUALITY** section of the FSA, the project would not adversely affect surrounding land uses due to the effects of dust or ozone air emissions.

The Riverside County Airport Land Use Commission has determined that the project is consistent with the Comprehensive Land Use Plan for Blythe Airport subject to conditions. Conditions related to Land Use are contained in the Conditions of Certification in this section of the FSA. Refer to the **TRAFFIC AND TRANSPORTATION, VISUAL RESOURCES,** and **PUBLIC HEALTH** sections of the FSA for conditions related to these other issue areas.

The BEP would be compatible with existing and planned land uses because the project would not physically divide an established community.

Other areas where potential land use incompatibilities could occur are related to any unmitigated noise, visual, traffic, or public health impacts on nearby land uses. Staff analyzed the potential health risks associated with the construction and operation of the BEP and concluded that with the implementation of the conditions of certification contained in the **PUBLIC HEALTH** section of the FSA, it is not expected that there would be any significant adverse cancer, or short-term or long-term non-cancer

health effect from any project emissions. Staff analyzed the potential air quality impacts associated with the construction and operation of the project and concluded that the BEP would likely result in no significant adverse air quality impacts. Refer to the **AIR QUALITY** section of the FSA. Staff analyzed the potential noise impacts associated with the construction and operation of the project and concluded that the BEP would likely present no significant adverse noise impacts. Refer to the **NOISE** section of the FSA. Staff does not expect the project to cause significant visual impacts that cannot be mitigated by the applicant's mitigation measures and the conditions of certification included in the **VISUAL RESOURCES** section of the FSA. Staff does not anticipate that the traffic generated by the project would result in significant adverse impacts. Refer to the **TRAFFIC AND TRANSPORTATION** section of the FSA.

RECOMMENDATION

If the Energy Commission certifies the BEP, staff recommends that the Commission adopt the following proposed conditions of certification.

CONDITIONS OF CERTIFICATION

LAND-1 The project owner shall obtain all easements on private lands necessary to construct and maintain the natural gas pipeline and transmission line interconnection with the Blythe Substation.

Verification: At least 30 days prior to start of construction of the natural gas pipeline and transmission line, or a lesser time period as mutually agreed to by the California Energy Commission Compliance Project Manager (CPM), the project owner shall submit a copy of the recorded easement agreement for each affected private property to the CPM.

LAND-2 The proposed water conservation offset program shall not retire lands designated as Prime Farmlands or Farmlands of Statewide Importance as defined by the Department of Conservation, or lands included in a Williamson Act Preserve. Fallowing or retirement of farmlands shall not violate any provision of a Williamson Act Contract. Lands selected for retirement on the Mesa shall not include lands currently involved in active orchard crop production.

Verification: At least 60 days prior to implementation of the Water Conservation Offset Program (WCOP), the project owner shall submit detailed information to the CPM regarding the lands involved in the WCOP, including: 1) location and assessor parcel number, 2) Department of Conservation Important Farmland Program Classification, 3) crop and cultivation history, and 4) Williamson Act Preserve and contract status. If the program will fallow or retire any lands under Wiliamson Act contract, the project owner shall provide documentation that such fallowing or retirement has been reviewed and approved by Riverside County Planning Department and does not violate any provision of a Williamson Act contract. Any WCOP agreements that are altered or added to the program shall be submitted to the CPM at least 30 days prior to taking effect.

LAND-3 Prior to construction of the natural gas pipeline, the project owner shall inform residents and farmers along the natural gas pipeline right-of-way of the construction timetable for the pipeline via mailed notices and posted signage. A construction liaison shall be provided and contact phone number shall be listed in the notice to provide the public with a point of contact for additional information and for registering complaints.

Verification: At least 30 days prior to the start of construction of the natural gas pipeline, the project owner shall submit a copy of the notice, the mailing list and a map showing the location of the posted notices to the CPM.

LAND 4 Prior to the start of construction, the project owner shall submit a site development plan of the project to the City of Blythe for their review and comment, and to the CPM for review and approval. The site development plan shall comply with all applicable provisions of Section 17, City of Blythe zoning code including Chapters 17.12 (Setbacks), 17.16 (Off-Street Parking), 17.22 (Landscaping), 17.26 (Signs), and 17.14 (Fences).

Verification: At least 60 days prior to the start of construction of the power plant, the project owner shall submit to the CPM for review and approval a site development plan and a letter from the City of Blythe Planning Director stating that the site development plan (including landscape plan) conforms to the City's Zoning Code.

LAND 5 Prior to the start of construction, the project owner shall convey an avigation easement to the Blythe Airport (County of Riverside) for all portions of the project including off-site power lines and pipelines located within the Airport Influence Area as shown in the Blythe Airport Comprehensive Land Use Plan dated August 1992.

Verification: At least 60 days prior to the start of construction of the power plant or any other facilities associated with the project, the project owner shall submit to the CPM a copy of the avigation easements showing proof of recordation with the Riverside County Recorder.

REFERENCES

Blythe Energy Project (BEP) 1999a Application for Certification , Blythe Energy Project (99-AFC-8). Filed with the California Energy Commission December 9, 1999.

Blythe Energy Project (BEP) 2000c. Data Adequacy Supplement #2, dated February 18, 2000.

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NOISE

Testimony of Thomas M. Murphy

INTRODUCTION

The construction and operation of any power plant creates noise, or unwanted sound. The character and loudness of this noise, the times of day or night during which it is produced, and the proximity of the facility to any sensitive receptors combine to determine whether the facility will meet applicable noise control laws and ordinances, and whether it will exhibit significant adverse environmental impacts.

The purpose of this analysis is to identify and examine the likely noise impacts from the proposed Blythe Energy Project (BEP), and to recommend procedures to ensure that the resulting noise impacts will comply with applicable laws and ordinances, and will be adequately mitigated. This will enable the Energy Commission to make findings that:

- the BEP will likely be built and operated in compliance with all applicable noise laws, ordinances, regulations and standards (LORS); and
- the BEP will present no significant adverse noise impacts, or none that have not been mitigated to the extent feasible.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

FEDERAL

Under the Occupational Safety and Health Act of 1970 (OSHA) (29 U.S.C. § 651 et seq.), the Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations (29 C.F.R. § 1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise level exposure as a function of the amount of time during which the worker is exposed (see **Noise: Appendix A, Table A4** immediately following this section). The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed; assuring that workers are made aware of overexposure to noise; and periodically testing the workers' hearing to detect any degradation.

There are no federal laws governing off-site (community) noise.

STATE

California Government Code Section 65302(f) requires that a noise element be prepared as part of the general plan to address foreseeable noise problems. In addition, Title 4, California Code of Regulations has guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. The State land use compatibility guidelines are listed in Table 1.

Table 1 Land Use Compatibility for Community Noise Environment

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE - Ldn or CNEL (db)													
	50		55		60		65		70		75		80	
Residential - Low Density Single Family, Duplex, Mobile Home														
Residential - Multi-Family														
Transient Lodging - Motel. Hotel														
Schools, Libraries, Churches, Hospitals, Nursing Homes														
Auditorium, Concert Hall, Amphitheaters														
Sports Arena, Outdoor Spectator Sports														
Playgrounds, Neighborhood Parks														
Golf Courses, Riding Stables, Water Recreation, Cemeteries														
Office Buildings, Business Commercial and Professional														
Industrial, Manufacturing, Utilities, Agriculture														

	Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
	Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design.
	Normally Unacceptable	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.
	Clearly Unacceptable	New construction or development generally should not be undertaken.

Source: State of California General Plan Guidelines, Office of Planning and Research, June 1990.

Other State LORS include the California Environmental Quality Act (CEQA) and California Occupational Safety and Health Administration (Cal-OSHA) regulations.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA requires that significant environmental impacts be identified, and that such impacts be eliminated or mitigated to the extent feasible. The CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et seq., Appendix G, § XI) explain that a significant effect from noise may exist if a project would result in:

"a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

"b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

"c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

"d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project…."

CAL-OSHA

Cal-OSHA has promulgated Occupational Noise Exposure Regulations (Cal. Code Regs., tit. 8, §§ 5095-5099) that set employee noise exposure limits. These standards are equivalent to the federal OSHA standards described above.

LOCAL

RIVERSIDE COUNTY GENERAL PLAN NOISE STANDARDS AND ORDINANCES

According to the Riverside County Department of Health, noise standards have been developed for stationary (facility-related) noise sources. Facility-related noise levels near residential receptors must not exceed 45 dBA between the hours of 10:00 p.m. to 7:00 a.m. and 65 dBA (10-minute L_{eq}) between the hours of 7:00 a.m. to 10:00 p.m. (10-minute L_{eq}). It should be noted that temporary construction activities are not covered by this standard (Redden, 1999).

Construction noise is covered under Ordinance 457.90, Section 1G of the Riverside County Building and Safety Department, which states the following: whenever a construction site is within one-quarter (1/4) mile of an occupied residence(s), no construction activities shall be undertaken between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September and between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May. Exceptions to these standards shall be allowed only with the written consent of the Riverside County building official.

CITY OF BLYTHE NOISE REGULATIONS

The City of Blythe has established a 24-hour (L_{dn} or CNEL) exterior noise limit of 65 dBA at the property line and an interior noise limit of 45 dBA. An area may be considered noise-impacted if future levels exceed 60 dBA at the exterior of an industrial building or property boundary (BEP 1999a, AFC § 7.3.3.3).

COUNTY OF LA PAZ

According to Mary Dahl, who is the Director of the Department of Community Development, La Paz County (Arizona) does not have any noise ordinances or standards (County of La Paz, 2000).

SETTING

PROJECT BACKGROUND

The BEP involves the construction and operation of a new 520 MW combined-cycle power plant on an approximately 76-acre parcel. The proposed plant is conceptualized as two F-Class 170 MW Combustion Turbine Generators (CTGs), two Heat Recovery Steam Generators (HRSGs), and one single condensing 180 MW Steam Turbine Generator (STG). The CTGs are natural gas-fired.

The applicant also proposes two options for the construction of a gas delivery pipeline. One pipeline would connect to the El Paso Natural Gas (EPNG) Company and the other would connect with the SoCal Gas pipeline. The applicant has identified an 11.5-mile route for the EPNG connection and a 0.8-mile route for the SoCal Gas connection (BEP 1999a, AFC § 2.2.8.1 and BEP 2000s). In addition to the natural gas pipeline, the applicant proposes to interconnect transmission lines with the existing Blythe substation. The combined length needed for this connection would be less than one-half mile. Water supply and use facilities will be constructed on-site (BEP 1999a, AFC § 2.1).

EXISTING LAND USE

The project site for the proposed Blythe Energy Project is located in an unincorporated area of Riverside County that has recently received approval for annexation into the City of Blythe. The facility site and a portion of the proposed transmission line interconnection route are located on vacant land. The remaining land use associated with the transmission line interconnection route is identified as agriculture. Existing land uses for the proposed natural gas pipeline route (both options) include agriculture, sewage disposal ponds, residences, and manufacturing.

COUNTY ZONING AND GENERAL PLAN DESIGNATION

As described in the Land Use section, the Riverside County zoning designations for the proposed El Paso Natural Gas interconnection route include: Heavy Agriculture; Light Agriculture; Medium Manufacturing; Manufacturing-Service Commercial; and Scenic Highway Commercial. Zoning along the SOCAL Gas pipeline interconnection route is Controlled Development.

CITY ZONING AND GENERAL PLAN DESIGNATION

As described above, the project site for the proposed Blythe Energy Project is located in an unincorporated area of Riverside County that has recently received approval for annexation into the City of Blythe. Upon annexation, the facility site would be zoned as General Industrial (I-G).

SENSITIVE RECEPTORS

No sensitive receptors (e.g., schools, hospitals, daycare facilities) are located within three miles of the BEP facility site; however, a residential receptor exists approximately 3,465 feet west-southwest of the proposed facility. Several sensitive receptors exist in the vicinity of the proposed natural gas pipeline route associated with the EPNG connection. The nearest receptor is the Felix J. Appleby Elementary School, which is approximately 0.75 mile north of the proposed pipeline corridor in the City of Blythe. Farm residences exist one mile east and south of the proposed pipeline corridor, located on various mesas and topographic lows. Nicholls Warm Springs is the nearest unincorporated residential area and it is approximately 2.5 miles southwest of the proposed pipeline corridor.

EXISTING NOISE LEVELS

In order to predict the likely noise effects of the BEP on these sensitive receptors, the applicant commissioned an ambient noise survey of the area. This survey was performed using a MetroSonics DB3080 datalogger, which recorded L_{eq}, L_{10}, and L_{90} noise measurements (BEP 1999a, AFC § 7.3.1.2). The L_{dn} and CNEL were calculated from the hourly L_{eq} data.

The applicant's noise survey monitored noise levels at the nearest residence (16275 Hobsonway West), which is located 3,465 feet west-southwest of the proposed facility. It should be noted that this residence is located approximately 600 feet north of Interstate 10 (I-10), a primary noise source in the region. Noise measurements were recorded hourly for a 25-hour period from 2:00 p.m. on November 2, 1999 until 3:00 p.m. November 3, 1999.

In addition to noise measurements at the nearest residence, noise measurements were also recorded at the northern boundary of the BEP site for a one-hour period in order to characterize the existing noise level at the site. The noise levels at the power plant were measured from noon until 1:00 p.m. on November 2, 1999.

Survey results indicated that the ambient noise level for the residential receptor (16275 Hobsonway West) is primarily influenced by highway traffic along I-10. Other background noise contributions were attributed to airplane overflights associated with landing and take-offs at the Blythe Airport. The average noise level over the 25-hour period was 53.9 dBA L_{eq}, 57.5 dBA L_{dn}, 47.8 dBA L_{90}, and 58.1 dBA CNEL. The average noise level at the north end of the proposed BEP property was measured to be 44.0 dBA L_{eq}: this measurement was approximately 10 dBA lower than the noise levels at the closest receptor. The lower noise level is a result

of the BEP property being further (approximately 0.5 mile) from I-10, which is the primary noise source in the area (BEP 1999a, AFC § 7.3.1.3).

IMPACTS

Project noise impacts can be created by construction and by normal operation of the power plant.

PROJECT SPECIFIC IMPACTS — CONSTRUCTION

COMMUNITY EFFECTS

Construction noise is a temporary phenomenon; the construction period for the BEP facility is scheduled to last 16-20 months (BEP 1999a, AFC § 2.2.15). Construction of an industrial facility such as a power plant is typically and unavoidably noisier than what is usually permissible under noise ordinances. In order to allow the construction of new facilities, construction noise during certain hours is commonly exempt from enforcement by local ordinances. Refer to the aforementioned section on LORS affiliated with Riverside County and the City of Blythe.

The applicant has predicted the noise impacts of project construction on the nearest sensitive receptor, which is 3,465 feet west-southwest of the proposed BEP facility. When construction activities occur at the southern portion of the facility, noise levels at the nearest residence are projected to be approximately 55 dBA. Noise levels at the nearest residence are expected to drop to 52 dBA when construction is occurring at the northwestern portion of the BEP site. Since the plant construction will be confined mainly to the northern portion of the site, construction noise related impacts would be closer to 52 dBA at the nearest residence. The daytime noise levels (hourly L_{90}) measured at the residential receptor ranged between 42.5 to 53.5 dBA. It is assumed that construction noise will be most prevalent during low volume traffic periods along I-10. However, temporary construction activities will be limited to daytime hours; therefore, construction related noise levels would be considered minor and will not result in any noise impacts (BEP 1999a, AFC § 7.3.2.1).

STEAM BLOWS

Typically, the steam blows create the loudest noise encountered during construction, and are inherent in building any project incorporating a steam turbine. After erection and assembly of the feedwater and steam systems, the piping and tubing that comprises the steam path has accumulated dirt, rust, scale and construction debris such as weld spatter, dropped welding rods and the like. If the plant were started up without thoroughly cleaning out these systems, all this debris would find its way into the steam turbine, quickly destroying the machine.

In order to prevent this, before the steam system is connected to the turbine, the steam line is temporarily routed to the atmosphere. High pressure steam is then raised in the heat recovery steam generator (HRSG) or a temporary boiler and allowed to escape to the atmosphere through the steam piping. This flushing action, referred to as a steam blow, is quite effective at cleaning out the steam

system. A series of short steam blows, lasting two or three minutes each, is performed several times daily over a period of two or three weeks. At the end of this procedure, the steam line is connected to the steam turbine, which is then ready for operation.

These steam blows can produce noise as loud as 130 dBA at a distance of 100 feet. This would attenuate to approximately 100 dBA, an exceedingly disturbing level, at the nearest residence, 3,465 feet distant. In order to minimize disturbance from steam blows, the steam blow piping can be equipped with a silencer that will reduce noise levels by 20 to 30 dBA, or to a level of 70 to 80 dBA at the nearest residence. This is still an annoying noise level; staff proposes that any high pressure steam blows be muffled with an appropriate silencer, and be performed only during restricted daytime hours (see proposed Condition of Certification **NOISE-4** below) in order to minimize annoyance to residents.

Alternatively, the applicant may elect to employ a new, quieter steam blow process, variously referred to as QuietBlow™ or Silentsteam™. This method utilizes lower pressure steam over a continuous period of approximately 36 hours. Resulting noise levels reach only about 80 dBA at 100 feet; noise levels at the nearest residence would thus be about 50 dBA, slightly higher than the background noise levels.

Regardless of which steam blow process the applicant chooses, staff proposes a notification process (see proposed Condition of Certification **NOISE-5** below) to make neighbors aware of impending steam blows. This should help ensure the process is at least tolerable to residents.

LINEAR FACILITIES

Construction of the gas line will produce noise. This noise will be noticeable, and possibly annoying, to persons outside their homes at those residences nearest the construction area. This work, however, is only a temporary phenomenon; the work will progress at such a pace that no single receptor will be inconvenienced for more than a few days. In addition, such work is customarily performed during the daytime, and would cause no impacts at night, when quiet time is most important.

Transmission line construction is limited to approximately 400 feet from the BEP facility. Since the closest receptor is 3,465 feet away from the transmission interconnect, staff believes no significant adverse noise impacts are likely to occur due to the construction of the linear facilities.

WORKER EFFECTS

The applicant acknowledges the need to protect construction workers from noise hazards as well as the applicable LORS relating to worker health and safety. In order to comply with any applicable LORS, the BEP has prepared a hazard analysis that will identify the activity, associated hazard(s), and the type(s) of control to serve as mitigation. Measures to be implemented for noise-related impacts include a Hearing Conservation Program and a Personal Protective Equipment Program. The Personal Protective Equipment Program contains a noise-related requirement

to determine and provide personal protective devices for specific jobs. The following requirements are indicative of the Hearing Conservation Program:

- Establish proper hearing protective devices and type to use
- Determine and establish training and instruction requirements and programs

To ensure adequate protection of workers, staff proposes Condition of Certification **NOISE-3**.

PROJECT SPECIFIC IMPACTS — OPERATION

COMMUNITY EFFECTS

The applicant commits to incorporating noise mitigation measures into the design of the project that will ensure that noise levels at the nearest receptor (3,465 feet in distance) will be below the 60 dBA established by the City of Blythe. The noise impact calculations in the AFC indicate that the normal operating noise level from the proposed power plant would be approximately 53.8 dBA CNEL at the closest residential receptor, which is well below the ambient survey level of 58.1 dBA CNEL.

POWER PLANT OPERATION

During its operating life, the BEP will represent essentially a steady, continuous noise source day and night. Occasional short-term increases in noise level will occur as steam relief valves open to vent pressure, or during startup or shutdown as the plant transitions to and from steady-state operation. At other times, such as when the plant is shut down for lack of dispatch or for maintenance, noise levels will decrease.

The primary noise sources anticipated from the proposed facility include the heat recovery steam generators, the combustion turbine generator packages, the steam turbine generator, the cooling towers, boiler feed pumps, the generator step-up transformers, and the circulating water pumps. Secondary noise sources are anticipated to include pumps, ventilation fans and compressors. The noise emitted by power plants during normal operations is generally broadband, steady state in nature.

The CEC defines the area impacted by the proposed project as that area where there is a potential increase in existing noise levels of 5 dBA or more during operation of the project. Typically, the CEC requires that the 5 dBA be compared against the lowest one-hour L_{90} value, which is usually during nighttime hours where sleep interference is a factor. According to Table 7.3-2 of the applicant's AFC, the lowest L_{90} noise level of 42.5 dBA occurred between the hours of noon and 1:00 pm (mid-day) and may not reflect the existing conditions in the area (BEP 1999a, AFC § 7.3.1.3). This may have been a result of meteorological conditions, low traffic values on nearby I-10, etc. It is staff's opinion that the 5 dBA should be compared against an 8-hour averaged L_{90} noise level, especially since the lower noise levels were recorded during the daytime hours.

For this analysis, the noise levels between 9 a.m. and 4 p.m. were selected to develop an 8-hour averaged L_{90} noise level. The maximum noise level during the selected period was 45.5 dBA (2 p.m. and 3 p.m.) and the minimum noise level was 42.5 (noon and 1 p.m.), with the averaged 8-hour L_{90} noise value being 44.2 dBA.

The applicant calculated the noise levels from the Proposed BEP Project at the closest residence, 3,465 feet to the west-southwest of the proposed site (BEP 2000, AFC § 7.3.2.2). The noise level was determined to be 48.2 dBA. This noise level would fall 1 dBA below the significance criteria when adding the 5 dBA to the averaged 8-hour L_{90} noise value of 44.2 dBA. As a result, the noise levels associated with the proposed project would not cause any significant noise impacts on the residential community. It should be noted that the proposed Condition of Certification **NOISE-6** would require that the noise levels at the closest residential receptor would not be any greater than the specified noise level of 49.2 dBA.

TONAL AND INTERMITTENT NOISES

One possible source of annoyance would be strong tonal noises, individual sounds that, while not louder than permissible levels, stand out in sound quality. To ensure the avoidance of such tonal sound, the noise control design of the BEP can be balanced to bring as many noise sources as possible to the same relative sound level, causing them all to blend without any one source standing out. Another potentially annoying source of noise from a combined cycle power plant is the intermittent or occasional actuation of steam relief valves. The hissing noise from these valves can be largely mitigated by the installation of adequate mufflers. To ensure that adequate measures are taken to mitigate tonal and intermittent noise sources, staff has proposed measures (see proposed Condition of Certification **NOISE-6**, below) to ensure that tonal and intermittent steam relief noises are not allowed to cause a problem.

LINEAR FACILITIES

The linear facilities associated with the proposed BEP facility would require fuel gas pipelines (SoCal Gas connection = 0.8 mile or EPNG connection =11.5 miles). Both pipelines would be buried below ground and would not produce any audible noise. Thus, there will be no noise impacts associated with the pipelines.

In addition to the pipeline, the proposed facility would require a transmission line to interconnect with the existing Blythe substation. The combined length needed for this connection would be about 400 feet from the proposed plant. Noise sources associated with power transmission include occasional breaker operations in the switchyard, and corona noise and very low magnetostriction hum from the conductors. Breaker noise is considered impulsive in nature, lasting a very short duration, and may occur only a very few times per year. Corona noise is characterized as a buzz or hum and is usually worse when the conductors are wet, such as in rain or fog. No significant noise impact will occur because the new transmission line would not be located near sensitive receptors (BEP1999a, AFC § 7.3.2.2).

Worker Effects

The applicant recognizes the need to protect plant operating and maintenance personnel from noise hazards, and commits to comply with applicable LORS. In order to comply with any applicable LORS, the applicant has prepared a hazard analysis that will identify the activity, associated hazard(s), and the type(s) of control to serve as mitigation. Measures to be implemented for noise-related impacts include a Hearing Conservation Program and a Personal Protective Equipment Program. The Personal Protective Equipment Program contains noise-related requirements that will provide the following: 1. Determine and provide personal protective devices for specific jobs and 2. Implement proper hearing protection equipment. The following requirements are indicative of the Hearing Conservation Program:

- Identify high-noise environments
- Determine exposure monitoring
- Institute a medical surveillance program and record keeping program
- Establish proper hearing protective devices and type to use
- Determine and establish training and instruction requirements and programs.

With proper execution of the Hearing Conservation Program, as well as with the implementation of proposed Condition of Certification NOISE-7, no occupational safety impacts are anticipated from operational noise.

CUMULATIVE IMPACTS

The *CEQA Guidelines,* Title 14, California Code of Regulations, Section 15130, requires a discussion of cumulative environmental impacts when the project's incremental effect is cumulatively considerable. Cumulative impacts are defined as those impacts that are created because of the combination of the project being evaluated together with other projects causing related impacts. The *CEQA Guidelines* require that the discussion reflect the severity of the impacts and the likelihood of their occurrence, but need not provide as much detail as the discussion of the impacts attributable to the proposed project alone.

The *CEQA Guidelines* also mandate two different ways in which cumulative impacts are to be evaluated. One of these mandated approaches is to summarize growth projections in an adopted general plan or in a prior certified environmental document. The second method involves compilation of a list of past, present, and probable future projects producing related or cumulative impacts. The second method has been utilized for the purposes of this Staff Assessment.

The City of Blythe is planning industrial development on the area surrounding the airport. A new distribution warehouse has been recently constructed in this area. In addition, it is expected that the cumulative noise level associated with constructing both projects would not significantly increase the ambient noise level in the area. Especially, if you consider that I-10 is the primary noise source in the area. As a

result, there are no significant cumulative effects associated with construction of BEP (BEP1999a, AFC § 7.2.2.5).

FACILITY CLOSURE

Upon closure of the facility, all operational noise will cease; no further adverse impacts from operation will be possible. The remaining potential noise source will be that caused by the dismantling of the structures and equipment, and any site restoration work that may be performed. Since this noise will be similar to that caused by the original construction of the BEP, it can be treated similarly. That is, noisy work can be performed during daytime hours, with machinery and equipment properly equipped with mufflers. Any noise LORS then in existence would apply; applicable Conditions of Certification included in the Energy Commission Decision would also apply unless properly modified.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Staff concludes that the BEP will likely be built and operated to comply with all applicable noise laws, ordinances, regulations and standards. Staff further concludes that the BEP facility, mitigated as described above, will likely present no significant adverse noise impacts. The BEP will likely represent an unobtrusive, nearly undetectable component of ambient noise levels.

RECOMMENDATIONS

Staff recommends that the following proposed Conditions of Certification be adopted to ensure compliance with all applicable noise LORS and implementation of the applicant's proposed mitigation measures.

PROPOSED CONDITIONS OF CERTIFICATION

NOISE-1 At least 15 days prior to the start of project-related ground disturbing activities, the project owner shall notify all residents and business owners within one-half mile of the site or adjacent to the pipeline route, by mail or other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: The project owner shall transmit to the Energy Commission Compliance Project Manager (CPM) in the first Monthly Construction Report following the start of project-related ground disturbing activities, a statement, signed by the project manager, attesting that the above notification has been performed, and describing the method of that notification. This statement shall also attest that the telephone number has been established and posted at the site.

NOISE-2 Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints.

Protocol: The project owner or authorized agent shall:

- Use the Noise Complaint Resolution Form (see Exhibit 1 for example), or functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- Attempt to contact the person(s) making the noise complaint within 24 hours;
- Conduct an investigation to determine the source of noise related to the complaint;
- If the noise is project related, take all feasible measures to reduce the noise at its source; and
- Submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts; and if obtainable, a signed statement by the complainant stating that the noise problem is resolved to the complainant's satisfaction.

Verification: Within 30 days of receiving a noise complaint, the project owner shall file a copy of the Noise Complaint Resolution Form, or similar instrument approved by the CPM, with the City of Blythe (or applicable Agency), and with the CPM, documenting the resolution of the complaint. If mitigation is required to resolve a complaint, and the complaint is not resolved within a 30-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is finally implemented.

NOISE-3 Prior to the start of project-related ground disturbing activities, the project owner shall submit a noise control program to the CPM for review. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal-OSHA standards.

Verification: At least 30 days prior to the start of project-related ground disturbing activities, the project owner shall submit to the CPM the above referenced program. The project owner shall make the program available to OSHA upon request.

NOISE-4 If a traditional, high-pressure steam blow process is employed during construction, the project owner shall equip steam blow piping with a temporary silencer that quiets the noise of steam blows to no greater than

110 dBA measured at a distance of 100 feet. The project owner shall conduct steam blows only during the hours of 8 a.m. to 5 p.m., unless the CPM agrees to longer hours based on a demonstration by the project owner that offsite noise impacts will not cause annoyance. If a low-pressure continuous steam blow process is employed, the project owner shall submit a description of this process, with expected noise levels and projected hours of execution, to the CPM.

Verification: At least 15 days prior to the first high-pressure steam blow, the project owner shall submit to the CPM drawings or other information describing the temporary steam blow silencer and the noise levels expected, and a description of the steam blow schedule. At least 15 days prior to any low-pressure continuous steam blow, the project owner shall submit to the CPM drawings or other information describing the process, including the noise levels expected and the projected time schedule for execution of the process.

NOISE-5 If high pressure steam blows are used at least 15 days prior to the first steam blow(s), the project owner shall notify all residents or business owners within one mile of the site of the planned steam blow activity, and shall make the notification available to other area residents in an appropriate manner. The notification may be in the form of letters to the area residences, telephone calls, fliers or other effective means. The notification shall include a description of the purpose and nature of the steam blow(s), the proposed schedule, the expected sound levels, and the explanation that it is a one-time operation and not a part of normal plant operations.

Verification: Within five (5) days of notifying these entities, the project owner shall send a letter to the CPM confirming that they have been notified of the planned steam blow activities, including a description of the method(s) of that notification.

NOISE-6 Within 30 days of the project first achieving an output of 80 percent or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey, utilizing the same monitoring sites employed in the pre-project ambient noise survey as a minimum. The survey shall also include the octave band pressure levels to ensure that no new pure-tone noise components have been introduced. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints. Steam relief valves shall be adequately muffled to preclude noise that draws legitimate complaints. If the results from the survey indicate that the project noise levels at the closest sensitive receptor (i.e., residence located 3465 feet distance) are in excess of 49.2 dBA L_{90} averaged over lowest 8-hour period, additional mitigation measures shall be implemented to reduce noise to a level of compliance with this limit.

Verification: Within 30 days after completing the survey, the project owner shall submit a summary report of the survey to the City of Blythe (or applicable Agency), and to the CPM. Included in the report shall be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. If additional mitigation measures are necessary within 30 days of completion of installation of these measures, the project owner shall submit to the CPM a

summary report of a new noise survey, performed as described above and showing compliance with this condition.

NOISE-7 The project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility. The survey shall be conducted within 30 days after the facility is in full operation, and shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations, sections 5095-5099 (Article 105) and Title 29, Code of Federal Regulations, section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure. The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures that will be employed to comply with the applicable California and federal regulations.

Verification: Within 30 days after completing the survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA and Cal-OSHA upon request.

NOISE-8 Noisy construction work (that which causes off-site annoyance, as evidenced by the filing of a legitimate noise complaint) shall be restricted to the times of day delineated below:

High-pressure steam blows:	8 a.m. to 5 p.m.
Other noisy work:	According to City of Blythe Regulations and Riverside County Ordinance 457.90

Verification: The project owner shall transmit to the CPM in the first Monthly Construction Report a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM

Blythe Energy Facility
(99-AFC-8)

NOISE COMPLAINT LOG NUMBER _____

Complainant's name and address:

Phone number: _____

Date complaint received: _____
Time complaint received: _____

Nature of noise complaint:

Definition of problem after investigation by plant personnel:

Date complainant first contacted: _____

Initial noise levels at 3 feet from noise source _____ dBA Date: _____

Initial noise levels at complainant's property: _____ dBA Date: _____

Final noise levels at 3 feet from noise source: _____ dBA Date: _____

Final noise levels at complainant's property: _____ dBA Date: _____

Description of corrective measures taken:

Complainant's signature: _____ Date: _____

Approximate installed cost of corrective measures: $ _____
Date installation completed: _____
Date first letter sent to complainant: _____ (copy attached)
Date final letter sent to complainant: _____ (copy attached)

This information is certified to be correct:

Plant Manager's Signature: _____

(Attach additional pages and supporting documentation, as required).

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NOISE: APPENDIX A
FUNDAMENTAL CONCEPTS OF COMMUNITY NOISE

To describe noise environments and to assess impacts on noise sensitive areas, a frequency weighting measure, which simulates human perception, is customarily used. It has been found that A-weighting of sound intensities best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. Table A1 provides a description of technical terms related to noise.

Noise environments and consequences of human activities are usually well represented by an equivalent A-weighted sound level over a given time period (L_{eq}), or by day and night levels with a nighttime increase of 10 dBA (L_{dn}). Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45-to 60 dBA range, and high above 60 dBA. Outdoor day-night sound levels vary over 50 dBA depending on the specific type of land use. In wilderness areas, the L_{dn} noise levels average approximately 35 dBA, 50 dBA in small towns or wooded residential areas, 65 to 75 dBA in major metropolis downtown (e.g., Los Angeles), and 80 to 85 dBA near freeways and airports. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, they nevertheless are considered to be levels of noise adverse to public health.

Various environments can be characterized by noise levels that are generally considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than what would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding average daytime levels. The day-to-night difference in rural areas away from roads and other human activity can be considerably less. Areas with full-time human occupation that are subject to nighttime noise, which does not decrease relative to daytime levels, are often considered objectionable. Noise levels above 45 dBA at night can result in the onset of sleep interference effects (USEPA, 1971). At 70 dBA, sleep interference effects become considerable.

In order to help the reader understand the concept of noise in decibels (dBA), NOISE: Table A2 has been provided to illustrate common noises and their associated dBA levels.

NOISE: Table A1 Definition of Some Technical Terms Related to Noise	
Terms	**Definitions**
Decibel, Db	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dB	The sound pressure level in decibels as measured on a Sound Level Meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this testimony are A-weighted.
L10, L50, & L90	The A-weighted noise levels that are exceeded 10%, 50%, and 90% of the time, respectively, during the measurement period. L90 is generally taken as the background noise level.
Equivalent Noise Level L_{eq}	The energy average A-weighted noise level during the Noise Level measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels to levels in the evening from 7 p.m. to 10 p.m. and after addition of 10 decibels to sound levels in the night between 10 p.m. and 7 a.m.
Day-Night Level, L_{dn}	The Average A-Weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10 p.m. and 7 a.m.
Ambient Noise Level	The composite of noise from all sources, near and far. The normal or existing level of environmental noise at a given location.
Intrusive Noise	That noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Source: California Department of Health Services 1976.	

NOISE: Table A2 Typical Environmental and Industry Sound Levels			
Source and Given Distance from that Source	A-Weighted Sound Level in Decibels (dBA)	Environmental Noise	Subjectivity/ Impression
Civil Defense Siren (100')	140-130		Pain Threshold
Jet Takeoff (200')	120		
Very Loud Music	110	Rock Music Concert	Very Loud
Pile Driver (50')	100		Very Loud
Ambulance Siren (100')	90	Boiler Room	Very Loud
Freight Cars (50')	85		
Pneumatic Drill (50')	80	Printing Press Kitchen with Garbage Disposal Running	Loud
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (100')	60	Data Processing Center Department Store/Office	
Light Traffic (100')	50	Private Business Office	Quiet
Large Transformer (200')	40		
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing
Source: Peterson and Gross 1974			

Subjective Response to Noise

The adverse effects of noise on people can be classified into three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as anxiety or hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Workers in industrial plants can experience noise effects in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or of the corresponding reactions of annoyance and dissatisfaction, primarily because of the wide variation in individual tolerance of noise.

One way to determine a person's subjective reaction to a new noise is to compare the level of the existing (background) noise, to which one has become accustomed, with the level of the new noise. In general, the more the level or the tonal variations of a new noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

With regard to increases in A-weighted noise levels, knowledge of the following relationships (Kryter 1970) can be helpful in understanding the significance of human exposure to noise.

1. Except under special conditions, a change in sound level of one dB cannot be perceived.
2. Outside of the laboratory, a 3-dB change is considered a barely noticeable difference.
3. A change in level of at least five dB is required before any noticeable change in community response would be expected.
4. A 10-dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.

Combination of Sound Levels

People perceive both the level and frequency of sound in a non-linear way. A doubling of sound energy (for instance, from two identical automobiles passing simultaneously) creates a three dB increase (i.e., the resultant sound level is the sound level from a single passing automobile plus three dB). The rules for decibel addition used in community noise prediction are:

NOISE: Table A3
Addition of Decibel Values

When two decibel values differ by:	Add the following amount to the larger value
0 to 1 dB	3 dB
2 to 3 dB	2 dB
4 to 9 dB	1 dB
10 dB or more	0
Figures in this table are accurate to ± 1 dB.	

Source: Thumann, Table 2.3

Sound and Distance

- Doubling the distance from a noise source reduces the sound pressure level by 6 dB.
- Increasing the distance from a noise source ten times reduces the sound pressure level by 20 dB.

Worker Protection

OSHA noise regulations are designed to protect workers against the effects of noise exposure, and list permissible noise level exposure as a function of the amount of time to which the worker is exposed:

NOISE: Table A4
OSHA Worker Noise Exposure Standards

Duration of Noise (Hrs/day)	A-Weighted Noise Level (dBA)
8.0	90
6.0	92
4.0	95
3.0	97
2.0	100
1.5	102
1.0	105
0.5	110
0.25	115

Source: OSHA Regulation

PUBLIC HEALTH

Testimony of Michael Ringer

INTRODUCTION

The purpose of staff's public health analysis is to determine if emissions of toxic substances during routine operation of the proposed Blythe Energy Project (BEP) will have the potential to cause significant adverse public health impacts or to violate standards for public health protection. If potentially significant health impacts are identified, staff will evaluate mitigation measures to reduce such impacts to insignificant levels.

Staff addresses potential impacts of regulated or criteria air pollutants in the **Air Quality** section. Impacts on public and worker health from accidental releases of hazardous materials are examined in the **Hazardous Materials Management** section. Health effects from electromagnetic fields are discussed in the **Transmission Line Safety and Nuisance** section. Pollutants released from the project in wastewater streams are discussed in the **Soils and Water Resources** section. Plant releases in the form of hazardous and nonhazardous wastes are described in the **Waste Management** section.

METHOD OF ANALYSIS

Public health staff is concerned about toxic emissions to which the public could be exposed during project construction and routine operation. Following the release of toxic contaminants into the air or water, people could come into contact with them through inhalation, dermal contact, or ingestion via contaminated food or water.

Air pollutants for which no air quality standards have been set are called noncriteria pollutants. Unlike criteria pollutants such as ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide, noncriteria pollutants have no ambient (outdoor) air quality standards that specify levels considered safe for everyone.

Since noncriteria pollutants do not have such standards, a process known as health risk assessment is used to determine if people might be exposed to those types of pollutants at unhealthy levels. The risk assessment procedure consists of the following steps:

21. Identify the types and amounts of hazardous substances that BEP could emit to the environment;
22. Estimate worst-case concentrations of project emissions in the environment using dispersion modeling;
23. Estimate amounts of pollutants to which people could be exposed through inhalation, ingestion, and dermal contact; and
24. Characterize potential health risks by comparing worst-case exposure to safe standards based on known health effects.

Initially, a screening level risk assessment is performed using generic assumptions that are intentionally biased toward protection of public health. That is, a study is done that is designed to overestimate public health impacts from exposure to project emissions. In reality, it is likely that the actual risks from the power plant will be much lower than the risks which are estimated by the assessment. This is accomplished by examining conditions that would lead to the highest, or worst-case, risks and then using those in the study. Such conditions include:

- Using the highest levels of pollutants that could be emitted from the plant;
- Assuming weather conditions that would lead to the highest ambient concentration of pollutants;
- Using the type of air quality computer model which results in the highest impacts;
- Calculating health risks at the location where the pollutant concentrations are calculated to be the highest;
- Using health-based standards designed to protect the most sensitive members of the population (i.e., the young, elderly, and those with respiratory illnesses); and
- Assuming that an individual's exposure to cancer-causing agents occurs for 70 years.

A screening level risk assessment will, at a minimum, include the potential health effects from inhaling hazardous substances. Some facilities may also emit certain substances which could present a health hazard from noninhalation pathways of exposure (see CAPCOA, Table III-5). When these substances are present in facility emissions, the screening level analysis includes the following additional exposure pathways: soil ingestion, dermal exposure, and mother's milk (CAPCOA , p. III-19).

The risk assessment process addresses three categories of health impacts: acute (short-term) health effects, chronic (long-term) noncancer effects, and cancer risk (also long-term).

Acute health effects result from short-term (1-hour) exposure to relatively high concentrations of pollutants. Acute effects are temporary in nature, and include symptoms such as irritation of the eyes, skin, and respiratory tract.

Chronic health effects are those which arise as a result of long term exposure to lower concentrations of pollutants. The exposure period is considered to be approximately from ten to one hundred percent of a lifetime (from seven to seventy years). Chronic health effects include diseases such as emphysema and heart disease.

The analysis for noncancer health effects compares the maximum project contaminant levels to safe levels called "reference exposure levels" or RELs (see CAPCOA, p. III-36). RELs are amounts of toxic substances to which people can be exposed and suffer no adverse health effects. These exposure levels are designed

to protect the most sensitive individuals in the population, such as infants, the aged, and people suffering from illness or disease which makes them more sensitive to the effects of toxic substance exposure. RELs are based on the most sensitive adverse health effect reported in the medical and toxicological literature, and include margins of safety. The margin of safety addresses uncertainties associated with inconclusive scientific and technical information available at the time of standard setting and is meant to provide a reasonable degree of protection against hazards that research has not yet identified. The margin of safety is designed to prevent pollution levels that have been demonstrated to be harmful, as well as to prevent lower pollutant levels that may pose an unacceptable risk of harm, even if the risk is not precisely identified as to nature or degree. Health protection is achieved if the estimated worst-case exposure is below the relevant reference exposure level. In such a case, an adequate margin of safety exists between the predicted exposure and the estimated threshold dose for toxicity.

If someone is exposed to multiple toxic substances, an adverse health effect could result, even if each individual substance is not present at harmful levels. Therefore, the assumption is made that the effects of each substance are additive. In those cases where the actions may be synergistic (where the effects are greater than the sum), this approach may underestimate the health impact (CAPCOA, p. III-37). In other cases, the effects may be antagonistic (where the effects are less than the sum), and the resultant health impact may be overstated.

For carcinogenic substances, the health assessment considers the risk of developing cancer and assumes that continuous exposure to the cancer-causing substance occurs over a 70-year lifetime. The risk that is calculated is not meant to project the actual expected incidence of cancer, but rather a theoretical upper-bound number based on worst-case assumptions. In reality, the risk is generally too small to actually be measured. For example, the one in one million risk level represents a one in one million increase in the normal risk of developing cancer over a lifetime, at the geographic location estimated to have the worst-case risk.

Cancer risk is expressed in chances per million, and is a function of the maximum expected pollutant concentration, the probability that a particular pollutant will cause cancer (called potency factors, these are published in the CAPCOA Guidelines), and the length of the exposure period. Cancer risks for each carcinogen are added to yield total cancer risk. The conservative nature of the screening assumptions used means that actual cancer risks are likely to be lower or even considerably lower than those estimated.

Failure to pass the initial screening analysis does not automatically indicate that the project would pose a significant risk to public health, but that a more detailed assessment, using more realistic project-specific assumptions, is necessary to more accurately determine potential public health risks.

SIGNIFICANCE CRITERIA

Commission staff determines the health effects of exposure to toxic emissions based on impacts to the maximum exposed individual. This is a person

hypothetically exposed to project emissions at a location where the highest ambient impacts were calculated using worst-case assumptions, as described above.

As described earlier, non-criteria pollutants are evaluated for short-term (acute) and long-term (chronic) noncancer health effects, as well as cancer (long-term) health effects. Significance of project health impacts is determined separately for each of the three categories.

ACUTE AND CHRONIC NONCANCER HEALTH EFFECTS

Staff assesses the significance of non-cancer health effects by calculating a "hazard index". A hazard index is a ratio comparing exposure from facility emissions to the reference (safe) exposure level. A ratio of less than one signifies that the worst-case exposure is below the safe level. The hazard index for every toxic substance, which has the same type of health effect is added to yield a total hazard index. The total hazard index is calculated separately for acute and chronic effects. A total hazard index of less than one indicates that cumulative worst-case exposures are less than the reference exposure levels (safe levels). Under these conditions, health protection is likely to be achieved, even for sensitive members of the population. In such a case, staff presumes that there would be no significant non-cancer project-related public health impacts.

CANCER RISK

Staff presumes that if worst-case toxic emissions from the proposed project increase anyone's lifetime cancer risk by one chance in one million ($1x10^{-6}$) or less, then the added risk is de minimis, or one that is so small as to be effectively "no risk". The Federal Food and Drug Administration (FDA) made a similar finding in the context of cancer risks from food additives (FDA 1985, p. 51557). They emphasized that the risk level did not mean that one in every one million people would contract cancer, but that the level represented an additional one in one million chance over a person's normal risk of developing cancer in his or her lifetime. On average, for example, the lifetime risk of someone developing cancer is around 250,000 in a million (about one of every four people will have some type of cancer in their lifetime). At the one in one million risk level, the FDA noted that "as far as can be determined, in all probability no one will contract cancer" due to a particular substance (Id.).

Staff does not believe that mitigation measures to reduce risk to less than one in one million are warranted, since at that level there is effectively no added cancer risk. Further, a survey of 132 regulatory decisions found that, with the exception of one decision, no action was taken to reduce risks below one in a million (Travis et al., 1987).

Staff does not view project-related cancer risks as significant at the de minimus level discussed above, since there is essentially no added risk. Therefore, staff must identify an appropriate level of risk on which to base determinations of significance. Staff relied upon regulations implementing the provisions of Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986 (Health & Safety Code, § 25249.5 et seq.) for guidance to determine a risk significance

level. Title 22, California Code of Regulations, § 12703(b) states that "the risk level which represents no significant risk shall be one which is calculated to result in one excess case of cancer in an exposed population of 100,000, assuming lifetime exposure." This level of risk is equivalent to a cancer risk of ten in one million, or $10x10^{-6}$. An important distinction is that the Proposition 65 significance level applies separately to each cancer-causing substance, whereas staff determines significance based on the total risk from all cancer-causing chemicals. Thus, the manner in which the significance level is applied by staff is more conservative (health-protective) than that which applies to Proposition 65.

The significant risk level of ten in one million is consistent with the level of significance adopted by the Mojave Desert Air Quality Management District pursuant to Health and Safety Code section 44362(b), which requires notification of nearby residents when an air district determines that there is a significant health risk from a facility.

As noted earlier, the initial risk analysis for a project is typically performed at a screening level that is designed to overstate actual risks, so that health protection can be ensured. When a screening analysis shows cancer risks to be above the significance level, refined assumptions would likely result in a lower, more realistic risk estimate. If project risk, based on refined assumptions, exceeds the significance level of ten in one million, staff would require appropriate measures to reduce risk to insignificance. If, after all risk reduction measures had been considered, a refined analysis identifies a cancer risk greater than ten in one million, staff would deem such risk to be significant, and would not recommend project approval.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

The following federal, state, and local LORS generally apply to the protection of public health. These provisions have established the basis for Energy Commission staff's determination regarding the significance and acceptability of project-related impacts on public health.

FEDERAL

CLEAN AIR ACT SECTION 112 (42 UNITED STATES CODE SECTION 7412)

Section 112 requires new sources, which emit more than ten tons per year of any specified hazardous air pollutant (HAP) or more than 25 tons per year of any combination of HAPs to apply Maximum Achievable Control Technology.

STATE

CALIFORNIA HEALTH AND SAFETY CODE SECTIONS 39650 ET SEQ.

These sections mandate the Air Resources Board and the Department of Health Services to establish safe exposure limits for toxic air pollutants and identify pertinent best available control technologies. They also require that the new source

review rule for each air pollution control district include regulations that require new or modified procedures for controlling the emission of toxic air contaminants.

CALIFORNIA HEALTH AND SAFETY CODE SECTION 41700

This section states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."

SETTING

This section describes the environment in the vicinity of the proposed project site from the public health perspective. Features of the natural environment, such as meteorology and terrain, affect the project's potential for causing impacts on public health. An emissions plume from a facility may affect elevated areas before lower terrain areas, due to a reduced opportunity for atmospheric mixing. Consequently, areas of elevated terrain can often be subjected to increased pollutant impacts. Also, the types of land use near a site influence the surrounding population distribution and density which, in turn, affect public exposure to project emissions. Additional factors affecting potential public health impact include existing air quality and environmental site contamination.

SITE AND VICINITY DESCRIPTION

The proposed site is located about five miles west of Blythe in an area that has been designated for industrial development.

The proposed project would occupy parcels of unimproved land. In the vicinity of the project, land use is primarily agricultural. Directly east and south of the project site, almost 500 acres of lemons are cultivated, and citrus orchards dominate the area. The Blythe airport is about one mile to the west, and the Interstate 10 corridor is about one-quarter mile to the south.

As mentioned above, the location of sensitive receptors near the proposed site is an important factor in considering potential public health impacts. The nearest residence is about three-quarters of a mile to the southwest, north of Interstate 10 and south of Hobson Way. There are a few farm residences primarily to the east and south, more than one mile from the site. The nearest residential area is an unincorporated area, called Nicholls Warm Springs, located about 2.5 miles to the southwest. There are no sensitive receptor facilities such as schools, hospitals, daycare facilities, or convalescent centers within three miles of the site.

METEOROLOGY

Meteorological conditions, including wind speed, wind direction, and atmospheric stability, affect the extent to which pollutants are dispersed into ambient air as well as the direction of pollutant transport. This, in turn, affects the level of public

exposure to emitted pollutants and associated health risks. When wind speeds are low and the atmosphere is stable, for example, dispersion is reduced and localized exposure may be increased.

The locale is a desert climate with low precipitation (less than four inches annually), high temperatures with a wide daily range, and low relative humidity. About 42 percent of precipitation occurs from December through March, and is associated with winter storms from the Pacific Ocean. About 25 percent of precipitation occurs in July and August, and is associated with a monsoonal flow of moisture from the Pacific Ocean and the Gulf of California. Wind directions are predominantly from the southwest from April through September, and from the northeast the remainder of the year. This pattern is highly seasonable and is influenced by the southwest-northeast orientation of the Colorado River Valley.

Atmospheric stability is a measure related to turbulence, or the ability of the atmosphere to disperse pollutants due to convective air movement. Average monthly mixing heights (the height above ground level through which the air is well mixed and in which pollutants can disperse) range from 800 meters above ground level during winter to near 3000 meters in the summer. Winds are calm approximately 15 percent of the time. Staff's **Air Quality** section presents more detailed meteorological data.

EXISTING AIR QUALITY

Ambient air quality data have not been measured in the Blythe area since 1992 (BEP 2000c, p. 7.7-23). The air quality monitoring data selected as most representative of the Blythe area was collected at Twentynine Palms, located 90 miles west-northwest of Blythe. There are very few sources of industrial pollutants in the Blythe area. No large stationary sources, such as large stationary agricultural internal combustion engines, are located within a three miles radius of the proposed site. A Southern California Gas compressor facility is located about 1.5 miles east-southeast of the proposed site.

SITE CONTAMINATION

Site disturbances will occur during facility construction from excavation, grading, and earth moving. Such activities have the potential to adversely affect public health through various mechanisms, such as the creation of airborne dust, material being carried off-site through soil erosion, and uncovering buried hazardous substances.

A Phase I Environmental Site Assessment (ESA) performed for the site found a relatively low potential for contamination as a result of past activities at the site, although groundwater sampling was recommended to determine the potential for subsurface impacts from a landfill located adjacent to the northwest corner of the site. Please refer to the **Soil and Water Resources** section for information concerning groundwater quality.

PROJECT SPECIFIC IMPACTS

Potential risks to public health may occur during both project construction and operation.

CONSTRUCTION IMPACTS

Potential risks to public health during construction may be associated with exposure to toxic substances in contaminated soil disturbed during site preparation, as well as from heavy equipment operation. Criteria pollutant impacts from the operation of heavy equipment and particulate matter from earth moving are examined in staff's **Air Quality** analysis.

As described above and in the **Waste Management** section, the Phase I ESA reported no evidence of significant site contamination. Therefore, no significant toxics-related public health impacts are anticipated from earth moving due to project construction.

The operation of heavy construction equipment will result in toxic emissions from diesel-fueled engines. Diesel exhaust is a complex mixture of many constituents that could cause adverse health impacts. However, the area of potential impact tends to be very close to the sources, due to the low height of the exhaust stacks. As noted above, the nearest residence is about three-quarters of a mile to the southwest, with a few farm residences located more than one mile from the site. The nearest residential area is located about 2.5 miles to the southwest. Thus, staff does not expect there to be any impact to members of the public from diesel equipment exhaust.

OPERATION IMPACTS

EMISSIONS SOURCES

The emissions sources at the proposed BEP include two combustion turbine generators, two supplementally fired heat recovery steam generators that supply steam to a steam turbine generator, and a cooling tower. During operation, potential public health risks are related to natural gas combustion emissions from the gas turbines and duct burners and noncombustion emissions from the cooling tower.

As noted earlier, the first step in a health risk assessment is to identify potentially toxic compounds that may be emitted from the facility. PUBLIC HEALTH Table 1 lists combustion-related toxic emissions from the turbines and supplementally-fired steam generators and shows how each contributes to the health risk analysis. For example, the first row shows that acetaldehyde may have cancer and chronic (long-term) noncancer health effects, but not acute (short-term) effects.

PUBLIC HEALTH Table 1
Natural Gas Combustion Emissions and Associated Potential Health Impacts

Substance	**Cancer**	**Chronic Noncancer**	**Acute Noncancer**
Acetaldehyde	✓	✓	
Ammonia		✓	✓
Benzene	✓	✓	✓
1,3-Butadiene	✓		
Formaldehyde	✓	✓	✓
Napthalene		✓	
PAHs	✓		
Propylene oxide	✓	✓	✓
Toluene		✓	
Xylene		✓	✓

Source: Attachment 60-1 to BEP 2000l, data responses # 60-62, using reference exposure levels and cancer unit risks from the Office of Environmental Health Hazard Assessment

Noncriteria emissions from the cooling tower originate from contaminants in the cooling source water that become entrained in liquid water droplets emitted as cooling tower drift. PUBLIC HEALTH Table 2 lists these substances and shows how each contributes to the health risk analysis.

PUBLIC HEALTH Table 2
Cooling Tower Emissions and Associated Potential Health Impacts

Substance	**Cancer**	**Chronic Noncancer**	**Acute Noncancer**
Arsenic	✓	✓	✓
Cadmium	✓	✓	
Copper		✓	✓
Lead	✓	✓	
Manganese		✓	
Mercury		✓	✓
Nickel	✓	✓	✓
Selenium		✓	✓
Zinc		✓	

Source: Attachment 60-1 to BEP 2000l, data responses # 60-62, using reference exposure levels and cancer unit risks from the Office of Environmental Health Hazard Assessment

The BEP will use high efficiency drift eliminators which limit the amount of drift loss to approximately 0.0006 percent of the circulating water rate, resulting in a drift rate of about 0.9 gallon per minute (BEP 2000c, page 7.7-8). This amount of water lost as liquid from the cooling towers is in contrast to the amount of water evaporated as steam, estimated to be from 1500 to 1800 gallons per minute, depending on

ambient temperatures (BEP 2000c, Figs. 7.13-4a,b). Steam emitted from the cooling towers is distilled water, and will not contain contaminants.

The drift eliminators must be properly installed and maintained in order to achieve efficient operation over the life of the facility. Following installation, proper maintenance includes periodic inspection and repair or replacement of any components found to be broken or missing. Staff has proposed Condition of Certification Public Health –1 for the inspection and maintenance of drift eliminators.

EMISSIONS LEVELS AND CONCENTRATIONS

Once potential emissions are identified, the next step is to quantify them by conducting a "worst case" analysis.

Estimates of emissions on an hourly and annual basis are required to calculate acute (short-term) and cancer and chronic (long-term) noncancer health effects. BEP Table 2-2 shows maximum fuel use for the gas turbines and duct burners (BEP 2000h, p. 4). The maximum fuel use is combined with the emission factor for each toxic air contaminant to estimate maximum hourly and annual emissions (see BEP 2000p, clarification to data response 60, attachment 60-B, HAP Calculations for Siemens V84.3A). Emission factors are estimates of the amounts of toxic substances released per unit of fuel burned from data in the California Air Toxic Emission Factors database maintained by the California Air Resources Board as well as from the U.S. Environmental Protection Agency (U.S. EPA 2000). Emission factors for metals from the cooling tower are derived from analyses of metals concentrations in the water used for cooling (see BEP 2000c, Supplemental Table 7.13-11, p. 7.13-13b and BEP 2000l, data response 62 and attachment 62-2).

The next step in the health risk assessment process is to estimate the maximum ambient concentrations of toxic substances. This is accomplished by estimating the maximum impact under a variety of operating conditions (see BEP 2000p, attachment 60-B, HAP Calculations for Siemens V843A) and using a screening air dispersion model that assumes conditions resulting in maximum impacts. The screening analysis uses U.S. EPA approved ISCST3 dispersion modeling program (please see staff's **Air Quality** section for a detailed discussion of the modeling methodology).

Finally, ambient concentrations are combined with RELs and cancer unit risk factors to estimate health effects which might occur from exposure to facility emissions. Exposure pathways, or ways in which people might come into contact with toxic substances, include inhalation, dermal (through the skin) absorption, soil ingestion, and mother's milk.

The above method of assessing health effects is described in the California Air Pollution Control Officers Association (CAPCOA) Air Toxics "Hot Spot" Program Revised 1992 Risk Assessment Guidelines (October 1993), and results in the following health risk estimates.

ACUTE AND CHRONIC NONCANCER HAZARD

The acute hazard index at the point of maximum impact for substances that could cause short-term health effects is 0.04 (PUBLIC HEALTH Table 3). BEP Figures 62-1 and 64-1 (BEP 2000l, data response 64) show the location of the maximum one-hour impacts for metal (from cooling towers) and non-metal (from combustion sources) emissions to be at the northwest and northeast corner of the plant boundary, respectively. Differences in impact locations are due to differences in parameters such as stack heights and exhaust temperature. The acute hazard index is well under the significance level of 1.0, which indicates that no short-term health effects are expected from routine plant operation.

The chronic hazard index at the point of maximum impact for substances that could cause long-term health effects is 0.02 (PUBLIC HEALTH Table 3). The location of the maximum chronic hazard for metals from the cooling towers is near the northeast corner of the plant boundary (BEP 2000l, data response 64, Figure 62-1). The maximum long-term impact for combustion emissions is located about one-half mile northeast of the proposed site (BEP 2000l, data response 64, Figure 64-1). The chronic hazard index is well under the safe level of 1.0, indicating that no long-term adverse health effects are expected. All maximum hazard locations are in undeveloped areas, distant from sensitive receptors.

PUBLIC HEALTH Table 3
Facility Hazard/Risk

Type of Hazard/Risk	Hazard Index/Risk	Significance (Safe) Level
ACUTE NONCANCER	0.04	1.0
CHRONIC NONCANCER	0.02	1.0
INDIVIDUAL CANCER	0.35×10^{-6}	10.0×10^{-6}

Source: BEP 2000p, attachment 60-C

CANCER RISK

As shown in PUBLIC HEALTH Table 3, total worst-case individual cancer risk is estimated to be 0.35 in one million. This is the risk at the location where long-term pollutant concentrations are calculated to be the highest, and is at the same location as the maximum chronic hazard. This risk is below the de minimus level of one in one million and well below the significance level of ten in one million.

CUMULATIVE IMPACTS

Elevated concentrations of toxic air contaminants from stationary sources tend to be quite localized, and cumulative risks are likely to occur only when multiple facilities with substantial low-level emissions are immediately adjacent to, or very close to, one another.

There are very few sources of industrial pollutants in the Blythe area. As discussed above, the only nearby stationary source is a Southern California Gas compressor

station, located about 1.5 miles east-southeast of the proposed site. This facility is powered by gas engines having relatively short exhaust stacks. The low height of the exhaust stacks limits the dispersion of emissions, resulting in an area of impact located close to the source. Because of the distance to the proposed BEP site from the compressor station, there will be no significant cumulative effects from the two facilities.

FACILITY CLOSURE

As noted in the introduction to this section, the scope of staff's public health analysis is limited to routine releases of harmful substances to the environment. During either temporary or permanent facility closure, the major concern would be from accidental or nonroutine releases from either hazardous materials or wastes which may be onsite. These are discussed in the sections on **Hazardous Materials** and **Waste Management**, respectively. During temporary closure (periods greater than those required for normal maintenance), it is unlikely that there would be any routine releases of harmful substances to the environment, since the facility would not be operating. For permanent closure, the only routine emissions would be related to facility demolition or dismantling, such as exhaust from heavy equipment or fugitive dust emissions. These would be subject to closure conditions adopted by the Energy Commission once a closure plan is received from the project owner.

MITIGATION

Noncriteria emissions from the proposed project are determined by many factors such as mode of facility operation, type of pollution control equipment, and type of fuel used. Please refer to the **Air Quality** section of this document for a detailed description and analysis of air pollution mitigation measures.

COMPLIANCE WITH APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

As noted in the LORS section above, section 112 of the federal Clean Air Act requires new sources which emit more than ten tons per year of any specified hazardous air pollutant (HAP) or more than 25 tons per year of any combination of HAPs to apply Maximum Achievable Control Technology (MACT). The most significant HAP emitted from combustion turbines is formaldehyde, which accounts for about two-thirds of HAP emissions. The U.S. EPA recently published HAP emission factors for combustion turbines, including formaldehyde (U.S. EPA 2000, Table 3.1-3). Use of the AP-42 emission factor to calculate annual formaldehyde emissions results in a level of approximately ten tons annually, which could classify BEP as a major source of HAP emissions, thus triggering the MACT requirement. However, the turbine manufacturer, Siemens Westinghouse Power Corporation, has provided source test data for formaldehyde emissions from the type of turbine to be installed at BEP (BEP 2000u, data response 202, attachment 202-1). The data show that expected formaldehyde emissions assuming constant operation at maximum load is less than three tons annually for both turbines and heat recovery

steam generators. Thus, BEP is not anticipated to require MACT under section 112.

Staff concludes that construction and operation of BEP will be in compliance with all applicable public health-related LORS.

CONCLUSIONS AND RECOMMENDATIONS

Staff has analyzed potential public health risks associated with construction and operation of the BEP. With implementation of the conditions of certification included herein, as noted, staff does not expect there to be any significant adverse cancer, or short- or long-term noncancer health effects from project emissions.

CONDITION OF CERTIFICATION

PUBLIC HEALTH-1 The project owner shall perform a visual inspection of the cooling tower drift eliminators once per calendar year, and repair or replace any drift eliminator components which are broken or missing. Prior to initial operation of the project, the project owner shall have the cooling tower vendor's field representative inspect the cooling tower drift eliminator and certify that the installation was performed in a satisfactory manner. The CPM may, in years 5 and 15 of project operation, require the project owner to perform a source test of the PM_{10} emissions rate from the cooling tower to verify continued compliance with the vendor guaranteed drift rate.

Verification: The project owner shall include the results of the annual inspection of the cooling tower drift eliminators and a description of any repairs performed in the next required quarterly compliance report. The initial compliance report will include a copy of the cooling tower vendor's field representative's inspection report of the drift eliminator installation. If the CPM requires a source test as specified in Public Health-1, the project owner shall submit to the CPM for approval a detailed source test procedure 60 days prior to the test. The project owner shall incorporate the CPM's comments, conduct testing, and submit test results to the CPM within 60 days following the tests.

REFERENCES

Applicant. 2000c. Data Adequacy Supplement #2, dated February 18, 2000.

Applicant. 2000h. BEP Final Selection of combustion turbine configuration, dated April 6, 2000.

Applicant. 2000l. BEP Responses to staff Data Requests #1 through 132, dated May 26, 2000.

Applicant. 2000p. BEP Data Responses to requests #1, in air, geological resources, noise, water and soil, visual, public health, land use, transmission system engineering, traffic and transportation (including master plan for the airport), and water and soil, dated June 19, June 21, June 27, and July 7,2000.

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POWER PLANT RELIABILITY

Testimony of Steve Baker

INTRODUCTION

In this analysis, Energy Commission staff addresses the reliability issues of the project to determine if the power plant is likely to be built in accordance with typical industry norms for reliability of power generation. Staff uses this level of reliability as a benchmark because the resulting project would likely not degrade the overall reliability of the electric system it serves (see **Setting** below).

The scope of this power plant reliability analysis covers:

- equipment availability;
- plant maintainability;
- fuel and water availability; and
- power plant reliability in relation to natural hazards.

Staff examined the project design criteria to determine if the project is likely to be built in accordance with typical industry norms for reliability of power generation. While Blythe Energy, LLC (Blythe) has predicted a level of reliability for the power plant (see below), staff believes Blythe should not be held responsible for achieving this goal, so long as the plant's reliability matches or exceeds that of similar plants.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Presently, there are no laws, ordinances, regulations or standards (LORS) that establish either power plant reliability criteria or procedures for attaining reliable operation. However, the commission must make findings as to the manner in which the project is to be designed, sited and operated to ensure safe and reliable operation (Cal. Code Regs., tit. 20, § 1752(c)). Staff takes the approach that a project is acceptable if it does not degrade the reliability of the utility system to which it is connected. This is likely the case if the project exhibits reliability at least equal to that of other power plants on that system (see **Setting** below).

SETTING

In the regulated monopoly electric industry of past decades, the utility companies assured overall system reliability, in part, by maintaining a "reserve margin." This amounted to having on call, at all times, sufficient generating capacity, in the form of standby power plants, to quickly handle unexpected outages of generating or transmission facilities. The utilities generally maintained a seven- to ten-percent reserve margin, meaning that sufficient capacity was on call to quickly replace from seven to ten percent of total system resources. This margin proved adequate, in part because of the reliability of the power plants that constituted the system.

Now, in the newly restructured competitive electric power industry, the responsibility for maintaining system reliability falls largely to the California Independent System Operator (Cal-ISO), a newly-formed entity that will work with the California Power Exchange (PX) to purchase, dispatch and sell electric power throughout the state. How Cal-ISO will ensure system reliability is currently being determined; protocols are being developed and put in place that are designed to allow sufficient reliability to be maintained under the competitive market system. "Must-run" power purchase agreements and "participating generator" agreements are two mechanisms being employed to ensure an adequate supply of reliable power (Mavis 1998, pers. comm.).

The Cal-ISO also requires those power plants selling ancillary services, as well as those holding reliability must-run contracts, to fulfill certain requirements, including:

- filing periodic reports on plant reliability;
- reporting all outages and their causes; and
- scheduling all planned maintenance outages with the Cal-ISO (Detmers 1999, pers. comm.).

The Cal-ISO's mechanisms to ensure adequate power plant reliability apparently are being devised under the assumption that the individual power plants that compete to sell power into the system will each exhibit a level of reliability similar to that of power plants of past decades. However, there is cause to believe that, under free market competition, financial pressures on power plant owners to minimize capital outlays and maintenance expenditures may act to reduce the reliability of many power plants, both existing and newly constructed (McGraw-Hill 1994). It is possible that, if significant numbers of power plants exhibit individual reliability sufficiently lower than this historical level, the assumptions used by Cal-ISO to ensure system reliability will prove invalid, with potentially disappointing results. Until the restructured competitive electric power system has undergone a shakeout period, and the effects of varying power plant reliability are understood and compensated for, staff deems it wise to encourage power plant owners to continue to build and operate their projects to the level of reliability to which all in the industry are accustomed.

While the BEP's output will be physically transmitted over Western's lines, this will not substantively affect the above narrative. BEP plans to sell power into the California market; it will act like any other merchant facility selling power through the PX. While BEP must pay wheeling charges to Western, this will have only a small impact on project costs (Mackin 2000, pers. comm.).

Blythe proposes to operate the 520 MW Blythe Energy Project (BEP) at baseload, selling energy and capacity on the market and via bilateral contracts. In addition, the BEP will provide load following power (BEP 1999a, AFC §§ 2.2.3, 2.2.5.2, 2.2.16.1, 2.2.16.3, 2.2.16.4, 6.7.1, 8.3.2). The project is expected to operate at an overall availability from 92 to 98 percent (BEP 1999a, AFC §§ 2.2.3, 2.4.1, 8.3.2).

ANALYSIS

A reliable power plant is one that is available when called upon to operate. Throughout its intended life, the BEP will be expected to perform reliably in baseload and load following duty. Power plant systems must be able to operate for extended periods (sometimes months on end) without shutting down for maintenance or repairs. Achieving this reliability is accomplished by ensuring adequate levels of equipment availability, plant maintainability, fuel and water availability, and resistance to natural hazards. Staff examines these factors for the project and compares them to industry norms. If they compare favorably, staff can conclude that the BEP will be as reliable as other power plants on the electric system, and will therefore not degrade system reliability.

EQUIPMENT AVAILABILITY

Equipment availability will be ensured by use of appropriate quality assurance/ quality control (QA/QC) programs during design, procurement, construction and operation of the plant, and by providing for adequate maintenance and repair of the equipment and systems (discussed below).

QA/QC PROGRAM

The applicant commits to employ a QA/QC program (BEP 1999a, AFC § 8.1.5) typical of the power industry. Staff expects implementation of this program to yield typical reliability of design and construction. To ensure such implementation, staff has proposed appropriate conditions of certification under the portion of this document entitled **Facility Design**.

PLANT MAINTAINABILITY

EQUIPMENT REDUNDANCY

A generating facility called on to operate in baseload service for long periods of time must be capable of being maintained while operating. A typical approach for achieving this is to provide redundant examples of those pieces of equipment most likely to require service or repair.

Blythe plans to provide appropriate redundancy of function for the combined cycle portion of the project (BEP 1999a, AFC Figure 2.0-7; § 8.3.4; BEP 2000l). The fact that the project consists of two trains of gas turbine generators/HRSGs provides inherent reliability. Failure of a non-redundant component of one train should not cause the other train to fail, thus allowing the plant to continue to generate (at reduced output). Further, the plant's distributed control system (DCS) will be built with typical redundancy. Emergency DC and AC power systems will be supplied by redundant batteries, chargers and inverters. Other balance of plant equipment will be provided with redundant examples, thus:

- three 50 percent boiler feed pumps;
- three 50 percent condensate pumps;
- two 60 percent circulating water pumps;

- two 100 percent closed loop cooling water pumps;
- two 100 percent closed loop cooling water heat exchangers; and
- two 100 percent air compressors and air dryers (BEP 1999a, AFC §§ 2.2.6.5, 2.2.7, 8.3.4; BEP 2000l).

With this opportunity for continued operation in the face of equipment failure, staff believes that equipment redundancy will be sufficient for a project such as this.

MAINTENANCE PROGRAM

Blythe proposes to establish a plant maintenance program typical of the industry (BEP 1999a, AFC § 8.3.2), but offers no details. Equipment manufacturers provide maintenance recommendations with their products, and all major power plant engineering companies offer standard off-the-shelf maintenance programs. In light of this easily available advice, and of the financial incentives to properly maintain the facility for reliable operation, staff expects that this will ensure that the project will be adequately maintained to ensure acceptable reliability.

FUEL AND WATER AVAILABILITY

For any power plant, the long-term availability of fuel and of water for cooling or process use is necessary to ensure reliability. The need for reliable sources of fuel and water is obvious; lacking long-term availability of either source, the service life of the plant may be curtailed, threatening the supply of power as well as the economic viability of the plant.

FUEL AVAILABILITY

The BEP will burn natural gas from the El Paso Natural Gas Company system. Gas will be transmitted to the plant via a new 11.5-mile long pipeline from El Paso's interstate pipeline near Ehrenberg, Arizona, and/or a new 0.8-mile long pipeline from the Southern California Gas Company transmission line south of Interstate 10 (BEP 1999a, AFC §§ 1.1.1, 2.2.2, 2.2.8, 6.4, 8.3.1). These natural gas systems, which provide access to gas from the Southwest, represent a resource of considerable capacity. These systems offer access to far more gas than the plant would require (BEP 1999a, AFC §§ 2.2.8, 8.3.1). Staff agrees with the applicant's prediction that there will be adequate natural gas supply and pipeline capacity to meet the project's needs.

WATER SUPPLY RELIABILITY

The BEP will obtain water for cooling and other plant uses from new on-site groundwater wells (BEP 1999a, AFC §§ 1.1.1, 1.1.5, 2.2.9, 6.5). Staff believes this source yields sufficient likelihood of a reliable supply of water. (For further discussion of water supply, see that portion of this document entitled **Water Resources**.)

POWER PLANT RELIABILITY IN RELATION TO NATURAL HAZARDS

Natural forces can threaten the reliable operation of a power plant. High winds, tsunamis (tidal waves) and seiches (waves in inland bodies of water) will not likely

represent a hazard for this project, but flooding and seismic shaking (earthquake) present credible threats to reliable operation (see those portions of this document entitled **Facility Design** and **Geology and Paleontology**).

FLOODING

The project site does not lie within either a 100-year or a 500-year flood zone (BEP 1999a, AFC §§ 2.3.1, 8.1.1, 8.3.3). This does not present a credible threat of flooding. For further discussion, see that portion of this document entitled **Geology and Paleontology**.

SEISMIC SHAKING

The site lies within Seismic Zone 3 (BEP 1999a, AFC §§ 2.3.1, 8.1.1, 8.1.2, 8.3.3). No active earthquake faults lie nearby; see that portion of this document entitled **Geology and Paleontology**. The project will be designed and constructed to the latest appropriate LORS. Compliance with current LORS applicable to seismic design represents an upgrading of performance during seismic shaking, compared to older facilities, due to the fact that these LORS have been periodically and continually upgraded. By virtue of being built to the latest seismic design LORS, this project will likely perform at least as well as, and perhaps better than, existing plants in the electric power system. Staff has proposed conditions of certification to ensure this; see that portion of this document entitled **Facility Design**. In light of the historical performance of California power plants and the electrical system in seismic events, staff believes there is no special concern with power plant functional reliability affecting the electric system's reliability due to seismic events.

COMPARISON WITH EXISTING FACILITIES

Industry statistics for availability factors (as well as many other related reliability data) are kept by the North American Electric Reliability Council (NERC). NERC continually polls utility companies throughout the North American continent on project reliability data through its Generating Availability Data System (GADS), and periodically summarizes and publishes the statistics on the Internet (http://www.nerc.com). NERC reports the following summary generating unit statistics for the years 1994 through 1998 (NERC 1999):

For Combined Cycle units (All MW sizes)
Availability Factor = 91.49 percent

The gas turbines that will be employed in the project have been on the market for several years now, and can be expected to exhibit typically high availability. The applicant's prediction of an annual availability factor of 92 to 98 percent (BEP 1999a, AFC §§ 2.2.3, 2.4.1, 8.3.2) appears reasonable compared to the NERC figure for similar plants throughout North America (see above). In fact, these new, large machines can well be expected to outperform the fleet of various (mostly older and smaller) gas turbines that make up the NERC statistics. Further, since the plant will consist of two parallel gas turbine generating trains, maintenance can be scheduled during those times of year when the full plant output is not required to meet market demand, typical of industry standard maintenance procedures. The applicant's estimate of plant availability therefore appears realistic. The stated

procedures for assuring design, procurement and construction of a reliable power plant appear to be in keeping with industry norms, and staff believes they are likely to yield an adequately reliable plant.

FACILITY CLOSURE

Closure of the facility, whether planned or unplanned, cannot impact project reliability. Reliability impacts on the electric system from facility closure, should there be any, are dealt with in that portion of this document entitled **Transmission System Engineering**.

RESPONSE TO PUBLIC AND AGENCY COMMENTS

The only comment received was from the applicant, who referred to the portion of this testimony headlined "Setting." The comment was that this section refers to the Cal-ISO, whereas the project will deliver power through Western's system. Staff's response is that all the reliability councils in the U.S. use similar reliability criteria; a power plant delivering power through Western will likely be expected to exhibit the same reliability as one delivering its power through the Cal-ISO. This testimony therefore remains germane to the BEP.

CONCLUSION

The applicant predicts an equivalent availability factor of 92 to 98 percent, which staff believes is achievable in light of the industry norm of 91 percent for this type of plant. Based on a review of the proposal, staff concludes that the plant will be built and operated in a manner consistent with industry norms for reliable operation. This should provide an adequate level of reliability.

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SOCIOECONOMICS

Testimony of James G. Fore

INTRODUCTION

The California Energy Commission (Energy Commission) staff socioeconomics impact analysis evaluates several areas in which the project may induce changes including community services and/or infrastructure and related community issues such as environmental justice and facility closure. Direct, indirect, and cumulative impacts are included in the evaluation. This analysis discusses the potential impacts of the proposed Blythe Energy Project (BEP) on local communities, community resources, and public services, pursuant to Title 14, California Code of Regulations, Section 15131.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

The following LORS are applicable to the BEP:

FEDERAL

Executive Order 12898, "Federal Actions to address Environmental Justice (EJ) in Minority Populations and Low-Income Populations." The order focuses federal attention on the environment and human health conditions of minority communities and directs agencies to achieve environmental justice as part of this mission. The Executive Order requires the US Environmental Protection Agency (EPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this situation. Agencies are required to identify and address any disproportionately high and/or adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations. The Energy Commission receives federal funds and is thus subject to this Executive Order.

STATE

CALIFORNIA GOVERNMENT CODE, SECTIONS 65995-65997

As amended by SB 50 (Stats. 1998, ch. 407, sec. 23), states that public agencies may not impose fees, charges or other financial requirements to offset the cost for school facilities. The relevant provisions restrict fee for the development of commercial and industrial space to a maximum of $0.31 per square foot of "chargeable covered and enclosed space".

LOCAL

California State Planning Law, Government Code Section 65302 et seq., calls for each city and county to adopt a General Plan consisting of seven mandatory elements to guide its physical development. Most communities do not have laws, ordinances, or regulations that specifically govern the socioeconomics impact of

projects. Instead many communities assess impact fees such as school impact fees as part of the building permit requirement.

SETTING

The BEP consists of two major construction activities: the construction of the power plant in eastern Riverside County, approximately 5 miles west of Blythe, California, and the construction of one or two natural gas pipelines.

The socioeconomics analysis for the project considers the Palo Verde Valley (including Blythe) as the primary area to be impacted by power plant construction and operation. Other areas that may be impacted are Riverside County, and La Paz County, Arizona, which is approximately 10 miles east of the proposed facility. It is possible that during construction the project may have some impact throughout these areas.

Labor sources for the BEP are expected to be Riverside County, Los Angeles, Las Vegas, Nevada, and Yuma and Phoenix, Arizona.

POPULATION AND DEMOGRAPHICS

The project is located in a rural area west of Blythe and slightly east of the Blythe airport. The populations that will be most impacted by this project are in US Census tract 458, and those tracts located in US Census Palo Verde Division. The population center for this portion of Riverside County is US Census Palo Verde Division, which contains Blythe.

The US Census Palo Verde Division is composed of the following census tracts:

- Census Tract 460 which lies east of the City of Blythe,
- Census Tract 461 which lies north of I-10 in the City of Blythe,
- Census Tract 462 which lies south of I-10 in the City of Blythe, and
- US Census Tract 459 lies west of the City of Blythe but slightly east of the BEP.

The BEP is located outside the western edge of the US Census Palo Verde Division in Census Tract 458.

The 1990 US Census data contains the most complete information of the demographics for the BEP area. The US Census for 1990 indicates a population of 20,533 for the Palo Verde Division and Census Tract 458. The population for the City of Blythe was 8,428 or 41% of the population.

California State Department of Finance, Demographic Research Unit has estimated the population for Blythe as of January 1, 1998 to be 21,050. This population includes approximately 9,000 inmates housed at the Ironwood and Chuckawalla State Prisons. These correction facilities are located some 16 miles west of Blythe but are within the corporate boundaries of Blythe.

The historical and projected population of Blythe and Riverside County are shown in **SOCIOECONOMICS Table 1, Historical and Projected Populations**.

SOCIOECONOMICS Table 1
Historical and Projected Populations

	Historical Population			Population Estimates		
AREA	1970	1983	1990	1998	2010	2020
Riverside County	456,916	740,800	1,144,400	1,470,398	2,125,537	2,773,431
Blythe excluding correction facilities	7,047	7,150	8,428	12,050	19,390	26,059
Blythe including correctional facilities	N/A	N/A	N/A	21,050	32,846	41,131

Source: BEP 1999a, AFC, Table 7.6-1 Page 7.6-2

The population for Blythe has increased at a 6.3 percent compounded rate of growth during the past eight years (see **SOCIOECONOMICS Table 2, Annual Compounded Population Growth Rate**). The population for Blythe (excluding the correction facility) is expected to continue to grow but at a slower rate. It is expected that future growth will be in line with the historical trend. The forecast of population growth for Blythe is estimated to be 3.0 percent. This is 0.6 percent above the population growth that occurred between 1970 to 1998, and 0.8 percent greater that the 1983 to 1990 growth.

SOCIOECONOMICS Table 2
Annual Compounded Population Growth Rate

	Historical Population Growth Rates			Future Growth Rate Estimates	
Area	1970-1983	1983-1990	1990-1998	1998-2010	2010-2020
Riverside County	3.8	6.4	3.2	3.1	2.7
Blythe excluding Correctional facilities	0.1	2.2	6.3	3.0	3.0
Blythe Including correctional Facilities				3.4	2.3

Source: Annual Compounded Population Growth Rate calculated from Socioeconomics Table 1.

The population of Blythe is one percent of the countywide population when the state correctional inmates are excluded.

LABOR FORCE

The BEP will require a pool of skilled laborers. Riverside and Los Angeles Counties have a substantial skilled labor force that the project can draw from (see **SOCIOECONOMICS Table 3, Available Labor By Skill In Riverside and Los Angeles Counties 1995 To 2002**).

SOCIOECONOMICS Table 3
Available Labor By Skill In Riverside and Los Angeles Counties, 1995 To 2002

	Riverside, County Annual Averages		Los Angeles County Annual Averages		Total Annual Averages	
Occupational Title	1995	2002	1995	2002	1995	2002
Carpenters	3,300	4,290	16,710	18,330	20,010	22,620
Masons and Related Workers	1,870	2,510	6,050	7,200	7,920	9,710
Painters and Related Workers	830	1,090	6,480	7,280	7,310	8,370
Metal Workers	2,030	2,500	28,270	30,450	30,300	32,950
Electricians	1,320	1,650	12,930	14,810	14,250	16,460
Welders	660	860	6,630	7,360	7,290	8,220
Excavators	260	340	650	790	910	1,130
Graders	220	270	700	790	920	1,060
Industrial Truck Operator	1,090	1,310	12,330	13,950	13,420	15,260
Operating Engineers	620	830	2,220	2,490	2,840	3,320
Helpers, laborers	12,800	16,900	137,500	159,300	150,300	176,200
Pipefitters	970	1,260	6,720	7,730	7,690	8,990
Administrative services Managers	710	840	19,160	21,270	19,870	22,110
Mechanical Engineers	80	100	2,290	2,480	2,370	2,580
Electrical Engineers	540	730	9,520	10,930	10,060	11,660
Engineering Technicians	2,230	2,710	35,920	39,020	37,150	41,730
Plant and System Occupations	480	600	8,270	7,890	8,750	8,490

Source: BEP AFC, Tables 7.6-7 and 7.6-7, Pages 7.6-7 – 7.6-8.

SCHOOLS

The school system that serves the BEP is the Palo Verde Unified School District. The school district is composed of three elementary schools, one middle school, one high school, and one continuation school (see **SOCIOECONOMICS Table 4, Palo Verde Unified School District, Enrollment and Capacity**). The community also has a two-year community college and two private schools: The Zion Lutheran School and the Escuela De La Raza Unida School.

SOCIOECONOMICS Table 4
PALO VERDE UINIFIED SCHOOL DISTRICT, ENROLLMENT AND CAPACITY

Schools	Enrollment Figures	Enrollment Capacity	Percent Capacity
ELEMENTARY			
Felix J. Appleby	565	745	75.8

Ruth Brown	635	780	81.4
Margaret White	625	680	91.9
Sub Total	1,815	2,225	82.8
Middle School			
Blythe Middle School	775	993	78.0
High School			
Palo Verde High School	1,015	1,140	89.0
Twin Palms Continuation High School	85	100	85.0
Grade 1-12 Total	3,700	4,438	83.4
College			
Community College	1,250	N/A	

Source: BEP 1999a, AFC, Table 7.6-12, Page 7.6-16.

IMPACTS

Staff reviewed the BEP AFC, Vol. I, December 1999, Section 7.6, Socioeconomics regarding potential impacts to community services and infrastructure (i.e., employment, housing, schools, utilities, emergency and other services), and environmental justice. Staff conducted an independent assessment of the socioeconomic impact on the community associated with the proposed BEP. For housing, staff considers a percentage of five percent or less of permanent available housing as an indicator that insufficient area housing may be available for incoming construction workers. Impacts on the school system, medical services, law enforcement, or community cohesion are based on subjective judgements or input from local and state agencies. Staff's evaluation indicates a minority population in the area of the project that is greater than 50 percent.

The construction and operation of the BEP will have the greatest potential impact on the City of Blythe.

EMPLOYMENT

The BEP is composed of two fundamental construction projects, the power plant and the associated fuel gas pipelines. The two construction projects are expected to occur over an 18-month period with the pipeline construction running concurrent with plant construction. The labor force for construction of the plant and natural gas pipelines is expected to peak in the tenth month after the start of construction at 481 (see **SOCIOECONOMICS Table 5, Blythe Energy Project Estimated Construction Staffing**). The labor force for plant construction would range from 40 to 130 employees for the first four months during mobilization and site preparation. Peak employment for plant construction would occur in the 12th month at 385.

Two natural gas pipelines have been proposed to supply fuel to the project. The proposed pipelines will connect the El Paso Natural Gas Company and SoCalGas pipeline systems to the plant. The construction phase for the natural gas pipelines is scheduled to commence eight months after plant construction has started. The El

Paso Natural Gas pipeline connection is the larger of the two projects and is estimated to take four months for construction with a peak workforce of 71 (BEP 1999a, AFC page 7.4-13). The SoCalGas pipeline connection is estimated to take two months for construction with a peak workforce of 60 (BEP 1999a, AFC page 7.4-14). The construction phase for the fuel gas pipeline is scheduled to be completed six months before plant construction is completed.

Construction of the natural gas pipelines is scheduled to start when plant construction is peaking. The peak construction workforce could be higher than the estimated 481 if construction of the natural gas pipeline does not start in the ninth month as proposed. If construction for the natural gas pipelines were delayed by two months the peak labor force would increase by 12 percent at 525 in the 12th month.

The labor force required for construction of the project includes boilermakers, carpenters, electricians, ironworkers, laborers, millwrights, operators, pipefitters and others. The employed force would include both skilled and non-skilled workers. Based on occupational employment projections by the California's Employment Development Division in September of 1998 (see **SOCIOECONOMICS Table 3, Available Labor By Skill In Riverside and Los Angeles Counties 1995 To 2002**), the project would require less than 1.5 percent of the labor pool in Riverside County. If Los Angeles County is included as a potential source of labor, the construction project would require only 0.2 percent of the available labor pool in Los Angeles and Riverside Counties.

If additional workers are required, the project could draw from adjoining areas such as Las Vegas, Yuma and Phoenix. Therefore, staff believes that sufficient workers for construction of the BEP are available within the general area. Most of the workforce will be within a one-way commute time of two hours from the plant site. The demand for skilled laborers should not result in a community labor shortage.

SOCIOECONOMICS Table 5
Blythe Energy Project Estimated Construction Staffing

Craft/Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Power Plant																		
Insulation Workers										9	17	21	28	28	21	17	14	9
Boiler Makers						14	21	30	30	30	30	30	24	19	19	9	9	9
Masons		2	5	9	9	9	9	5	3	2	1	1	1	1	1	1	1	1
Carpenters	10	13	156	22	30	36	40	40	35	29	23	23	23	19	12	10	10	10
Electricians	4	4	8	8	14	28	28	33	38	43	47	57	47	42	36	24	14	14
Iron Workers	3	7	7	10	15	26	33	39	39	33	26	19	14	9	9	9	9	9
Laborers	14	20	20	26	31	33	38	38	38	33	33	34	33	24	19	19	14	14
Millwrights				5	5	8	8	11	11	14	14	14	9	9	9	8	8	8
Operating Engineers	4	6	8	11	11	13	13	15	17	17	17	18	17	11	9	9	5	5
Plasters								2	2	4	4	6	4	4	2			
Painters																		
Pipefitters	4	8	10	10	17	19	26	36	50	64	83	93	99	93	82	57	28	24
Sheer-metal Workers									6	9	9	14	17	14	9	9	9	6
Sprinkler Fitters								1	1	1	1	4	8	11	8	4	2	2
Surveyors	2	2	3	4	4	4	4	4	4	4	4	4	4	4	2	2	1	
Teamsters				1	1	2	2	2	2	2	2	2	2	2	2	2	1	
Total Power Plant Manual Staff	41	60	75	106	137	193	222	255	275	294	311	338	330	291	241	181	126	112
Total Power Plant Contractor Staff	6	11	17	23	28	33	38	38	47	47	47	47	47	38	36	28	28	26
Total Power Plant Site Staff	47	71	92	129	165	226	260	293	322	341	358	385	377	329	277	209	154	138
Gas Pipeline																		
Foreman									6	6	5	2						
Welders									6	12	9	2						
Mechanics									3	3	2	1						
Equipment Operators									26	28	20	8						
Laborers									35	56	43	16						
Teamsters									12	12	10	6						
Flagmen									6	6	6	4						
Management/Office									7	7	7	2						
Total Gas Pipeline Site Staff									101	140	112	40						
Total Power Plant and Gas Pipeline Site Staff	47	70	92	129	165	226	260	293	423	481	470	426	377	329	277	209	154	138

Source: BEP 1999a, AFC, Table 7.6-13, Pages 7.6-19 – 7.6-20.

During operation of the project, about 20 permanent workers will be needed to maintain and operate the project (12 to 14 operating technicians, 3 to 4 maintenance technicians and 3 to 4 administrators).

HOUSING

The BEP could cause a tight housing market during construction if a large number of the workers relocate to the area. But Blythe has experienced large construction projects in the past. The area supported the labor force for the construction of two prisons, Ironwood State Prison opened in February 1994 and Chuckawalla Valley Prison opened in December, 1988. During the construction of these projects there were a maximum of 250 to 300 construction workers involved (Fulton 2000b). There was no noticeable shortage of housing for these workers during construction. Many of the workers were reported to have brought Recreation Vehicles (RV) with them and took advantage of the many RV parks in the area for housing during construction.

Since this construction, Blythe has added 5 new motels with an additional 357 rooms (Fulton, 2000b). This gives the Blythe area 23 motels with approximately 1,100 rooms (BEP 1999a, AFC, page 7.6-21). There are an additional 78 motels within 65 miles of Blythe (Yahoo 2000a), which would be approximately one hour or less commute for workers using these facilities.

Blythe has also had additional housing, condominiums and apartments built since these construction projects. Permanent housing is not considered to be in short supply in Blythe. Local realtors were polled by the BEP to establish vacancy rates in the City. Rental home vacancies were estimated to be five to eight percent and apartments at ten percent (BEP 1999a, AFC, page 7.6-3). Blythe also has over 300 mobile homes spaces.

Not included, as permanent-housing units are the many RV parks located in the Blythe area, which have in excess of 600 spaces. The combination of housing, apartments, motel/hotel rooms, and RV spaces available to non-local construction and operation workers for this project should be sufficient.

Those employees seeking long-term residences could take advantage of new housing development that has been occurring within the City. The long-term operations of the facility would result in only a small increase in population with only 20 full-time employees required to operate the facility.

One possible area of concern for housing is during the winter season. The population in the Palo Verde Valley triples during the winter season due to visitors that are attracted to the area because of its warm climate. BEP may want to schedule the start of construction such that the peak employment months occur over the late spring to early fall months before the influx of winter visitors to the area. Because a majority of the individuals coming to the area during the winter season typically use motor homes, trailers and campers for their accommodations, it is expected that the housing needs for the BEP can still be met by the community.

SCHOOLS

The Palo Verde Unified School District experienced its peak enrollment in the 1994-1995 school year at 4,050 students. Since that time, school enrollment has declined approximately 1.5 percent annually.

Construction of the proposed project is not expected to result in significant population changes for the school system as most of the construction workers are expected to commute to the work site or take up temporary housing in the area. The operation of the BEP will require a small work force of 20 employees. Therefore, the Palo Verde Unified School District should be able to absorb additional students due to construction and operation at the BEP. The school district is presently at a capacity level of 83.4 percent for grades K –12 (Gilmore 2000).

If the Palo Verde Unified School district should require additional facilities, the funding would be through either property taxes or statutory facility fees. The Palo Verde Valley Unified School District has in place an impact fee of $0.31 per square foot for new construction of commercial/industrial buildings.

The life of the BEP power plant is estimated to be a minimum of 30 years. The basic countywide property tax rate of one-percent plus any existing bonds or special assessments would be applied to the estimated plant value. The BEP AFC has assumed that the project real property would be assessed at $180 million (BEP 1999a, AFC, page 7.6-23). This results in a property tax obligation of approximately two million dollars annually. Part of this revenue could be used by the schools as well as on infrastructure and services such as government and social programs.

UTILITIES, EMERGENCY AND OTHER SERVICES

ELECTRICITY

The City of Blythe obtains its electricity from the Southern California Edison Company (SCE). The plant will have several generators to supply its electricity needs (BEP 1999a, AFC, page 7.6-14). Therefore, the electrical requirements of BEP will not place a significant load on SCE system such that the City of Blythe would be impacted.

WATER SUPPLY

The BEP will not be connected to the City's water system. The project plans to have three on-site wells to supply water for all power plant needs (BEP 1999a, AFC, page 7.6-15). The annual consumption of groundwater extracted from the three on-site wells is estimated to be 3,000 acre-feet. To minimize the impact of the BEP on regional water supplies, BEP is working with the Palo Verde Irrigation District (PVID) to develop a water conservation offset program to offset all of its ground water use.

To implement the water conservation offset program BEP will purchase or acquire under long-term leases approximately 600 acres of agricultural land that is in

production. This land would be retired from agricultural production to offset BEP's annual water consumption. The Palo Verde Valley in 1999 had 122,120 planted or harvested acres of agricultural land. BEP retirement of 600 acres from agricultural production would represent approximately 0.5 percent of the productive agricultural acreage. This reduction in agricultural production will result in a minor change to Riverside County's annual crop revenues.

For more information on water supply, see the Soils and Water Resources section of this Final Staff Assessment.

SEWER

The area has two wastewater treatment facilities. Blythe treats its wastewater at a facility located south of the City and approximately five miles from the BEP. An oxidation lagoon east of the airport is used to treat the Blythe airport wastewater. This facility is approximately 0.25 miles west of the BEP. The BEP will not impact either of these wastewater facilities, as the project will handle its wastewater and sewage treatment on-site during construction and operation (BEP 1999a, AFC, page 7.6-15). Please refer to the Soils and Water Resources section for a detail discussion of wastewater disposal.

LAW ENFORCEMENT

The City of Blythe has annexed the land associated with the BEP, and the Blythe Police Department will be the law enforcement service. The Blythe Police Department is located at 249 North Spring Street, which places it approximately five miles from the power plant. The current police department has a staff of 25 law enforcement officers (Blythe 2000b). In an emergency situation the police department estimates that response time to the project would be approximately three minutes. For non-emergency situations the response time would be between five to ten minutes.

The City of Blythe has mutual aide agreements with other law enforcement organizations in the community. This includes the Riverside County Sheriff's Department. The nearest Sheriff's Department is located at 260 North Spring Street in Blythe approximately five miles from the site. The headquarters for the Riverside County sheriff's Department is in Riverside, California. The Blythe station has 18 sworn full-time law enforcement officers. The department handles emergency calls for county residents in the general Palo Verde Valley. The estimated normal response time for a patrol vehicle to the BEP would be about ten minutes.

FIRE PROTECTION

In accordance with the City of Blythe/Riverside County automatic aide agreement, the Riverside County Fire Department will provide fire protection services. The Riverside County Fire Department has two fire stations located near the BEP. The closest facility to the project is the Riverside County Fire Department Station No. 45. This facility is approximately one mile west of the project and would have a response time of three to five minutes. It is staffed by two trained firefighters. The facility has two fire engines, the full time staff at the station uses one and the other fire engine is used as backup for volunteer firefighters based around the area.

The other county fire station is Riverside Fire Department Station No. 43 and would have a response time of five to seven minutes to the site. This station has two trained firefighters on full time with an additional 10 to 15 volunteer firefighters. The station is equipped with two fire engines, one water truck, and a squad vehicle.

With Blythe's annexation of BEP, the Blythe Fire Department would also provide the fire protection. The Blythe Fire Department is located at 201 North Commercial Street approximately 5 miles east of the site. The fire department has 33 trained volunteer firefighters and one full time fire marshal. Their fire fighting equipment consists of four fire engines, one 50-foot ladder truck, one squad car, and one quick response vehicle. Response time to the BEP would be approximately 10 to 15 minutes.

The BEP is to be equipped with its own fire protection system. This system is to include contained chemical storage areas, carbon dioxide suppression equipment, emergency shut-off gas supply, and a water-based hydrant and hose system around the plant. The water storage tanks will include approximately 150,000 gallons of reserved fire suppression capacity. Please refer to the section on Worker Safety and Fire Protection for additional information of fire protection.

HOSPITALS AND MEDICAL SERVICES

The medical services available in Blythe include a full service hospital with 55 beds and 24 hour emergency room service, 23 physicians/surgeons, six dentists, four optometrists four chiropractors and one podiatrist. These services should be adequate to meet the medical service needs of the BEP during construction and operation.

If required other medical services are available in the area. Located approximately 30 miles from the BEP in Parker, Arizona is the La Paz Medical Center. This is a full service hospital with eight doctors on staff, 39 beds and 24 hour emergency service. The community of Quartzsite has a clinic that offers daytime services and is associated with the La Paz Medical Center. Other medical facilities are located approximately 70 miles from the site. The largest being the Yuma Regional Medical Center in Yuma, Arizona with 237 beds.

FINANCIAL

Riverside County and Blythe receive revenues from a variety of sources. These sources include property, sales and franchise taxes, licenses and permits, fines and penalties, charges for use of service and property, and transfer from other governments. Riverside County and Blythe will receive revenue from the project. The greatest impact of the revenue generated by the project should be on the city budget. With the City of Blythe annexation of the project, the property taxes collected would be split according to an agreement between the City of Blythe and Riverside County. This split divides property tax revenue at a rate of 75 percent for the County and 25 percent for the City.

The initial impact on the local community will be from sales taxes on equipment, material and supplies purchased during construction. It has been estimated that the

cost for material and supplies for construction would be $150 million. Of this amount the value of material and supplies that will be purchased locally will be $5 to $10 million (BEP 1999, AFC page 7.6-22).

To maintain the BEP during its operating life will require major maintenance for the facility every 3 to 4 years at an estimated cost of $10 million. Approximately 15 percent of this would be spent locally. This spending will generate sales tax revenues for the City of Blythe and Riverside County. The sales tax is 7.75 percent of which Blythe would receive one percent (Blythe 2000c).

Operation of the BEP will result in 20 full time employees. An employee's annual salary will average approximately $50,000 (BEP 1999 AFC page 7.6-22). This would result in an average operating payroll of one million dollars.

ENVIRONMENTAL JUSTICE

For all siting cases, Energy Commission staff follows the federal guidelines in doing the environmental justice analysis. This is a two step process that assesses:

- Whether the area potentially affected by the project has a population that is more than 50 percent minority or low-income or has a minority or low-income population percentage that is meaningfully greater than the percentage in the general population; and
- Whether the environmental impacts are likely to fall disproportionately on the minority and/or low-income population.

As shown in **SOCIOECONOMICS Table 7, Demographic Information,** the Blythe Area has a significant portion of its population classified as minorities and/or living below the poverty level. The U.S. census data for the Palo Verde Division and US census tract 458 indicates a population of 18,351. Of this total 46.0 percent were classified with a white ethnic background. The next largest segment was those with Hispanic heritage, (persons of Hispanic heritage may be of any race) at 41.5 percent. The area minority population was 54.0 percent.

To further define the minority population a review of the census tracts within six miles of the proposed project site was done. Four of the census tracts within this six-mile radius of the BEP have a minority population greater than 50 percent based on the 1990 census (see **SOCIOECONIMICS Table 8, Demographic Profile By Census Tracts**). Tract 462 had the largest minority population at 65.8 percent. This is out of a total population of 1,253. This tract is located in the City of Blythe south of Interstate 10, approximately five miles from the plant site. Census tract 459 has a minority population of 64.5 percent. This is from a population base of 1,732. Tract 459 covers a large area located west of the City of Blythe, and east of the Blythe Airport. The proposed Blythe Power plant is located just west of this census tract in census tract 458.

SOCIOECONOMICS Table 7
Demographic Information

	California		Riverside County		Palo Verde Division and US Census Tract 458	
Ethnic Background	**Population**	**Percent**	**Population**	**Percent**	**Population**	**Percent**
White	17,029,126	57.8%	754,140	64.4%	8,438	46.0%
Black	2,092,446	7.1%	59,966	5.1%	1,947	10.6%
Native American	184,065	0.6%	8,393	0.7%	160	0.9%
Asian and Pacific islander	2,710,353	9.2%	38,349	3.3%	105	0.6%
Others	56,093	0.2%	2,051	0.2%	92	0.5%
Hispanic Origin(1)	7,387,938	25.1%	307,514	26.3%	7,609	41.5%
Total Minority	**12,730,895**	**42.8%**	**416,273**	**35.6%**	**9,913**	**54.0%**
Total Population	**29,760,021**		**1,170,413**		**18,351**	
Household Income						
Below poverty	1,049,206	10.1%	39,842	9.9%	1,013	19.3%
Above Poverty	9,350,494	89.9%	362,584	90.1%	4,232	80.7%

Source: 1990 U.S. Census Data

(1) Persons of Hispanic Heritage may be of any race.

SOCIOECONOMICS Table 8
Demographic Profile By Census Tracts

Census Tract	Not of Hispanic Origin					Hispanic Origin	Total Minority	Total	Percent Minority
	White	Black	American Indian, Eskimo, or Aleut	Asian or Pacific Islander	Other Race				
458	1,964	873	18	32	72	1535	2,530	4,494	56.3%
459	615	77	23	6	6	1005	1,117	1,732	64.5%
460	1,250	46	41	4	0	350	441	1,691	26.1%
461	4,181	670	73	58	14	4185	5000	9,181	54.5%
462	428	281	5	5	0	534	824	1,253	65.8%
Totals	8,438	1,947	160	105	92	7,609	9,913	18,351	54.0%

Source: 1990 U.S. Census Data, Population and Housing.

Staff met with members of the Blythe community on July 27, 2000, to describe the proposed BEP, the Energy Commission's siting process and to ask for information from the community regarding their existing environment and health.

Staff did not hear of any unique circumstances that could lead to significant impact at this meeting. An environmental analysis was conducted in the areas of public health and air quality to determine whether there could be any significant and adverse impacts on the minority population. With implementation of the proposed conditions of certification included in this Final Staff Assessment for air quality and public health, the project will not cause any significant impact on the minority population. Because staff has determined that there will not be a significant impact on any population, no disproportionate impact analysis was necessary.

Based on the 1990 Census data for the five census tracts impacted by the BEP, 80.7 percent or 4,232 households were above the US poverty level while 19.3 percent or 1,013 households were below the US poverty level (see **SOCIOECONOMICS Table 9, Percentage of Households Living Below the Poverty Level**). This percentage is below the greater than 50 percent threshold the Energy commission staff uses to determine if there is a need for additional analysis of disproportionate impact on this population.

SOCIOECONOMICS Table 9
Percentage of Households Living Below the Poverty Level

Census Tract	Number of Households in Tract	Households Below Poverty Level	Percent Below Poverty Level
458	597	145	24.3%
459	586	143	24.4%
460	584	89	15.2%
461	3,004	539	17.9%
462	474	97	20.5%
Total	5,245	1,013	19.3%

Source: 1990 US Census Data, Poverty Status By Household

CUMULATIVE IMPACTS

The only major construction project in the Blythe area is the construction of a new campus for the community college approximately four miles from the BEP site. The construction of the facility has been started and is scheduled to be completed in June, 2001. Therefore the BEP should not overlay the community college construction in such a way as to have cumulative impact on the community.

FACILITY CLOSURE

PLANNED PERMANENT CLOSURE

The BEP AFC (see Facility Closure 3.0, pp. 5.0-1 to 5.0-2) provides for the inclusion of socioeconomics LORS which will be incorporated into the facility closure plan when it becomes necessary at the end of the project's economic life. The socioeconomics impacts of permanent facility closure will be evaluated at the time under the Energy Commission's facility closure process.

UNEXPECTED TEMPORARY CLOSURE

Any unexpected, temporary closure would not likely cause any significant environmental impacts on the affected area, because the likely result of a temporary closure would be reactivation of the power plant by the same or a new owner within a relatively short period of time. Personnel changes may occur if there is an ownership change, but socioeconomics impacts would not change significantly because the number of operating personnel would remain relatively the same.

UNEXPECTED PERMANENT CLOSURE

Any unexpected, permanent closure of the BEP is not likely to cause any significant socioeconomics impacts on the affected area, because facility closure impacts (i.e., dismantling) would be similar to construction impacts, and staff has found no significant socioeconomics impacts due to the construction of the project.

MITIGATION

The proposed project is not expected to result in any significant adverse socioeconomic effects, thus no mitigation is proposed beyond the requirement to pay school impact fees.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The BEP should result in gross benefits for the affected area from increased property and sales taxes, and a higher employment base. The community will also benefit from the economic activity generated by the purchase of services, manufactured goods and equipment from local businesses.

For example, during the construction period there will be an average workforce of 247 during the 18-month construction period. The plant will also have a permanent staff of approximately 20 individuals with an annual payroll of one million dollars once in operation. During construction the project is expected to result in purchases of goods and services in the community of approximately $5 to $10 million. During the plant operation, local expenditures will be approximately $1.5 million every three to four years.

The BEP both direct and indirect should not cause a significant adverse impact on the affected area's housing, schools, police, fire, emergency services, hospitals, or utilities during construction or operation.

A potential problem could exist during construction of the BEP if the peak construction period occurs during the winter season. The population in the Palo Verde Valley triples during the winter season, which could result in a tight housing market. If construction starts in late fall this will result in a peak labor force during mid to late summer, which should ease any potential housing problem for the community.

A minority population greater than 50 percent does exist in the project area. Based on the analysis conducted, staff does not foresee this project resulting in a disproportional impact on the minority population.

RECOMMENDATIONS

For the area of socioeconomics, staff recommends that should the BEP be approved, the proposed condition of certification be adopted.

PROPOSED CONDITIONS OF CERTIFICATION

SOCIO-1 The project owner shall pay the statutory school impact development fee as required at the time of filing for the "in-lieu" building permit.

Verification: The project owner shall provide proof of payment of the statutory development fee to the Compliance Project Manager (CPM) in the next Monthly Compliance Report following the payment.

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SOIL & WATER RESOURCES

Testimony of Richard Sapudar and Linda Bond

INTRODUCTION

This analysis examines the water and soil resource aspects of the Blythe Energy Project (BEP), specifically focusing on the following areas of concern:

- how the project's demand for water affects surface or groundwater supplies;
- whether project construction or operation will lead to accelerated wind or water erosion and sedimentation;
- whether project construction or operation will lead to degradation of surface or groundwater quality; and
- whether the project will comply with all applicable laws, ordinances, regulations and standards.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

FEDERAL

CLEAN WATER ACT

The Clean Water Act (33 USC section 1257 et seq.) requires states to set standards to protect water quality. Point source discharges to surface water are regulated by this act through requirements set forth in a National Pollutant Discharge Elimination System (NPDES) Permit. Stormwater discharges during construction and operation of a facility also fall under this act and must be addressed through either a project specific or general NPDES permit. In California, the nine Regional Water Quality Control Boards (RWQCB) administer the requirements of the Clean Water Act, which includes Section 401 and 402 requirements for activities which involve water quality. Section 404 of the act regulates the discharge of dredged or fill material into waters of the United States, including rivers, streams and wetlands. The Army Corp of Engineers (ACOE) issues site-specific or general (nationwide) permits for such discharges.

RIVERS AND HARBORS ACT OF 1899

The Rivers and Harbors Act (33 USC 403) contains requirements for construction in "navigable waters" or activities within a floodplain. It restricts the placement of structures, excavation or deposition of materials into and any other work that could affect the course, location, condition, or capacity of "navigable waters of the United States", without a permit from the ACOE.

COLORADO RIVER WATER

Water from the Colorado River is fully allocated, with the flow shared by the upper and lower basin States, and Mexico. The 1928 Supreme Court Decree appointed the Secretary of the Interior as the Water Master over the Lower Colorado River

Basin. The United States Bureau of Reclamation (USBR) performs the actual Water Master functions (BEP 1999).

The use of Colorado River water is accomplished through a complex series of laws, court decrees, compacts, an international treaty, agreements, and regulations identified collectively as the Law of the River (BEP 1999):

- The Colorado River Compact, 1922,
- The Boulder Canyon Project Act, 1920,
- The Seven Party Agreement, 1931,
- Treaty with Mexico, 1944,
- US Supreme Court Decree, 1928,
- Arizona v. California, 1964,
- The Colorado River Basin Act, 1968.

The United States uses the Laws of the River to assign three principal priorities in the operation of the Colorado River:

- River regulations, navigational improvement, and flood control.
- Irrigation and domestic use and present water rights.
- Power generation.

Water is released when there is a beneficial use for the water. Other uses are also considered, such as recreation, wildlife, water quality, and species conservation.

The Bureau of Reclamation considers groundwater in excess of certain depths in the Mesa area to be, due to the direct hydrologic connection between groundwater and the river, to be Colorado River water. To manage the surface water and groundwater linkage for the Colorado River, over which the USBR has jurisdiction, the USBR has also developed a model in cooperation with the US Geological Survey. The USBR will likely begin applying the accounting surface model to groundwater withdrawals of the Colorado River within the next several years (USBR 2000c).

The California Energy Commission (CEC) requested that the USBR state their jurisdiction over groundwater in the area of the BEP project site, and how this jurisdiction, if any, would be exercised with regard to the BEP (CEC 2000). In response, the USBR has indicated that it will assert jurisdiction over this proposed groundwater use. USBR stated that “an entitlement consistent with the existing Law of the River is required for any water pumped from wells that would be replaced by Colorado River water. (USBR, 2000c)”.

STATE

PORTER-COLOGNE WATER QUALITY CONTROL ACT

The Porter-Cologne Water Quality Control Act of 1967, Water Code section 13000 et seq., requires the State Water Resources Control Board and the nine regional RWQCBs to adopt water quality criteria to protect state waters. These criteria include the identification of beneficial uses, narrative and numerical water quality standards and implementation procedures. The criteria for the project area are contained in the Colorado River Region Water Quality Control Plan. This plan sets numerical and/or narrative water quality standards controlling the discharge of wastes with elevated temperature to the state's waters. These standards are applied to the proposed project through the Waste Discharge Requirements (WDRs) permit, which are addressed in Division 7, Section 13260 of the California Water Code.

Section 13552.6 of the Water Code specifically identifies that the use of potable domestic water for cooling towers, if suitable recycled water is available, is an unreasonable use of water. The availability of recycled water is based upon a number of criteria, which must be taken into account by the SWRCB. These criteria are that: the quality and quantity of the reclaimed water are suitable for the use; the cost is reasonable, the use is not detrimental to public health, will not impact downstream users or biological resources, and will not degrade water quality.

Section 13552.8 of the Water Code states that any public agency may require the use of recycled water in cooling towers if certain criteria are met. These criteria include that recycled water is available and meets the requirements set forth in section 13550; the use does not adversely affect any existing water right; and if there is public exposure to cooling tower mist using recycled water, appropriate mitigation or control is necessary.

The SWRCB has also adopted a number of policies that provide guidelines for water quality protection. The principle policy of the State Board which addresses the specific siting of energy facilities is the Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling (adopted by the Board on June 19, 1976 by Resolution 75-58). This policy states that use of fresh inland waters should only be used for powerplant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. This SWRCB policy recommends that power plant cooling water should, in order of priority come from wastewater being discharged to the ocean, ocean water, brackish water from natural sources or irrigation return flow, inland waste waters of low total dissolved solids, and other inland waters. This policy goes on to address cooling water discharge prohibitions.

Sections 401 of the Clean Water Act provides for state certification of federal permits allowing discharge of dredged or fill material into waters of the United States. These certifications are issued by the RWQCBs. For this project, any 401 certification will be handled with the Waste Discharge Requirements (WDR) permit.

LOCAL

The City of Blythe and County of Riverside adhere to Federal and State water law, and have jurisdiction to issue grading permits with erosion and sediment control measures, and sanitation permits for installation of septic tanks and leach fields. The project will comply with all local requirements.

ENVIRONMENTAL SETTING

REGIONAL DESCRIPTION

The project site is located within the Palo Verde Mesa of the Colorado River Basin near the city of Blythe. The Mesa is bounded on the north by portions of both the Little and Big Maria Mountains, on the west by the McCoy and Mule Mountains, and on the south by the Palo Verde Mountains. The Palo Verde Valley, a subarea of the Colorado flood plain, forms the eastern boundary of the Mesa. The Palo Verde Mesa covers approximately 280 square miles (BEP 1999).

The region has a dry, warm climate, characterized by mild winters and hot summers. The average temperature range from a low of 41°F in January and December to a high of 108°F in July. High temperatures, low humidity and frequent winds lead to a high rate of evapotranspiration in the area (BEP 1999). Precipitation is meager with an average annual rainfall at the Blythe Airport of 3.7 inches. Precipitation is typically concentrated about equally in two periods, one in the summer and one in the winter. In the summer, high temperatures and moisture from the Gulf of Mexico can result in thunderstorms, which have high intensities and can result in rapid runoff.

In the winter, storms from the Pacific Ocean cause gentle rains with little or no runoff. Occasionally, moist air from tropical disturbances in the desert can combine with Gulf of Mexico moisture and cause heavy precipitation in August or September (USGS 1973).

The major water body in the region is the Colorado River. No other perennial streams exist in the project area. However, numerous dry washes cross the Palo Verde Mesa, flowing generally southeast the valley during intense storms.

Native vegetation in the region consists mainly of the Creosote desert scrub plant community characteristic of the Sonoran Desert. Soils in the region primarily derive from alluvial and colluvial deposits and range from coarse to moderately fine in texture. The major land use in the region is agriculture.

The primary water-bearing unit that occurs in the Palo Verde Mesa is the older alluvium of the Colorado River. The older alluvium is the result of all but the most recent degradations and aggradations of the Colorado River. The older alluvium within the Mesa is composed of sand, silt, and clay with minor amounts of gravel. The gravel deposits within the Mesa primarily occur in a 1-mile wide zone that roughly parallels and borders Mesa-Valley boundary. The Colorado River gravel deposits have the highest conductivity of any rocks in the region, and wells in the

Mesa that penetrate the gravel zone are the most productive. Beyond the gravel zone, sand is the dominant lithology. Within the Palo Verde Mesa, the older alluvium is over 500 feet thick in the central portions of the mesa and pinches out along the bordering bedrock mountains. (USGS, 1973)

SITE AND VICINITY DESCRIPTION

The project is located near the center of the Palo Verde Mesa basin about a mile from the Mesa-Valley boundary. The site is on an intermediate plateau, about 70 feet in elevation above the Colorado River Valley near Blythe and about 60 feet in elevation below the Blythe Airport, and the site topography is flat.

SOILS

The soils at the site (Soil and Water Resources Table 1) are made up of sixteen soil types with textures ranging from moderately fine to coarse (BEP 1999, Table 7.14-1). The water erosion hazard is expected to be slight at the site, along the transmission lines, and at the interconnection to the SoCalGas natural gas pipeline. At the interconnection to the El Paso natural gas pipeline, the erosion hazard is expected to be nonexistent or slight, except for the segment extending from Rannells Drain to Hobsonway. The water erosion potential along this segment is considered to be slight to moderate (BEP 1999). The wind erosion potential for most of these soils is moderate to high.

VEGETATION

The vegetation in the area is dominated by three plant community types: creosote bush scrub associated with undeveloped desert areas; riparian plant communities associated with the channel banks of the Colorado River and its various canals and drains; and agricultural areas in active cultivation. Because the site is not located adjacent to the Colorado River, the riparian communities are not found on the project site. The bush-scrub community occupies approximately 74 acres of the site, while the remaining 2 acres are in agricultural or industrial use (BEP 1999).

Although vegetation communities on the site are highly disturbed and fragmented, the revegetation potential of all of the soils on the site are high, so revegetation is not expected to pose a problem. The project site is on land that has been designated as prime agricultural land. However, no loss of crop production in the area will occur because the site is currently vacant (BEP 1999).

SOIL & WATER RESOURCES Table 1
Soil Characteristics, Blythe Energy Project

Soils Affected by the Project Site, Transmission Lines, and the Interconnection to the SoCalGas Pipeline route					
Soil Name	**USDA Texture**	**Permeability (in/hr)**	**Water Erosion**	**Wind Erosion**	**Slope**
Aco	sandy loam	0.0-6.3	slight	3*	> 1%
Orita	gravelly fine sandy loam	0.63-2.00	slight	8	> 1%
Soils Affected by the Interconnection to the El Paso Natural Gas Company Pipeline					
Soil Name	**USDA Texture**	**Permeability (in/hr)**	**Water Erosion**	**Wind Erosion**	**Slope**
Aco	sandy loam	0.0-6.3	slight	3	> 1%
Badlands**					9-75%
Cibola	fine sandy loam	0.06-0.20	none to slight	4	> 1%
Cibola	silty clay loam	0.06-0.20	none to slight	4L	> 1%
Gilman	fine sandy loam	0.63-2.00	none to slight	3	> 1%
Gilman	silty clay loam	0.63-2.00	none to slight	4L	> 1%
Glenbar	silty clay loam	0.06-0.2	none to slight	4L	> 1%
Holtville	silty clay	0.06-0.20	none to slight	4	> 1%
Imperial	silty clay	< 0.06	none to slight	4	> 1%
Imperial	fine sandy loam	< 0.06	none to slight	3	> 1%
Indio	very fine sandy loam	0.63-2.00	none to slight	3	> 1%
Indio	silty clay loam	0.63-2.00	none to slight	4L	> 1%
Indio	silt loam	0.63-2.00	none to slight	4L	0-2%
Meloland	fine sandy loam	2.00-6.30	none to slight	3	> 1%
Meloland	silty clay loam	2.00-6.30	none to slight	4L	> 1%
Orita	gravelly fine sandy loam	0.63-2.00	slight	8	> 1%
Ripley	silty clay loam	0.2-0.63	none to slight	4L	> 1%
Ripley	very fine sandy loam	0.63-2.00	none to slight	3	> 1%
Rositas	fine sand	6.3-20.0	slight to moderate	1	0-2%
Rositas	fine sand	6.3-20.0	slight	1	2-9%
Rositas	fine sand, wet	6.3-20.0	slight to moderate	8	0-2%
Rositas	silty clay loam	0.2-0.63	none to slight	4L	0-2%

* Numbers represent Wind Erodability Group (WEG) index classification. Scale of 1-8, lower number denotes greater susceptibility to wind erosion (4L has lower erosion hazard than 4).
** Badlands soil characteristics too variable for valid estimates.

SURFACE HYDROLOGY

There are no significant surface water bodies in the vicinity of the site. The nearest stream, the McCoy Wash, is located about 3 miles north of the project site. The Colorado River is located about 9 miles to the east of the site. There are occasional ephemeral streams evident as surface flow to the north of the site during intense storms (BEP 1999 sec 7.13.1.1). The project's water supply will come from groundwater wells to be constructed on the site.

GROUNDWATER

The subsurface geology and groundwater conditions (hydrogeology) at the project site are typical for the Palo Verde Mesa. The site is underlain by the older alluvium of the Colorado River, which is the primary aquifer for the Mesa. Based on a geologic cross section developed by the USGS (USGS 1973 plate 3) the older alluvium is over 500 feet thick in the vicinity of the project site and is composed of sand, silt, clay and some gravel. This aquifer is hydrologically linked with the Colorado River. Wells completed within gravel lenses of the older alluvium are highly productive.

Groundwater occurs at a depth of about 90 feet below ground surface (or 246 feet above mean sea level) in the vicinity of the project (Ninyo & Moore 1999; BEP 1999). USGS (1973) estimated that groundwater elevations at the site were about 250 feet (mean sea level) in 1964. Based on the 1964 groundwater data, the direction of groundwater flow in the project area is to the south.

Aquifer properties include confining conditions, hydraulic conductivity and storage. Although the water-bearing properties of the Mesa have been generally described by the USGS (1973) and DWR (1978), no specific information on the localized aquifer properties of the project site are currently available. Most wells on the Mesa draw water from sand layers. Project wells may also tap into highly productive gravel lenses, which only occur within a mile from the Mesa-Valley boundary (USGS 1973). Similarly, evaluation of specific yield, the primary storage property of an unconfined aquifer, is not available for the project site.

USE OF GROUNDWATER

Since 1964, groundwater levels in the Palo Verde Mesa have declined and partially recovered. Groundwater development for agricultural irrigation on the Palo Verde Mesa increased significantly during the 1970's and 1980's, which caused a regional decline in groundwater levels in the Mesa. Although most farming on the Mesa was discontinued by the early 1990's, groundwater levels have not fully recovered (BEP 1999).

The applicant has provided a description current water use on the Mesa for commercial, industrial, municipal and agriculture purposes. Groundwater is used by the Blythe airport, the golf course, and the community of Mesa. The airport's water use is about 61 acre-feet/year, and the golf course uses about 69 acre-feet/year. No estimate of water use was provided for the community of Mesa Verde. Approximately 223 acres of agricultural land that is not served by the Palo Verde Irrigation District (PVID) also depends on groundwater for the irrigation. These independent farmlands include approximately 150 acres of citrus and 70 acres of dates. In addition, the applicant reports that 520 acres of farmland on the Mesa is irrigated with surface water within PVID. This acreage with PVID includes 481 acres of citrus and 39 acres of alfalfa (BEP 1999). PVID reports that all of the agricultural land located near the project site is irrigated with surface water provided by the district (Smith, verbal communication, 10/19/2000). The applicant estimates that total agricultural water use is about 3,700 acre-feet/year (BEP 1999).

Staff also identified numerous residential and/or commercial buildings near the project site in the Land Use Section of the Preliminary Staff Assessment (PSA, 2000, Figure 4). The nearest existing residence (16275 Hobsonway West) is located 3,465 feet west-southwest of the project site. In addition, there appears to be 2 other residences or commercial properties located within a mile of the project and another 12 residences or commercial properties located within a 2-mile zone. It is reasonable to assume that residences, as well as commercial enterprises, that are located in this area would also depend on groundwater for their water supply (Nelson, 2000).

WATER QUALITY

The native chemical composition of groundwater in the vicinity of the project site is best described as either a sodium-sulfate or sodium-chloride water. The groundwater in the Palo Verde Mesa typically has higher TDS values than the Valley (BEP 1999). In addition, groundwater sampling performed by the applicant indicates that groundwater in the vicinity of the proposed project wells has been contaminated with low concentrations of organic chemicals.

The Blythe Airport, located west of the project site, represents a potential contamination source for the project's water supply. The airport property includes an inactive landfill that was associated with the former Blythe airbase. The landfill lies less than one mile upgradient of the proposed site. A sampling plan was agreed upon by the Commission staff and the applicant (Workshop, City of Blythe, May 4, 2000) in order to determine the extent of groundwater contamination at the site. Most of the organic chemicals found in the sampling program were near the old mobile home site on the southeast corner of the site, the corner furthest from the landfill, although the source of the contamination was not able to be determined.

IMPACTS

PROJECT SPECIFIC IMPACTS

In this section, staff assess the potential for significant adverse impacts related to (1) erosion and sedimentation, (2) water resources, (3) wastewater, (4) drainage, and (5) Colorado River pipeline crossing. The discussion of water resources includes a description of the plant water requirements and assessments of well interference and water quality impacts.

EROSION AND SEDIMENTATION

Activities associated with facility construction include grading, and other earth moving activities. Removal of protective cover vegetation and disturbance of the soil surface structure leaves the soil particles vulnerable to detachment by rainfall. Grading activities may result in soil compaction, which increases stormwater runoff velocities, allowing more soil particles to be entrained in the runoff and carried off-site. Alteration of natural drainages may cause runoff to cross-exposed surfaces leading to increased erosion. Sediment carried off-site may be deposited in adjacent water bodies. This may reduce drainage capacity leading to flooding or

degrade sensitive biological habitats. Erosion is also a significant concern where construction of linear facilities crosses natural and man-made drainages.

The soils affected by project elements have a slight water erosion hazard (Soil and Water Resources Table 1). A portion of the soils along the El Paso Natural Gas (EPNG) Company Natural Gas Pipeline route has a slight to moderate erosion hazard (BEP 1999). All soils affected by the project construction, but especially exposed berms and spoil piles, are vulnerable to water erosion. Improper discharge of water from dewatering activities associated with power plant and gas line construction may also lead to erosion.

Water erosion at the site should be slight once construction is completed, since the finished site will be leveled, covered with concrete and gravel, and drainage systems will be in place. However, during project operation, wind and water action can continue to erode unprotected surfaces. An increase in the amount of impervious surfaces will increase runoff, leading to the erosion of unprotected surfaces. BEP (2000a) has prepared and will implement a stormwater pollution prevention plan as required under the General Construction Activity Stormwater Permit issued by the State Water Resources Control Board.

The transmission system for the project will add approximately 2,500 ft. of new 230 kV line and remove approximately 3,000 ft. of existing 161 kV line. Most of the new transmission construction is located on the 76-acre site. New transmission line construction off site falls within the existing transmission right-of-way corridors within an established lemon orchard (BEP 2000a).

Two natural gas delivery pipelines are being considered to supply the plant with fuel. The first alternative is an interconnection to the EPNG Company's high-pressure interstate pipeline system in Arizona. This pipeline would run 11.5 miles, including a segment to be bored under the Colorado River.

The second alternative is an interconnection to the SoCalGas Pipeline. A new pipeline running 0.8 miles in length would be sufficient to connect the project to the SoCalGas intrastate pipeline system (BEP 1999).

The interconnection to the EPNG Company pipeline traverses agricultural land uses, primarily alfalfa, cotton, lemons, and melons. The interconnection to the SoCalGas pipeline lies entirely on the mesa and crosses under the I-10 corridor. Neither corridor retains substantial characteristics of the native vegetation, and those areas which retain some natural characteristics have been extensively disturbed (BEP 1999).

Construction and routing design will utilize disturbed land to the maximum extent possible to reduce effects on biological resources (BEP 1999). Newly disturbed areas will have to remain clear of vegetation to maintain a 10-foot buffer from the pipeline centerline.

In general, soils at the plant site and soils along the natural gas pipeline and the transmission line corridors have the same erosion hazards and often similar slopes

(Soil and Water Resources Table 1). Therefore, comparable erosion control measures will be implemented at the site and along the linear facility corridors.

During construction, these measures will include sediment barriers to reduce erosion and prevent sediment from leaving the site. Slope breakers may be constructed from soil, silt fences or staked hay or straw bales. If straw bales are used, they will be removed at the end of construction. Accumulated sediment will be removed when it reaches a depth of six inches. A permanent berm towards the southeastern end of the site will be constructed during the initial site grading to minimize stormwater leaving the site and flowing into local drainage channels. Wind erosion and dust will be suppressed by watering of construction areas. Other Best Management Practices (BMPs) should be implemented as needed to comply with the permitting conditions.

Paving, geotextiles, vegetation, rock surfacing, construction of a permanent bermed area and diversion of storm water to that area, and sediment pits will be used as long-term erosion control measures on site.

The applicant believes that additional soil control measures along the transmission route will not be required due to the flat terrain and the fact that all transmission improvements will be made on site on the power plant property or within the existing lemon orchard. Water erosion will be reduced by the level terrain and the absence of surface water run off, and wind erosion will be reduced by the surrounding dense tree cover within the orchard. Further description of the orchard's erosion control measures is needed to completely assess the impacts.

The natural gas pipeline right-of-way will require compaction and paving of soils. All pipeline construction will occur within existing road rights-of-way or directly on the power plant site and no natural vegetation will be disturbed.

The stormwater management plan for the project does not include a list of BMPs for stormwater management in the operational phase, since all storm water will be contained on the site and captured in the evaporation ponds. Other management measures, including preventive maintenance, good housekeeping, spill prevention and response, inspections, environmental work instruction, hazardous materials and waste handling, and reporting and record keeping are described in the plan. The construction schedule is included.

WATER RESOURCES

PLANT WATER REQUIREMENTS

The project intends to use groundwater as the primary source of water. As shown in Soil & Water Resources Table 2, project water demand will range from approximately 2.4 million gallons per day (mgd) to 3.0 mgd. Due to high levels of evaporation, cooling tower makeup represents 95 percent of the project's water demand. Daily water consumption based upon different temperatures is shown in Soil & Water Resources Table 2. These estimates reflect cycling of the water seven

times through the cooling towers. Other uses include potable and steam cycle demands.

SOIL & WATER RESOURCES Table 2
Blythe Energy Project Daily Water Consumption

Base Load, 59°F, 7 Cycles	
Main Cooling Tower Evaporation	2,305,000 gal.
Inlet Air Chiller Cooling Water	104,000 gal.
Potable Water	1,440 gal.
Miscellaneous Losses	24,600 gal.
Total Daily Consumption	2,435,040 gal.
Base Load, 110°F, 7 Cycles	
Main Cooling Tower Evaporation	2,644,000 gal.
Inlet Air Chiller Cooling Water	367,000 gal.
Potable Water	1,440 gal.
Miscellaneous Losses	13,000 gal.
Total Daily Consumption	3,025,440 gal.

Total annual water use, based upon estimated operating parameters, is shown in Soil & Water Resources Table 3, and consists of makeup water for the cooling system, potable water, and demineralized water as makeup for the stream system. The demineralized water will be produced using either a reverse osmosis unit in series with a mixed bed-polishing unit, or by the mixed bed polisher alone. A storage tank with 600,000-gallon capacity for demineralized water will provide seven days of backup capacity.

SOIL & WATER RESOURCES Table 3
Estimated Total Water Demand

Water Use	Key Assumptions	Total
Low Condition Water Use-15%	1,700 gpm @ 59°F	411 ac-ft
High Condition Water Use-32%	2,200 gpm @ 110°F	1,136 ac-ft
Average Water Use-48%	1,800 gpm @ 74°F	1,394 ac-ft
Non-Operational Periods, Annual O&M, etc.-0.05%	25 gpm	2 ac-ft
Annual Total Water Use-95%	8322 hrs.	2,943 ac-ft

Three wells will be located on the project site and will be about 550 feet deep penetrating approximately 450 feet of water bearing formation. Groundwater is currently located approximately 90 feet below ground surface at the site. The wells will have a 16 inch casing, an average specific capacity of 50 gpm/ft, with each capable of producing 2,500 gpm with a drawdown of 50 feet at the well. Each well will be able to supply the project individually, and each well will be connected to the raw water storage tank. As part of geotechnical testing, a monitoring well was installed on the project site, and will be used to provide data on groundwater level and water quality on an on-going basis. Water treatment for the cooling system make-up water will provide for control of corrosion, mineral scale, and biofouling (BEP 1999).

Sulfuric acid will be fed into the circulating water system to reduce alkalinity and control scaling. A bulk sulfuric acid storage tank and metering pumps will supply

the acid. An organic phosphate solution may also be used to further inhibit scale formation. Sodium chlorite or equivalent will be used as a biocide via a bulk storage tank and metering equipment.

WELL INTERFERENCE IMPACTS

Significant well interference impacts occur when a project's pumping causes substantial and unacceptable declines in groundwater levels in existing nearby wells. Power plants are water-intensive operations when water is used for cooling. If groundwater is used for cooling, the drawdown caused by project pumping usually causes drawdown that is significantly greater than drawdown for typical land and water uses.

For comparison, citrus crops in the Blythe area consume an average of 4.3 acre-feet per acre of water annually (DWR, 1986 and Snyder, 1999). In contrast, BEP will occupy only 76 acres (BEP, 1999a) and will consume an average of 2,500 acre-feet of water per year. This rate of consumption is equal to about 33 acre-feet of water per acre. Additionally, the project will require a maximum water extraction of 4,000 acre-feet per year or about 53 acre-feet per acre. This means that the BEP will consume 7 1/2 to 12 times more water per acre than equivalent acreage planted in citrus. Therefore, drawdown from the project wells and the corresponding well interference will be much greater than drawdown for water requirements for typical land uses, so the significant project pumping impacts on nearby groundwater users should be carefully evaluated. Private residential wells may be particularly vulnerable to the impacts of well interference because they tend to be smaller and shallower than agricultural or municipal production wells.

There are four adverse impacts that could occur owing to well interference.

25. Declines in groundwater levels in affected wells would increase the pumping lift and would correspondingly increase energy costs.
26. The productivity of affected wells would significantly decrease if the declines in groundwater levels significantly reduced the saturated interval from which the wells draw water.
27. Declines in groundwater levels in affected wells could require the lowering of well bowls to maintain efficient operation and to prevent equipment damage.
28. If the declines in groundwater levels caused the water levels in affected wells to drop below the depth of the well, the wells would go dry. Less dramatic, but with the same effect, if well interference caused groundwater levels to drop below the effective pumping depth of the nearby wells, the pumps would "suck air" and the wells would be unusable.

All of these potential adverse impacts could occur to wells located near the project site, especially because the aquifer in the Palo Verde Mesa is unconfined. In an unconfined aquifer, drawdown causes the aquifer to dewater within the radius of influence. Furthermore, there are no extensive clay layers to buffer shallow wells from the drawdown impact of pumping from deep production wells.

The extent of dewatering caused by pumping can be analyzed. The depth and radial influence of the drawdown are determined by the rate of pumping, the depth of the well screens (well construction specifications), and the local aquifer properties. The aquifer properties include storage, vertical and horizontal hydraulic conductivity, and the thickness of the screened interval of the aquifer. In an unconfined aquifer, the specific yield is the most important component of aquifer storage.

Aquifer properties are determined by the layering and thickness of coarse-grained materials, gravel and sand, and fine-grained materials, clay and silt. The composition of aquifers varies widely throughout an aquifer. To accurately determine the impact of pumping, calculations of well interference must be based on the aquifer properties within the area of concern. While regional impacts can be evaluated based on a representation of average regional aquifer properties, evaluation of the drawdown of a well field should be based on aquifer properties in the vicinity of the project wells and the nearby wells that would be most likely effected by project pumping.

Calculation of well interference is usually based on one of several standard equations, an estimate or calculation of aquifer properties, a representative pumping rate, a time period, and the location of the pumping well relative to the existing, nearby wells. Following well construction, on-site aquifer tests will be required to determine the site-specific aquifer parameters and the actual drawdown for the 3 production wells that are planned for the project. However, prior to project construction, a pre-project analysis of the potential well interference is needed.

Applicant's Analysis of Well Interference

Initially, the applicant provided a regional groundwater model to evaluate potential well interference. However, the model used average regional aquifer properties of transmissivity and storage and did not represent the localized aquifer properties that are specific to the Mesa or the project well site and the surrounding vicinity. Furthermore, the modeling results did not identify the impacts to nearby wells that would be specifically caused by the project pumping.

In response to staff requests, BEP subsequently provided a more specific analysis of the probable magnitude of well interference to be expected, based on available data and project well specifications (BEP 2000, Memo dated 9/26/2000). This second BEP analysis used the Theis nonequilibrium equation for a confined aquifer, which can also be applied to an unconfined aquifer if the drawdown is small, relative to the thickness of the aquifer. The parameter values used in the BEP analysis are listed in Table 4 and were derived as follows.

The time period used in the BEP analysis was 40 years, the life of the project. Aquifer transmissivity (T), which is equal to the thickness of the aquifer (b) times the effective hydraulic conductivity (K) of the aquifer materials (T= b x K), was based on an aquifer thickness of 500 feet and a range of 3 hydraulic conductivity values:

29. 779 feet per day (calculated average value),

30. 857 feet per day (110% of average value), and

31. 701 feet per day (90% of average value).

The aquifer storativity value used in the analysis was 32 percent, the reported storage capacity of Palo Verde Valley aquifer (USGS, 1973). The pumping rate of 2,997 gallons per minute was a calculated value, based on a radius of 5 feet and a drawdown of 2.5 feet. (It was unclear why this method was used to calculated pumping and why the analysis did not use the average or maximum pumping rate described in the AFC (BEP, 1999a)).

SOIL & WATER RESOURCES Table 4
Well Interference Parameter Values Used in BEP Analysis

Parameters	Value	Description
Aquifer Thickness	500 feet	
Avg. Hydraulic Conductivity (K)	779 feet/day	Calculated Transmissivity ($T = b \times K = 389{,}500$ feet^2 / day)
High Hydraulic Conductivity (K)	857 feet/day	Calculated Transmissivity ($T = b \times K = 428{,}450$ feet^2 / day)
Low Hydraulic Conductivity (K)	701 feet/day	Calculated Transmissivity ($T = b \times K = 350{,}550$ feet^2 / day)
Specific Yield (Sy)	32 percent	Storativity of Palo Verde Valley aquifer (USGS, 1973)
Pumping Rate (Q)	2997 gpm	Calculated (Equivalent to 4,835 acre-feet/year)
Time Period (t)	40 years	Life of the project

gpm - gallons per minute

BEP's analysis evaluated well interference at 7 existing wells near the project. The BEP analysis produced the following estimates of well interference (drawdown) in existing wells that would be caused by project pumping (Table 5).

SOIL & WATER RESOURCES Table 5
Results of BEP Well Interference Analysis
Drawdown Impact to Nearby Existing Wells (feet)

Existing Well	Distance from BEP Site to Existing Well (feet)	Well Interference (feet)		
		Average K Value	Low K Value	High K Value
Water Well #4	8,400	0.7	0.8	0.7
Water Well # 5	9,000	0.7	0.8	0.7
City Well	11,400	0.7	0.7	0.6
Water Well #9	12,800	0.6	0.7	0.6
Water Well #6	14,784	0.6	0.7	0.6
Water Well #7	16,400	0.6	0.6	0.5
Water Well #8	19,000	0.6	0.6	0.5

Based on this analysis, well interference would be minimal. However, staff has evaluated BEP's well interference analysis and identified three significant problems with the analysis.

One key error in the BEP analysis is the calculation of transmissivity. BEP calculates the transmissivity of the aquifer using a hydraulic conductivity derived from pumping tests in the Palo Verde area (USGS, 1973) and the total thickness of the aquifer. The USGS pumping tests evaluated the hydraulic conductivity of the screened intervals of the wells, which are located to correspond to the most productive layers within the aquifer. To this point, the values for hydraulic conductivity calculated by the USGS are derived by dividing the transmissivity of each test by the thickness of the perforated interval, not the thickness of the entire aquifer. According to BEP's average calculated transmissivity of 304,800 gpd/ft and hydraulic conductivity of 5,828 gpd/ft^2, based on the USGS values, the average thickness of the test intervals is 52 feet (304,800 gpd/ft divided by 5,828 gpd/ft^2 equals 52 feet). However, rather than using the average transmissivity of 304,800 gpd/ft in the well interference analysis, BEP recalculates transmissivity, multiplying the average hydraulic conductivity for the most permeable portions of the aquifer by 500 feet, the total thickness of the aquifer. The resulting transmissivity is 2,913,239 gpd/ft (389,500 ft^2/day). This calculated transmissivity, which is used in the well interference analysis, is higher than any of the transmissivities reported by the USGS (1973) and results in a significant underestimation of drawdown impacts on the nearby existing wells.

The second significant problem with the BEP well interference analysis is the range of values of hydraulic conductivity and transmissivity considered. Clearly demonstrated in results of the pumping tests reported by the USGS (1973), hydraulic conductivity and transmissivity can range in value over an order of magnitude in the Palo Verde area. The narrow range of plus or minus 10 percent of the average used in the BEP analysis significantly understates the range of hydraulic conductivity values that have been measured in the basin. The location of the BEP site increases the uncertainty in predicting the hydraulic conductivity because the highly productive gravel zones of the aquifer usually do not extend into

the Palo Verde Mesa beyond a mile from the valley. The BEP site is located just beyond the normal range of this gravel zone.

The third potential problem with the BEP well interference analysis is that it appears to fail to identify nearby domestic wells and to evaluate the impact of project pumping on these wells. Although the BEP's analysis identified the distance to 7 existing wells near the project, it did not provide map locations. The closest well identified by BEP is 8,400 feet from the project site. However, the Land Use section of the Preliminary Staff Assessment states that the nearest residence (16275 Hobsonway West) is located 3,465 feet west-southwest of the project site (PSA, 2000, Land Use, page 127). It is reasonable to assume that residences, as well as commercial enterprises, that are located in this area depend on groundwater for their water supply (Nelson, 2000). Figure 1 shows the location of this residence as well as several other residential/commercial sites located near the site. (This figure is based on PSA Land Use Figure 4, which also references the AFC 1.0-9). As discussed above, private residential wells would be particularly vulnerable to the impacts of well interference. Furthermore, because the aquifer is unconfined, the water table will eventually decline in the vicinity of the project in response to project pumping, which will increase the potential that nearby shallow wells would be significantly impacted.

Staff Analysis of Well Interference

In response to the problems staff identified in BEP analysis, staff prepared an independent analysis of well interference. Staff uses the same basic equation, the Theis nonequilibrium equation, but uses somewhat different input parameters. The parameter values used for the staff analysis are summarized in Table 6 and discussed below.

SOIL & WATER RESOURCES Table 6
Well Interference Parameter Values Used in Staff Analysis

Parameters	Value	Description
Minimum Transmissivity	64,000 gpd/ft	Lowest transmissivity reported for the Palo Verde Mesa (USGS, 1973, Table 5, page G68)
Maximum Transmissivity	290,000 gpd/ft	Highest transmissivity reported for the Palo Verde Mesa (USGS, 1973, Table 5, page G68)
Measured Storativity	32 percent	Storage capacity of Palo Verde Valley aquifer (USGS, 1973, page G72)
Average Pumping Rate	1,800 gpm	BEP 1999a, AFC page 7.13-9 (3,000 acre-feet/year)
Maximum Pumping Rate	2,500 gpm	BEP 1999a, AFC, Appendix 7.13 page 11 (4,000 acre-feet/year)
Distance to Nearest Well	3,465 feet	Nearest residence (16275 Hobsonway West) (PSA, 2000, Land Use, page 127)
1-mile radius	5,280 feet	2 other residences or commercial buildings
2-mile radius	10,560 feet	12 additional residences or commercial buildings
Time Period	40 years	Life of the project

gpm - gallons per minute
gpd/ft - gallons per day/foot

The staff analysis used the same values for storativity and time period that was used in the BEP analysis, but used different values for transmissivity, pumping and distance to the nearest well.

The staff analysis used a specific yield value of 32 percent, which is the storativity value reported for the Palo Verde Valley aquifer by the USGS (1973). Although this storativity value is probably too high, especially for the Palo Verde Mesa, this aquifer parameter has little effect on long-term drawdown. Given that the time period for the analysis is 40 years, storativity value of the aquifer was not an important issue.

The staff analysis used transmissivity values that were reported for wells located in the Palo Verde Mesa, rather than the Palo Verde Valley (USGS, 1973) to estimate the likely conditions at the project site. The transmissivities of materials in the Palo Verde Valley would tend to be higher than the transmissivities of material in the Palo Verde Mesa because river deposits are generally less permeable with distance from the river. Using an average or a range of transmissivities from wells located in both the Mesa and the Valley would tend to overestimate the likely transmissivity at the site. The two transmissivity values selected were based on the only two pumping tests in the Mesa that received a good rating by the USGS (1973). The higher transmissivity of 290,000 gpd/ft was from a well that is located one mile from the boundary between the Mesa and the Valley. This well probably taps into the gravel zone that borders this area. The lower transmissivity of 64,000 gpd/ft was from a well located over 4 miles from the boundary between the Mesa and the Valley and clearly reflect much less permeable conditions. The BEP site is located a mile and a half from the Valley, but beyond the usual range of the gravel deposits, so it is likely that the transmissivity in the BEP wells will be within the range of the two transmissivities reported by the USGS.

The staff analysis evaluated drawdown for two difference pumping rates. A pumping rate of 1,800 gpm (3,000 acre-feet/year) represents the average water use rate for the project that was estimated by BEP (1999a, AFC page 7.13-9). A second pumping rate of 2,500 gpm (4,000 acre-feet/year) was also evaluated, which represents the maximum water use rate that was estimated by BEP (1999a, AFC, Appendix 7.13 page 11).

The staff analysis evaluated impacts at 3 distances from the project site - 3,465 feet, 5,280 feet (1 mile), and 10,560 feet (2 miles). As discussed above, the nearest existing well is probably a domestic well that serves the residence (16275 Hobsonway West) is located 3,465 feet west-southwest of the project site (PSA, 2000, Land Use, page 127). In addition, there appears to be 2 other residences or commercial properties located within a mile of the project and another 12 residences or commercial properties located within a 2-mile zone. There is also land being actively irrigated for agriculture near the project site, but PVID reports that all of these lands are served with surface water by the district and would not be effected by project pumping (Smith, verbal communication, 10/19/2000).

Table 7 provides a summary of the results of the staff well interference analysis.

Soil and Water Figure 1

Blythe Energy Project – Generalized Land Use Within 2 Miles of the Project Site

SOIL & WATER RESOURCES Table 7
Results of Staff Well Interference Analysis
Drawdown Impact to Nearby Existing Wells (feet)

Pumping Rate (gpm)	**Average = 1,800**		**Maximum = 2,500**	
Transmissivity (gpd/ft)	64,000	290,000	64,000	290,000
Distance from Project Wells				
3,465 feet	14	4.1	19	5.7
5,280 feet	11	3.5	16	4.9
10,560 feet	6.9	2.6	9.5	3.5

Well Equation: Theis Nonequilibrium Equation
Time period = 40 years
gpm - gallons per minute
gpd/ft - gallons per day/foot

The results of staff's analysis of drawdown indicate that drawdown in nearby wells would be significantly more than the drawdown calculated by BEP. BEP analysis indicated that drawdown in the nearest wells would be less than one foot in all cases. In contrast, the staff analysis estimates that drawdown would be between 4 feet to 19 feet in the nearest well and between 2.6 feet to 9.5 feet in wells located 2 miles from the site.

In evaluating the significance of the impact of project pumping on nearby existing wells, it is important to recognize that all pumping causes drawdown and some degree of well interference. As discussed above, typical land uses also requires water. Based on average weather conditions in the Blythe area, the 76-acre project site, planted in citrus, would consume about 330 acre-feet of water per year, based on the average evapotranspiration for citrus of 4.3 feet per year (DWR, 1986 and Snyder, 1999).

(76 acres x 4.3 feet of water per year) = 327 acre-feet per year

Although the actual pumping rate would be equal to the applied water rate, this analysis assumes that any water that is not consumed by evapotranspiration recharges the aquifer through deep percolation on-site.

The following table (Table 8) shows the estimated drawdown impacts of pumping if the project site was to be planted with a citrus orchard and irrigated with groundwater compared to the range of drawdown that is likely to occur owing to pumping for the BEP.

SOIL & WATER RESOURCES Table 8
Net Drawdown Impact to Nearby Existing Wells (feet)
Water Consumption for Irrigation of 76 acres of Citrus
Compared to BEP Water Consumption

	Orchard		**BEP**		**BEP**	
Pumping Rate	**200 gpm (330 acre-feet/year)**		**Average 1,800 gpm (3,000 acre-feet/year)**		**Maximum 2,500 gpm (4,000 acre-feet/year)**	
Transmissivity (gpd/ft)	64,000	290,000	64,000	290,000	64,000	290,000
Distance from Project Wells						
3,465 feet	1.6	0.5	14	4.1	19	5.7
5,280 feet	1.3	0.4	11	3.5	16	4.9
10,560 feet	0.8	0.3	6.9	2.6	9.5	3.5

gpm - gallons per minute
gpd/ft - gallons per day/foot

This analysis clearly indicates that drawdown caused by groundwater consumption for a typical land use would be minimal as compared to the estimated impact of the groundwater consumption by BEP. Therefore, if wells are used to provide water to the nearby residences and commercial properties identified in the land use survey, the impact of the proposed BEP pumping may be significant.

The significance of the impact will depend on the actual drawdown that occurs and the size and depth of the wells that are effected. Following well construction, on-site aquifer tests will be required to determine the actual drawdown in the 3 project wells. Existing large production wells would experience declines in groundwater levels that would increase the pumping lift and would correspondingly increase energy costs. Low capacity, shallow wells could experience declines in groundwater levels that would significantly reduce the saturated interval from which the well draws water and would decrease the productivity of the well. Well interference caused by project pumping could require the lowering of well bowls to maintain efficient operation and to prevent equipment damage in affected wells. If the declines in groundwater levels caused the water levels in affected wells to drop below the effective pumping depth, wells would need to be deepened.

WATER QUALITY IMPACTS

The quality of its groundwater is generally good, although TDS is somewhat high. However, the applicant has also identified pre-existing low concentrations of various organic solvents in the groundwater. Through sampling of groundwater from existing wells in the vicinity of the site, the applicant has developed a profile of organic volatile chemicals, pesticides and nitrates that occur in low levels in the groundwater near the site (BEP 2000b).

The analyses included organic, volatile organic compounds, semi-volatile organic compounds, pesticides, polychlorinatedbiphenyls (PCBs), metals, and other physical and chemical parameters.

The following constituents that were identified in the project groundwater samples exceeded drinking water standards:

- Total Dissolved Solids (exceeded in 6 of 6 samples; 1,160 – 1,230 mg/L; regulatory limit (RL) of 500, 1,000 and 1,500 mg/L)
- Manganese (2 of 4; ND - 0.94 mg/L; RL of 0.05 mg/L)
- Nitrate as Nitrogen (3 of 4; 8.7 - 49 mg/L; RL of 10 mg/L)
- Fluoride (temperature dependent so may be exceeded in 2 of 4; 0.7 - 1.7 mg/L; RL of 1.4 – 2.4 mg/L)
- Specific Conductance (exceeded in 4 of 4; 1,710 – 1,910 µmhos/cm; RL of 900,

- Aluminum (1 of 2; ND – 1.3 mg/L; RL of 0.05 – 0.20 mg/L)
- Iron (2 of 2; 0.62 – 1.5 mg/L; RL of 0.30 mg/L)
- Sulfate (between recommended and upper drinking water limits in 4 of 4; 390 – 430 mg/L; RL of 250, 500, and 600 mg/L)
- Turbidity (1 of 2; 8.1 – 71 NTU; RL of 5 NTU)

The following volatile organics and semi-volatile organics were detected:

- Styrene (8.1 µg/L, method detection limit (MDL) of 0.5 µg/L)
- Ethylbenzene (0.5 µg/L, MDL of 0.5 µg/L)
- Toluene (2.7 µg/L, MDL of 0.5 µg/L)
  Total Xylenes (2.0 µg/L, MDL of 0.5 µg/L)
- Methylene Chloride (0.5 and 2.2 µg/L, MDL of 0.5 µg/L)
- 1,4 Dichlorobenzene (1.5 µg/L, MDL of 0.5 µg/L)
- Di (2 Ethyl Hexyl) Phthalate (3.4 µg/L, MDL of 3.0 µg/L)

Groundwater contaminants may produce impacts through concentration as cooling water is circulated in the cooling towers, and/or by volatilization of contaminates as they are evaporated during the cooling process. The potential impacts of concern may include air emissions resulting worker safety issues, or exposure of downwind receptors.

In response to a staff data request to at the September 18, 2000 workshop in Blythe, California (BEP 2000d), the Applicant provided, as shown in Soil and Water Table 9, the expected emission rates of organic chemicals associated with groundwater at the power plant site. Calculated groundwater release rates are below OSHA exposure levels for ethylebenzene, toluene, total zylenes, and 1,4-dichlorobenzene. Methylene chloride, styrene, and di-2-ethylhexyl-phthalate exceed the maximum daily exposure level. However, this analysis assumes that

one employee is exposed to all of any particular chemical released from the groundwater in his/her shift, which would be unlikely.

At these organic chemical concentrations, secondary impacts such as air emissions, worker safety issues, and downwind receptor exposure do not appear to be significant. For example, at an annual water use of 3,000 acre-feet, the maximum toluene emission would be approximately 1,000 grams or 35 ounces a year or 0.096 oz daily. The National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services has established a worker daily 8-hour exposure level of toluene at 100 ppm. This could equate to a maximum toluene exposure of about 0.90 grams or 0.032 ounces per day.

Although the current concentrations of groundwater contaminants should not cause any significant adverse impacts, the extent of groundwater contamination has not been assessed. Project pumping will induce groundwater gradients causing groundwater in the surrounding area to flow towards the project wells. If higher concentrations of contaminants exist in the subsurface near the project site, concentrations in the water produced by the project wells could increase. The potential for change in the concentration of groundwater contaminants in the project water supply will be addressed as Conditions of Certification (COCs).

WASTEWATER

Since the BEP will be using groundwater to supply the project, the quality of the water supplied to the project influences the nature of the waste stream. Substances contained in the supply water will be concentrated depending on the number of times it is cycled through the cooling system, and will result in higher concentrations of these substances in the wastewater discharged to the evaporation ponds. The quality of the groundwater is shown in Soil & Water Resources Table 10, along with that of the principal wastewater streams and the total wastewater stream from the evaporator to the evaporation ponds (BEP 1999).

SOIL AND WATER RESOURCES Table 9
RELEASE LEVEL AND EXPOSURE LEVEL FOR CHEMICALS

FOUND IN GROUNDWATER

Chemical	Solubility (g/100mL) *	Concentration In Ground water (mg/L)**	Permissible Exposure Levels (ppm)***	Vapor Density At STP (g/L)****	Total Daily Release from Groundwater in 8-Hour Shift (ounces)	Maximum Annual Release (ounces)	Maximum Daily Permissible Exposure Levels (ounces)
Methylene Chloride	1.320	2.2	500	2.9	0.026	29	0.147
Styrene	0.032	8.1	100	3.6	0.097	106	0.032
Ethybenzene	0.021	0.5	100	0.9	0.004	7	0.032
Toluene	0.053	2.7	100	3.1	0.032	35	0.032
Total Xylenes	0.018	2.0	100	3.6	0.024	26	0.032
1,4 Dichlorobenzene	0.008	1.5	75	5.1	0.018	20	0.039
Di (2 Ethyl Hexyl) Phthalate	0.000034	3.4	15	5.00	0.041	45	0.008

*** Source: www.chemfinder.camsoft.com**

**** Maximum Concentration Found in Groundwater**

***** Occupational Safety and Health Administration (OHSA), Permissible Exposure Level (PEL)**

****** Obtained from Cornell University Material Safety Data Sheet (MSDS) (www.msds.pdc.cornell.edu.com) with levels given at Standard Temperature and Pressure (STP)**

SOIL AND WATER RESOURCES Table 10
Expected Water Quality for Blythe Energy Project
(mg/L)[1]

Water Component	Well Water	Well Water RL*	Cooling Tower Blowdown	Cooling Tower Blowdown RL	Chiller Tower Blowdown	Chiller Tower Blowdown RL	Boiler Blowdown	Boiler Blowdown RL	Evaporator Recovered Water	Evaporator Recovered Water RL	Evaporator Brine to Evap Ponds	Evaporator Brine to Evap Ponds RL
Dissolved Silica	20.7	0.1	145	0.1	227.7	0.1	0.3	0.01	0.10	0.01	3,623	15
Dissolved Iron	0.62	0.02	4.34	0.02	6.82	0.02	0.1	0.001	0.00	0.001	109	3
Calcium	66.3	1	464	1	729.3	1	ND	0.01	0.31	0.01	1,603	150
Magnesium	10.7	1	75	1	117.7	1	ND	0.01	0.05	0.01	1,873	150
Sodium	276	1	1,870	1	3,036	1	0.3	0.01	1.25	0.01	48,300	150
Potassium	6.67	1	47	1	73.37	1	ND	0.01	0.03	0.01	1,167	150
HCO3	139	3										
CO2	ND	3										
Sulfate	288	0.5	2,703	0.5	3,168	0.5	0.1	0.005	1.81	0.005	50,400	75
Chloride	269	1	1,883	1	2,959	1	0.1	0.01	1.26	0.01	47,075	150
Fluoride	2.25	0.1	16	0.1	24.75	0.1	ND	0.001	0.01	0.001	394	15
Nitrate	3.4	1	24	1	37.4	1	ND	0.01	0.02	0.01	595	150
Boron	1	0.01	7	0.01	11	0.01	ND	0.001	0.00	0.001	175	1.5
Phosphorus	0.21	0.05	1.47	0.05	2.31	0.05	0.6	0.05	ND	0.05	37	7.5
TDS	1,064	10	7,448	10	11,704	10	2	1	5.00	1	186,200	1,500
Aluminum	1.3	0.05	9.1	0.05	14.3	0.05	ND	0.05	ND	0.05	228	7.5
Antimony	ND**	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.75
Arsenic	0.004	0.002	0.028	0.002	0.044	0.002	ND	0.002	ND	0.002	1	0.3
Barium	ND	0.1	ND	0.1	ND	0.1	ND	0.1	ND	0.1	ND	15
Cadmium	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.15
Copper	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	1.5
Lead	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.005	ND	0.75
Manganese	0.1	0.01	0.7	0.01	1.1	0.01	ND	0.01	ND	0.01	18	1.5
Mercury	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.001	ND	0.15
Nickel	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	0.01	ND	1.5
Selenium	0.01	0.005	0.07	0.005	0.11	0.005	ND	0.005	ND	0.005	2	0.75
Strontium	1.7	0.1	11.9	0.1	18.7	0.1	ND	0.1	ND	0.1	298	15
Zinc	0.1	0.01	0.7	0.01	1.1	0.01	ND	0.01	ND	0.01	18	1.5
pH	7.8		8.2		8.3		10		7.5		6.8	

[1] **Except for the well water, the listed concentrations and reportable limits are estimated**

*** RL = Reporting Limit**

**** ND = None Detected at Reporting Limit**

Source: Supplemental Table 7.13-11, AFC, Blythe Energy Project, Revised Feb. 2000.

The primary wastewater stream will be discharged from the plant's cooling and process systems, and will consist of HRSG and cooling water waste streams. A sanitary wastewater stream will be treated by an on-site septic system composed of catch basins and a leach field.

The largest single wastewater stream will be blowdown from the cooling water system. This waste stream is composed of water, which has been concentrated approximately seven times through recirculation in the cooling towers. Makeup water for this system will be obtained from groundwater and from water recycled from other plant processes. Chemicals will be added to the circulating water to control scaling, prevent biofouling of the cooling tower, and to prevent corrosion of the circulating water piping and condenser tubes.

Plant drains are located throughout the plant. Wastewater enters these drains from equipment washdown areas, equipment leakage drains, the CTG area, and the HRSG area. These waste streams are sent to an on-site wastewater system for eventual reuse in the cooling tower basin. Drains that collect oil or grease are handled separately through use of an oil/water separator, disposed of off-site, or recycled by a regulated facility, if appropriate.

Waste from chemicals in the chemical feed area drains will either be collected on-site or disposed of off-site, depending on the nature of the waste. These drains will be separated from other drains. Wastewater will be routed to a neutralization facility for pH adjustment, and then to the treatment facility for eventual reuse in the cooling tower basin.

Other waste streams include the inlet cooler blowdown, which will be subject to 7-10 concentration cycles, cycle makeup treatment wastes, and HRSG blowdown, which will contain dissolved solids and salts. Reject water from the reverse osmosis unit will also contain dissolved salts at a concentration approximately four times that of chiller cooling water (see Soil and Water Resources Table 10), along with some RO membrane treatment chemicals. Water for reuse in the plant will be recovered from this waste stream through the use of an evaporator. At the point where no additional water can be recovered with the evaporator, the concentrated brine will be discharged to the evaporation ponds.

The project's wastewater discharge to the evaporation ponds requires Waste Discharge Requirements (WDRs) from the Colorado River Basin Regional Water Quality Control Board (CRBRWQCB), as required by Title 27 of the California Code of Regulations. BEP has applied for WDRs by filing a Report of Waste Discharge (ROWD) with the CRBRWQCB. Draft WDRs were requested from BEP 30-days prior to the date scheduled for the FSA (October 25, 2000) and have been received and reviewed by CEC staff.

Each of the two ponds will be eight acres in size, which will allow for one pond to be taken out of service for removal of accumulated sludge, with the sludge being disposed of offsite at a solid waste disposal facility. These ponds will receive a waste stream from the evaporator of approximately 4 gallons per minute. Each

pond will have two cells, and the applicant's analysis indicates that this acreage will be adequate for both the plant wastewater flow and rainfall falling directly into the ponds. These ponds will have the following characteristics and sufficient depth to allow for (BEP 2000):

- Storage of the entire salt production for a period of 30-years plus 50 percent.
- Water level variations throughout the year due to changes in plant inflow, rainfall, and evaporation rates.
- Increases in water level when the evaporation rate is 90 percent of the mean evaporation rate for two successive years.
- Increases in inflow for a minimum period of two weeks should the brine concentrator and reverse osmosis equipment become inoperative.
- Increases in the water level during pond maintenance, which assumes one cell will need maintenance for a period of two months.
- Increases in water level in the case of a 100-year rainfall event on top of the maximum water level resulting from water level variations.
- Freeboard above the maximum water level to provide the greater of 24-inches or the height of the wind wave run-up plus 12-inches.

Two liners will be used, with a leak detection and removal system installed between the liners, and a 12-inch clay or similar material at the base. The outer and inner layers will be covered with high-density polyethylene (HDPE) geomembrane material. The pond influent system will be designed so that each cell can operate independently should a shutdown for maintenance reasons be necessary.

Requirements will include monitoring of:

- Evaporation wastewater basin.
- Evaporation sludge.
- Groundwater.
- Leachate collection and recovery system.
- Vadose zone.

The proposed location of groundwater and vadose zone monitoring sites are shown in the ROWD (BEP 2000c). The ROWD also discusses the type and frequency of sampling, and the constituents analyzed for each type of sample. Sample collection, storage, and analysis will be performed by State approved labs in accordance with U.S. EPA approved methods or by using the most recent edition of Standard Methods for the Examination of Water and Wastewater. The CRBRWQCB will approve all alternative methods of analysis.

DRAINAGE

The project area will cover approximately 76 acres, with about 30 acres occupied by the powerplant and switchyard. The project site is relatively flat with only a slight slope from the northwest to the southeast. Although some grading at the site is anticipated, it is not expected to alter the existing slope or drainage pattern.

Stormwater runoff from paved main plant areas will be directed to the evaporation ponds, while runoff from other locations on the property will be either contained in the bermed area located along the southeast of the property, or discharged to local drainage channels along Hobsonway and Buck Boulevard to the west of the site through an NPDES stormwater permit.

A stormwater and erosion and management plan for both the construction and operational phases of the project has been provided by the Applicant (NPDES Permit Application for Storm Water Pollution Prevention Plan for Industrial Operations).

COLORADO RIVER PIPELINE CROSSING

The natural gas pipeline that will supply the project with fuel will be interconnected with the El Paso Natural Gas Company. The interconnect for this pipeline will require that the pipeline traverse below the Colorado River. Horizontal directional drilling methods will be used to place the pipeline beneath the river, and will involve staging areas on both side of the river channel.

Although this drilling technique is intended to avoid any adverse impacts to the river channel bottom and to the water column itself, there is a risk that the river channel bottom could be penetrated and drilling muds and other associated drilling fluids could be released into the water column. There is concern that aquatic life could be adversely impacted though increased turbidity in the water column.

CUMULATIVE IMPACTS

The Bureau of Reclamation considers groundwater in excess of certain depths in the Mesa area to be, due to the direct hydrologic connection between groundwater and the river, to be Colorado River water. The staff concurs, as does the applicant, that the groundwater the project plans to use is primarily derived from the Colorado River through the Colorado River aquifer.

Although the impacts from the project on the regional water supply will be relatively small, water from the Colorado River has been fully allocated. For this reason, the cumulative impact of the project water use with regard to regional water management is an issue.

Owing to the hydraulic connection between the aquifer beneath the Mesa, the aquifer beneath the Palo Verde Valley and the Colorado River, the proposed project pumping will draw on the regional groundwater supply. Project pumping represents one more demand on the cumulative water demand within the Colorado River Basin.

In addition, project pumping will have a negative effect on the recovery of the groundwater levels in the Palo Verde Mesa. Groundwater levels in the Palo Verde Mesa declined significantly as a result of groundwater development in the Mesa during the 1970's and 1980's (BEP, 1999 section 7.13.1.4), as discussed previously. Although most of this irrigation was abandoned in the early 1990's, groundwater levels in the Mesa have not fully recovered. Groundwater pumping by

the proposed project would induce drawdown in the Mesa and add to the cumulative impact of other existing pumping on the Mesa, both past and present.

FACILITY CLOSURE

The project is expected to operate for a minimum of 30 years. Closure options range from “mothballing”, with the intent of a restart at some time, to the removal of all equipment and facilities.

The decommissioning plan will be submitted to the CEC for approval prior to decommissioning. Compliance with all applicable LORS, and any local and/or regional plans will be required. The plan will address all concerns in regard to potential erosion. It will be necessary for the groundwater wells used by the project to be closed following DWR procedures to minimize the potential for groundwater contamination and safety issues.

MITIGATION

APPLICANT’S MITIGATION

The applicant has concluded that all impacts related to erosion and sedimentation, to well interference, to groundwater contamination, and to drainage are insignificant or would be avoided with the implementation of the construct and operation procedures that BEP has proposed. To address cumulative regional water supply impacts, the applicant has proposed a Water Conservation Offset Program (WCOP) with the PVID. To address potential wastewater impacts, the plant will be configured for zero discharge.

MITIGATION OF CUMULATIVE IMPACTS-WATER SUPPLY JURISDICTIONAL ISSUES

The applicant has proposed a WCOP (USBR 2000c) with the PVID to address the issues of Colorado River water accounting (BEP 2000b Data Request 121) and cumulative regional water supply impacts. The WCOP has been developed and coordinated with both the PVID and the USBR, and is intended to conserve the same amount of water (3,000 acre-feet/year) that the project will consume. The BEP is within the PVID’s boundaries for Tier 3 lands, and is entirely within the USBR’s accounting surface zone. This water will be accounted for by PVID and the USBR as Colorado River water, and water that is below the accounting surface will be accounted for against PVID’s water right entitlement.

The PVID water right for Colorado River water is not for a discrete quantitative amount, but rather for all water required to supply reasonable and beneficial needs on a gross area of 120,500 acres (104,500 acres of Priority 1 lands in the Palo Verde Valley and 16,000 acres of Priority 3 lands on the Palo Verde Mesa). The PVID, Yuma Project, Imperial Irrigation District/Coachella Valley Water District have the first three priorities to Colorado River water in the amount of 3.85 MAF. This amount was allocated by the Seven Party Agreement (BEP 1999).

According to the Bureau of Reclamation (2000a; 2000c) and the Palo Verde Irrigation District (Van Dyke 2000b) the proposed WCOP does satisfy the requirements of the PVID and USBR concerning LORS issues related to the USBR's accounting for the use of Colorado River water. Authorized use of Colorado River water requires either a contract with the USBR or an agreement with a contractor of the USBR (USBR 2000c). Specifically, if the WCOP is in effect the USBR considers that the water used by the BEP will be accounted for under the PVID's entitlement to Colorado River water.

In a response to a letter from CEC to the USBR (2000c), the USBR has stated its position as follows:

> "…an entitlement consistent with the existing Law of the River is required for any water pumped from wells that will be replaced by Colorado River water. An offset program like that envisioned for this project will satisfy that requirement as long as the lands involved are within the PVID, the water use is included as part of the PVID's reported consumptive use to Reclamation, and the consumptive use is consistent with the California priority system for the use of Colorado River Water. The July 17, 2000 proposal: 'Water Conservation Offset Program for the Blythe energy Project', meets these

Based on this USBR response, staff has determined that the WCOP is a requirement for authorized use of Colorado River water by the BEP for its power plant operational needs.

The USBR is currently in the process of developing a policy to regulate unauthorized diversions of Colorado River water, and the accounting surface model is the method that will eventually be used for this purpose at some point in the future, and presumably within the operational lifetime of the BEP (USBR 2000a, 2000c). The USBR's position is stated as since the BEP wells will develop a cone of depression of the groundwater elevation that will likely extend into the accounting surface, that this groundwater use would be accounted for as part of the PVID's Colorado River entitlement. The BEP does not dispute that this groundwater is derived from the Colorado River, and is included within the western extent of the accounting surface. The letter encourages "the development of a water conservation offset program" should the project proceed (USBR 2000a).

The BEP is located within the Tier 3 lands of the PVID, which includes a total of 16,000 acres on the lower Palo Verde Mesa and for which the PVID has rights to divert surface water for these 16,000 acres. The WCOP has been designed to mitigate the 3,000 ac-ft./year water use of the project. The principal components of the WCOP include (USBR 2000c):

32. The Blythe Energy Project will construct up to three wells on-site to develop the required pumping capacity and redundant systems needed for the project. The wells will pump groundwater from beneath the project site, and will be equipped with continuously recording meters to maintain accurate and complete records of the volume of water pumped.

33. The Blythe Energy Project will acquire lands and/or irrigation rights of Tier 3 mesa lands designated for irrigated agricultural use through purchase or lease. These irrigation rights will be retired for the life of the power plant project. Alternatively, if adequate Tier 3 lands are not available, lands and/or irrigation rights of PVID Tier 1 lands will be acquired and retired. At the Board's direction, if Tier 1 are to be utilized, the land may be fallowed on a seasonal rotational basis to offset the volume of water pumped for use at the power plant, so that 50 percent of the land will always remain in agricultural use. This is PVID's preferred alternative.

34. A consumptive water use volume of 4.6 acre-feet per acre will be used as stipulated by PVID as the basis of accounting for the Program. This consumptive use fraction has been previously used in two water transfers approved by the PVID Board.

35. The acreage of land retired from irrigation will be documented in an annual submittal from the power plant operator to the PVID. If the option for rotational fallowing of Tier 1 lands is exercised, the report will identify the fallowed lands, times of fallowing, and lease agreements for continued farm use of the non-fallowed 50 percent of lands.

36. The water balance for this project is completely inter-district (sic); no lands or water outside of the existing PVID boundaries are involved, and no surface water will be physically re-routed from its present use at one site to a new use at another site.

37. The Offset Program includes a reliable method of verification for both groundwater use at the Mesa, and for conservation offset of an equivalent amount of Tier 3 (or Tier 1) surface water entitlement that could have otherwise been diverted under the District's Tier 3 (or Tier 1) entitlement. PVID's Tier 3 entitlement for the acreage designated pursuant to this program will be retired for the life of the Blythe Energy Project.

As stated by the USBR (2000c), the WCOP appears to meet the requirements of the USBR for accounting for Colorado River water, and the WCOP would provide for authorized use of this water by BEP. Such use would not reduce either the PVID's current entitlement, or that of the water right holders subordinate to the PVID. However, whether or not the WCOP would actually conserve the same amount of water consumed by the project is dependent on the criteria used for the selection of the lands to be included in the program.

The Applicant has proposed to address the issues of regional groundwater supply impacts with the WCOP. BEP has concluded that there will be no net cumulative impact on the regional water supply with the implementation of the proposed WCOP. However, the WCOP does not provide adequate detail on the criteria used for the selection of agricultural lands to be included in the program, which does not allow for the evaluation of the cumulative impacts of water use over the life of the project.

CEC staff stated in PSA that it intends to review the WCOP with regard to the appropriateness of the coefficients used to calculate the water use attributed to

these lands, and for the irrigation and crop history of the lands proposed for fallowing, with the USBR being consulted as required. However, neither the lands to be fallowed/retired, nor the criteria for lands to be included in the WCOP have been made available to staff for evaluation. On several occasions the Applicant has been asked to consider the submission of such information as confidential business information should there be any concern for adverse impacts on the negotiations for such lands. At the Status Conference on October 10, 2000, CEC staff again made the Applicant aware of the continued concerns regarding the water conservation aspects of the WCOP as currently proposed.

The applicant has not provided any other evaluation of the cumulative project impacts on the regional water supply, since it was anticipated that the WCOP would likely address these regional impacts. Although the WCOP will not mitigate the project's localized impact on groundwater level declines and recovery in the Palo Verde Mesa area, it presumably could mitigate the net effect on water consumption on a regional basis if properly designed and implemented to do so; staff is unable to evaluate the water conservation aspects of the WCOP without adequate information.

WASTEWATER AND STORMWATER

The plant is configured as a zero discharge power plant. All wastewater is discharged to lined evaporation ponds, with the details discussed under Impacts. A Report of Waste Discharge was submitted to the CRBRWQCB requesting that draft Waste Discharge Requirements be provided for the project. A preliminary review of the ROWD was completed by the CRBRWQCB, and several recommendations were made to modify the design of the evaporation ponds. The CRBRWQCB has since produced draft WDRs for the project, which includes these recommendations. These WDRs require the BEP to be in compliance with Division 7 of the California Water Code and the provisions of the Federal Clean Water Act.

BEP has provided a stormwater management and erosion control plan for the project. The BEP has also completed an NPDES Application for Storm Water Pollution Prevention Plan for Construction and an NPDES Application for Storm Water Pollution Prevention Plan – Industrial Operations for the operational phase of the plant.

STAFF'S MITIGATION MEASURES

Staff's discussion of mitigation includes the water resource issues and the issue of cumulative regional water supply impacts.

WATER RESOURCES

Staff has recommended mitigation measures for potential adverse impacts from well interference, based on the independent analysis performed by staff, and groundwater monitoring to ensure that adverse water quality impacts do not occur.

WELL INTERFERENCE

Based on the results of the well interference analysis performed by the staff, drawdown impacts to nearby wells could be significant, especially to shallow, low

capacity wells. To determine the actual need for mitigation, on-site aquifer tests will be required to determine the site-specific aquifer parameters and the actual drawdown for the 3 production wells that are planned for the project following well construction. Mitigation for significant drawdown impacts would include, as needed, reimbursement for increase energy costs associated with increased pumping lift, lowering well bowls, and deepening impacted wells. Mitigation would be required to restore the current water supply capacity and/or compensate for increased costs to existing well owners that are significantly impacted by project pumping.

Staff recommends that all residential, commercial, municipal and agricultural landowners be notified within a 2-mile radius of the BEP site. Staff further recommends that all groundwater users be compensated accordingly if

38. their water supply well is located within a 2-mile radius of the proposed project site and
39. the results of the BEP pumping tests and the resulting site-specific well interference analysis indicate that their well water levels will decline by 5 feet or more.

WATER QUALITY

The Blythe Airport property includes a landfill that lies adjacent to the project site, the details of which are described under Impacts. This landfill was used during World War II to dispose of solid waste at the military base that occupied that land before the airport was built. The landfill sits upgradient from the project site, making it a possible groundwater contamination concern.

During the workshop in the City of Blythe on May 4, 2000, CEC staff and the Applicant agreed to a complete suite of chemical analyses which approximates the analyses conducted for a Phase II Environmental Site Assessment. The analyses included organic, volatile organic compounds, semi-volatile organic compounds, pesticides, polychlorinatedbiphenyls (PCBs), metals, and other physical and chemical parameters.

Several substances were detected above drinking water MCLs, with several others detected at relatively low concentrations. However, it is unknown what the effects on contaminant concentrations and the direction of movement during the prolonged pumping of groundwater will be when the BEP becomes operational. Although no water quality mitigation is recommended at this time, ongoing monitoring is needed. Staff will recommend a Condition of Certification that will require an annual chemical analysis for volatile and semi-volatile organic substances for the first 5-years of operation, with the results to be reported to the CEC Compliance Program Manager.

MITIGATION OF CUMULATIVE REGIONAL WATER SUPPLY IMPACTS

BEP has proposed that the WCOP will mitigate the impact of project water consumption on a regional basis, i.e. the net impact would be zero. Water consumed by the BEP would be fully offset under the terms of the WCOP, and the regional water balance would not be affected.

The WCOP document was requested for review by CEC staff, and the document was provided to CEC as an attachment to the USBR letter responding to staff's request for a determination of USBR's jurisdiction over the water the BEP will consume (USBR 2000c). CEC staff has reviewed the WCOP for the appropriateness of the key provisions of a conservation offset program, which should include the selection of the variables used to determine the water use of the lands being fallowed, the selection criteria for the lands to be fallowed, the cropping and irrigation history of the lands, and the terms of the agreement with the landowners which will ensure that the same amount of water used by BEP will likely be conserved by the WCOP.

Based on this review, staff has concluded that the WCOP, as currently written and discussed by the Applicant, does not provide adequate information necessary to evaluate the capacity of the WCOP to offset the project's water use either regionally or within the Palo Verde Mesa. The WCOP does not identify the lands to be fallowed that would allow for the cropping and irrigation history to be reviewed. The Applicant was informed of the staff concerns with regard to these various aspects of the WCOP at workshops held on July 26, 2000, September 18, 2000, in the PSA published on September 1, 2000, and at the status conference held on October 10, 2000.

Regarding the identification of the actual lands to be fallowed, the Applicant was advised that this information could be provided for staff review as confidential business information if identification of the actual parcels under consideration for the WCOP would adversely affect negotiations with the landowners. For reasons unknown, the Applicant chose not to provide information under these conditions.

Therefore, staff has insufficient information regarding key aspects of the WCOP to recommend any conditions of certification at this time. However, staff will reiterate in the Conclusions and Recommendations section the components of the WCOP that are either inadequate or inadequately discussed in sufficient detail to allow it to be evaluated.

COMPLIANCE WITH APPLICABLE LORS

In this section staff addresses the compliance of the proposed BEP with applicable laws, ordinances and standards, including compliance with State Water Resources Control Board (SWRCB) Policy 75-58, entitled Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling.

SWRCB POLICY 75-58

This policy states that the source of power plant cooling water should come from the following sources in order of priority:

40. Wastewater being discharged to the ocean.
41. Ocean water.
42. Brackish water from natural sources or irrigation returns flow.

43. Inland wastewaters of low total dissolved solids.

44. Other inland waters.

Clearly, the first two sources listed are not reasonable options for the proposed project. Nor do irrigation return flows appear to represent a reliable or sufficient water source, since they are accounted for as return flows to the Colorado River by the PVID and the USBR. Wastewater treatment effluent is also likely not available in sufficient quantities, and appears to be included as return flows to the Colorado River by the PVID. Furthermore, this water would need to be treated to tertiary levels before use as cooling tower make-up.

The groundwater the project intends to use is relatively high in total dissolved solids, but has not been determined by staff to be brackish at this time. Staff is not aware of any other natural sources of brackish water within the area. Staff is not aware of other wastewater streams in the project vicinity that are sufficient in volume for project use. Sources of inland water within the project vicinity other than the proposed groundwater are limited to surface water flows resulting from the diversion of Colorado River water, which could likely have greater environmental impacts than the proposed source.

DRY AND WET/DRY COOLING

SWRCB Policy 75-58 also states that "studies associated with power plants should include an analysis of the cost and water use associated with the use of alternative cooling facilities employing dry, or wet/dry modes of operation."

Cooling towers reject heat from a power plant's steam cycle to condense the steam exiting the steam turbine and to maintain the lowest possible condenser vacuum. The heat rejection mechanism in wet cooling towers is primarily the evaporation of water to the atmosphere. Dry cooling towers transfer heat consecutively through heat exchangers, while wet/dry hybrid cooling towers use combinations of the two mechanisms to reject heat to the atmosphere.

Cooling towers use forced or induced draft to move ambient air through the tower. The ambient air temperature, humidity, velocity, and mass flow rate affect the heat transfer rate and, ultimately, the efficiency of the cooling tower. The cooling tower heat rejection efficiency and pump and fan loading affect the overall power plant thermal efficiency and output.

The fundamental differences between wet, wet/dry hybrid, and dry cooling towers are initial capital costs and heat rejection effectiveness. Dry cooling towers are two to three times more expensive than a wet system. Hybrid systems fall in the range between the two, depending upon the ratio of "wet to dry" cooling in the hybrid design. In general, the cost differences are due to the dry condenser, or heat exchanger, and taller and larger structures for dry and hybrid cooling systems.

Despite the significant cost differences, dry and hybrid cooling systems are occasionally employed because they use less water and reduce the occurrence of visible plumes compared to wet systems. For the Sutter Power Project (97-AFC-2), a combined cycle project, the switch from conventional wet cooling towers to dry

cooling represented a 95 percent reduction in project water demand. For wet/dry hybrid systems, the reduction in water use is dependent upon the percentage of dry versus wet. For certain applications, the wet/dry cooling systems may also be parallel in configuration, in which case the wet and dry systems are separate, with each being independently capable of cooling the plant.

Dry and hybrid cooling systems are, however, less efficient in rejecting heat, generally have higher parasitic (fan) electrical loads, and can create a higher pressure (temperature) in the steam turbine condenser. Both of these factors decrease the thermal efficiency and power output of the project.

The effects are not as significant on a combined cycle project as compared to a steam-cycle only project, in that the cooling system only affects the steam side of the combined cycle project and not the performance of the gas turbine. The effect would be greater at higher ambient temperatures because the relationship is non-linear. Additional fuel can be burned to overcome some or all of the loss of output, but the fuel will be an additional operating cost and will produce additional air pollutant emissions. Other characteristics include, for example, higher noise impacts for dry or hybrid cooling systems relative to a wet system due to larger fans to move more ambient air through the tower.

A comparison of dry, hybrid, and wet cooling towers ultimately depends on the specific needs of the proposed application. Dry and hybrid-cooling systems provide benefits in the areas of water use, plume visibility, and wastewater discharges, but with some performance degradation and additional costs. Additionally, dry and hybrid cooling can be noisier, use additional fuel, or be a more visually obtrusive structure.

The policy states that, where the SWRCB has jurisdiction, use of fresh inland waters for power plant cooling will be approved only when it is demonstrated that the use of other water sources or other methods of cooling are environmentally undesirable or economically unsound. Based upon the use of dry cooling by other existing and proposed power plants here in California and elsewhere, the use of dry cooling or wet/dry cooling is technologically feasible.

The original dry cooling estimates submitted by the Applicant for water usage/wastewater discharge did not allow for a direct comparison for the wet and wet/dry cooling options. The Applicant eliminated the evaporator (brine concentrator) for the dry cooling option, which resulted in a greater flow of wastewater into the evaporation ponds, and then simply enlarged the evaporation ponds to accommodate this increased wastewater flow. This inflated the water usage for the dry cooling option, since the additional wastewater being discharged to the evaporation ponds is not being recovered by the brine concentrator and reused in the plant.

The Applicant was asked to revise the response to Staff Data Request 118 and include the use of an evaporator with the dry cooling option so that a direct comparison can be made for all cooling options. AFC Tables 116a and 118 were revised to reflect using an evaporator to reduce evaporation pond size for the dry

cooling alternative. This change allows direct comparison of the wastewater handling impact between the various cooling options using the same technologies.

The capital cost of the dry cooling system and related equipment decreased but is still about twice the capital cost of the wet cooling system as can be seen in the revised Table 116a. Operation and maintenance costs of the dry cooling system increased to levels slightly lower than the other options as shown in revised Table 118. The Total Capital cost for wet cooling was $15.4 M, $20.7 M for wet/dry, and $30.2 M for dry cooling (BEP 2000d).

Using inlet air cooling, the net plant output is reduced by approximately 21 MW at 110°F and by 13 MW at 74°F when using air cooled condensers (dry cooling). This information was not provided for the wet/dry hybrid option, and the response is not adequate for comparative purposes. Water usage/wastewater discharge (gallons per minute) was 2,101gpm/7gpm for wet cooling, 1,820gpm/6gpm for wet/dry hybrid, and 139gpm/2 gpm for dry cooling.

Based upon these criteria, reasonable alternative sources of water for project cooling are not available or of sufficient quantities. Furthermore, the use of alternative cooling technologies would cost significantly more than the proposed use of wet cooling. Therefore, staff concludes that the project complies with this policy.

COLORADO RIVER WATER

Based on the letter received from the USBR (USBR 2000c), the WCOP does appear to comply with the requirement for authorized use of Colorado River water by the BEP. Such authorized use requires an entitlement that, except for Federal reserved rights, includes a contract with the Secretary of the Interior, which is accomplished through the USBR. This authorized use applies to Colorado River water that is either derived through diversion of surface water, or as in the case of BEP, though pumping of groundwater which is replaced by Colorado River water. The USBR has indicated that the WCOP will satisfy the requirement for authorized use as long as the lands involved are within the PVID, the consumptive water use is reported and included as part of PVID's consumptive use, and the consumptive use is consistent with the California priority system for the use of Colorado River water.

CONCLUSIONS AND RECOMMENDATIONS

Staff has sufficient information at this time to make findings and provide recommendations for all aspects of the proposed project except the water conservation aspect of the WCOP. Staff is unable to recommend the project for Certification until the water conservation aspects of the WCOP have been resolved.

The principal areas adequately addressed by the project are summarized below:

45. Through communication with the USBR (USBR 2000c) the jurisdictional issues related to the project's use of Colorado River water have been resolved. The WCOP will allow the project to comply with the requirement for authorized use of Colorado River water by an agreement with PVID.

46. Staff has concluded that the proposed project groundwater pumping will not result in any unmitigated adverse impacts to the operation of neighboring wells if all of the recommended conditions of certification are adopted by the Commission and implemented by the applicant. The one exception to this is the determination of how increased costs to owners of neighboring wells resulting from well interference will be compensated. These costs will result in an increase in energy costs resulting from the increase in lift, the cost of well-bowl lowering, and the cost of well deepening.

47. The applicant has addressed the need to analyze the potential impacts of the project's use of contaminated groundwater contaminated with low concentrations of organic chemicals. The staff and the applicant concur that no water quality mitigation will be required this time. However, a Condition of Certification will address future information needs related to this issue.

48. The alternative cooling analysis has been revised to allow for a direct comparison of the cooling options. The information is now considered to be adequate.

49. The Applicant has demonstrated the ability to comply with the requirement for obtaining draft WDRs from the Regional Water Quality Control Board, and has generated applications for stormwater and erosion control permits.

UNRESOLVED ISSUES

The WCOP, as mitigation for the project's water use, is incomplete to the extent that staff is unable to determine if it is capable of providing for the conservation of the same amount of water the BEP will consume. Staff is not able to include Conditions of Certification related to the WCOP until the following major issues requiring additional information and explanation by the Applicant are addressed:

50. The WCOP does not contain the criteria for selection of the lands to be fallowed, nor does it identify the lands to be included in the program. Typically, such plans, e.g., the Palo Verde Test Land Fallowing Program (MWDSC 1995) being a good example of a plan suitable for the Blythe area, contain a requirement for the lands to have a demonstrated recent cropping and irrigation history. Should lands be included in the WCOP that have not been used for irrigated agriculture relatively recently, no conservation will likely result. For example, if lands are "fallowed" which have not been used for irrigated agriculture for the past 20 years and are not likely to be used for such purposes in the foreseeable future, actual conservation of water will not be realized. While the MWDSC in their 1992-94 study used 4 out of the last 5 years as selection criteria for lands included in that program, a reasonable requirement for a long-term conservation program would be for the lands to have been used for <u>irrigated</u> agriculture for 5 out of the past 10 years. In this case for lands entering the program, this could be any 5 out of most recent 10 years, and they would not need be consecutive years. The MWDSC used PVID water toll records to verify that all lands met the criteria for recent agricultural production.

51. The WCOP does not contain any assurance that additional lands would not be put into production by the same landowner participating in the WCOP by

fallowing land. The issue here is that when lands are taken out of current production the landowner is generally left with an excess capacity to grow additional crops, i.e., labor, expensive equipment, or other infrastructure that is now idle and available for use. The WCOP should address through the fallowing agreement the possibility that a participating landowner may put additional acreage into production, either his own or leased acreage, to utilize any existing excess capacity.

52. A water conservation figure of 4.6 acre-feet per acre of fallowed land has been agreed upon by the BEP, the PVID, and the USBR. While this figure was used in the MWDSC fallowing program within the PVID and generally seems reasonable for this region, there is no requirement for the lands to be fallowed to actually meet this requirement. This value appears to be an average of the amount of water applied to the lands within the PVID, which should be sufficient when combined with reasonable criteria for the selection of lands to be included in the WCOP.

53. Fallowing of agricultural lands is generally an expected and recurring part of crop production. A provision excluding lands from participation in WCOP that are being scheduled for fallowing as part of the agricultural production cycle would ensure actual water conservation. Should Tier 1 lands be included in a rotational fallowing scheme rather than the permanent fallowing of Tier 3 lands, a provision addressing this issue would be particularly important.

54. The WCOP does not appear to preclude lands participating in the fallowing program from being developed or put to other uses that may consume water. While this does not appear to be a current concern given the past, recent, and near-term projected growth characteristics of the Blythe area, the expected productive life of the power plant is a minimum of 30 years, which is a sufficiently long enough period of time for unexpected growth to occur. The WCOP should address the need for fallowing additional lands should activities involving consumptive uses of water occur on lands included in the fallowing program.

CONDITIONS OF CERTIFICATION

These conditions should not be considered as a complete list of COCs for the project. COCs have not been developed for WCOP for the reasons identified in the Conclusions and Recommendations section.

SOILS & WATER 1: Prior to beginning any clearing, grading or excavation activities associated with construction of any project element, the project owner shall obtain Energy Commission staff approval for a Storm Water Pollution Prevention Plan (SWPPP) as required under the General Stormwater Construction Activity Permit for the project.

Verification: Thirty days prior to the start of any clearing, grading or excavation activities associated with the construction of any project element, the project owner will submit a copy of the Storm Water Pollution Prevention Plan (SWPPP) to the Energy Commission Compliance Project Manager (CPM) for review and approval. Approval of the plan by the Energy Commission CPM must be received prior to the

initiation of any clearing, grading or excavation activities associated with construction of any project element.

SOILS & WATER 2: Prior to beginning any clearing, grading or excavation activities associated with construction of any project element, the project owner shall obtain staff approval for a final erosion control and revegetation plan that addresses all project elements. The final plan to be submitted for staff's approval shall contain all the elements of the draft plan with changes made to address any staff comments and the final design of the project.

Verification: The erosion control and revegetation plan shall be submitted to the Energy Commission CPM no later than thirty days prior to the scheduled construction start date. Approval of the final plan by the Energy Commission CPM must be received prior to the initiation of any clearing, grading or excavation activities associated with construction of any project element.

SOILS & WATER 3: No later than sixty days prior to commercial operation, the project owner, as required under the General Industrial Activity Storm Water Permit, the project owner will develop and implement a Storm Water Pollution Prevention Plan (SWPPP). Approval for the final Industrial Activities SWPPP must be obtained from Energy Commission staff prior to commercial operation of the power plant.

Verification: Two weeks prior to the start of commercial operation, the project owner will submit to the Energy Commission CPM a copy of the Storm Water Pollution Prevention Plan (SWPPP) prepared under requirements of the General Industrial Activity Storm Water Permit. The final plan shall contain all the elements of the draft plan with changes made to address staff comments and the final design of the project.

SOILS AND WATER 4: The project owner will record on a monthly basis the amount of groundwater pumped by the project. This information will be supplied to the Energy Commission, the Palo Verde Irrigation District, and the United States Bureau of Reclamation.

Verification: The project owner will submit a groundwater use summary to both the CPM and the PVID on an annual basis for the life of the project. The annual summary will include the monthly range, monthly average, and total groundwater use by the project in both gallons-per-minute and acre-feet. For subsequent years the annual summary will also include the yearly range and yearly average groundwater use by the project. This same information will be provided to both the PVID and the Lower Colorado Regional Office of the USBR. Any significant changes in the water supply needs for the project during construction or operation of the plant, will be noticed in writing to the CPM at least 90-days prior to the effective date of the proposed change.

SOIL & WATER 5: The project owner shall conduct aquifer tests in each new project well to determine the site-specific aquifer parameters of transmissivity and storativity. Each well shall be tested separately, using one of the other new wells or one of the existing BEP monitoring wells and available local wells as observation wells. The test period shall long enough to produce stable, measurable drawdown in the observation wells.

Verification: The project owner shall submit a report describing the aquifer test to the CEC CPM and Colorado River Basin RWQCB 30 days prior to the startup of project operations. The report shall include a description of the results of the test, the test procedure, the raw data, and the calculation of aquifer parameters.

SOIL & WATER 6: The project owner shall recalculate the well interference impacts for existing wells within a 2-mile radius of the project. The analysis shall use the new aquifer parameter values developed from the aquifer testing of the new project wells and shall evaluate drawdown impacts for the following 2 conditions:

55. the anticipated average project pumping rate for a 40-year period,
56. the anticipated maximum project pumping rate for a 4-month period, and

Verification: The project owner shall submit a report to the CEC CPM 30 days prior to the startup of project operations that describes the calculation of well interference. The description shall include a listing of all the parameters used, the calculation method and the location and distance of impacted wells relative to the project wells.

SOIL & WATER 7:

The project owner shall reimburse impacted well owners for increased energy costs associated with the increase in pumping lift, the cost of well-bowl lowering, and well deepening. The project owner shall notify all residential, commercial, municipal and agricultural landowners within a 2-mile radius of the BEP site. The project owner shall compensate all groundwater if (1) their water supply well is located within a 2-mile radius of the proposed project site and (2) the results of the BEP pumping tests and the site-specific well interference analysis indicate that their well water levels will decline by 5 feet or more.

The details of this condition need to be developed prior to certification.

Verification: The details of verification of payment for well interference impacts need to be developed in consultation with the applicant and other interested parties prior to certification to ensure all impacts are fully mitigated.

SOIL & WATER 8: The project owner shall measure groundwater levels in the on-site monitoring well on a monthly basis for the first six months following the project start up and thereafter on a quarterly basis.

Verification: The project owner shall submit a quarterly report of the groundwater level monitoring to the CEC CPM on a quarterly basis.

SOILS & WATER 9: The Applicant will obtain a final Waste Discharge Requirement (WDRs) issued by the Colorado River Basin Regional Water Quality Control Board (CRBRWQCB) for the project's wastewater discharge.

Verification: The Applicant will obtain and provide a copy of final WDRs issued by the CRBRWQCB for the project's wastewater discharge to the evaporation ponds to the CPM at least 60-days prior to the evaporation ponds receiving any wastewater discharge. Any change to the design, construction, or operation of the ponds permitted by the WDRs will be noticed in writing to both the CPM and the

CRBRWQCB during both construction and/or operation. The project owner will notify the Energy Commission in writing of any changes to the WDRs that are instituted by either the project owner or the CRBRWQCB, including WDRs permit renewal. The project owner will provide the CPM with the annual monitoring report summary required by the WDRs, and will fully explain any violations, exceedances, enforcement actions, or corrective actions.

SOILS & WATER 10: The Applicant will provide the results of an annual analysis of groundwater from the Northeast and Southeast monitoring wells (as identified in the BEP response to Staff Data Request 212), and from at least one of the wells constructed to supply the project with groundwater. The analytes will include the volatile and semi-volatile organic compounds reported in the response to Staff Data Request 212.

If there is a significant increase in the concentration of groundwater contaminants, the need for additional pretreatment of water will be reassessed. The need for pretreatment of groundwater prior to use by the project would be based on incompatibility with the WDRs, exceedances of air emissions standards, worker safety standards, or standards of exposure of downwind receptors.

Verification: The results of the required analyses will be provided to the CPM in a summary format similar to that of the Applicant's response to Staff Data Request Attachment 212B, on an annual basis beginning after one year of operation on the anniversary date the BEP begins operation and continuing for a total of 5-years. The need for additional pretreatment of water will be assessed on an ongoing basis. The need for continued monitoring will be reassessed at the end of the 5-year period.

SOILS & WATER 11: The Applicant will submit a workplan that discusses in detail all activities related to the placement of the natural gas pipeline underneath the Colorado River. This workplan will identify all principal materials, methods, and equipment that will be used for the pipeline project, and will address contingencies for both preventing and responding to the accidental penetration of the channel bottom and release of drilling fluids or muds, to include bentonite clay, into the water column of the Colorado River. The workplan will also identify and demonstrate compliance with all LORS associated with the pipeline project, to include Section 10 of the Rivers and Harbors Act, Sections 402 and 404 of the Clean Water Act (if applicable) administered by the U.S. Army Corps of Engineers, Section 401 of the Clean Water Act Water Quality Certification (if applicable) administered by the CRBRWQCB, and California Fish and Game Code Division 2, Chapter 6, Sections 1600 – 1607, Section 1603 Streambed Alteration Agreement (if applicable) administered by the California Department of Fish and Game.

Verification: The pipeline construction workplan will be submitted to the CEC CPM and all other agencies issuing permits for the project at least 90 days prior to the start of construction activities. The workplan will contain copies of all final draft or final permits required for the pipeline project, and the Applicant will adhere to all conditions specified in these permits. Particular attention will be given to avoiding

the release of bentonite clay into the water column of the Colorado River resulting from penetration of the channel bottom during the boring operation. The Applicant will provide a summary report of the pipeline construction operation that details and explains any activities, events, or incidents that deviate from those described in the workplan. The summary report will be sent to the CEC CPM, and all other agencies issuing permits for the project within 30-days after completion of the pipeline construction project, and prior to the start of plant operations.

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FLOODPLAIN ASSESSMENT

Testimony of Nicholas Chevance, Western Area Power Administration

INTRODUCTION

Western Area Power Administration (Western) has been approached by Wisvest Corporation, a non-regulated subsidiary of Wisconsin Energy Corporation, to interconnect the power to be generated by the Blythe Energy Project (Project) to Western's transmission system. The Project as proposed is a 520-megawatt (MW) natural gas-fired thermal power plant that is intended to serve competitive regional markets in southern California and Arizona. The Project is intended as a "merchant plant;" the Project would be independent of other generators and the power generated would serve the open market rather than any particular utility or load.

The Project would occupy approximately 15 acres of a 76-acre parcel of land located just east of the Blythe Airport that has been recently annexed by the City of Blythe. Water for cooling and steam generation would be obtained from groundwater wells at approximately 2,200 gallons per minute. The plant would be a "zero discharge" facility, meaning that there would be no wastewater discharge from the plant; wastewater would be handled by evaporation ponds on-site. Natural gas would be fed to the plant by new pipelines that would tap existing major interstate gas pipelines in the vicinity. One option is to pipe gas from the Arizona side of the Colorado River through a new 11.5-mile pipeline. A review of the flood hazard maps for Riverside County, California, indicates that the plant site will reside outside the 100-year floodplain of the Colorado River and McCoy Wash, a nearby intermittent drainage. However, the proposed pipeline route will cross the Colorado River and the Palo Verde Valley just south of the City of Blythe.

In accordance with the U.S. Department of Energy (DOE) Floodplain/Wetland Review Requirements (10 CFR part 1022), Western has prepared this floodplain assessment to determine whether the proposed project will cause harm to the affected floodplain. It will also review actions proposed to avoid or minimize potential harm to or within the affected floodplain.

ACTIVITIES AFFECTING FLOODPLAINS

The only activities within the hundred-year flood stage (base flood) of the Colorado River is the proposed natural gas pipeline that would connect the plant site to the El Paso Gas terminal on the Arizona side of the river (Federal Emergency Management Agency Flood Insurance Rate Map Index for Riverside County, California 1996; see Geology and Paleontology testimony this volume). The project as proposed would include the installation of a 16-inch pipeline that would be installed at a depth of at least 48-inches below the ground surface. The pipeline right-of-way would be placed within the boundaries of existing roads. The crossing of the Colorado River will involve horizontal directional drilling, which will place the pipeline under the River. The bore will start within the El Paso Gas facility on the Arizona side of the river, and the receiving pit for the bore will be immediately adjacent to Interstate highway on the California side of the river, adjacent to an

existing campground and boat launch. The pipeline will be under the river at least 50 feet below the lowest part of the river. This same technique will be used for any crossings of irrigation canals and drains as the pipeline crosses the Valley. No other facilities will be constructed within the floodplain.

FLOODPLAIN EFFECTS

The effects of construction on the floodplain would be minimal. Since all construction will take place within areas already disturbed, such as roads, irrigation canals and drains, and a graveled yard, this project will not have additional impacts on the floodplain. The construction of dams by the Bureau of Reclamation upstream from the project area has controlled the Colorado River to a certain degree. The threat of damaging floods and their effects have been lessened. However, in the event of a flood, a buried pipeline would not necessarily become a hazard, nor would it increase the impacts from a flood. A buried pipeline would not necessarily be an endangered feature in the event of a flood. This project will not construct any other facilities within or over the river.

A small increased risk of pollution would result from having construction equipment working in the floodplain. This includes the risk of accidental oil or fuel spills from malfunctioning equipment. Given the size of equipment involved and the amount of potential spill material, this risk is considered very low. If a spill were to occur it would be minor and would be readily contained and cleaned up.

The bore under the river is subject to review by the U.S. Army Corps of Engineers (Corps) under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403). That act requires an authorization or permit before any construction takes place that may be a hazard to navigation. Borings under rivers and other bodies of water are subject to Section 10 review by the Corps. The Corps has indicated that it will issue a letter of permission to the applicant for the directional drilling under the river.

The California Department of Fish and Game (CDFG) requires a streambed alteration agreement for any borings under rivers or streams. Part of its requirements include authorization by the Corps and a comprehensive contingency plan to anticipate any possible problems. The applicant has begun its negotiations with the CDFG on its agreement.

An increased risk of pollution would result if the bore “fracked out,” or spilled its boring fluid into the Colorado River. This would happen if the underlying geologic strata should fracture and allow the bentonite slurry used as lubricant and sealer in the bore drilling to escape into the river. The CDFG has required an extensive remedial action plan to contend with such an event. However, this technology is not new and has been used in this location before. While it poses an increased risk, that risk is not seen as significant.

Finally, an increased risk of pollution, as well as an increased risk to human health and safety, exists for any natural gas pipeline should that pipeline rupture. There is

not an increased risk for this pipeline compared to any other pipeline, but the risk of rupture has to be acknowledged. The risk is not considered significant.

ALTERNATIVES

Several alternatives to the pipeline have been explored in the analysis of the project. One alternative would not build a new pipeline across the floodplain of the Colorado River. Instead, the applicant would build a short segment of new 16-inch pipeline approximately 0.8-mile south from the proposed plant site to an existing interstate natural gas pipeline belonging to Southern California Gas Company. All construction on this alternative would take place on the mesa above the floodplain, and would not have any impact on the floodplain. The applicant has reserved the right to delay the decision on which pipeline to build until prices for natural gas can be negotiated with the two companies. A business decision will determine which pipeline will be built once the California Energy Commission permits the project. Both alternatives are being studied as equal solutions.

Several routing alternatives were explored for the pipeline alternative across the floodplain. One alternative was to place the new pipeline on the existing over-water crossing of the interstate pipeline on the Colorado River. However, it was determined that the existing crossing could not support the weight of the added 16-inch pipeline. All other alternative routes across the floodplain included a directional bore under the river, but crossed the floodplain on different routing. The proposed routing under consideration here was in response to concerns about the number of irrigation drains the pipeline would cross. The proposed routing has the least potential impact on other features of the floodplain.

MITIGATION MEASURES

All construction zones will have sediment barriers to reduce erosion and prevent sedimentation in any water body. The horizontal boring under the Colorado River will conform to existing standards and regulations, as well as the conditions of the Corps permit and the streambed alteration agreement from the CDFG. The pipeline itself will conform to existing standards for pipeline construction, installation and monitoring. No additional mitigative measures should be necessary.

TRAFFIC AND TRANSPORTATION

Testimony of Ron Foster

INTRODUCTION

The Traffic and Transportation section of the Final Staff Assessment (FSA) addresses the extent to which the Blythe Energy Project (BEP) may impact the transportation system in the local area. This analysis includes the identification of: the roads and routings which are proposed to be used for construction and operation; potential traffic related problems associated with the use of those routes for construction and operation of the project; the anticipated number of trips to deliver oversize/overweight equipment; the anticipated encroachment upon public rights-of-way during the construction of the proposed project and associated facilities; and the frequency of trips and probable routes associated with the delivery of hazardous materials. Staff has concluded that with mitigation there would be no significant traffic and transportation impacts related to the construction and operation of the BEP. Local streets and highways in the project area have sufficient reserve capacity to handle BEP traffic (construction and operations) under existing and cumulative conditions.

Staff has used information from the BEP Application for Certification (BEP 1999, AFC), as well as other resources to determine whether the project has the potential to have significant traffic and transportation impacts, as well as to assess the availability of mitigation measures which could substantially reduce or eliminate the significance of those impacts. Conditions of certification are included to implement the appropriate mitigation measures and to ensure that the project complies with the applicable Laws, Ordinances, Regulations and Standards (LORS).

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

FEDERAL

- Title 49, Code of Federal Regulations, Sections 171-177, governs the transportation of hazardous materials, the type of materials defined as hazardous, and the marking of the transportation vehicles.
- Title 49, Code of Federal Regulations, Sections 350-399, and Appendices A-G, Federal Motor Carrier Regulations, addresses safety considerations for the transport of goods, materials, and substances over public highways.
- Title 49, Code of Federal Regulations, Section 44718 and Title 14, Code of Federal Regulations, part 77, addresses hazards to air navigation.

STATE

- California Vehicle Code, section 353 defines hazardous materials.
- California Vehicle Code, sections 31303-31309 regulate the highway transportation of hazardous materials, the routes used, and restrictions thereon.
- California Vehicle Code, sections 31600-31620 regulate the transportation of explosive materials.
- California Vehicle Code, Sections 32000-32053, regulates the licensing of carriers of hazardous materials and includes noticing requirements.
- California Vehicle Code, Sections 32100-32109, establishes special requirements for the transportation of inhalation hazards and poisonous gases.
- California Vehicle Code, Sections 34000-34121, establishes special requirements for the transportation of flammable and combustible liquids over public roads and highways.
- California Vehicle Code, Sections 34500 et seq., regulate the safe operation of vehicles, including those that are used for the transportation of hazardous materials.
- California Vehicle Code, Sections 2500-2505, authorizes the issuance of licenses by the Commissioner of the California Highway Patrol for the transportation of hazardous materials including explosives.
- California Vehicle Code, Sections 13369, 15275, and 15278, address the licensing of drivers and the classifications of licenses required for the operation of particular types of vehicles. In addition, these sections require the possession of certificates permitting the operation of vehicles transporting hazardous materials.
- California Streets and Highways Code, Sections 117 and 660-72, and California Vehicle Code 35780 et seq., require permits for the transportation of oversized loads on county roads.
- California Streets and Highways Code, Sections 660, 670, 1450, 1460 et seq., and 1480 et seq., regulate right-of-way encroachment and the granting of permits for encroachment on state and county roads.
- California Health and Safety Code, Section 25160 et seq., addresses the safe transport of hazardous materials.

LOCAL

RIVERSIDE COUNTY

The General Plan establishes local goals and policies regarding transportation improvements. The circulation element of the plan outlines the following objectives:

1. Monitor land use and economic trends so that the Riverside County Highway Plan can be amended to reflect these changes.
2. Maintain the existing highway network, while providing for future expansion and improvement based on travel demand, and the development of alternative travel modes.
3. Encourage the use of road improvement financing mechanisms which equitably distribute the cost of road improvements among those who benefit from the road improvements.
4. Provide bike routes and related bicycle facilities which will form a network interconnecting the various communities of Riverside County and forming a continuous link in the overall bikeway system of the State of California.

RIVERSIDE COUNTY CONGESTION MANAGEMENT PLAN

The Riverside County Transportation Commission (RCTC) has been designated as the Congestion Management Agency (CMA) for Riverside County.

RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION

The Riverside County Transportation Airport Land Use Commission was established in 1970 by the County Board of Supervisors in accordance with Public Utilities Code (PUC) of the State of California, Section 21675. The seven member commission has the responsibility for formulating a comprehensive land use plan for the areas surrounding each public use airport in the county.

BLYTHE AIRPORT COMPREHENSIVE LAND USE PLAN (ACLUP)

The ACLUP is prepared for the Airport Land Use Commission (ALUC) and is intended to protect and promote the safety and welfare of residents in the airport vicinity and users of the airport while ensuring continued operation of the airport. The Public Utilities Code of the State of California, Section 21675 requires the ALUC to formulate a comprehensive land use plan for the area surrounding each public use airport.

BLYTHE AIRPORT DRAFT MASTER PLAN UPDATE

The Blythe Airport Master Plan Update project is currently being prepared through a joint effort by the City, County and FAA. The Master Plan will address goals and policies about future development for the airport and the surrounding area.

CITY OF BLYTHE GENERAL PLAN

The BEP site and adjacent properties have recently been annexed by the City of Blythe. The City is updating its General Plan and proposes that the BEP site and surrounding area be designated Industrial rather than the current Agricultural Open Space zoning designation.

LA PAZ COUNTY - ARIZONA

There is currently no General Plan Document. County operates under existing zoning regulations.

SETTING

REGIONAL DESCRIPTION

ROADWAYS AND HIGHWAYS

The project site is located approximately five miles west of the center of the City of Blythe, near Interstate 10 (I-10) in southeastern California. The site is 76 acres in size and is approximately one mile east of the Blythe Airport as shown in **TRAFFIC and TRANSPORTATION Figure 1.** The project site is accessed directly from Hobsonway, a two-lane arterial (oriented east/west). Hobsonway serves as the I-10 frontage road in the area and as the business loop for the City of Blythe (BEP 1999, AFC page 7.4-2). From the west the site is reached from the I-10/Mesa Drive interchange located near the airport. From the east the site is reached via I-10 at interchanges located at SR-78 (Neighbors Boulevard), Lovekin Boulevard or US-95 (Intake Boulevard). Buck Boulevard, a dirt road (oriented north/south) along the eastern boundary of the project site, extending from Hobsonway north would become the asphalt-paved access road to the proposed site.

Three highways, I-10, State Route (SR) 78 and United States (U.S.) Highway 95 provide regional access to the plant site. I-10 is a major four-lane divided, east-west freeway that links the Greater Los Angeles Metropolitan Region eastward through Phoenix and Tucson, Arizona to New Mexico and points east. I-10 is located approximately 0.25 miles south of the BEP site. U.S. 95 is a two-lane, north-south highway that provides north access to the City of Blythe via the cities of Vidal and Needles. US-95 continues north through California into Nevada and on to Las Vegas. The highway is located approximately 6.5 miles east of the BEP site. SR 78 is a two-lane, north-south highway that provides south access to the Palo Verde Valley via the City of Brawley. SR-78 has it's western terminus in San Diego County at Interstate 8. The highway is located approximately 1.5 miles east of the site.

PLANNED ROADWAY IMPROVEMENTS

Local improvements to the roadway system near the project site would include paving Buck Boulevard along the eastern side of the property boundaries. Additionally, other roadway improvements would be made at the project entrance intersection with Hobsonway to facilitate construction traffic to and from the site.

The area designated as the Blythe Airport Industrial Park is located west of the project site (1.5 miles). The area is north of and adjacent to Hobsonway. The proposed plant site, along with other lands were recently annexed by the City of Blythe. The revised airport master plan includes the Blythe Airport Industrial Park area. The type and intensity of industrial development and the necessary infrastructure improvements for the area have not been defined.

I-10 is scheduled for pavement rehabilitation, safety and drainage improvements from east of Wiley Well Road to the Arizona boarder (21 miles). Caltrans anticipates issuing the contract for this work in April, 2001. The I-10 pavement

rehabilitation project is scheduled for a March, 2002 completion date (Caltrans, District 08, Riverside County). During the rehabilitation project I-10 would experience lane segment closures and occasional restricted ramp operations in the vicinity of the BEP site.

TRAFFIC AND TRANSPORTATION **Table 1** identifies the annual average daily traffic (AADT), annual average daily truck traffic, annual average percent of truck traffic, annual average peak-hour traffic, hourly highway design capacity, and peak hour level of service (LOS) for highways in the vicinity of the project. The information shown was obtained from the Caltrans 1998 Traffic Volumes on California State Highways publication and from the Caltrans web-site. The traffic estimates are presented for various road segments between mileposts or junctions on each highway. Daily and peak hour traffic volumes are illustrated on **TRAFFIC and TRANSPORTATION Figure 1.**

LOS levels refer to the average vehicle capacity and the flow of traffic. LOS A denotes free flow of traffic while LOS E and F means that there is a congested flow. The LOS criteria take into account numerous variables such as annual average daily traffic (AADT), lane capacity, grade, environment, and other relevant information. A threshold of LOS D is the minimum standard accepted by both Caltrans and Riverside County. However, the CMP authority in the area of the project site is Riverside County. The County CMP states that LOS D is to be achieved whenever practical and LOS E threshold represents the maximum vehicles per day that a highway or roadway can serve and still meet the minimum acceptable standard on the CMP roadway system (Medina 2000, pers. comm.).

Traffic volumes for Hobsonway and Mesa Drive were not available. As stated in the AFC, “traffic counts for local roadways are limited or nonexistent as neither the County of Riverside nor the City of Blythe measure traffic flows on roads near the site due to the rural nature and low traffic volume in the area.” (BEP 1999, AFC page 7.4-5). As shown in **Table 1**, all highways in the area currently operate at LOS A.

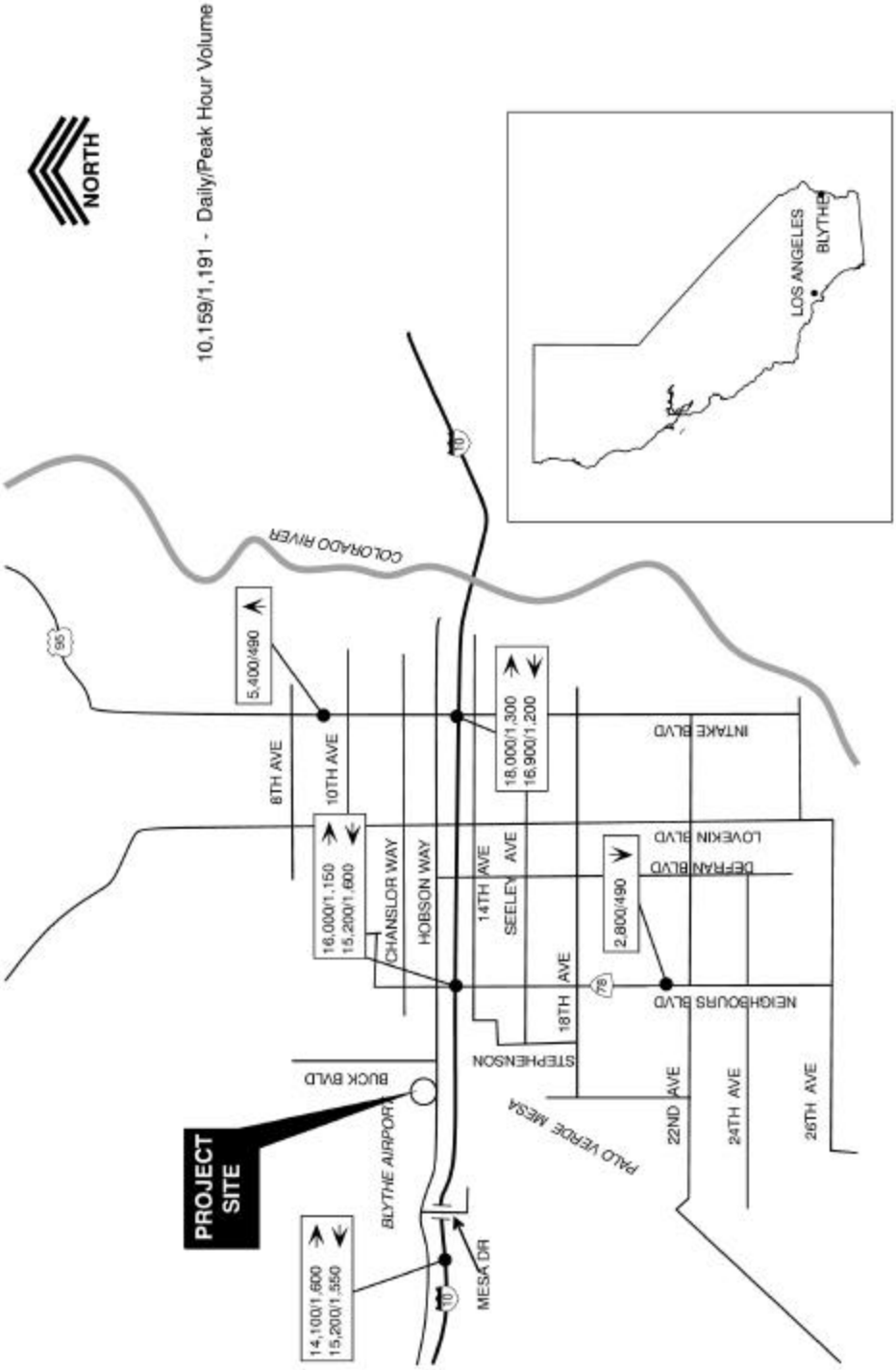

Figure 1
PROJECT LOCATION AND DAILY / PEAK HOUR TRAFFIC VOLUMES ON MAJOR ROADS
351582/BASE-8/2/2000

TRAFFIC AND TRANSPORTATION TABLE 1
Conditions of Affected Highways

Highway Segment	Annual Average Daily Traffic[1]	Annual Average Daily Truck Traffic[2]	Percent of Daily Truck Traffic	Annual Average Peak Hour Traffic[1]	Hourly Highway Capacity[3]	LOS[4]
State Route 78						
S. of Interstate 10	2,800	171	6.1	240	1,200	A
US-95						
N. of Interstate 10	5,400	648	12	490	1,200	A
Interstate 10						
E. of Mesa Dr.	15,200	5,898*	38.8	1,600	4,400	A
W. of Mesa Dr.	14,700	6,192*	42.1	1,550	4,400	A
E. of SR-78	16,000	5,898	38.8	1,150	4,400	A
W. of SR-78	15,200	6,192	42.1	1,600	4,400	A
E. of US-95	18,000	6,540	36.3	1,300	4,400	A
W. of US-95	16,900	6,480	38.3	1,200	4,400	A

Source: Adapted from BEP AFC, Table 7.4-1, Page 7.4-4
[1] Source: 1998 Traffic Volumes on the California State Highway System (Caltrans 1999)
[2] Source: 1997 Truck Volumes, Caltrans Official Web-site (Caltrans 2000)
[3] Maximum number of vehicles per hour, one-direction.
[4] LOS calculated by dividing peak hour volume (V) by peak hour capacity (C); and using the V/C ratio.

* Annual average daily truck traffic not available for this segment. Estimate based on SR 78 interchange segments volumes given proximity and low density of development at the Mesa Drive interchange.

The AFC provides accident data from the Highway Patrol (Blythe Station) for I-10, SR-78, US-95 and unincorporated roadways in the vicinity of the project site for a period between 1997 and September 1999 (BEP 2000, AFC page 7.4-6). The data shows that accident rates range from 0.40 to 0.70 accidents per million vehicle miles (MVM) traveled. The 1997 Accident Data on State Highways (Caltrans, 1998) indicates an average statewide accident rate of 2.4 MVM for roadway types corresponding to I-10 and 1.27 MVM for State Routes corresponding to US-95 and SR 78. The accident rates for the highways near the study area are well below statewide accident averages. The Blythe Station Highway Patrol agreed that this estimate is accurate (King 2000).

RAILROADS, BUS SERVICE & BIKE LANES

The Blythe area is served by the Arizona & California (A&C) Railroad which travels through part of the Palo Verde Valley. The railroad line accesses the valley from the northwest and then runs south through the City of Blythe. The A&C line terminates at Ripley, approximately seven miles southwest of the City of Blythe. This railroad line is used for transport of rail freight into and out of the Palo Verde Valley and averages two-train trips per day. Passenger service is not provided.

Local bus service in the greater Blythe area is provided by the Palo Verde Valley Transit Agency. The Greyhound company provides bus service outside of the region. The project area is not directly served by either local or regional bus service.

The City of Blythe encourages the use of walking and bicycling as alternative modes of transportation and when appropriate incorporates bicycle and pedestrian facilities into the roadway design process. Hobsonway currently has no bicycle lanes in the vicinity of the site and none are planned as part of the project construction.

AIRPORT

The Blythe Airport is located approximately one mile west of the proposed BEP site off of Hobsonway. Regional access to the airport is from I-10 at the Mesa Drive interchange. The airport is operated as a municipal general aviation facility and provides regional air services under the Essential Airports Service Subsidy Program. There are two operating runways at Blythe Airport. Runway 8-26 (oriented east-west) is the primary runway and is 6,562 feet long, 150 feet wide. Runway 17-35 (oriented north-south) is 5,820 feet long, 100 feet wide. Activity at the airport consists of an average of 67 aircraft operations per day (Internet-site airnav.com, 2000). Aircraft using Runway 8-26, approaching from or departing to the east, fly-over the BEP site. The Master Plan update considers extending Runway 8-26 by 1,180 feet to 7,000 feet in order to accommodate larger aircraft (Blythe Airport Master Plan, Table 3C, pg. 3-7).

The Blythe Airport Master Plan is currently being updated by the City of Blythe, Riverside County and the Federal Aviation Administration (FAA). The primary objective of the Master Plan is to develop and maintain a long-term development program for the airport and the surrounding area. A Planning Advisory Committee (PAC) has been established to review draft materials. The draft study will be open to public review and comment in accordance with the National Environmental Protection Act (NEPA), and the California Environmental Quality Act (CEQA), requirements. A final Master Plan document is anticipated in the first quarter of 2001 (Hull 2000a).

The City of Blythe (Nelson 2000 and Hull 2000c) has indicated that any Master Plan proposals for the future extension of airport Runway 8-26 will be to the west only. This would extend the runway away from the project and from the populated downtown area.

IMPACTS

POWER PLANT

CONSTRUCTION PHASE

COMMUTE TRAFFIC

Construction of the generating plant facility would occur over an estimated 20-month period and would require a peak (three month) construction workforce of 385 workers, assuming a single shift and a 40-hour, five to six day work week. Of the 385 workers, approximately 314 workers would be required for the power plant and transmission line and 71 workers would be needed for the pipelines (BEP 1999, AFC pages 7.4-15-16). Construction workers commuting from the greater Blythe area would travel west on Hobsonway or travel west I-10 to the I-10/SR 78 interchange; those workers who live west of the site would travel east on I-10 to the Mesa Drive interchange. Workforce vehicle trips were calculated based on this data.

BEP assumes an average automobile occupancy (AAO) of 1.1 persons per vehicle to represent a worst-case construction worker commute scenario. Using the AAO rate of 1.1 results in approximately 700 daily trips to and from the site with a maximum of 350 vehicle trips during the p.m. peak hour. Parking for construction worker vehicles would be provided on the power plant site (BEP 1999, AFC page 7.4-10). A worst-case scenario which assumes that all workers would drive individually to the project site would result in 770 daily vehicle trips to and from the site and a maximum of 385 trips from the site during the p.m. peak hour. This is one possible scenario; however there are alternatives to single occupant vehicle trips. Even under worst-case conditions (770 daily vehicle trips) the impact to local roads and highways would not be significant given the current operating levels of service (LOS A) and the relatively low volumes of background traffic.

Staff agrees with BEP that the preferred route for commuting workers from Blythe would be east along I-10 to the Mesa Drive interchange and west on Hobsonway to Buck Boulevard. Parking for construction personnel and visitors would be provided in an area on or adjacent to the project site. Construction workforce traffic would generally occur between 6:00 a.m. and 7:00 a.m. in the morning, and again between 4:00 p.m. and 5:00 p.m. in the evening, unless flexible work schedules are implemented.

Using the traffic pattern assumptions described above, construction related vehicle traffic would be heaviest on I-10/Mesa Drive and Hobsonway. The impact on I-10 during peak hours, assuming the worst case scenario of 385 trips by workers (maximum workers at peak construction of the project) would result in traffic increases of approximately 24 percent along portions of I-10. This traffic impact is

not significant because the highway segment under worst case would continue to operate at LOS A. Hobsonway would experience an increase in traffic at peak hours, but given the current level of observed (Staff site visit, June 2000) peak hour traffic, estimated at LOS A, the impact is not considered significant since the LOS level would probably not decrease below B for the commute period. The current General Plan identifies Hobsonway as a primary arterial and Mesa Drive as a collector street.

The construction contractor would be required to prepare a construction traffic control plan and implementation program to be submitted to Caltrans and to the City of Blythe Public Works Director (BEP 1999, AFC pages 7.4-21,22).

TRUCK TRAFFIC

Construction of the generating plant would require the use and installation of heavy equipment and associated systems and structures. Heavy equipment would be used throughout the construction period, including trenching and earthmoving equipment, forklifts, cranes, cement mixers and drilling equipment.

In addition to deliveries of heavy equipment, construction materials such as concrete, wire, pipe, cable, fuels and reinforcing steel would be delivered to the site by truck. An estimated 4,310 truck deliveries would be made to the plant site over the course of the 20-month construction period (on average approximately 216 truck deliveries per month). Assuming 22 average workdays per month and two trips for each truck delivery (one to and one from the site), the project will generate approximately 19 truck trips per day, on average. During the peak month of construction truck activity daily truck trips are estimated at 50 per day (BEP 1999, AFC page 7.4-10).

Deliveries will also include small quantities of hazardous materials to be used during project construction. The applicant has stated that the deliveries of hazardous materials to and from the site will be conducted in accordance with California Vehicle Code Section 31300 et seq. (BEP 2000a, page 7.4-23).

The AFC does not select a specific truck route for supplying and removing hazardous materials. However, it does note, "Pursuant to Section 31303 of the California Vehicle Code, the transportation of hazardous materials will be on state or interstate highways that offer the shortest overall transit time possible. The CHP has identified I-10, US-95, and SR-78 as roadways to be used in the transportation of designated hazardous materials." (BEP 1999, AFC page 7.4-17).

Transportation of equipment that would exceed the load size and limits of certain roadways would require special permits from Caltrans California Streets and Highways Code, Sections 117 and 660-72, and California Vehicle Code 35780 et seq., require permits for the transportation of oversized loads on state and county roads. By law Energy Commission certification takes the place of all necessary state, local and regional permits. However, staff typically requires applicants to get permits from Caltrans for oversized loads, encroachment and activities within road

right-of-ways. Staff has proposed a condition of certification to ensure compliance with County and Caltrans requirements.

OPERATIONAL PHASE

COMMUTE TRAFFIC

Operation of the generating plant would require a labor force of approximately 20 full-time employees. A worst case scenario assumes that each employee would drive a separate vehicle to work and that they would make one round trip from home to work per day, generating approximately 40 vehicle trips per day. Adequate parking would be made available for employees on an on-site paved lot. BEP has assumed, and staff agrees, that the majority of the permanent workforce would reside in the greater Blythe area and their preferred route to work would be from the east along I-10 to Mesa Drive, then east on Hobsonway to Buck Boulevard and from the west on Hobsonway to Buck Boulevard or west on I-10 to the SR 78 interchange and west on Hobsonway to Buck Boulevard. BEP operations-related traffic impacts are considered minimal, representing less than 1 percent of existing AADT on I-10.

TRUCK TRAFFIC

Approximately eight or nine truck deliveries of aqueous ammonia, a hazardous substance, will occur each month with an average of two deliveries per week (BEP 1999, AFC page 7.4-17). For an in-depth description of the amount and type of hazardous materials that will be used during operation of the facility, see the Waste Management and Hazardous Materials Sections of the FSA. Hazardous waste materials would be picked up at the project site once every 90 days and hauled offsite by licensed hazardous waste transporters (BEP 1999, AFC Page 7.11-15). The materials will be transported to three Class 1 landfills in Southern California or recycled at one of several oil haulers/recyclers located in Southern California (BEP 1999, AFC Pages 7.11-11-12).

As discussed in the (LORS) section of this assessment, federal and state regulations are in place to ensure that the handling and transportation of hazardous materials on all roadways is done in a manner that protects public safety. Federal laws specific to this issue are Title 49, Code of Federal Regulations, Sections 350-399 and Appendices A-G, of the Federal Motor Carrier Safety Regulations. These sections address safety considerations for the transport of goods, materials, and substances over public highways.

The California Vehicle Code and the Streets and Highways Code (Sections 31600 through 34510) are equally important to ensure that the transportation and handling of hazardous materials are done in a manner that protects public safety. Enforcement of these statutes is under the jurisdiction of the California Highway Patrol. The State Department of Motor Vehicles specifically licenses all drivers who carry hazardous materials. Drivers are required to carry a manifest, available for inspection by the California Highway Patrol inspection stations along major highways and interstates. The inspection stations also check for weight limits and conduct periodic brake inspections. Commercial truck operators handling

hazardous materials are also required to take instruction in first aid and procedures on handling hazardous waste spills. Potential impacts of the transportation of hazardous materials would be mitigated to a level of insignificance by compliance with federal and state standards established to regulate the transportation of hazardous substances.

Transportation of materials and equipment that would exceed the load size and limits of certain roadways would require special permits from Caltrans. California Streets and Highways Code, Sections 117 and 660-72, and California Vehicle Code 35780 et seq., require permits for the transportation of oversized loads on state and county roads. Staff has proposed a condition of certification to ensure compliance with County and Caltrans requirements.

Due to the limited amount of truck traffic associated with the operational phase of the project, hazards with other local truck traffic in the area is considered minimal. Mitigation measures and conditions of certification that ensure compliance with state, federal and local permit and safety requirements are discussed later in this section. There is good hazard free road access to the site.

AIRPORT OPERATIONS

Aircraft landing from the east at Blythe Airport may fly over the project site on approach. The east edge of the primary airport runway (Runway 8-26) is approximately one mile west of the BEP site. The end of Runway 8-26 is located at 393 feet above mean sea level (MSL). The BEP is approximately 335 feet above MSL. When constructed, the power plant heat recovery steam generator stacks will be 130 feet high. The stacks are estimated to be 72 feet above the level of the runway. When using the lowest Instrument Landing System (ILS) angle (2.9 degrees) for Runway 8-26, the height of the aircraft over the stacks could be about 168 feet (BEP 2000b, page 1).

The Federal Aviation Administration (FAA) has made an evaluation related to the project stack height and found that the proposed structure would not exceed obstruction standards and would not be a hazard to air navigation. Based on this evaluation marking and lighting are not necessary for aviation safety (FAA 1999). The FAA did indicate however, that if marking or lighting were accomplished on a voluntary basis that it be installed and maintained in accordance with FAA requirements (FAA Advisory Circular 70/7460-1J). The applicant has indicated its intent to install lighting on the power plant stacks in accordance with FAA requirements. The ILS approach to Runway 8-26 has not been approved by the FAA (Blythe Airport Comprehensive Land Use Plan 1992, page 2-3).

The Riverside County Airport Land Use Commission (ALUC) requested an application for Development Review from BEP in July 2000. The ALUC has legal authority to review and comment on any proposed development within the “airport influenced area”. The BEP is within the “airport influenced area” and the ALUC is reviewing the project for land use compatibility standards. The ALUC standards are based on the criteria of noise, safety and height (Downs, Keith. 2000c). BEP filed an application with the ALUC on August 7, 2000 (BEP 2000d). A review of the

initial application resulted in a request for further information by ALUC staff (Downs 2000b) and BEP submitted a revised application on September 11, 2000 (BEP 2000e). ALUC staff prepared a report for the Commissioners and the project was discussed at the ALUC meeting on October 19, 2000.

The ALUC reviewed the project in terms of consistency with the Comprehensive Land Use Plan (CLUP) for the Blythe Airport. Areas of concern noted by the ALUC staff report include:

- Alternatives Siting: Discussion of how alternatives affect the airport and its traffic in terms of aviation safety, and conforming uses.
- Aviation Safety: Include state and local responses along with the FAA review (7460). Address issues related to height and plume.
- Prohibited Uses: Includes uses that may direct steady or flashing light or cause sunlight to be reflected toward an operating aircraft. Any use which generates smoke, water vapor or which would attract large concentrations of birds, or would generate electrical interference that may be detrimental to the operation of an aircraft.
- Fuel Storage: Any use which has a primary activity involving the storage, manufacture or distribution of explosives or flammable materials.
- LORS: The document needs to address Public Utilities Commission (PUC) 21670 and include a review of the document by Caltrans Aeronautics Program.

Regarding the prohibited uses noted above, the BEP would have two evaporation ponds with a combined surface area of approximately 16 acres (BEP 1999a, page 2.0-25). These ponds may attract birds that could adversely affect aircraft during landing from or departing to the east. In addition, the proposed project may generate visible cooling tower plumes of various sizes during certain times of the year.

The ALUC found the BEP was consistent with the Blythe Airport Comprehensive Land Use Plan subject to a number of conditions (Riverside County 2000). One of the conditions requires BEP to submit prior to the issuance of any permit an avigation easement to the County of Riverside which will ensure that the project does not adversely affect Blythe Airport operations. Staff has proposed a condition of certification to require proof of the easement prior to Commission certification.

Caltrans Aeronautics reviewed the BEP and initially raised some concerns about potential adverse impacts related to airport operations that included the effects of heat and visible plumes, electrical interference, and approaches to Runway 08/26 from the east (Caltrans 2000a). However, after further correspondence with the City of Blythe and the acknowledgement that the runway would not be extended to the east, Caltrans has determined that the concerns have been adequately addressed. The only remaining concern involves the FAAs approval of the analysis of the waterfowl attractant potential (Caltrans 2000b).

Though the FAA, Caltrans Aeronautics, the ALUC and the Blythe Airport Manager are satisfied that the BEP will not adversely affect airport operations, staff is still somewhat concerned about the relatively small separation (168 feet) between the bottom of the ILS approach to Runway 08/26 and the top of the power plant exhaust stacks.

In addition, there is a remote chance of an accidental release from the ammonia refrigeration system as the result of an aircraft crash at the BEP. Staff has determined that the probability of such an event is less than 1 in 10,000,000 (See the **Hazardous Materials Management** section of this document for further analysis).

LINEAR FACILITIES

CONSTRUCTION PHASE

TRANSMISSION LINE

The project high voltage transmission line will cover a relatively short distance and will be constructed and strung within the BEP parcel from the existing substation to the power plant. Construction of the 230 kV structures and stringing the transmission line will cause temporary closure of Buck Boulevard and the use of some construction vehicles. The AFC includes the transmission line construction vehicles in its estimate of overall truck trip generation for the power plant. Potential impacts from construction of the transmission line would be insignificant and short-term.

NATURAL GAS PIPELINES

SoCalGas Company Interconnection

Construction of the natural gas pipeline interconnection to the SoCalGas pipeline is estimated to take approximately two months and require on average 40 workers per day with a peak daily workforce estimate of 60 people. A worst case estimate in which all pipeline workers drive alone to the site would result in 60 p.m. peak hour trips during peak construction activities and 40 p.m. peak hour trips during average construction activities. An estimate of 20 trucks or pickup trucks would be used daily during construction of the pipeline as well as heavy duty equipment for trenching, pipe laying and backfilling activities. (BEP 1999, AFC page 7.4-14).

The pipeline will extend approximately 2,000 feet south from the power plant across (trenching) or under (microbore drilling) Hobsonway and under I-10 to an existing SoCalGas Company connection. The crossing of Hobsonway will require an encroachment permit from Riverside County. BEP has stated their intent to comply with County encroachment permit requirements (BEP 2000a, page 7.4-14). Working in the right-of-way of I-10 will require an encroachment permit from Caltrans. The applicant has stated intent to comply with Caltrans encroachment permit requirements. Staff has proposed conditions of certification ensuring

compliance with both County and Caltrans limitations for encroachment into public rights-of-way.

All crossings of roads and other sensitive areas during construction activities will be in accordance with local, state, and federal regulatory requirements and specifications. Therefore, the crossings will be provided with adequate barricades and lights in accordance with the Caltrans "Manual of Traffic Control for Construction and Maintenance of Work Zones" and the California Vehicle Code (Section 21400).

I-10 and Hobsonway would continue to operate at acceptable levels of service during the two-month pipeline construction period. The Caltrans I-10 pavement rehabilitation project scheduled for April 2001, could potentially overlap with BEP pipeline construction activity. In the event of construction overlaps, coordination between BEP and Caltrans would be required to minimize impacts. Use of routine construction safety measures and compliance with encroachment permit requirements should be sufficient to ensure no significant impacts.

El Paso Natural Gas Company Interconnection

Construction of the gas pipeline interconnection to the El Paso Natural Gas pipeline is expected to take four months and require on average 48 daily workers per month. The construction workforce would peak at 71 workers. A worst case estimate in which all pipeline workers drive alone to the site would result in 71 p.m. peak hour trips during peak construction activities and 48 p.m. peak hour trips during average construction activities. An estimate of 20 trucks or pickup trucks would be used daily during construction of the pipeline as well as heavy duty equipment for trenching, pipe laying and backfilling activities. (BEP 1999, AFC page 7.4-14).

The pipeline would extend approximately 11 miles from the power plant to the east side of the Colorado River in La Paz County, Arizona (BEP 2000c, Figure 1.0-9). The adjusted pipeline route would extend from the power plant site east along Hobsonway to Arrowhead Boulevard, south on Arrowhead Boulevard passing under I-10 to Seeley Avenue (formerly 16th Avenue). The pipeline would continue east on Seeley Avenue under the AT&SF Railroad tracks to Intake Boulevard, north on Intake Boulevard to Riviera Drive which fronts I-10 and east on Riviera Drive near the I-10 on-ramp where the pipeline would be drilled under the Colorado River to the gas line connection on the east side of the river.

The pipeline route is primarily within County and City rights-of-way and most of the route is characterized as agricultural land. Some residential and business access driveways will be temporally impacted by the pipeline construction, particularly along Seeley Avenue. BEP has stated their intent to comply with local, County and State encroachment permit requirements. Staff has proposed conditions of certification ensuring compliance with limitations for encroachment into public rights-of-way.

La Paz County planning staff indicated concerns with the BEP pipeline construction in Arizona (Dhal 2000a.). Initially, La Paz staff indicted that a special use permit

may be needed from the Board of Supervisors and that two public meetings would be required. Following a meeting with BEP representatives and a visit to the drilling site, planning staff determined that no special requirements would likely be needed (Dhal 2000b.). County staff stated that the construction is a permitted use and that no grading permit or encroachment permit is required because the project will move less than 50 cubic yards of earth.

Local roads and highways will continue to operate at acceptable levels of service during the four-month pipeline construction period. Impacts to residential and commercial uses along the route will be temporary. Given the relatively low number of estimated commute and construction worker trips and the low levels of existing traffic, no significant impact to local roads and highways is expected from construction of the gas pipeline.

CUMULATIVE IMPACTS

The analysis of the available capacity of the regional highways and local roads described in this section shows that the regional transportation system serving the BEP area (along the potentially affected highways) is operating at very efficient levels of service with significant reserve capacity. The three primary highways and the primary local arterial operate at LOS A. As mentioned above, Caltrans plans on re-paving portions of I-10 in the BEP area in 2001 and 2002. This could overlap with the construction of BEP.

The AFC provides an analysis of year 2003 traffic conditions plus project commute trips (BEP 1999, AFC Table 7.4-9, page 7.4-19). The background forecast volumes were developed by Caltrans for year 2015 conditions. The Caltrans forecast were divided into yearly increments and background traffic representing 2003 was distributed to the appropriate highway segments (Crain 2000, pers. comm.). An analysis of the 2003 p.m. peak hour forecast plus peak hour employee trips indicates that freeway segments in the area would continue to operate at LOS A.

The only other significant potential development proposed for the BEP area is the Blythe Airport Industrial Park site located two miles west of the power plant. No definite time frame for the development of the Blythe Airport Industrial Park has been established by either Riverside County or the City of Blythe. This project is expected to be defined within the Blythe Airport Master Plan Update which is currently underway. Development of the Blythe Airport Industrial Park could create potential localized impacts at the I-10/Mesa Drive interchange. Staff does not believe that the industrial park development would significantly impact operations on any of the affected highway segments. Information about development intensity, construction times and duration are not currently available. A draft Master Plan is expected in the Spring of 2001 (Hull 2000b).

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS AND STANDARDS

FEDERAL

BEP has stated their intention to comply with all federal LORS. A condition to ensure compliance is included below. Staff believes such compliance will not present any unusual difficulties. Therefore, the project is considered consistent with identified federal LORS.

STATE

BEP has stated their intention to comply with all state LORS. A condition to ensure compliance is included below. Staff believes such compliance will not present any unusual difficulties. Therefore, the project is considered consistent with identified state LORS.

LOCAL

BEP has stated their intention to comply with County requirements for encroachment into public right-of-way.

La Paz County has indicated that there are no LORS requirements to which BEP would be expected to comply with other than applicable zoning regulations (Dhal 2000c, pers. comm.).

FACILITY CLOSURE

PLANNED CLOSURE

Planned closure occurs at the end of a project's life, when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence. The applicant will prepare a Facility Closure Plan for submittal to the Energy Commission for review and approval at least twelve months prior to the proposed closure. At the time of closure all then-applicable LORS will be identified and the closure plan will address how these LORS will be complied with.

UNEXPECTED TEMPORARY CLOSURE

Unexpected temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster or an emergency. In the event of temporary closure, the effects on traffic and transportation would be similar to those for normal operation of the power plant facility, and the applicant would have to comply with all applicable LORS with respect to transportation permits for hazardous materials and equipment deliveries and removal.

UNEXPECTED PERMANENT CLOSURE

Unexpected permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unexpected closure where the owner remains accountable for implementing the on-site contingency plan. It can also include unexpected closure where the project owner is unable to implement the contingency plan, and the project is essentially abandoned. Staff assumes that the facility will either remain idle until such time that new ownership is established, or dismantling of the facility will occur. In any event, the owner will have to secure applicable transportation permits to satisfy the LORS requirements as stated in this report.

In the event of permanent closure, the effects would be similar to those associated with project construction. Permanent closure will involve a peak work period with commute traffic. In either instance, the roadway systems within the vicinity of the project should be able to handle closure-related traffic without a significant impact on the current LOS of the area roads.

MITIGATION

BEP has indicated its intention to comply with all LORS relating to: 1) the transport of oversized loads, 2) the transport of hazardous materials, and 3) the acquisition of permits for pipelines that will cross-state and county highways.

The combined construction vehicle trips will not result in a significant impact to any of the local arterial or highway segments and trip reduction measures are not necessary for the construction phase of this project. For operational employees trip reduction measures could be employed, but since the maximum number of employees assigned to any one shift is approximately 11, trip reduction measures are not necessary for this project.

RESPONSE TO PUBLIC AND AGENCY COMMENTS

PV-4 *Comment noted that the AT & SF Railroad spur became Arizona and California around May 1991*. Text corrected in the FSA.

PV-6 *Comment noted that U.S. 95 goes north through California into Nevada to Las Vegas.* Text corrected in the FSA.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

POWER PLANT

There would be transportation of hazardous materials during construction and operation. There is good road access for the transportation of hazardous materials.

With implementation of the proposed conditions of certification, potential problems will not exceed significance thresholds established by the Highway Patrol.

During the construction phase, roadway demand resulting from the daily movement of workers and materials will not increase beyond significance thresholds established by local and state authorities.

During the operational phase, increased roadway demand resulting from the daily movement of workers and materials will be minimal.

Staff has concluded that there would be no significant traffic and transportation impacts related to the construction and operation of the BEP.

AIRPORT

Power plant exhaust stacks will be lighted in accordance with FAA requirements. The ALUC found the BEP to be a compatible use within the CLUP for the Blythe Airport. Though staff shares some of the concerns noted in the ALUC staff report and the initial Caltrans Aeronautics letter, overall, the BEP is compatible with the Blythe Airport Comprehensive Land Use Plan and the safe operation of the airport.

LINEAR FACILITIES

Construction of the gas pipelines and electric transmission line will have minimal temporary impacts on the function of area roadways. Routine construction safety measures and required encroachment permits should be sufficient to ensure no impacts.

RECOMMENDATION

If the Energy Commission certifies the Blythe Energy Project, staff recommends that the Commission adopt staff's proposed conditions of certification.

CONDITIONS OF CERTIFICATION

TRANS-1 The project owner shall comply with Caltrans, County of Riverside, La Paz County and City of Blythe limits on vehicle sizes and weights. In addition, the project owner or its contractor shall obtain necessary transportation permits from Caltrans and all relevant jurisdictions for roadway use.

Verification: In the Monthly Compliance Reports, the project owner shall certify that it has received all oversize and overweight transportation permits required during that reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least six months after the start of commercial operation.

TRANS-2 The project owner or its contractor shall comply with Caltrans, County of Riverside, and City of Blythe requirements for encroachment into public rights-of-way and shall obtain necessary encroachment permits from Caltrans and all relevant jurisdictions.

Verification: In Monthly Compliance Reports, the project owner shall submit copies of any encroachment permits received during the reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least six months after the start of commercial operation.

TRANS-3 The project owner shall ensure that all federal and state regulations for the transport of hazardous materials are observed and all necessary permits acquired during both construction and operation of the facility.

Verification: The project owner shall include in its Monthly and Annual Compliance Reports, copies of all permits/licenses acquired by the project owner and/or subcontractors concerning the transport of hazardous materials.

TRANS-4 The project owner shall prepare a Traffic Management Plan (TMP) to address potential conflicts on Seeley Avenue during construction of the El Paso Natural Gas Pipeline interconnection. The TMP shall also address all traffic control measures necessary during construction, including time of day and duration of temporary lane closures to permit equipment ingress and egress, safety measures and techniques, signage, barrier requirements, and any other communications requirements.

Verification: At least thirty (30) days prior to the start of earth moving or disturbance activity, the project owner shall provide the CPM, Riverside County and the City of Blythe Public Works Director for review and approval, a copy of its Traffic Management Plan.

TRANS-5 Following construction of the power plant and all related facilities, the project owner shall meet with Riverside County, La Paz County and the City of Blythe to determine the actions necessary to repair local roads which will be used for construction traffic, to original or as near original condition as possible.

Protocol: At least thirty (30) days prior to the start of earth moving activities, the project owner shall photograph or videotape the primary routes to be used by construction traffic from the junction of SR-78 westerly along Hobsonway and from the junction of Mesa Drive easterly along Hobsonway to the project site. To document the condition of the roads, the project owner shall provide Riverside County and the City of Blythe copies of these photographs or videotapes.

Following completion of project construction, the project owner shall meet with Riverside County, La Paz County and the City of Blythe to determine the condition of the roads.

Verification: At least fifteen (15) days prior to the start of earth moving activities, the project owner shall provide copies of photographs or videotapes of construction traffic routes to Riverside County and the City of Blythe, and the CPM. Within sixty (60) days of this meeting, the project owner shall complete the necessary repairs. Within ninety (90) days of the completion of project construction the project owner shall acknowledge satisfactory completion of the roadway repairs to the CPM.

Trans-6 The project owner shall comply with the conditions outlined in the October 19, 2000 decision of the Riverside County Airport Land Use Commission that the BEP was consistent with the Blythe Airport Comprehensive Land Use Plan.

Verification: At least thirty days prior to the start of earth moving activities, the project owner shall provide the City of Blythe, Riverside County Airport Land Use Commission, and the CEC's CPM a copy of the aviation easement, the applicable standards, and a plan regarding lighting, reflection of sunlight, electrical interference, noise, smoke and vapor, and attraction of birds. The project owner shall also provide the above-noted parties a copy of a risk analysis regarding the use of hazardous materials at the BEP.

Trans-7 The project owner shall comply with the ALUC condition that an avigation easement will be filed with the County of Riverside to ensure that Blythe Airport operations are not adversely impacted by the BEP.

Verification: At least thirty days prior to certification, the project owner shall provide a copy of the avigation easement to the CPM.

REFERENCES

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VISUAL RESOURCES

Testimony of Michael Clayton

SUMMARY

Energy Commission staff analyzed both the potential visual impacts of the proposed Blythe Energy Project (BEP) and the compliance of the project with applicable laws, ordinances, regulations, and standards. The project's impacts on visual resources would not be significant if the applicant's proposed mitigation measures, as modified, expanded, and augmented by staff's recommendations are effectively implemented. Staff also concludes that the project would comply with applicable laws, ordinances, regulations, and standards.

INTRODUCTION

Visual resources are the natural and cultural features of the environment that can be viewed. This analysis focuses on whether BEP would cause significant adverse visual impacts and whether the project would be in conformance with applicable laws, ordinances, regulations, and standards. The determination of the potential for significant impacts to visual resources resulting from the proposed project is required by the California Environmental Quality Act (CEQA) Public Resources Code section 21000 et seq. and Title 20, California Code of Regulations, section 1701 et seq. The determination of the conformance of the proposed project with applicable laws, ordinances, regulations, and standards is required by Public Resources Code section 25525.

ORGANIZATION OF ANALYSIS

This analysis is organized as follows:

- Description of analysis methodology;
- Description of applicable laws, ordinances, regulations and standards;
- Description of the project aspects that may have the potential for significant visual impacts;
- Assessment of the visual setting of the proposed power plant site and linear facility routes;
- Evaluation of the visual impacts of the proposed project on the existing setting;
- Evaluation of compliance of the project with applicable laws, ordinances, regulations, and standards;
- Identification of measures needed to mitigate any potential significant adverse impacts of the proposed project and to achieve compliance with applicable laws, ordinances, regulations, and standards.
- Conclusions and Recommendations; and
- Proposed Conditions for Certification

ANALYSIS METHODOLOGY

Visual resources analysis has an inherent subjective aspect. However, the use of generally accepted criteria for determining impact significance and a clearly described analytical approach aid in developing an analysis that can be readily understood.

SIGNIFICANCE CRITERIA

Commission staff considered the following criteria in determining whether a visual impact would be significant.

STATE

The CEQA Guidelines defines a "significant effect" on the environment to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including objects of historic or aesthetic significance. (Cal. Code Regs., tit.14, § 15382.)

Appendix G of the Guidelines, under Aesthetics, lists the following four questions to be addressed regarding whether the potential impacts of a project are significant:

57. Would the project have a substantial adverse effect on a scenic vista?
58. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
59. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
60. Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

LOCAL

Energy Commission staff considers any local goals, policies, or designations regarding visual resources. Conflicts with such laws, ordinances, regulations, and standards can constitute significant visual impacts. See the section on Applicable Laws, Ordinances, Regulations, and Standards.

PROFESSIONAL STANDARDS

Professionals in visual impact analysis have developed a number of questions as a means of evaluating the potential significance of visual impacts (see, e.g., Smardon 1986). The questions listed below address issues commonly raised in visual analyses for energy facilities. Staff considers these questions in assessing whether a project would cause a significant impact in regard to any of the four CEQA criteria listed above.

- Will the project substantially alter the existing viewshed, including any changes in natural terrain?

- Will the project deviate substantially from the form, line, color, and texture of existing elements of the viewshed that contribute to visual quality?
- Will the project eliminate or block views of valuable visual resources?
- Will the project result in significant amounts of backscatter light into the nighttime sky?
- Will the project be in conflict with directly identified public preferences regarding visual resources?
- Will the project result in a significant reduction of sunlight, or the introduction of shadows, in areas used extensively by the community?
- Will the project result in a substantial visible exhaust plume?

VIEW AREAS AND KEY OBSERVATION POINTS

The proposed project is visible from a number of areas. Energy Commission staff evaluated the visual impact of the project from each of these areas. Staff used Key Observation Points[1], or KOPs, as locations in each of these areas for detailed analysis and photographs of the existing setting and visual simulations of the proposed project. KOPs are selected to be representative of the most critical locations from which the project will be seen. However, KOPs are not the only locations that staff considered in each view area.

EVALUATION PROCESS

For each viewing area, staff considered the existing visual setting and the visual changes that the project would cause to determine impact significance. Energy Commission staff conducted a site visit and verified that the view areas and KOPs selected by the applicant are appropriate for this analysis. Staff also requested two additional KOPs. Visual Analysis Data Sheets were prepared for each KOP and are presented in Appendix A.

ELEMENTS OF THE VISUAL SETTING

To assess the existing visual setting, staff considered the following elements:

Visual Quality

Visual quality is an expression of the overall visual impression or appeal of a given landscape and the associated public value attributed to the visual resource. This analysis used an approach that considers visual quality as ranging from outstanding to low. Outstanding visual quality is a rating reserved for landscapes that would be what a viewer might think of as “picture postcard” landscapes. Low visual quality describes landscapes that are often dominated by visually discordant human alterations, and do not provide views that people would find inviting or interesting (Buhyoff et al., 1994).

[1] The use of KOPs or similar view locations is common in visual resource analysis. The US Bureau of Land Management and the US Forest Service use such an approach.

Visual Absorption Capability

A landscape's ability to accept alteration without diminishment of visual quality or creation of visual contrast is often referred to as visual absorption capability. In the case of predominantly natural settings, the presence of forms, lines, colors, and textures similar to those of a proposed project would indicate a landscape more capable of accepting those project characteristics than a landscape where those elements were absent. Also, the presence of opportunities to screen the project from view, either by landforms, vegetation, or existing structures, would also improve a given landscape's ability to absorb a project without noticeably diminishing visual quality or increasing visual contrast. The lower the rating for visual absorption capability, the more susceptible the landscape is to visual impacts. The higher the visual absorption capability the less vulnerable the landscape is to visual impacts.

Viewer Sensitivity

Viewer sensitivity is a measurement of the level of interest or concern of viewers regarding the visual resources in an area. Official statements of public values and goals reflect viewers' expectations regarding a visual setting. This analysis also employed land use as an indicator of viewer sensitivity. Uses associated with 1) designated parks, monuments, and wilderness areas, 2) scenic highways and corridors, 3) recreational areas, and 4) residential areas are generally considered to be highly sensitive. Travelers on other highways and roads, including those in agricultural areas, may be moderately sensitive depending on viewer expectations as conditioned by regional and local landscape features. Commercial uses, including business parks, typically have low-to-moderate sensitivity, though some commercial developments have specific requirements related to visual quality, such as landscaping, building height limitations, building design, and prohibition of above-ground utility lines, that indicate high visual sensitivity. Industrial uses are typically the least sensitive because workers are focused on their work, and generally are working in surroundings with relatively low visual value.

Viewer Exposure

The visibility of the landscape, the number of viewers, the duration of the view, and the viewing distance to the landscape feature affect the exposure of viewers to a given viewshed or landscape. Landscape visibility is highly dependent on screening and angle of view. The smaller the degree of screening, the higher a feature's visibility is. The closer the feature is to the center of the view area, the greater its visibility is. Increasing distance also reduces visibility. Viewer exposure can range from having high values for all factors, such as an unobstructed foreground view from a large number of residences, to having low values for all factors, such as a partially obscured and brief background view for a few travelers.

Visual Impact Susceptibility

The level of susceptibility of a view area to impacts due to visual change is a function of visual quality, viewer sensitivity, and viewer exposure.

TYPES OF VISUAL CHANGE

To assess the visual changes that the project would cause, staff considered the following factors:

Dominance

One measure of visual change is *project dominance*. Dominance is a measure of a feature's apparent size relative to other visible landscape features and the total field of view. A feature's dominance is affected by its relative location in the field of view and the distance between the viewer and the feature. The level of dominance can range from subordinate to dominant.

Contrast

Visual contrast describes the degree to which a project's visual characteristics or elements (consisting of form, line, color, and texture) differ from the same visual elements established in the existing landscape. The degree of contrast can range from high to low.

View Blockage

View blockage describes the extent to which any previously visible landscape features are blocked from view by the project. Blockage of higher quality landscape features by lower quality features causes adverse impacts. The degree of view blockage can range from strong to none.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

FEDERAL AND STATE

The proposed project, including the electric transmission interconnection lines, and the optional SoCal Gas interconnection route, are located on private lands. The optional El Paso Natural Gas Company interconnection pipeline route is located on county and municipal land within a municipal right of way. Also, there is no roadway in the project vicinity that is a designated or eligible State Scenic Highway. Therefore, no federal or state regulations pertaining to scenic resources are applicable to the project.

LOCAL

The proposed power plant and linear facilities would be located in Riverside County, California and La Paz County, Arizona.

RIVERSIDE COUNTY

The Land Use Element of the Riverside County Comprehensive General Plan states that future industrial development should occur within the designated City of Blythe sphere of influence, which includes the project site adjacent to Blythe Airport. The Land Use Planning goals of the General Plan Land Use Element also include: "The retention as open space of those lands containing important natural resources such as scenic beauty, sensitive vegetation, wildlife habitats and historic or prehistoric

sites or which are subject to environmental hazards, such as seismic hazards, flooding, hazardous slopes and high fire risks. "Interstate 10 is identified as eligible for designation as a County Scenic Highway under Program 2 – County Scenic Highways, of the Scenic Highways portion of the Comprehensive General Plan.

LA PAZ COUNTY

La Paz County has no specific policies on visual or aesthetic resources that apply to the BEP (Dahl 2000).

CITY OF BLYTHE

The City of Blythe has no specific policies on visual or aesthetic resources that apply to the BEP (Wellman 2000b).

PROJECT DESCRIPTION

The following section describes the aspects of the project that may have the potential for significant visual impacts. These facilities include the power plant and switchyard, three electric transmission tie-lines, a natural gas delivery pipeline, two water evaporation ponds, construction laydown areas, and access roads.

POWER PLANT

The proposed power plant site is located on a 76-acre site that is bounded by Buck Boulevard on the east and Hobsonway on the south, which is approximately one-quarter mile north of Interstate 10. The site is approximately five miles west of the City of Blythe (see **PROJECT DESCRIPTION Figure 1**). The key components of the generating plant would be situated in the northwest corner of the site and will occupy approximately 15 acres. The most visually prominent elements of the power plant would be the 93-foot-tall heat recovery steam generator (HRSG); the two HRSG stacks, which would be 130 feet tall, and the 60-foot tall generation building. The remaining power plant facilities would range from 8 to 43 feet tall (BEP 1999a, p.7.5-8). The plant buildings will be prefabricated metal or concrete structures, painted desert colors to blend with the surrounding landscape (BEP 1999a, p.7.5-9), as illustrated in **PROJECT DESCRIPTION Figure 3.** The HRSG stacks will be painted with a Sherwin Williams Kem Hi-Temp No. 13 "Dusty" or equivalent tan tone (BEP 2000l). The 15-acre switchyard will be located between the generating plant and Buck Boulevard. The maximum height of structures in the switchyard will be the 125-foot tall microwave tower and 60-foot tall take-off structures. The switchyard will be similar in appearance and size to the existing Blythe Substation, located approximately 600 feet east of the project site in the adjacent citrus grove (BEP 1999a, p. 7.5-9).

ELECTRIC TRANSMISSION LINES

The electricity generated at the power plant would be transmitted to the electrical grid through a looped tie to the existing Parker to Blythe transmission line. The tie would consist of three tie-lines exiting the northeast corner of the site (see **PROJECT DESCRIPTION Figure 2)**. Two lines would exit the switchyard and travel east for about 450 feet and 650 feet respectively to connect with the existing

Blythe to Parker transmission line. A third 600-foot tie-line will exit north and connect with Blythe Substation using a portion of the Parker-Blythe transmission line. The total length of the new tie-lines would be 1,700 feet and the length of line eliminated from the Parker-Headgate-Blythe line would be 2,000 feet. The lines would be placed on new wood-pole, H-frame structures similar to those currently on the site. The conductors would have a non-specular finish to reduce reflectivity (BEP 1999a, p.7.5-12).

WATER EVAPORATION PONDS

PROJECT DESCRIPTION Figure 2 shows the location of the two 8-acre water evaporation ponds. Each pond would be surrounded by a 10-foot tall berm as shown on **PROJECT DESCRIPTION Figure 7**.

CONSTRUCTION LAYDOWN AREAS

PROJECT DESCRIPTION Figure 8 shows the location of the two material and equipment laydown areas. One laydown area would be located adjacent and to the north of the plant site and switchyard and one laydown area would be located adjacent and to the south of the plant site and switchyard.

ACCESS ROADS

The plant access roads will connect to Buck Boulevard at two locations as shown on **PROJECT DESCRIPTION Figure 6**.

NATURAL GAS DELIVERY PIPELINE

PROJECT DESCRIPTION Figure 5 shows the proposed options for the gas pipeline interconnection. The potential interconnection to the SoCal Gas Pipeline would extend 0.8 mile due south of the plant site. The potential interconnection to the El Paso Natural Gas Pipeline located just east of the Colorado River would be approximately 11.5 miles in length and would generally follow existing roads.

SETTING

REGIONAL SETTING

The BEP would be located on Palo Verde Mesa in eastern Riverside County. The project region encompasses broad flat desert valleys and north-south trending, highly eroded mountain ranges that rise sharply from the adjacent basins. The region marks the transition zone between the high elevation Mojave Desert and the arid, lower elevation Colorado Desert. Typical landforms include mesas, valleys, mountains, and foothills. The elevation ranges from approximately 250 to 800 feet (BEP 1999a, p. 7.5-1).

Most development within the region occurs within Palo Verde Valley along the west side of the Colorado River and includes the City of Blythe, the towns of Palo Verde and Ripley, as well as agricultural fields, railroad lines, power transmission lines, and the Palo Verde Dam and diversion works. Most of the agricultural activity in the

region also occurs in the valley and is dominated by irrigated farming consisting primarily of row crops and alfalfa (BEP 1999a, p. 7.5-2).

Overlooking Palo Verde Valley to the west lies the two-tiered Palo Verde Mesa. The mesa is a broad alluvial plain situated between, and derived from, the McCoy Mountains to the west, Little Maria Mountains to the north, and Big Maria Mountains to the northeast. To the south are the Mule and Little Chuckwalla Mountains. The mountain ranges add visual variety to the otherwise flat desert landscape.

PROJECT AREA SETTING

POWER PLANT VIEWSHED

VISUAL RESOURCES Figure 1 shows the area from which the proposed power plant would be visible, also called the viewshed. Because the site is situated on an elevated mesa, ground level components are generally only visible from foreground viewing opportunities in close proximity of the site, typically on Hobsonway and Interstate 10. However, the taller portions of the plant facilities would be visible at distances greater than 10 miles because of the relatively flat terrain and minimal view obstructions. The majority of viewers of the site would be motorists on Interstate 10, located approximately 0.25 mile south of the site; commercial areas on the east side of Blythe Airport; rural residences; and the Blythe Municipal Golf Course and adjacent residences in the Mesa Bluffs area. Other locations from which viewers would be able to see the project include the City of Blythe (located approximately five miles to the east), residential subdivisions on the mesa and in the valley, and recreational use areas in the surrounding mountains.

The Blythe Airport is considered potentially eligible for listing in the National Register of Historic Places and could be considered a sensitive viewing location. However, the plant site is located approximately 1.3 miles distant to the east and at an elevation approximately 58 to 60 feet lower than the airport. Thus, views of the plant site from the airport would be limited. Visibility would be attenuated with increasing distance, particularly at times of the year when dust and poor visibility conditions persist. Vapor plumes from the project, which would extend above the tallest project structures, could be seen from greater distances than the power plant structures, particularly on clear days that coincide with favorable meteorological conditions for plume formation (low temperature and high humidity).

POWER PLANT VICINITY

The BEP would be located on the eastern lower tier of Palo Verde Mesa, which is characterized by a mostly undeveloped desert landscape of level terrain and sparse desert scrub vegetation interspersed with a small amount of irrigated agriculture and containing some industrial, utility, and transportation facilities. Views of the mesa are panoramic in scope and encompass a landscape of generally uniform tan coloration interspersed with contrasting dark and light zones. Middleground views reveal a natural setting of stippled appearance due to the contrasts between vegetation, soil, and rock. Closer foreground views present a mosaic of sparse shrubby vegetation and desert pavement openings.

The project site and the surrounding landscape are characterized by views that are expansive and relatively unobstructed. Structures are few and widely dispersed (BEP 1999a, p. 7.5-3). Although the site is undeveloped, several electric transmission lines cross the site and are supported on wood pole H-frame structures. Immediately adjacent and to the east of the site are a citrus orchard and the Blythe Substation. Sewage disposal ponds are located adjacent to the site and to the southwest but are not generally visible from either Hobsonway or Interstate 10. There are three rural residences located within one mile of the plant site and 32 residences located between one mile and two miles of the site. There are 112 residences between two to four miles from the site. There are an additional 77 residences between four and five miles of the site (BEP 2000c, p. 7.5-7). Interstate 10 in the vicinity of the proposed project has been identified as Eligible for County Scenic Highway designation in the Scenic Highways portion of the County Comprehensive General Plan.

ELECTRIC TRANSMISSION LINE ROUTE

The proposed electric transmission line tie-in routes are within the power plant vicinity, described above.

WATER EVAPORATION PONDS

The proposed water evaporation ponds are within the power plant vicinity, described above.

CONSTRUCTION LAYDOWN AREAS

The proposed construction laydown areas are within the power plant vicinity, described above.

ACCESS ROAD

The proposed access roads are within the power plant vicinity, described above.

NATURAL GAS DELIVERY PIPELINE ROUTES

VISUAL RESOURCES Figure 2 shows the proposed options for the gas pipeline interconnection. The SoCal Gas Pipeline route option would extend 0.8 mile due south of the plant site to tie in with the existing SoCal Gas Pipeline. The route would pass beneath Hobsonway and Interstate 10 and is within the power plant vicinity described above.

The El Paso Natural Gas Pipeline interconnection option would extend east from the plant along existing roads for a distance of approximately 11.5 miles. **VISUAL RESOURCES Figure 2** shows the location of six photographs (Figures 3 through 8) along the pipeline route. The pipeline route will extend east along Hobsonway to Arrowhead Boulevard (see **VISUAL RESOURCES Figure 3**). A portion of the pipeline will be constructed in the right of way of Hobsonway. Citrus groves are located along the north side of Hobsonway between the plant site and the edge of the Palo Verde mesa. The landscape surrounding the citrus groves and south of Hobsonway is vegetated with a combination of non-native and native species. Land

uses along Hobsonway in the vicinity of the pipeline route include low-density agriculture, rural commercial, and residential.

From the intersection of Hobsonway and Arrowhead Boulevard the pipeline will run south in the Arrowhead Boulevard right of way, crossing under Interstate 10 and extending to 16th Avenue (see **VISUAL RESOURCES Figure 4**). The landscape along this portion of the route is primarily agricultural in character. The pipeline then extends east along 16th Avenue to the intersection of 16th Avenue and Intake Boulevard.

At Intake Boulevard, the pipeline route turns north to Riviera Drive (see **VISUAL RESOURCES Figure 5**), and then east to a point near the I-10 on-ramp where the pipeline will be drilled underground and under the Colorado River using a directional horizontal drilling technique (see **VISUAL RESOURCES Figures 6 and 7**). The landscape along Riviera Drive is rural/agricultural to the south while Interstate 10 parallels the north side of Riviera Drive. The pipeline would resurface at its final destination in the El Paso Gas Company metering yard on the Arizona side of the Colorado River (see **VISUAL RESOURCES Figure 8**). On the east side of the Colorado River, the land is disturbed and contains no native vegetation (BEP 2000s, page 2).

VIEW AREAS AND KEY OBSERVATION POINTS

Staff evaluated the project in detail from eight view areas. **VISUAL RESOURCES Figure 9** shows the location of the KOPs used to represent these areas and the direction of view from each KOP. Visual Analysis Data Sheets are provided for each KOP in Appendix A.

KOP 1 – WESTBOUND INTERSTATE 10

KOP 1 was selected as one of two locations to characterize the impact to motorists on Interstate 10 (I-10). KOP 1 is located on westbound I-10 approximately one-quarter mile due south of the southeast corner of the project site. This vantage point captures the view of the site available to westbound I-10 motorists just after reaching the top of the mesa (see **VISUAL RESOURCES Figure 10A**).

This location provides a panoramic view to the north encompassing the project site in the middleground and the Little Maria and Big Maria Mountains as distant background features. The foreground to middleground terrain is flat and supports sparse desert scrub vegetation. Also visible is the citrus orchard immediately east of the site, Blythe Substation, and the numerous electric transmission lines that cross the site. The view to the site from westbound I-10 would be “indirect” or “peripheral” in that at the point that motorists ascend the first tier of the mesa and are in a position to see the site, its view orientation would effectively be 90° off (north) of the primary view direction, which is westerly. For the purposes of this report, a view is considered indirect or peripheral if the angle of view is greater than 45° off the primary view direction (typically direction of travel for motorists or residence’s frontal facing view direction).

Visual Quality

Views to the north from I-10 encompass foreground to middleground panoramic scenes of a broad, level, desert mesa landscape lacking distinctive features and punctuated by energy transmission infrastructure and orchards. The distant Little Maria and Big Maria Mountains provide a backdrop of angular landforms, adding some visual variety and interest though they appear low on the horizon. The tan desert soils are the dominant coloration and the dark green of the adjacent citrus orchard adds some color contrast in an otherwise monotonal landscape. The lack of scenic features, vivid coloration, or elements of visual interest, combined with the presence of numerous transmission line structures and the substation, result in a low rating for visual quality.

Visual Absorption Capability

The proposed project would be located in the middleground on level terrain, portions of which are presently occupied by energy transmission structures with similar vertical lines to those of the proposed switchyard and vertical power plant surfaces. The adjacent Blythe Substation establishes complex industrial-appearing forms and lines in the existing landscape. From KOP 6, the viewer would see the new facilities through the existing SoCal Edison-Eagle Mountain 161kV transmission line and the IID-F Line-Nyland 161kV and Western-Knob 161kV transmission lines. Although this existing infrastructure provides somewhat of a developed context for the new facilities, the lack of screening and openness of the level landscape would increase project noticeability. Therefore, overall visual absorption capability is rated low to moderate.

Viewer Sensitivity

Of the approximately 16,000 motorists per day on I-10, about 40 percent are heavy trucks (BEP 1999a, p. 7.5-4). Though viewer expectations along this portion of I-10 generally anticipate open, unobstructed, panoramic landscapes, geometric block forms similar to that of the proposed facility are present in the regional landscape and periodically adjacent to the highway. Such forms include scattered residential and commercial structures and buildings associated with the Blythe Airport. I-10 motorists are also provided periodic views of a substantial amount of energy transmission infrastructure, which exhibit an industrial character of complex horizontal and vertical forms and lines. The presence of built geometric structures and linear facilities in an otherwise predominantly natural setting provides a regional visual context that results in a low-to-moderate viewer sensitivity.

Viewer Exposure

Site visibility is high in that views of the site from KOP 1 are generally unobstructed at a middleground viewing distance but the angle of view is peripheral (greater than 45° off the primary westerly view direction). Although the number of potential viewers is high, the duration of view is brief given the relatively high rates of travel speed along Interstate 10. As a result, the high visibility and numbers of viewers are moderated by the brief duration of a peripheral view. Therefore, overall viewer exposure is moderate.

Visual Impact Susceptibility

For westbound motorists on I-10, the low visual quality, low-to-moderate visual absorption capability and viewer sensitivity, and moderate viewer exposure result in a low-to-moderate visual impact susceptibility as viewed from KOP 1. Essentially, the low visual quality landscape has existing characteristics that will be able to accommodate the proposed project without generating high visual contrast. Since viewer sensitivity to the likely changes would be low-to-moderate and viewer exposure to those changes would only be moderate, the conclusion is that the likelihood that a severe visual impact would result under this scenario is low-to-moderate.

KOP 2 – NEAREST RESIDENCE AND COMMERCIAL ESTABLISHMENT ON HOBSONWAY

KOP 2 was selected to characterize the visual impact to the nearest residence and commercial use on Hobsonway. KOP 2 is located adjacent, and to the south of, Hobsonway, approximately 0.75 mile southwest of the project site. The view is to the northeast and is depicted in **VISUAL RESOURCES Figure 11A**. From this location, views toward the site are open and generally unobstructed except for some screening provided by low-growing vegetation in the foreground of KOP 2. The foreground to middleground terrain is flat and the project would be located in the middleground along with a number of transmission line structures and the Blythe Substation. The Big Maria and Dome Rock Mountains are visible as distant background features.

Visual Quality

Views to the northeast from the residence and commercial establishment encompass foreground to middleground panoramic scenes of a broad, level, desert mesa landscape lacking distinctive features and containing energy transmission infrastructure. The distant Big Maria and Dome Rock Mountains provide a backdrop of angular landforms, adding some visual variety and interest though they appear low on the horizon. The tan desert soils and dark greenish-brown desert scrub vegetation are the dominant coloration in a landscape generally lacking vivid coloration or color contrast. The lack of scenic features or elements of visual interest, combined with the presence of numerous transmission line structures, the Blythe Substation, and the structures associated with the commercial use, result in a low rating for visual quality.

Visual Absorption Capability

The proposed project would be located in the middleground of views from KOP 2 on level terrain, portions of which are presently occupied by energy transmission structures with vertical lines similar to those of the proposed switchyard and vertical power plant surfaces. The adjacent Blythe Substation establishes complex industrial-appearing forms and lines in the existing landscape. From KOP 2, the viewer would view the new facilities “through” the SoCal Edison-Eagle Mountain 161kV transmission line. This existing infrastructure provides a developed context for the new facilities. However, the general lack of significant screening opportunities and openness of the level landscape would increase project

noticeability. Therefore, overall visual absorption capability is rated low-to-moderate.

Viewer Sensitivity

Viewer expectations at this location are conditioned by the regional landscape along Hobsonway and in the vicinity of KOP 2. Viewers generally anticipate open, unobstructed, panoramic landscapes, the presence of numerous electric transmission line structures and Blythe Substation, the geometric block forms of the existing commercial/residential buildings at KOP 2 and the nearby (though not visible from KOP 2) developed facilities adjacent to the airport. Viewers are also aware of the high traffic volumes and large trucks with containers of rectangular block form on Interstate 10. Overall viewer sensitivity is rated low-to-moderate.

Viewer Exposure

Site visibility is moderate-to-high in that the view of the site from KOP 2 is generally unobstructed at a middleground viewing distance except for some limited ground level screening provided by desert scrub vegetation. While the number of viewers is low, the view duration from this location would be extended with a direct angle of view. The low numbers of viewers and the middleground viewing distance would partially balance the moderate-to-high visibility and extended duration of view. Therefore, viewer exposure would be moderate.

Visual Impact Susceptibility

For viewers at this location, the low visual quality, low-to-moderate visual absorption capability and viewer sensitivity, and moderate viewer exposure result in a low-to-moderate visual impact susceptibility as viewed from KOP 2.

KOP 3 – NICHOLLS WARM SPRINGS SUBDIVISION

KOP 3 was selected to capture the potential visual impact to the nearest major residential area. The Nicholls Warm Springs residential subdivision is located south of Blythe Municipal Airport, adjacent, and to the south of, Interstate 10. KOP 3 was established on the north side of the subdivision at a distance of approximately 2.5 miles southwest of the project site. A number of residences along the north and east perimeter of the subdivision would have distant, indirect views of the proposed project. The viewshed to the northeast from KOP 3 includes the characteristic sparsely vegetated, tan-colored desert landscape in the foreground to middleground, a few structures on the north side of I-10 adjacent to the airport, and several transmission lines extending across the flat desert landscape. The Blythe Substation is barely discernible in the background (see **VISUAL RESOURCES Figure 12A**).

Visual Quality

Views to the northeast from the north side of the Nicholls Warm Springs residential subdivision encompass foreground to background panoramic scenes of a broad, level, desert mesa landscape with a dominant monotone tan coloration and lacking distinctive features. Interstate 10 features prominently in the foreground to middleground landscape. The viewshed is typical of the region and is punctuated

by energy transmission infrastructure and facilities associated with Blythe Municipal Airport. Though barely visible above the horizon, the distant Big Maria and Dome Rock Mountains provide a faint backdrop of angular landforms of lavender coloration. The lack of scenic features, vivid coloration or color contrast, or elements of visual interest, combined with the presence of energy and transportation infrastructure contribute to a low rating for visual quality.

Visual Absorption Capability

The proposed project would be located on level terrain at a background distance of approximately 2.5 miles. Although the lack of screening and openness of the flat foreground to middleground landscape will result in the new facilities protruding above the horizon, the substantial viewing distance reduces the visibility and noticeability of the project site. Also, the faint backdrop of the Big Maria Mountains will help to obscure the plant facilities. Therefore, overall visual absorption capability is rated moderate.

Viewer Sensitivity

Although residential uses are generally attributed a high degree of viewer sensitivity, viewer sensitivity is also conditioned by existing landscape characteristics and quality, visibility, and primary view direction. At the Nicholls Warm Springs Subdivision, most primary (front of residence) views along the north and east side of the subdivision (represented by KOP 3) are directed to the south and west away from the direction of the proposed project. Also, the project is located at a substantial distance from the subdivision, thus reducing project visibility. Furthermore, between the project and the subdivision is Interstate 10 with a continuous flow of vehicles, many of which are large tractor-trailers with large containers of rectangular, geometric form. Also present in northern views from the subdivision are structures on the north side of I-10 in close proximity to Blythe Airport. Views in the direction of the proposed project encompass numerous built features, thus, tempering viewer expectations and lowering viewer sensitivity to a moderate level at KOP 3.

Viewer Exposure

Project visibility is low due to the substantial distance between KOP 3 and the proposed project and the partial screening that occurs from a continual stream of vehicles on I-10, which intervenes between the viewer and the project site. The low project visibility and peripheral view offset the moderate number of viewers with potentially extended views such that overall viewer exposure at KOP 3 would be low.

Visual Impact Susceptibility

From the north side of Nicholls Warm Springs residential development, the low visual quality and viewer exposure, and moderate visual absorption capability generally offset the moderate viewer sensitivity. Therefore, visual impact susceptibility is low for KOP 3.

KOP 4 – CITY OF BLYTHE

KOP 4 is located adjacent, and to the north of, Hobsonway on the "C" Canal east levee adjacent to the K-Mart parking lot. This location is approximately four miles east of the project site and was selected to depict the closest view of the site from the City of Blythe urban center. The view from KOP 4 is panoramic, encompassing agricultural fields, the irrigation canal, Hobsonway, roadside utility infrastructure on wood poles that transition from the foreground to background, Palo Verde Mesa, and the McCoy Mountains in the distant background (see **VISUAL RESOURCES Figure 13A**). The view to the site from KOP 4 would be direct though completely obscured by intervening vegetation.

Visual Quality

Views to the west from KOP 4 encompass foreground to middleground views of a landscape that has been substantially altered for agricultural, irrigation, transportation, and communication purposes. The viewshed is panoramic, providing scenes of broad, level agricultural fields and adjacent utility infrastructure, which is typical of the characteristic rural/cropland landscape common to the Palo Verde Valley. The distant McCoy Mountains provide a faint lavender backdrop of angular forms, adding some visual variety though they appear low on the horizon. The green color of the agricultural fields is the dominant, though transient, coloration, which changes with crop stage. However, the lack of scenic features, vivid coloration, or elements of visual interest as well as the prominence of Hobsonway, roadside utility poles, and signage contribute to a low rating for visual quality.

Visual Absorption Capability

The proposed project would be located on level terrain at a background distance of approximately four miles. At this distance, and being set back from the edge of the lower mesa tier, the project would be minimally visible. Also, vegetation along intervening roads screens the ground level portions of the site. Therefore, overall visual absorption capability is rated high.

Viewer Sensitivity

KOP 4 is located on the western edge of the urban center of Blythe. Viewers at this location are generally accessing commercial facilities or are in transit to other short-range destinations that are typically not considered visually sensitive activities or uses. Viewer expectations at this locale include the transitional landscapes between urban and rural settings that include various forms of infrastructure as well as commercial and industrial uses. Although there are several residences in the vicinity of KOP 4 (primarily along Hobsonway), the residences do not have unobstructed views of the site since they generally face north or south toward Hobsonway and not to the west. Overall viewer sensitivity is considered low.

Viewer Exposure

Site visibility is low at a background viewing distance that offsets the moderate to high number of viewers with the potential for direct and extended views. Therefore, viewer exposure is low.

Visual Impact Susceptibility

The low visual quality, viewer sensitivity, and viewer exposure, combined with high visual absorption capability result in a low visual impact susceptibility as viewed from KOP 4.

KOP 5 – BLYTHE MUNICIPAL GOLF COURSE AND MESA BLUFFS RESIDENCES

KOP 5 was selected to characterize the impact to the Blythe Municipal Golf Course and the adjacent residences, all of which are located on Palo Verde Mesa and have a direct, though distant (at approximately 4.5 miles), line of sight to the proposed plant site. KOP 5 is located in a small parking area adjacent to the Golf Course and several residences at the edge of the mesa (see **VISUAL RESOURCES Figure 14A**).

This location provides a panoramic view to the south and southwest, encompassing the Palo Verde Valley in the foreground and middleground and the project site in the background. The Mule and Little Chuckwalla Mountains provide a distant backdrop to the site. The foreground to middleground terrain is flat and supports sparse desert scrub vegetation and a few irrigated agricultural parcels. Also visible in the distance is the City of Blythe, the airport, the citrus orchard immediately east of the site, the Blythe Substation, and the numerous electric transmission lines that cross the site. At this distance, the substation and transmission lines are barely discernible. The view to the site from several residences and several of the golf course fairways and greens would be direct and extended.

Visual Quality

The panoramic views to the south and southwest overlook the Palo Verde Valley and Palo Verde Mesa. These vista views also encompass the mountains that ring the area. Though much of the foreground to middleground landscape is dominated by monotone desert scrub vegetation and sandy soils, the elevated perspective available from this KOP provides visual access to a regional landscape that offers more distinctive features with greater visual variety and interest. The color contrast of the tan soils and vegetation with the vivid green of irrigated croplands and the lavender of distant mountain ranges add to a more visually interesting landscape. Visual quality from KOP 5 is rated moderate-to-high.

Visual Absorption Capability

The proposed project would be located on level terrain at a background distance of approximately 4.5 miles. Although views of the site from the Mesa Bluffs area would be unobstructed, at this distance, the project would appear very small in the landscape. Also, the backdrop of the Mule Mountains would prevent any project components from extending above the horizon. Therefore, overall visual absorption capability is rated moderate-to-high.

Viewer Sensitivity

Residences in the Mesa Bluffs area are situated along the mesa edge to take advantage of the vistas overlooking the Palo Verde Valley and Mesa. Also, the recreational users of the Municipal Golf Course (approximately 40,000 to 50,000

rounds of golf are played annually – BEP 2000c, p. 7.5-19) have expectations for panoramic views and a predominantly naturally appearing landscape. Therefore, the viewers in the Mesa Bluffs area are considered to be highly sensitive to landscape changes and overall viewer sensitivity is rated high.

Viewer Exposure

Site visibility is low due to the substantial distance between the golf course/Mesa Bluffs area and the project site. Though the number of potential viewers at the golf course is moderate, the site would only be visible from a few of the fairways and greens and would generally not be noticeable given the distance and indirect angle of view. The adjacent residences would have more direct viewing opportunities but again, the distance would generally limit project visibility. However, the low project visibility would offset the extended duration of view available to residents and golfers alike. Therefore, viewer exposure is considered low.

Visual Impact Susceptibility

For viewers along Mesa Bluffs, the moderate-to-high visual quality and high viewer sensitivity are balanced by the moderate-to-high visual absorption capability and overall low viewer exposure, leading to a low-to-moderate assessment for overall visual impact susceptibility.

KOP 6 – WESTBOUND HOBSONWAY

KOP 6 was selected as one of two locations to characterize the impact to motorists on Hobsonway. KOP 6 is located on westbound Hobsonway at the southeast corner of the project site and captures the view of the site available to westbound motorists (see **VISUAL RESOURCES Figure 15A**).

This location provides a panoramic view to the north encompassing the project site in the foreground and the Little Maria and Big Maria Mountains as distant background elements. The foreground to middleground terrain is flat and supports sparse desert scrub vegetation, which is crossed by numerous electric transmission lines. Also visible (but out of the frame of the photograph) is the citrus orchard immediately east of the site and Blythe Substation. The view to the site from westbound Hobsonway would be peripheral. At the point that motorists ascend the first tier of the mesa and are in a position to see the site, their view orientation toward the site would effectively be 90° off (north) of the primary view direction, which is the westerly direction of travel.

Visual Quality

Views to the north from Hobsonway encompass foreground to middleground panoramic scenes of a broad, level, desert mesa landscape lacking distinctive features and punctuated by energy transmission infrastructure and orchards. The distant Little Maria and Big Maria Mountains provide a backdrop of angular landforms, adding some visual variety and interest though they appear low on the horizon. The tan desert soils are the dominant coloration and the dark green of the adjacent citrus orchard adds some color contrast in an otherwise monotonal landscape. The lack of scenic features, vivid coloration, or elements of visual

interest, combined with the presence of numerous transmission line structures, Blythe Substation, and roadside fencing result in a low rating for visual quality.

Visual Absorption Capability

The proposed project would be located in the foreground to middleground on level terrain, portions of which are presently occupied by energy transmission structures with vertical lines similar to those of the proposed switchyard and vertical power plant surfaces. The adjacent Blythe Substation establishes complex industrial-appearing forms and lines in the existing landscape. From KOP 6, the viewer would see the new facilities through the existing SoCal Edison-Eagle Mountain 161kV transmission line and the IID-F Line-Nyland 161kV and Western-Knob 161kV transmission lines. Although this existing infrastructure provides somewhat of a developed context for the new facilities, the lack of screening and openness of the level landscape would increase project noticeability. Therefore, overall visual absorption capability is rated low to moderate.

Viewer Sensitivity

Viewer expectations along this portion of Hobsonway are conditioned by the vicinity landscape. Viewers generally anticipate open, unobstructed, panoramic landscapes, the presence of numerous electric transmission line structures and Blythe Substation, the geometric block forms of the commercial/residential buildings at KOP 2 and the residential structure further west, and the nearby (though not visible from KOP 6) structures adjacent to the airport to the west. Viewers are also aware of the high traffic volumes and large trucks with containers of rectangular block form on Interstate 10. Overall viewer sensitivity is rated low-to-moderate.

Viewer Exposure

Though the angle of view toward the site from Hobsonway is peripheral (greater than 45° off the primary view direction, which is west), site visibility is high because views of the site from KOP 6 are unobstructed at a foreground to middleground viewing distance. However, the close proximity and high visibility is moderated by relatively low numbers of potential viewers along Hobsonway and the brief time that westbound motorists could potentially view the project given the typically high rates of travel speed and peripheral view direction. Therefore, overall viewer exposure is moderate.

Visual Impact Susceptibility

For westbound motorists on Hobsonway, the low visual quality, low-to-moderate viewer sensitivity, and moderate viewer exposure, when combined with a low-to-moderate visual absorption capability, result in a low-to-moderate visual impact susceptibility as viewed from KOP 6.

KOP 7 – NEARBY RESIDENCE AND EASTBOUND HOBSONWAY

KOP 7 was selected to characterize the reasonable worst case visual impact to nearby residences and eastbound traffic on Hobsonway. KOP 7 is located on eastbound Hobsonway, immediately north of a residence that is located on the eastern face of the mesa's upper tier, approximately 0.85 mile southwest of the

project site. The view is to the northeast and is depicted in **VISUAL RESOURCES Figure 16A**. This location provides a slightly elevated view over the site that is open and unobstructed. The foreground to middleground terrain is flat and supports sparse desert scrub vegetation. The project would be visible in the middleground along with a number of existing transmission line structures, Blythe Substation, the paved lanes of Hobsonway, and the adjacent citrus orchard. Other roadside utility poles are visible as they transition from the foreground to background away from the viewer along the north side of Hobsonway. To the east, the Dome Rock Mountains are visible as distant background elements.

Visual Quality

Views to the east-northeast from KOP 7 and the adjacent residence encompass foreground to background panoramic scenes of a broad, level, desert mesa landscape lacking distinctive features and containing energy transmission infrastructure and irrigated orchards. The most prominent foreground to middleground landscape feature is the narrow, linear ribbon of dark gray pavement that comprises Hobsonway. Portions of the Palo Verde Valley are visible in the background and the distant Dome Rock Mountains provide a backdrop of angular landforms that add some visual variety and interest. The tan desert soils and dark greenish-brown desert scrub vegetation are the dominant coloration in a landscape generally lacking vivid coloration or color contrast. The lack of scenic features or elements of visual interest combined with the presence of numerous transmission line structures, utility poles, Blythe Substation, road pavement, roadside fencing, and the built structures at the nearest commercial/residential use contribute to a low rating for visual quality.

Visual Absorption Capability

The proposed project would be located in the middleground of views from KOP 7 on level terrain, portions of which are presently occupied by energy transmission structures with vertical lines similar to those of the proposed switchyard and vertical power plant surfaces. The adjacent Blythe Substation establishes complex industrial-appearing forms and lines in the existing landscape. From KOP 7, the viewer would see the new facilities through the existing SoCal Edison-Eagle Mountain 161kV transmission line. This existing infrastructure provides a developed context for the new facilities. However, the general lack of significant screening opportunities and openness of the level landscape would increase project noticeability while the backdrop of the Dome Rock Mountains will lessen project noticeability. Therefore, overall visual absorption capability is rated low-to-moderate.

Viewer Sensitivity

Viewer expectations at this location are conditioned by the vicinity landscape along Hobsonway which includes, unobstructed, panoramic landscapes, the presence of numerous electric transmission structures, Blythe Substation, and occasional geometric block forms such as the existing commercial establishment and facilities adjacent to the airport (which are not visible from KOP 7). Viewers are also aware of the high traffic volumes and large trucks with containers of rectangular block form

on Interstate 10. Viewer sensitivity is rated low-to-moderate for motorists on Hobsonway while viewer sensitivity for the adjacent residence is rated high.

Viewer Exposure

Site visibility is high in that the view of the site from KOP 7 is slightly elevated and generally unobstructed with a middleground viewing distance. While the number of viewers is low, the view duration for eastbound motorists on Hobsonway and for the adjacent residence would be extended with a direct angle of view. The high visibility and extended duration of view would be somewhat moderated by the low numbers of viewers and middleground viewing distance. Therefore, viewer exposure would be moderate for motorists and high for the adjacent residence.

Visual Impact Susceptibility

For westbound motorists at KOP 7, the low visual quality, low-to-moderate visual absorption capability, and low-to-moderate viewer sensitivity, combined with moderate viewer exposure, result in an overall moderate visual impact susceptibility. The adjacent residence experiences higher viewer sensitivity and exposure so the resulting visual impact susceptibility is considered high for the residence.

KOP 8 – EASTBOUND INTERSTATE 10

KOP 8 was selected to characterize the visual impact to eastbound motorists on Interstate 10 (I-10). KOP 8 is located on eastbound I-10 southwest of the project site and immediately east of the upper mesa eastern face. The view is to the northeast and is depicted in **VISUAL RESOURCES Figure 17A**. This location provides a slightly elevated view over the site that is open and unobstructed. The foreground to middleground terrain is flat and supports a sparse desert scrub vegetation. The project would be visible in the middleground along with a number of existing transmission line structures, the Blythe Substation, and the adjacent citrus orchard. To the east, the Dome Rock Mountains are visible as distant background elements.

Visual Quality

Just after descending the upper tier of the mesa, the view to the east and northeast from Interstate 10 encompasses middleground to background panoramic scenes of a broad, level, desert mesa landscape lacking distinctive features and containing energy transmission infrastructure, roadside signage, and irrigated orchards. The dark green color of the orchard provides some color contrast with the surrounding tan desert soils and vegetation. The most prominent foreground to middleground landscape feature is the narrow, linear ribbon of gray pavement that comprises Interstate 10. The distant Dome Rock Mountains provide a backdrop of angular landforms. The general lack of scenic features or elements of visual interest, combined with the presence of numerous transmission line structures, utility poles, Blythe Substation, road pavement and roadside signage, and the built structures at the nearest, down-slope commercial/residential use on Hobsonway contribute to a low rating for visual quality.

Visual Absorption Capability

The proposed project would be located in the middleground of views from KOP 8 on level terrain, portions of which are presently occupied by energy transmission structures with vertical lines similar to those of the proposed switchyard and vertical power plant surfaces. The adjacent Blythe Substation also establishes complex industrial-appearing forms and lines though they are not similar to the geometric block forms and massing that would comprise the proposed project. From KOP 8, the viewer would see the new facilities through the existing SoCal Edison-Eagle Mountain 161kV transmission line. This existing infrastructure, along with the highway in the foreground, provides a developed context for the new facilities. However, the general lack of significant screening opportunities and openness of the level landscape will result in the new facilities protruding above the horizon, which will increase project noticeability. Therefore, overall visual absorption capability is rated low-to-moderate.

Viewer Sensitivity

Viewer expectations at this location are conditioned by the vicinity landscape along Interstate 10 which includes, unobstructed, panoramic landscapes, the presence of numerous electric transmission structures, Blythe Substation, and occasional geometric block forms such as the existing commercial establishment and facilities adjacent to the airport (which are not visible from KOP 8). Views also include the high traffic volumes and large trucks with containers of rectangular block form on Interstate 10. Overall viewer sensitivity is rated low-to-moderate.

Viewer Exposure

In spite of an indirect view, site visibility is high in that the view of the site from KOP 8 is from a slightly elevated perspective and is generally unobstructed at a middleground viewing distance. The number of viewers is high and the view duration for eastbound motorists on I-10 would be moderate. The high visibility and numbers of viewers and moderate duration of view would contribute to high viewer exposure.

Visual Impact Susceptibility

For viewers at KOP 8, the low visual quality, low-to-moderate visual absorption capability and viewer sensitivity, combined with a high viewer exposure result in an overall moderate visual impact susceptibility.

IMPACTS

PROJECT SPECIFIC IMPACTS

CONSTRUCTION IMPACTS

POWER PLANT, ELECTRIC TRANSMISSION LINES, WATER EVAPORATION PONDS, AND ACCESS ROAD

Construction of the proposed power plant, electric transmission lines, water evaporation ponds, and access road would cause temporary visual impacts due to the presence of equipment, materials, and workforce. These impacts would occur at the proposed power plant site and construction laydown areas, along the short rights of way for the transmission lines, at the water evaporation ponds, and along the access road. All of these components are located within, or immediately adjacent to, the proposed 76-acre development site. Traffic would also increase dramatically along Hobsonway during construction. Construction activities would be visible from Hobsonway, the nearest commercial establishment, the nearest residences, and Interstate 10 which is the primary travel corridor in the region. Due to the relatively short-term nature of project construction, adverse but not significant visual impacts are anticipated.

NATURAL GAS DELIVERY PIPELINE

Views of the natural gas delivery pipeline construction equipment, materials, and activities would be limited to a relatively few motorists on the roads the pipeline will be following, a few commercial properties, and a number of rural residences. A typical pipeline spread would affect a linear area of approximately 300 to 400 feet. Pipeline construction would be highly visible in the foreground of views to the adjacent commercial and residential uses. However, occupants would have a frontal view of the pipeline laying equipment for only three to five days and a residual side view of the equipment for several more days, depending upon obstructions and adjacent screening (BEP 2000w, Visual Resources p. 15). Therefore, visual impacts would be adverse but not significant.

OPERATION IMPACTS

The analysis of operation impacts is presented for each Key Observation Point (KOP) in the Visual Analysis Data Sheets provided at the end of this chapter. For each KOP, an evaluation of visual contrast, project dominance, and view blockage is provided with a concluding assessment for the severity of visual change.

KEY OBSERVATION POINT 1 – WESTBOUND INTERSTATE 10

VISUAL RESOURCES Figure 10B presents a photosimulation of the proposed project as viewed from KOP 1. The geometric block forms of the power plant facilities and the complex form of the switchyard are clearly visible in the middleground to the west of the existing Blythe Substation. Though not discernible in the photosimulation, the wood pole H-frame transmission line structures would also be visible but not generally noticeable in the context of the existing

transmission line structures on and adjacent to the site. The two water evaporation ponds and the access roads would not be noticeable in the field of view.

Visual Contrast

The following section evaluates the changes that would occur to the three principal landscape components of land and water, vegetation, and structures as a result of project implementation, and the resulting visual contrast that would be caused, if any.

As detailed in the Visual Analysis Data Sheet for KOP 1, the landform component of the existing landscape is characterized by level to angular block forms with strong horizontal (foreground mesa) to irregular lines (background mountain ranges). The color is tan and the landform texture is smooth to granular. With implementation of the proposed project, some landform modification will occur with development of the water evaporation ponds. Landform changes will primarily result in low, horizontal block landforms and horizontal lines associated with the pond berms. These changes would be consistent with the established landforms and lines in the existing landscape. However, the pond berms and excavated areas associated with pond construction will generally not be noticeable in views from KOP 1. As a result, landform changes associated with the proposed project will not result in perceptible visual contrast as experienced from KOP 1.

Existing vegetation within the viewshed of KOP 1 is visible as well-defined continuous blocks with horizontal lines (the citrus orchard) and as irregular patchy forms with irregular to indistinct lines (the desert scrub vegetation). Vegetation colors range from green to tan and generally exhibit a matte texture. With implementation of the proposed project, minimal change to the existing vegetation characteristics will occur. Therefore, any vegetation changes associated with the proposed project are not expected to result in perceptible visual contrast as viewed from KOP 1.

The numerous transmission line and substation structures visible in the foreground to middleground as viewed from KOP 1 range from linear forms associated with the transmission towers and conductors to geometric and complex for the substation components. Structural line characteristics range from vertical (for the transmission structures and substation components), to horizontal (for the transmission conductors and substation components). Existing structure colors include gray, tan, and white and at the KOP 1 viewing distance, structural textures appear smooth.

The proposed project will introduce prominent, middleground, geometric, block forms associated with the power plant facilities as well as linear and complex forms associated with the proposed transmission line structures and switchyard. Such geometric block forms are not currently present in the immediate viewshed shown in the simulation. However, as shown in the simulation from KOP 1, from this particular vantage point, the density of structures at Blythe Substation imparts an impression of mass that is similar to the proposed switchyard and is not completely dissimilar to the power plant structural mass. The resulting visual contrast would be moderate with respect to form. Project implementation would also result in more

prominent irregular to horizontal structural lines that would not be consistent with the less prominent vertical lines of the existing transmission lines and the less prominent vertical and horizontal lines of the Blythe Substation. The resulting visual contrast would be moderate. The earth-tone structure coloration and smooth texture would be similar to existing structure colors. The resulting visual contrast would be low for color and none for texture.

In summary, the visual contrast that would be experienced at KOP 1 would be moderate. This result is highly correlated to the moderate degree of visual contrast associated with the changes in structural form and line that would occur when comparing the proposed project with existing structure characteristics in the KOP 1 landscape.

Project Dominance

The most prominent landscape feature in foreground to middleground views from KOP 1 is the broad mesa landform. Also prominent is the complex structural form of Blythe Substation. The distant Little Maria and Big Maria mountain ranges are noticeable but subordinate features. Although the proposed power plant facilities including the switchyard would be similar in height and twice as wide when compared to Blythe Substation, the proposed facilities would appear substantially smaller than the mesa landform. As with the existing structures, the proposed structures would appear small to moderate in size in the wide field of view. However, the solid massing of the geometric block structures, the lack of an apparent backdrop, and the resulting structure skylining would increase the prominence of the proposed project. Therefore, project dominance is rated co-dominant.

View Blockage

From Key Observation Point 1 the project would block a relatively small part of the low quality view. Therefore, view blockage would be low.

Severity of Visual Change

From westbound Interstate 10, the severity of the visual change that the proposed project would cause, would be moderate primarily due to the moderate contrast associated with the power plant facility structural forms and lines and the co-dominance of the proposed project in relation to the existing landscape features.

Visual Impact Significance

As viewed from westbound I-10, the key considerations regarding the existing landscape are low visual quality and viewer sensitivity which lead to a low-to-moderate visual impact susceptibility. When the proposed project is considered within this context, the moderate severity of visual change that would occur with project implementation would result in an adverse but not significant visual impact.

KOP 2 – NEAREST RESIDENCE AND COMMERCIAL ESTABLISHMENT ON HOBSONWAY

VISUAL RESOURCES Figure 11B presents a photosimulation of the proposed project as viewed from KOP 2. The geometric block forms of the power plant

facilities are clearly visible to the west of the existing Blythe Substation. The proposed switch yard and transmission lines would be partially screened from view by the power plant facilities. The two water evaporation ponds and the access roads also would not be noticeable in the field of view since intervening ground level scrub vegetation would screen them from view.

Visual Contrast

As detailed in the Visual Analysis Data Sheet for KOP 2, the landform component of the existing landscape is characterized by level to angular block forms with strong horizontal (foreground mesa) to irregular lines (background mountain ranges). The predominant landform color is tan and the landform texture is smooth to granular. With implementation of the proposed project, some landform modification will occur with development of the water evaporation ponds. Landform changes will primarily result in low, horizontal block landforms and horizontal lines associated with the pond berms. These changes would be consistent with the established landforms and lines in the existing landscape. However, the pond berms and excavated areas associated with pond construction will not be visible in views from KOP 2 because intervening ground level desert scrub vegetation will screen much of them from view. As a result, landform changes associated with the proposed project will not result in perceptible visual contrast as experienced from KOP 2.

Existing desert scrub vegetation within the viewshed of KOP 2 is visible as irregular patchy forms with irregular to indistinct lines. Vegetation colors range from green to tan and dark brown, and generally exhibit a matte texture. With implementation of the proposed project, minimal change to the existing vegetation characteristics will occur. Therefore, any vegetation changes associated with the proposed project are not expected to result in perceptible visual contrast as viewed from KOP 2.

The numerous transmission line and substation structures visible in the middleground as viewed from KOP 2 range from linear forms associated with the transmission towers and conductors to geometric and complex forms for the substation components. Structural line characteristics range from vertical (for the transmission structures and substation components), to horizontal (for the transmission conductors and substation components). Existing structure colors include gray, tan, and white and at the KOP 2 viewing distance, structural textures appear smooth.

The proposed project will introduce prominent, geometric, block forms associated with the power plant facilities as well as linear and complex forms associated with the proposed transmission line structures and switchyard. Unlike the view from KOP 1 which is closer to Blythe Substation, from this vantage point, the density of structures at the substation does not impart a sense of mass that would appear somewhat similar to the block forms of the proposed project. However, the resulting visual contrast would still be moderate. Project implementation would also result in more prominent irregular to horizontal structural lines. The prominent irregular to horizontal lines of the power plant facilities are not consistent with the less prominent vertical lines of the existing transmission lines and the less prominent vertical and horizontal lines of the Blythe Substation as experienced from this KOP.

The resulting visual contrast would be moderate for line. The gray and tan structure coloration and smooth texture would be similar to existing structure colors. The resulting visual contrast would be low for color and none for texture.

In summary, the overall visual contrast that would be experienced at KOP 2 would be moderate. This result is primarily due to the moderate degree of visual contrast associated with the introduction of new structural forms and lines into the KOP 2 landscape.

Project Dominance

The most prominent landscape feature in foreground to middleground views from KOP 2 is the broad mesa landform. Less prominent is the complex structural form of Blythe Substation and the numerous transmission line structures. The distant Big Maria and Dome Rock mountain ranges are noticeable but subordinate features. Although the proposed power plant facilities would appear substantially smaller than the mesa landform, they would appear considerably more prominent than the existing substation and transmission line structures from KOP 2. The proposed project would appear small in size in the wide field of view. However, the solid massing of the geometric block structures, the lack of an apparent backdrop, and the resulting structure skylining would increase the prominence of the proposed project. Therefore, project dominance is rated co-dominant.

View Blockage

From KOP 2, the project would block a relatively small part of the overall, low quality view. Specifically, a portion of the Dome Rock Mountains to the east would be blocked from view by the power plant facilities. The resulting view blockage would be low.

Severity of Visual Change

From KOP 2, the severity of the visual change caused by the proposed project would be moderate because of the moderate degree of visual contrast that would occur and the project's co-dominance in the field of view.

Visual Impact Significance

As viewed from KOP 2, the key existing landscape characteristics affecting the visual impact would be the low visual quality and low-to-moderate viewer sensitivity which lead to a low-to-moderate visual impact susceptibility. When the proposed project is considered within this context, the moderate severity of visual change that would occur with project implementation would result in an adverse but not significant visual impact.

KOP 3 – NICHOLLS WARM SPRINGS SUBDIVISION

VISUAL RESOURCES Figure 12B presents a photosimulation of the proposed project as viewed from KOP 3, adjacent to the north side of the Nicholls Warm Springs Subdivision. A number of residences along the north and east perimeters of the subdivision would have distant, though indirect, views of the project site. The geometric block forms of the power plant facilities are visible to the west of the

existing Blythe Substation. The proposed switchyard and transmission lines would be screened from view by the power plant facilities. The two water evaporation ponds and the access roads also would not be noticeable in the field of view since the project site would be on a lower elevation mesa tier and intervening ground level scrub vegetation would screen the pond berms from view.

Visual Contrast

As detailed in the Visual Analysis Data Sheet for KOP 3 (see Appendix A), the landform component of the existing landscape is characterized by level to angular block forms with strong horizontal (foreground mesa) to irregular lines (background mountain ranges). The predominant landform color is tan and the landform texture is smooth to granular. With implementation of the proposed project, some landform modification will occur with development of the water evaporation ponds. Landform changes will primarily result in low, horizontal block landforms and horizontal lines associated with the pond berms. These changes would be consistent with the established landforms and lines in the existing landscape. However, the pond berms and excavated areas associated with pond construction would not be visible in views from KOP 3 because intervening vegetation would screen them from view. As a result, landform changes associated with the proposed project would not result in perceptible visual contrast as experienced from KOP 3.

Existing desert scrub vegetation within the viewshed of KOP 3 is visible as irregular patchy forms with irregular to indistinct lines. Vegetation colors range from green to tan and dark brown, and generally exhibit a matte texture. With implementation of the proposed project, minimal change to the existing vegetation characteristics will occur. Therefore, any vegetation changes associated with the proposed project are not expected to result in perceptible visual contrast as viewed from KOP 3.

The transmission lines crossing the proposed plant site are barely discernible from KOP 3. More prominent are the overhead utility lines that pass over KOP 3 and transition from a foreground to background landscape feature. Linear forms and vertical to horizontal structural lines characterize the transmission lines. An additional structure visible in the viewshed from KOP 3 is a vertical signage structure on the north side of Interstate 10 in close proximity to the airport. Existing structure colors include gray, tan, and white and at the KOP 3 viewing distance, structural textures appear smooth.

The proposed project will be barely discernible as background geometric block and linear forms. To the extent they are visible, structural lines will be vertical and horizontal. Structure colors will be earth-tones while structure textures will be smooth. The resulting contrast between the existing and proposed structures will be low for form, line, and color, and none for texture. Overall visual contrast as experienced from KOP 3 would be low.

Project Dominance

The most prominent landscape feature in foreground to middleground views from KOP 3 is the broad mesa landform. At the KOP 3 viewing distance of

approximately 2.5 miles, the barely visible geometric, block forms of the proposed project would appear as subordinate, background features in the landscape.

View Blockage

As viewed from KOP 3, the small profile of the proposed project and minimal skylining that would occur would result in a low degree of view blockage.

Severity of Visual Change

From KOP 3, the severity of the visual change caused by the proposed project would be low because of the low degree of visual contrast that would result, the subordinate presence of the proposed project in relation to the existing landscape features, and the low degree of view blockage that would occur with project implementation.

Visual Impact Significance

When considered within the context of the low visual impact susceptibility of the existing landscape as discussed above, the low severity of the visual change that would be observed at KOP 3 would not result in a significant visual impact.

KOP 4 – CITY OF BLYTHE

VISUAL RESOURCES Figure 13B presents a photosimulation of the proposed project as viewed from KOP 4. From this location, at a distance of approximately four miles, the proposed project facilities would not be discernible in the landscape due to the screening provided by intervening vegetation.

Visual Contrast

As detailed in the Visual Analysis Data Sheet for KOP 4, no visual contrast would occur since the proposed project facilities would not be discernible from this KOP.

Project Dominance

Because the proposed project components would not be visible at this location, project dominance would be rated subordinate.

View Blockage

From Key Observation Point 4, there would be no view blockage since the Project components would not be visible.

Severity of Visual Change

From KOP 4, the severity of the visual change that the proposed project would cause would be negligible because of the lack of project visibility.

Visual Impact Significance

As viewed from KOP 4 at the western edge of the City of Blythe urban area, no significant visual impacts are anticipated due to the low visual impact susceptibility of the existing landscape and the negligible severity of visual change anticipated with project implementation.

KOP 5 – BLYTHE MUNICIPAL GOLF COURSE AND MESA BLUFFS RESIDENCES

VISUAL RESOURCES Figure 14B presents a photosimulation of the proposed project as viewed from KOP 5. The geometric block forms of the power plant facilities are visible on the mesa horizon as a low rectangular structure with a vertical component extending above. At a distance of approximately 4.5 miles, no other project components (transmission lines, switchyard, and evaporation ponds) would be visible.

Visual Contrast

As detailed in the Visual Analysis Data Sheet for KOP 5, the landform component of the existing landscape is characterized by level to angular block forms with strong horizontal (middleground mesa) to irregular lines (background mountain ranges). The predominant landform color is tan and the landform texture is smooth to granular. With implementation of the proposed project, landform changes will result in low, horizontal block landforms and horizontal lines associated with the pond berms. These changes would be consistent with the established landforms and lines in the existing landscape. However, the pond berms and excavated areas associated with pond construction would not be visible in views from KOP 5 because of the substantial viewing distance. As a result, landform changes will not result in perceptible visual contrast as experienced from KOP 5.

Existing desert scrub vegetation within the viewshed of KOP 5 is visible as irregular patchy forms with irregular to indistinct lines. The more prominent rectangular areas of irrigated agricultural land appear as well-defined continuous blocks with prominent horizontal and diagonal lines. Vegetation colors range from green to tan and dark brown, and generally exhibit a smooth to matte texture. With implementation of the proposed project, minimal change to the existing vegetation characteristics will occur. Therefore, vegetation changes associated with the proposed project are not expected to result in perceptible visual contrast as viewed from KOP 5.

The transmission lines crossing the proposed plant site and the adjacent Blythe Substation and nearby airport facilities are barely discernible from KOP 5. Linear and geometric forms and vertical to horizontal structural lines characterize these subordinate background features. Existing structure colors include gray, tan, and white and at the KOP 5 viewing distance, structural textures appear smooth.

The proposed project will be barely discernible as background geometric block and linear forms. To the extent they are visible, structural lines will be vertical and horizontal. Structure colors would be earth tones while structure textures will be smooth. There would be no visual contrast between the existing and proposed structures with respect to form, line, and texture and visual contrast would be low for color. Overall visual contrast as experienced from KOP 5 would be low.

Project Dominance

The most prominent landscape features in foreground to middleground views from KOP 5 are the broad landforms of the valley floor and mesa. The background is

dominated by the distant angular forms of the Mule, Palo Verde, and Little Chuckwalla Mountains. At the KOP 5 viewing distance of approximately 4.5 miles, the geometric, block forms of the proposed project would appear small in size in the wide field of view and subordinate in relation to the level valley and mesa and mountainous backdrop.

View Blockage

As viewed from KOP 5, the small profile of the proposed project would result in minimal blockage of the mountain backdrop.

Severity of Visual Change

From KOP 5, the severity of the visual change caused by the proposed project would be low because of the low degree of visual contrast that would result, the subordinate presence of the proposed project in relation to the existing landscape features, and the negligible view blockage that would occur with project implementation.

Visual Impact Significance

When considered within the context of the low-to-moderate visual impact susceptibility of the existing landscape as discussed above, the low severity of the visual change that would be observed at KOP 5 would not result in a significant visual impact.

KEY OBSERVATION POINT 6 – WESTBOUND HOBSONWAY

VISUAL RESOURCES Figure 15B presents a photosimulation of the proposed project as viewed from KOP 6. The geometric block forms of the power plant facilities and the complex form of the switchyard would be clearly visible to the west of the existing Blythe Substation. Though not discernible in the photosimulation, the proposed wood pole H-frame transmission line structures would also be visible but not generally noticeable in the context of the existing transmission line structures on and adjacent to the site. The two water evaporation ponds and the access roads also would not be noticeable in the field of view.

Visual Contrast

As detailed in the Visual Analysis Data Sheet for KOP 6, the landform component of the existing landscape is characterized by level to angular block forms with strong horizontal (foreground mesa) to irregular lines (background mountain ranges). The color is tan and the landform texture is smooth to granular. With implementation of the proposed project, some landform modification will occur with development of the water evaporation ponds. Landform changes will primarily result in low, horizontal block landforms and horizontal lines associated with the pond berms. These changes would be consistent with the established landforms and lines in the existing landscape. However, the pond berms and excavated areas associated with pond construction will generally not be noticeable in views from KOP 6. As a result, landform changes associated with the proposed project will not result in perceptible visual contrast as experienced from KOP 6.

Existing vegetation within the viewshed of KOP 6 is visible as well-defined continuous blocks with horizontal lines (the citrus orchard) and irregular patchy forms with irregular to indistinct lines (the desert scrub vegetation). Vegetation colors range from gray to green to tan and generally exhibit a smooth to matte texture. With implementation of the proposed project, minimal change to the existing vegetation characteristics will occur. Therefore, any vegetation changes associated with the proposed project are not expected to result in perceptible visual contrast as viewed from KOP 6.

The transmission line structures visible in the foreground to middleground as viewed from KOP 6 appear as linear forms with vertical, horizontal, and diagonal line characteristics. Existing structure colors are tan, gray, and white and at the KOP 6 viewing distance, structural textures appear smooth.

The proposed project would introduce prominent middleground, geometric, block forms associated with the power plant facilities as well as linear and complex forms associated with the proposed transmission line structures and switchyard. Although the complex linear forms of the proposed switchyard would be similar to those of the existing Blythe Substation, geometric block forms similar to those of the proposed project are not readily visible from KOP 6. A moderate degree of visual contrast would occur. Project implementation would also result in more prominent vertical, irregular, and horizontal structural lines which would not be consistent with the less prominent vertical lines of the existing transmission lines and the less prominent vertical and horizontal lines of Blythe Substation (located out of the frame of view in the simulation). The resulting visual contrast would be moderate. The earth-tone structure coloration and smooth texture would be similar to existing structure colors and some natural colors as well. The resulting visual contrast would be low for color and none for texture.

In summary, the visual contrast that would be experienced at KOP 6 would be moderate. This result is highly influenced by the moderate degree of visual contrast associated with the changes in structural form and line that would occur when comparing the proposed project with the existing facility characteristics in the KOP 6 landscape.

Project Dominance

The most prominent landscape feature in foreground to middleground views from KOP 6 is the broad mesa landform. The distant Little Maria and Big Maria mountain ranges are noticeable but subordinate features in the landscape background. The proposed power plant facilities and switchyard would appear substantially smaller than the mesa landform. As with the existing structures, the proposed structures would appear small-to-moderate in size in the wide field of view. However, the solid massing of the geometric block structures, the lack of a prominent backdrop, and the resulting structure skylining would increase the prominence of the proposed project. Therefore, project dominance is rated co-dominant.

View Blockage

From Key Observation Point 6 the project would block a relatively small part of the low quality view. Therefore, view blockage would be low.

Severity of Visual Change

From westbound Hobsonway, the severity of the visual change that the proposed project would cause would be moderate primarily due to the moderate contrast associated with the power plant structural forms and lines and the co-dominance of the proposed project in relation to the existing landscape features.

Visual Impact Significance

As viewed from westbound Hobsonway, the key considerations regarding the existing landscape are the low visual quality and low-to-moderate viewer sensitivity, which lead to a low-to-moderate visual impact susceptibility. When the proposed project is considered within this context, the moderate severity of visual change that would occur with project implementation would result in an adverse but not significant visual impact.

KOP 7 – NEARBY RESIDENCE AND EASTBOUND HOBSONWAY

VISUAL RESOURCES Figure 16B presents a photosimulation of the proposed project as viewed from KOP 7. The geometric block forms of the power plant facilities are clearly visible to the northwest (to the left in the image) of the existing Blythe Substation. The proposed switchyard and transmission lines would be screened from view at this location by the power plant facilities. The two water evaporation ponds and the southern access road (not shown in the simulation) also would be slightly noticeable in the field of view from this elevated perspective.

Visual Contrast

The landform component of the existing landscape is characterized by level to angular block forms with strong horizontal (foreground mesa) to irregular lines (background mountain ranges--see Visual Analysis Data Sheet for KOP 7). The predominant landform color is tan and the landform texture is smooth to granular. With implementation of the proposed project, some landform modification will occur with development of the water evaporation ponds. Landform changes will primarily result in low, horizontal block landforms and horizontal lines associated with the pond berms. These changes would be consistent with the established landforms and lines in the existing landscape. As a result, landform changes associated with the proposed project will result in a low degree of visual contrast as experienced from KOP 7.

Vegetation within the viewshed of KOP 7 is visible as well-defined continuous blocks (citrus orchard) to irregular patchy forms (desert scrub) with irregular to indistinct lines. Vegetation colors range from green to tan and dark brown, and generally exhibit a matte texture. With implementation of the proposed project, the grading of the water evaporation ponds will result in a short-term change in the middleground vegetation line characteristics. The grading of the desert scrub vegetation will result in noticeable lines of demarcation whereas presently,

prominent lines in the scrub vegetation do not occur. Most of the graded areas will be replaced by project structures facilities including structures and access roads. The new line of demarcation between graded and non-grade areas in the short-term, and between project facilities and natural areas in the long-term, will appear horizontal in the view from KOP 7 as shown in the simulation. However, this new horizontal line of vegetation demarcation would appear similar to the existing horizontal line of demarcation between the desert scrub vegetation on site and the orchards to the east. Therefore, the resulting visual contrast is expected to be low.

The numerous transmission line and substation structures visible in the middleground as viewed from KOP 7 range from linear forms associated with the transmission towers and conductors to geometric and complex forms for the substation components. Structural line characteristics range from vertical (for the transmission structures and substation components), to horizontal (for the transmission conductors and substation components). Existing structure colors include gray, tan, and white and at the KOP 7 viewing distance, structural textures appear smooth.

The proposed project will introduce prominent, geometric, block forms associated with the power plant facilities as well as linear and complex forms associated with the proposed transmission line structures and switchyard. From this vantage point, the geometric block forms would appear somewhat similar to the existing geometric block structures of the commercial use at KOP 2 (visible in the lower right corner of the simulation). Also, the vertical forms of the stacks would appear similar to the vertical forms exhibited by the utility poles immediately adjacent to the north side of Hobsonway. As a result, a moderate degree of visual contrast would occur. Project implementation would also result in more prominent irregular to horizontal structural lines. The prominent irregular to horizontal lines of the power plant facilities would not be consistent with the less prominent vertical lines of the existing transmission lines and the less prominent vertical and horizontal lines of Blythe Substation. The resulting visual contrast would be moderate for line. The gray and tan structure coloration and smooth texture would be similar to existing structure colors. The resulting visual contrast would be low for color and none for texture.

In summary, the visual contrast that would be experienced at KOP 7 would be moderate. This result is primarily due to the moderate degree of visual contrast associated with the changes in structural form and line that would occur when comparing the proposed project with the existing facility characteristics in the KOP 7 landscape.

Project Dominance

The most prominent landscape features in foreground to middleground views from KOP 7 are the broad mesa landform, the prominent linear form of Hobsonway and the utility poles adjacent to Hobsonway. The distant Big Maria and Dome Rock mountain ranges are the most prominent background landscape features. Less prominent are the complex structural form of Blythe Substation and the linear forms of the numerous transmission line structures throughout the viewshed. Although the proposed power plant facilities would appear smaller than the mesa and

mountain landforms and the linear form of Hobsonway, they would appear more prominent than existing substation and transmission lines. The project would also appear relatively small in size in the wide field of view. The solid massing of the geometric block structures and the resulting structure skylining would increase the prominence of the proposed project. Therefore, project dominance is rated co-dominant.

View Blockage

From Key Observation Point 7 the project would block a relatively small part of the overall, low quality view. Specifically, a portion of the Dome Rock Mountains to the east would be blocked from view by the power plant facilities as would a small portion of the orchards to the east of the plant site. The resulting view blockage would be low.

Severity of Visual Change

From eastbound Hobsonway and the adjacent residence, the severity of the visual change that the proposed project would cause, would be moderate due to the moderate contrast associated with the power plant facility structural forms and lines and the co-dominance of the proposed project in relation to the existing landscape features.

Visual Impact Significance

As viewed from KOP 7 and the adjacent residence to the south of Hobsonway, the moderate severity of visual change would result in an adverse but not significant visual impact on eastbound motorists when viewed in the context of the landscape's moderate (motorists) to high (residences) visual impact susceptibility. Although visual impact susceptibility from the nearby residence is considered high, the applicant's specification of desert tone paint colors to achieve greater blending in the landscape would keep the potential visual impact to a level that is considered adverse but not significant.

KOP 8 – EASTBOUND INTERSTATE 10

VISUAL RESOURCES Figure 17B presents a photosimulation of the proposed project as viewed from KOP 8. The geometric block forms of the power plant facilities are clearly visible to the northwest of the existing Blythe Substation. The proposed switch yard and transmission lines would be generally screened from view at this location by the power plant facilities. The two water evaporation ponds and the access roads also would not be noticeable in the field of view from this location.

Visual Contrast

The landform component of the existing landscape is characterized by level to angular block forms with strong horizontal (foreground mesa) to irregular lines (background mountain ranges--see Visual Analysis Data Sheet for KOP 8). The predominant landform color is tan and the landform texture is smooth to granular. With implementation of the proposed project, some landform modification will occur with development of the water evaporation ponds. Landform changes will primarily result in low, horizontal block landforms and horizontal lines associated with the

pond berms. These changes would be consistent with the established landforms and lines in the existing landscape and would be minimally visible from KOP 8. As a result, landform changes associated with the proposed project will result in a low degree of visual contrast as experienced from KOP 8.

Existing vegetation within the viewshed of KOP 8 is visible as well-defined continuous blocks (citrus orchard) to irregular patchy forms (desert scrub) with irregular to indistinct lines. Vegetation colors range from green to tan and dark brown, and generally exhibit a matte texture. With implementation of the proposed project, the grading of the water evaporation ponds will result in a short-term change in the middleground vegetation line characteristics. However, these vegetation changes will not be visible from KOP 8 and no perceptible visual contrast would occur at KOP 8 with respect to vegetation.

The most prominent built feature in the KOP 8 viewshed is the foreground to background linear pavement form of Interstate 10. Additionally, numerous transmission line and substation structures are visible in the middleground as viewed from KOP 8 and range from linear forms associated with the transmission towers and conductors to geometric and complex forms for the substation components. Structural line characteristics range from prominent diagonals (for Interstate 10), to vertical (for the transmission structures and substation components), to horizontal (for the transmission conductors and substation components). Existing structure colors include gray, tan, and white and at the KOP 8 viewing distance, structural textures appear smooth to granular.

The proposed project will introduce prominent, geometric, block forms associated with the power plant facilities as well as linear and complex forms associated with the proposed transmission line structures and switchyard. The geometric block forms are not similar to the predominantly linear existing structures and the geometric block forms of the structures associated with the commercial/residential use at KOP 2 are, for the most part, screened from view at KOP 8 by intervening vegetation. However, the geometric block forms of roadside signage are visible in the KOP 8 viewshed, as are the frequent container trucks on I-10. As a result, a moderate degree of visual contrast would occur. Project implementation would also result in more prominent irregular to horizontal structural lines. The prominent irregular to horizontal lines of the power plant facilities are not consistent with the less prominent vertical lines of the existing transmission lines and the less prominent vertical and horizontal lines of Blythe Substation. The resulting visual contrast would be moderate for line. The tan structure coloration and smooth texture would be similar to existing structure colors. The resulting visual contrast would be low for color and none for texture.

In summary, the visual contrast that would be experienced at KOP 8 would be moderate. This result is highly correlated to the moderate degree of visual contrast associated with the changes in structural form and line that would occur when comparing the proposed project with the existing facility characteristics in the KOP 8 landscape.

Project Dominance

The most prominent landscape features in foreground to middleground views from KOP 8 are the prominent linear form of Interstate 10, the broad mesa landform, and the distant Dome Rock Mountains in the background. Less prominent are the complex structural form of Blythe Substation and the linear forms of the numerous transmission line structures throughout the viewshed. Although the proposed power plant facilities would appear smaller than the Interstate 10, mesa, and mountain landforms, they would appear more prominent than the substation and transmission lines. The project would also appear relatively small in size in the wide field of view. However, the solid massing of the geometric block structures and the resulting structure skylining would increase the prominence of the proposed project. Therefore, project dominance is rated co-dominant.

View Blockage

From Key Observation Point 8 the project would block a relatively small part of the overall, low quality view. Specifically, a portion of the Dome Rock Mountains to the east would be blocked from view by the power plant facilities. The resulting view blockage would be low.

Severity of Visual Change

From eastbound I-10, the severity of the visual change that the proposed project would cause would be moderate due to the moderate contrast associated with the power plant facility structural forms and lines and the co-dominance of the proposed project in relation to the existing landscape features.

Visual Impact Significance

As viewed from eastbound Interstate 10, the key existing landscape characteristics contributing to the visual impact conclusion would be the low-to-moderate viewer sensitivity and high viewer exposure which lead to a moderate visual impact susceptibility. When the proposed project is considered within this context, the moderate severity of visual change that would occur with project implementation would result in an adverse but not significant visual impact.

ELECTRIC TRANSMISSION LINES

The three short tie-lines will exit the proposed switchyard to the north and east to connect with existing lines. The northern-most tie-line will exit the site to the north across undeveloped land to tie in to the existing Western 161kV Parker transmission line. The remaining two tie-lines will exit the site to the east through the existing citrus orchard to connect to the Western 161kV Parker line and the Western 161kV Parker-Headgate-Rock line.

Much of these facilities will be screened from public view by the proposed new power plant and switchyard and the existing orchard. For those portions of the tie-lines that may be visible, they would generally not be noticed in the context of the existing transmission lines (and structures) connecting to Blythe Substation. Therefore, no short-term or long-term significant visual impacts are anticipated with construction and operation of the three transmission tie-lines.

NATURAL GAS DELIVERY PIPELINE

Most of the natural gas delivery pipeline route that would be visible to the public is within existing rural public roads. The Hobsonway and I-10 gas pipeline crossings for the SoCal Gas interconnection option would be bored beneath the roads. The El Paso Gas Company interconnection option would be bored beneath the Colorado River and would re-surface in the El Paso Gas Company Metering Yard adjacent, and on the east side of, the river. Long-term project visibility would be limited to the aboveground warning markers. Therefore, long-term visual impacts due to the operation of the natural gas delivery pipeline would be less than significant.

LIGHTING

In regard to exterior lighting, the applicant has stated the following:

> "The lighting system shall include High Pressure (HP) sodium light sources for outdoor installations. A low visibility lighting scheme using shielded, high cut-off angle fixtures will be utilized to minimize the nighttime impact from nearby properties. Metal-halide lighting will be utilized for interior high-bay installations. Fluorescent light sources will be utilized for indoor area installations. Incandescent light sources will be utilized for control room and turbine area emergency illumination. Except for small pump houses, incandescent lamps with integral battery and charger units shall be used for emergency lighting in miscellaneous yard structures" (BEP 2000l, data response #89).

> "The lighting system shall be designed to minimize its impact on the City of Blythe and the surroundings. External lighting shall be designed to turn off by daylight photosensors, as well as manually from the main control room. Also, the placement of external lights shall be designed in such a way so as not to illuminate directly off of the project site."

Additionally, FAA-approved lighting will be installed "at the tops of the HRSG exhaust stacks. The lighting will be FAA approved equipment and installed in accordance with the appropriate guidelines. FAA lighting is generally low intensity red lighting and will not impact the ground observer. All other lighting on the HRSG exhaust stack will be at the 120-foot level platform of the stack and along the access ladder from the 90-foot elevation drum level platform to the 120-foot elevation stack platform. This lighting is for personnel access and safety and will be equipped with directional shading to minimize the visual impact from a distance. The intensity of each individual access/safety light will be approximately 2-5 foot-candles" (BEP 2000l, data response #92).

In addition, the Applicant has specified the types of control features to be used for the various project components in their further clarification of the response to Data Request 90 (BEP 2000p, p.1). However, the potential exists for the project to cause significant lighting impacts because of the relatively low lighting levels in the rural vicinity. Exterior lighting for the proposed power plant has the potential to considerably increase lighting levels, changing the visual character of the vicinity from rural to industrial, creating glare, backscatter to the nighttime sky, and illumination of visible plumes. As a result, the Energy Commission staff has

expanded the applicant's proposed design measures in a proposed condition of certification (see below). Proper implementation of these measures is expected to minimize lighting and keep lighting impacts to less than significant levels.

VISIBLE PLUMES

The applicant has stated the following regarding plume visibility:

> "a steam plume could be visible from viewpoints on Interstate 10, Hobsonway, residences and residential subdivisions in the Palo Verde Mesa and Valley, and from the City of Blythe. Normally, steam from the cooling towers will dissipate fairly quickly and a plume will not form. The temperature and humidity conditions suitable for creation of a visible plume will occur intermittently and very infrequently throughout the year. It is estimated that suitable conditions for a visible plume of several hundred meters will occur only a few times annually, for a few hours at a time, primarily during nighttime or early morning in the coldest winter months. When a plume does form, it will create an obvious contrast with the existing landscape, and may be visible for several miles from the plant" (BEP 1999a, AFC page 7.5-11).

The visibility of plumes depends partly on viewing conditions. The visibility of nighttime plumes depends on the degree to which they are illuminated. Because existing exterior lighting levels in the vicinity of the power plant site are very low, and because the applicant has proposed to minimize exterior lighting, the plumes are not expected to be substantially visible at night. Therefore, staff has excluded plumes during nighttime hours from its analysis.

Cooling Tower Plumes

The proposed cooling tower banks would cause visible vapor plumes created by condensation of water in the plumes of moist air emitted from the cooling towers. In response to a staff data request, the applicant provided additional information regarding expected cooling tower plume frequency and size (BEP 2000l, data response #110). The response included three tables detailing visible plume probability distributions for cooling tower plume length, elevation, and radius. This information is presented in the following Tables 1, 2, and 3.

Table 1
Visible Cooling Tower Plume Length Probability Distribution (percent)

Length (m)[1]	Winter	Spring	Summer	Autumn	Annual
300	8.5	0.2	0.1	0.2	2.2
400	5.7	0.1	0.1	0.1	1.5
500	2.0	0.0	0.1	0.1	0.5
600	1.8	0.0	0.1	0.1	0.5
700	0.0	0.0	0.0	0.0	0.0

Plume length from tower centerline

Table 2
Visible Cooling Tower Plume Elevation Probability Distribution (percent)

Elevation (m)[1]	Winter	Spring	Summer	Autumn	Annual
50	15	0.8	0.4	1.1	4.3
70	9.9	0.2	0.2	0.3	2.6
100	7.1	0.1	0.2	0.1	1.8
130	5.5	0.1	0.1	0.1	1.4
160	0.0	0.0	0.0	0.0	0.0

Plume elevation from top of tower

Table 3
Visible Cooling Tower Plume Radius Probability Distribution (percent)

Length (m)[1]	Winter	Spring	Summer	Autumn	Annual
20	25	3.1	1.0	3.1	7.8
30	17	1.0	0.4	1.3	4.9
40	1.8	0.0	0.1	0.1	0.5
50	1.8	0.0	0.1	0.1	0.5
60	0.0	0.0	0.0	0.0	0.0

Vertical radius of plume

The applicant's response also included the following clarifications and conclusions:

present the predicted seasonal and annual probabilities that the steam plume's length, elevation, and radius will be greater than the values shown in the first column of the theses tables. As the primary interest in developing the model was to determine the maximum extent of plume impacts at significant distances from the tower, and because of the nature of the linear mechanical draft tower model, it is virtually impossible to predict near-field visible plume lengths, per

Mr. Lawrence Coke, one of the model developers (Coke, 1999). Therefore, plume length data within 200 meters of the tower are not presented…"

The applicant further stated that:

> "The maximum predicted plume length is between 600 and 700 meters, which could occur 0.5 percent of the time, or approximately 44 hours per year. Most of that time (39 hours) would occur during the winter. Considering the location of the towers, a visible plume would never reach Hobsonway. The maximum plume elevation is predicted to be between 130 and 160 meters 1.4 percent of the time, or approximately 123 hours per year. Most of that time (120) hours would occur during the winter. The maximum radius of the plume is predicted to be between 50 and 60 meters, which could occur 0.5 percent of the time, or approximately 44 hours per year. Most of that time (39 hours) would occur during the winter. Most of these occurrences will be during nighttime and early morning hours, when temperatures are relatively low and relative humidity is relatively high."

Staff will evaluate this information and will provide its evaluation in the Final Staff Assessment. Although views of the plumes would be available from a rather large geographic area encompassing the Palo Verde Mesa, Palo Verde Valley, and surrounding region (see **VISUAL RESOURCES Figure 18**), cooling tower plumes equal to 300 meters in length would occur less than three percent of the time. Also, plumes would generally be 50 meters above the stack or less. Foreground to middleground views of the stack plumes would be limited to those close proximity viewing opportunities along Hobsonway (KOPs 2, 6, and 7) and I-10 (KOPs 1 and 8) and at nearby residences (KOPs 2 and 7). More distant views of the plume would be available from residences and recreation areas on Palo Verde Mesa (KOPs 3 and 5), from Palo Verde Valley (KOP 4), and from various locations along the Colorado River.

As previously discussed, the visual quality experienced from most areas in the project region as represented by the selected KOPs is low with the exception of KOP 5 (with its elevated panoramic vista), located near the Blythe Municipal Golf Course and Mesa Bluffs residences. At KOP 5, visual quality is considered moderate to high. Visual impact susceptibility for KOPs 1 through 6 is either low or low-to-moderate. Visual impact susceptibility for KOPs 7 and 8 are moderate to high and moderate respectively.

Since daylight temperatures in the Blythe area are sufficiently warm most of the year to minimize plume formation, the larger, more visible plumes would typically occur in the winter, during nighttime and early morning hours. Although a visible plume would be the most noticeable project feature from KOP 5, the conditions necessary for plume formation would also coincide with off-peak use of the Blythe Municipal Golf Course (KOP 5). The residences located near to the project site (KOPs 2 and 7) and motorists on Interstate 10 (KOPs 1 and 8) and Hobsonway (KOPs 2, 6, and 7) would experience adverse visual impacts from plume formation. However, due to the anticipated low frequency of plume occurrence during the daylight hours, the resulting adverse visual impact would not be significant.

Exhaust Stack Plumes

The HRSG exhaust stacks have the potential to cause visible vapor plumes created by condensation of water in the plumes of moist air emitted from the stacks. In Data Request 111, staff requested similar information for the HRSG exhaust stack plumes as for the cooling tower plumes discussed above. In response to staff's data request, the applicant stated that "vapor plumes from HRSG stacks are normally insignificant as a visual effect since they are small in size, and are visible for only short duration" and that HRSG plumes are not anticipated to result in adverse visual impacts. The applicant further explained that there were two factors that would limit their ability to provide a meaningful response to Data Request 111:

> "First, because HRSG stack plumes are not an environmental problem at plants employing similar technology throughout the country, they have not been analyzed in detail, or modeled (in contrast to cooling tower plumes). Therefore, no standard validated model exists to perform the requested analysis. We note that for a similar request by the CEC on another recent project, a major modeling effort was undertaken in which a model was created as the basis of the analysis. We do not dispute the veracity of the model or the analytical results produced for that project in any way, but we note that the model has not been validated or the results verified, and we do not believe that a similar modeling effort would produce meaningful results for the Blythe Project.

Second, while water vapor will be part of the exhaust plume (being a product of combustion), due to the elevated temperature of the exhaust plume, the relative humidity of the exhaust is typically less than 20%. As the exhaust plume disperses and mixes with the ambient air the water vapor typically does not condense and become visible, particularly under the persistent warm and dry meteorological conditions encountered in Blythe."

Upon reviewing the applicant's response to Data Request 111, Staff agrees that HRSG exhaust stack plume formation would be minimal given the persistent warm temperatures and low humidity characteristic of the Blythe region. Therefore, no significant visual impacts are anticipated as a result of HRSG exhaust stack plume formation.

CONSIDERATION OF IMPACTS IN RELATION TO CEQA SIGNIFICANCE CRITERIA

This analysis considered the potential impacts of the proposed project in relation to the four significance criteria for visual resource impacts listed in Appendix G of the CEQA Guidelines, under Aesthetics, specified below.

- Would the project have a substantial adverse effect on a scenic vista?

Although panoramic vistas are available to users of the Blythe Municipal Golf Course and to the adjacent residences at Mesa Bluffs, there are no recognized scenic vistas in the project viewshed. Therefore, the project would not cause significant visual impacts in regard to this criterion.

- Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

  The foreground to middleground mesa landscape consists primarily of desert scrub vegetation with a substantial amount of electric transmission infrastructure and other built features (including roads and structures). Views from the nearby residences off of Hobsonway and from Hobsonway and Interstate 10 are not considered scenic. Therefore, the project would not cause significant visual impacts in regard to this criterion.

- Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

As previously discussed, neither the project facilities nor the associated plumes are expected to significantly degrade the low-to-moderate visual quality of the project site and surroundings as experienced from nearby and more distant viewing opportunities. Therefore, the project is not anticipated to cause significant visual impacts in regard to this criterion.

- Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

The project has the potential to create a new source of substantial light that would adversely affect nighttime views in the area. However, the mitigation measures proposed by the applicant and expanded by staff (see below) would ensure that lighting impacts would be less than significant.

CUMULATIVE IMPACTS

Cumulative impacts to visual resources would occur where project facilities or activities (such as construction) occupy the same field of view as other built facilities or impacted landscapes. It is also possible that a cumulative impact could occur if a viewer's perception is that the general visual quality of an area is diminished by the proliferation of visible structures (or construction effects such as disturbed vegetation), even if the new structures are not within the same field of view as the existing structures. The significance of the cumulative impact would depend on the degree to which (1) the viewshed is altered; (2) visual access to scenic resources is impaired; (3) visual quality is diminished; or (4) the project's visual contrast is increased.

No other planned projects have been identified that could contribute to cumulative visual impacts along with the proposed project. However, the proposed project would contribute to the cumulative visual impacts of existing development on Palo Verde Mesa and in Palo Verde Valley by increasing the industrial character of the landscape as viewed from locations within the viewshed of the project site including travel routes, residences, and commercial establishments. Although there are approximately 31 residences in the project region that have views of the site, only a nearby residence on Hobsonway (KOP 7) would experience a significant visual impact.

Views of the site from the representative KOPs also encompass existing development on, adjacent to, and in the vicinity of the site including existing transmission lines, the Blythe Substation, Hobsonway, and Interstate 10. For the foreground to middleground view areas in close proximity to nearby commercial and residential uses and along Hobsonway and Interstate 10, as represented by KOPs 1, 2, 6, 7, and 8, the existing roads and electric transmission infrastructure have noticeably affected the views. The proposed project structures would be co-dominant features in the landscape and would add to the degradation of views that has already resulted from built features. However, because the project impact would not substantially increase the total visual impact that would be experienced from KOPs 1,2, 6, 7, and 8, the cumulative impact would be adverse but not be significant.

The more distant viewing opportunities available on Palo Verde Mesa and in Palo Verde Valley represented by KOPs 3, 4, and 5, encompass more development features in addition to the energy transmission infrastructure on and adjacent to the project site. The panoramic vistas available at KOP 5 encompass much of the development that has occurred on Palo Verde Mesa in the region of the proposed project. From these viewing locations, the proposed project facilities would either be screened from view (KOP 4) or would appear as a subordinate landscape feature (KOPs 3 and 5), so their contribution to cumulative impacts would not be substantial.

Since there will be minimal aboveground visible evidence of the gas pipeline interconnection (limited to aboveground warning markers), no adverse visual impacts are anticipated and no cumulative visual impacts would occur associated with the pipeline.

Plumes from the proposed cooling tower stacks would occur infrequently and then mostly during nighttime and early morning hours in winter. At those times that the plumes would be visible, they would contribute to cumulative visual impacts on views from the project area. However, the low frequency of occurrence would result in an adverse but not significant cumulative visual impact.

FACILITY CLOSURE

INTRODUCTION

There are at least three circumstances in which a facility closure can take place, planned closure, unexpected temporary closure and unexpected permanent closure.

PLANNED CLOSURE

Planned closure occurs at the end of a project's life, when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence. The closure plan that the project owner is required to prepare should address removal of the power plant structures and the transmission

poles, and the regrading of the evaporation ponds and berms to reduce visual impacts.

UNEXPECTED TEMPORARY CLOSURE

Unexpected temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster, or an emergency. No special conditions regarding visual resources are expected to be required to address temporary closure.

UNEXPECTED PERMANENT CLOSURE

Unexpected permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unexpected closure where the owner remains accountable for implementing the on-site contingency plan. It can also include unexpected closure where the project owner is unable to implement the contingency plan, and the project is essentially abandoned. The contingency plan that the project owner is required to prepare should address removal of the power plant structures and the transmission poles, and the regrading of the evaporation ponds and berms to reduce visual impacts.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS AND STANDARDS

LOCAL

RIVERSIDE COUNTY

Under Program 2 – County Scenic Highways of the Scenic Highways portion of the Comprehensive General Plan, I-10 is identified as eligible for designation as a County Scenic Highway. Although there are a number of land use standards pertaining to scenic highways in the Comprehensive General Plan, these standards only address official State Scenic Highways, State Scenic Highway Corridors, and designated scenic highway routes. They do not pertain to highways that are eligible but not yet designated, which is the case for that portion of I-10 in the vicinity of the proposed project. Therefore, the proposed project is considered consistent with the Riverside County Comprehensive General Plan with respect to visual resources.

LA PAZ COUNTY

There are no specific policies or regulations pertaining to visual resources that apply to the project. Therefore, the El Paso Natural Gas Pipeline connection option is considered consistent with La Paz County policy and regulations with respect to visual resources (Dahl 2000).

CITY OF BLYTHE

There are no specific policies or regulations pertaining to visual resources that apply to the project. Therefore, the proposed project is considered consistent with the

City of Blythe General Plan and Zoning Ordinance with respect to visual resources (Wellman 2000b).

MITIGATION

APPLICANT'S PROPOSED MITIGATION MEASURES

The applicant has proposed seven mitigation measures to be incorporated into the project design to minimize visual impacts associated with the operation of the facility:

VIS-1. Plant facilities will be painted with colors similar to the surrounding desert landscape, principally tan, sand, and buff colors. The colors will help project facilities to harmonize with the surrounding environment.

VIS-2. Fencing will be constructed of non-reflective material, treated, or painted to reduce visual effects.

VIS-3. Non-reflective surfaces will be used for plant equipment and structures, including transmission line structures, to minimize glare from these facilities.

VIS-4. Nighttime lighting on the project site will be limited to areas required for the safety of project personnel and the public.

VIS-5. Directional shielding of lights will be installed to prevent significant light, glare, or backscatter illumination visible to sensitive viewpoints.

VIS-6. Exposed soils resulting from vegetation clearing during construction must be revegetated after facilities are installed.

VIS-7. All construction debris will be removed immediately following completion of power plant and switchyard construction activities.

ADDITIONAL MITIGATION

Energy Commission staff generally agrees with the applicant's proposals in regard to color, fencing, lighting, revegetation, and management of construction debris. However, staff's position is that these proposals need to be more precisely developed in conditions of certification, which staff proposes below. No additional mitigation is proposed.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Assuming effective implementation of applicant's proposed mitigation measures, as modified, expanded, and augmented by staff's recommendations, the project, as proposed, is not expected to cause any significant visual impacts. With the

proposed mitigation, the project is also expected to be in compliance with applicable laws, ordinances, regulations, and standards regarding visual resources.

RECOMMENDATIONS

The Energy Commission should adopt the following conditions of certification if it approves the project.

PROPOSED CONDITIONS OF CERTIFICATION

VIS-1 Prior to first synchronization of the project, the project owner shall treat the project structures, buildings, and tanks in an earthen hue or hues that minimize visual intrusion and contrast by blending with the surrounding landscape, and shall treat those items and the switchyard structures and electric transmission towers in a non-reflective finish. The project owner shall develop a specific treatment plan for CEC approval to ensure that the proposed colors do not unduly contrast with the surrounding landscape colors. The plan shall be submitted sufficiently early to ensure that any precolored buildings, structures, and linear facilities will have colors approved and included in bid specifications for such buildings or structures.

Protocol: The project owner shall submit a treatment plan for the project to the Compliance Project Manager (CPM) for review and approval. The treatment plan shall include:

- specification of the treatment proposed for use on project structures, including structures treated during manufacture, and 11' x 17" color simulations of the project with the proposed treatment;
- a list of each major project structure, building, and tank, specifying the color(s) proposed for each item;
- documentation that a non-reflective finish will be used on all project elements visible to the public;
- a detailed schedule for completion of the treatment; and
- a procedure to ensure proper treatment maintenance for the life of the project.

If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the plan, the project owner shall submit a revised plan to the CPM.

After approval of the plan by the CPM, the project owner shall implement the plan according to the schedule and shall ensure that the treatment is properly maintained for the life of the project.

For any structures that are treated during manufacture, the project owner shall not specify the treatment of such structures to the vendors until the project owner receives notification of approval of the treatment plan by the CPM.

The project owner shall not perform the final treatment on any structures until the project owner receives notification of approval of the treatment plan from the CPM.

The project owner shall notify the CPM within 7 (seven) days after all precolored structures have been erected and all structures to be treated in the field have been treated and the structures are ready for inspection.

Verification: At least 60 (sixty) days prior to ordering the first structures that are color treated during manufacture, the project owner shall submit its proposed plan to the CPM for review and approval.

If the CPM notifies the project owner that any revisions of the plan are needed before the CPM will approve the plan, within 30 (thirty) days of receiving that notification, the project owner shall submit to the CPM a revised plan.

Not less than 30 (thirty) days prior to first synchronization of the project, the project owner shall notify the CPM that all structures treated during manufacture and all structures treated in the field are ready for inspection.

The project owner shall provide a status report regarding treatment maintenance in the Annual Compliance Report.

VIS-2 All fencing for the project shall be non-reflective.

Protocol: Prior to ordering the fencing the project owner shall submit to the CPM for review and approval the specifications for the fencing documenting that such fencing will be non-reflective.

If the CPM notifies the project owner that revisions of the specifications are needed before the CPM will approve the submittal, the project owner shall submit to the CPM revised specifications.

The project owner shall not order the fencing until the project owner receives approval of the fencing submittal from the CPM.

The project owner shall notify the CPM within 7 (seven) days after the fencing has been installed and is ready for inspection.

Verification: Prior to first turbine roll and at least 30 (thirty) days prior to ordering the non-reflective fencing, the project owner shall submit the specifications to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the submittal are needed before the CPM will approve the submittal, within 30 (thirty) days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall notify the CPM within 7 (seven) days after completing installation of the fencing that the fencing is ready for inspection.

VIS-3 Prior to first synchronization of the project, the project owner shall design and install all lighting such that light bulbs and reflectors are not visible from public viewing areas and illumination of the vicinity and the nighttime sky is minimized. To meet these requirements:

Protocol: The project owner shall develop and submit a lighting plan for the project to the CPM for review and approval. The lighting plan shall require that:

- Lighting is designed so that exterior light fixtures are hooded, with lights directed downward or toward the area to be illuminated and so that backscatter to the nighttime sky is minimized. The design of this outdoor lighting shall be such that the luminescence or light source is shielded to prevent light trespass outside the project boundary;
- High illumination areas not occupied on a continuous basis such as maintenance platforms or the main entrance are provided with switches or motion detectors to light the area only when occupied; and
- A lighting complaint resolution form (following the general format of that in Attachment 1) will be used by plant operations, to record all lighting complaints received and document the resolution of those complaints. All records of lighting complaints shall be kept in the on-site compliance file.

If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the plan, the project owner shall prepare and submit to the CPM a revised plan.

Lighting shall not be installed before the plan is approved. The project owner shall notify the CPM when the lighting has been installed and is ready for inspection.

Verification: At least 90 (ninety) days before ordering the exterior lighting, the project owner shall provide the lighting plan to the CPM for review and approval.

If the CPM notifies the project owner that any revisions of the plan are needed before the CPM will approve the plan, within 30 (thirty) days after receiving that notification the project owner shall submit a revised plan to the CPM.

The project owner shall notify the CPM within seven (7) days of completing exterior lighting installation that the lighting is ready for inspection.

VIS-4 The project owner shall provide landscaping satisfactory to the City of Blythe Planning Department.

Protocol: The project owner shall submit a landscaping plan to the CPM for review and approval. The submittal shall include evidence that the plan is satisfactory to the City of Blythe Planning Department.

If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the submittal, the project owner shall submit to the CPM a revised plan.

The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM.

Verification: Prior to first synchronization of the project and at least 60 (sixty) days prior to installing the landscaping, the project owner shall submit the plan to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the submittal are needed before the CPM will approve the submittal, within 30 (thirty) days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall notify the CPM within 7 (seven) days after completing installation of the landscaping, that the landscaping is ready for inspection.

VIS-5 The project owner shall provide soil restoration and revegetation satisfactory to the City of Blythe Planning Department.

Protocol: The project owner shall submit a soil restoration and revegetation plan to the CPM for review and approval. The submittal shall include evidence that the plan is satisfactory to the Director of the City of Blythe Planning Department.

If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the submittal, the project owner shall submit to the CPM a revised plan.

The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM.

Verification: Prior to first synchronization of the project and at least 60 (sixty) days prior to undertaking soil restoration and revegetation, the project owner shall submit the plan to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the submittal are needed before the CPM will approve the submittal, within 30 (thirty) days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall notify the CPM within 7 (seven) days after completing installation of the landscaping, that the soil restoration and revegetation is ready for inspection.

REFERENCES

Applicant. 1999a. Application for Certification, Blythe Energy Project (99-AFC-8). Filed with the California Energy Commission, December 9, 1999.

Applicant. 2000c. Data Adequacy Supplement #2, dated February 18, 2000.

Applicant. 2000l. BEP Responses to staff Data Requests #1 through 132, dated May 26, 2000.

Applicant. 2000p. BEP Data Responses to requests #1, in air, geological resources, noise, water and soil, visual, public health, land use, transmission system engineering, traffic and transportation (including master plan for the airport), and water and soil, dated June 19, June 21, June 27, and July 7, 2000.

Applicant. 2000s. BEP Adjustment to proposed El Paso Natural Gas pipeline route, and photographic images dated June 25 and June 30, 2000.

Applicant. 2000u. BEP "Areas from which the plume can be seen," BEP, dated July 11, 2000.

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Wellman, Jennifer. 2000b. City of Blythe Development Services Department. August 1, 2000. Conversation with Michael Clayton of Michael Clayton & Associates regarding the proposed project's consistency with City policies and plans pertaining to visual resources.

ATTACHMENT 1
LIGHTING COMPLAINT RESOLUTION FORM

BLYTHE ENERGY PROJECT Riverside County, California
Complainant's name and address: Phone number:
Date complaint received: Time complaint received:
Nature of lighting complaint:
Definition of problem after investigation by plant personnel: Date complainant first contacted:
Description of corrective measures taken: Complainant's signature: _____ Date:
Approximate installed cost of corrective measures: $ Date installation completed: Date first letter sent to complainant: _____(copy attached) Date final letter sent to complainant: _____(copy attached)
This information is certified to be correct: Plant Manager's Signature:

(Attach additional pages and supporting documentation, as required.)

VISUAL RESOURCES APPENDIX A

Visual Analysis Data Sheets for KOPs 1 through 8

KOP 1 DATA SHEET (Front)

KOP 1 DATA SHEET (Back)

KOP 2 DATA SHEET (Front)

KOP 3 DATA SHEET (Front)

KOP 4 DATA SHEET (Front)

KOP 5 DATA SHEET (Front)

KOP 6 DATA SHEET (Front)

KOP 7 DATA SHEET (Front)

KOP 7 DATA SHEET (Back)

KOP 8 DATA SHEET (Front)

Visual Resources Figures 1 through 18

[Figures 1 through 8, 13 through 15, 17, and 18 are not included. All of the figures are in the Preliminary Staff Assessment available on the Energy Commission's web site at http://www.energy.ca.gov/sitingcases/blythe/documents/index.html. All of the figures will also be available at public workshops.]

VISUAL RESOURCES Figure 9
Location of Key Observation Points (KOPs)

Source: BEP 1999a, Figure 7.5-2

VISUAL RESOURCES Figure 10A
KOP 1 - Existing Condition

VISUAL RESOURCES Figure 10B
KOP 1 - Photosimulation

Source: BEP 2000p

VISUAL RESOURCES Figure 11A
KOP 2 - Existing Condition

VISUAL RESOURCES Figure 11B
KOP 2 - Photosimulation

Source: BEP 2000p

VISUAL RESOURCES Figure 12A
KOP 3 - Existing Condition

VISUAL RESOURCES Figure 12B
KOP 3 - Photosimulation

Source: BEP 2000p

VISUAL RESOURCES Figure 16A
KOP 7 - Existing Condition

VISUAL RESOURCES Figure 16B
KOP 7 - Photosimulation

Source: BEP 2000w

WASTE MANAGEMENT

Testimony of Michael Ringer

INTRODUCTION

This analysis presents an assessment of issues associated with managing wastes generated from constructing and operating the proposed Blythe Energy Project (BEP). It evaluates the proposed waste management plans and mitigation measures designed to reduce the risks and environmental impacts associated with handling, storing, and disposing of project-related hazardous and nonhazardous wastes. The technical scope of this analysis encompasses wastes generated during facility construction and operation, except project wastewaters, such as those discharged to evaporation ponds. Wastewater management is discussed in the **Soil and Water Resources** section of this document.

Energy Commission staff's objectives in its waste management analysis are to ensure that:

- The management of the wastes will be in compliance with all applicable laws, ordinances, regulations, and standards (LORS). Compliance with LORS ensures that wastes generated during constructing and operating the proposed project will be managed in an environmentally safe manner; and
- Disposal of project wastes will not result in significant adverse impacts to existing waste disposal facilities.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

FEDERAL

RESOURCE CONSERVATION AND RECOVERY ACT - RCRA (42 U.S.C. § 6922)

RCRA establishes requirements for the management of hazardous wastes from the time of generation to the point of ultimate treatment or disposal. RCRA requires generators of hazardous waste to comply with requirements regarding:

- Record keeping practices which identify quantities of hazardous wastes generated and their disposition,
- Labeling practices and use of appropriate containers,
- Use of a manifest system for transportation, and
- Submission of periodic reports to the EPA or authorized state.

TITLE 40, CODE OF FEDERAL REGULATIONS, PART 260

These sections contain regulations promulgated by the EPA to implement the requirements of RCRA as described above. Characteristics of hazardous waste are described in terms of ignitability, corrosivity, reactivity, and toxicity, and specific types of wastes are listed.

STATE

CALIFORNIA HEALTH AND SAFETY CODE §25100 ET SEQ. (HAZARDOUS WASTE CONTROL ACT OF 1972, AS AMENDED)

This act creates the framework under which hazardous wastes must be managed in California. It mandates the State Department of Health Services (now the Department of Toxic Substances Control (DTSC) under the California Environmental Protection Agency, or Cal EPA) to develop and publish a list of hazardous and extremely hazardous wastes, and to develop and adopt criteria and guidelines for the identification of such wastes. It also requires hazardous waste generators to file notification statements with Cal EPA and creates a manifest system to be used when transporting such wastes.

TITLE 14, CALIFORNIA CODE OF REGULATIONS, §17200 ET SEQ. (MINIMUM STANDARDS FOR SOLID WASTE HANDLING AND DISPOSAL)

These regulations set forth minimum standards for solid waste handling and disposal, guidelines to ensure conformance of solid waste facilities with county solid waste management plans, as well as enforcement and administration provisions.

TITLE 22, CALIFORNIA CODE OF REGULATIONS, §66262.10 ET SEQ. (GENERATOR STANDARDS)

These sections establish requirements for generators of hazardous waste. Under these sections, waste generators must determine if their wastes are hazardous according to either specified characteristics or lists of wastes. As in the federal program, hazardous waste generators must obtain EPA identification numbers, prepare manifests before transporting the waste off-site, and use only permitted treatment, storage, and disposal facilities. Additionally, hazardous waste must only be handled by registered hazardous waste transporters. Generator requirements for record keeping, reporting, packaging, and labeling are also established.

SETTING

PROJECT AND SITE DESCRIPTION

The proposed project is a nominal 520 megawatt natural gas fired combined cycle generating facility consisting of two gas turbine generators with associated heat recovery steam generators and one steam turbine generator. The proposed location is on unimproved desert land, about five miles west of the city of Blythe. The site is in Riverside County, currently outside of the boundary of the city of Blythe, but may be annexed by the city along with other surrounding land as part of its industrial park development.

A Phase I Environmental Site Assessment (ESA) was performed by Greystone Environmental Consultants for 460 acres of land comprised of five parcels (parcels 4,25,27,34,35), including the proposed site (parcels 34 and 35), in May 1999 (BEP 1999a, AFC Appendix 7.2). The purpose of the ESA was to determine the potential

for the presence or likely presence of any hazardous substances or petroleum products under conditions that may indicate a release or threat of a release from present or past activities.

The Phase I ESA included:

- Review of site historical uses including historic aerial photographs and topographic maps,
- Site inspection of proposed site and surrounding properties to assess evidence of current or past chemical spills, hazardous materials storage, and underground tanks, and
- Records review of state and federal agency database listings to assess the presence of known spills, current generators of hazardous wastes and users of hazardous materials, the presence of known leaking underground and aboveground storage tanks, identified National Priority List (Superfund) sites, and landfills located on or within the vicinity of the property. Databases included the Federal Emergency Response Notification System; Toxic Release Information System; registered underground storage tanks; RCRA generators and treatment, storage, and disposal facilities; leaking underground storage tanks; landfills and solid waste disposal sites; and state and federal superfund sites.

The Phase I ESA reported the following:

- No registered underground storage tanks are located on the property. One such facility is located south southwest of the site, but is located hydrologically crossgradient from the site and does not appear to be of concern.
- The site does not contain leaking underground storage tanks. Five leaking tanks were found at one location about one mile southeast of the site, but appear to be downgradient from the site.
- No aboveground storage tanks are located at the site. One tank was located about one-half mile south and downgradient from the site.
- The only toxic pit identified is located greater than one mile to the west of the site.
- There have been no reported hazardous material incidents at the site. One report listed an incident at a location one mile southeast and downgradient of the site.
- There are no Superfund sites within one mile of the property.
- There are no RCRA facilities (waste treatment, storage, or disposal) on site, however one is listed between one and two miles southwest of the site.
- Although no landfills are located on site, the Blythe airport has an inactive landfill less than one mile upgradient from the site. City, county, and state records provide little information regarding this landfill. Due to former military activities in the area, the potential exists for this landfill to contain hazardous

wastes. If present, hazardous materials could leach into soil and groundwater on site.

The ESA recommended that groundwater samples be obtained during the geotechnical test boring program to determine the potential for subsurface impact from potentially hazardous materials.

IMPACTS

PROJECT SPECIFIC IMPACTS

CONSTRUCTION

Site preparation, along with construction of the generating plant and associated facilities, will generate a variety of nonhazardous and hazardous wastes.

Nonhazardous waste streams from construction may include paper, cardboard, wood, glass, and plastics. These will be generated from packing materials, waste construction lumber, insulation materials, and empty containers. BEP estimates that about 100 tons of these wastes will be generated during construction (BEP 1999a, AFC p. 7.11-3). These wastes will be recycled where practical, with the rest disposed to the Blythe Sanitary Landfill (BEP 1999a, AFC p. 7.11-13). Hazardous material containers may be classified as nonhazardous if they are emptied and managed according to specified methods (Cal. Code Regs., tit. 22, §66261.7).

About 70 tons of waste asphalt or concrete will be generated during construction of foundations, parking lots, and roads (BEP 1999a, AFC p. 7.11-3). Uncontaminated soil and concrete may be used for fill material either on or offsite, with the remainder being disposed to the Blythe Sanitary Landfill.

Up to 25 tons of metal wastes from welding and cutting operations, packing materials, trim, and empty containers and drums will be generated (BEP 1999a, AFC p. 7.11-4). This also includes aluminum and copper electrical wiring waste from the power plant, substation, and transmission lines. These wastes will be recycled through scrap metal brokers with the remainder disposed to the Blythe landfill.

Construction of the natural gas and auxiliary pipelines will require drilling under roads, canals, railroad lines, and possibly the Colorado River. Such activities will generate drilling muds, which are used to lubricate and cool the drilling bit and to transport cuttings from the boreholes. Bentonite clays mixed with water are the primary constituents of drilling mud. Uncontaminated bentonite is nontoxic, and generally buried within the drill pad site. Depending on the natural gas interconnections chosen, 220 to 250 cubic yards of drilling muds may be generated (BEP 1999a, AFC p. 7.11-4). The drilling muds will be transported to appropriate landfills, depending on whether contamination is encountered during boring operations or whether chemicals are added to improve boring operations.

Hazardous wastes that may be generated during construction include waste oil and grease, paint, spent solvent, welding materials, and cleanup materials from spills of hazardous substances. These are typically generated in minor amounts. The construction contractor is considered the actual waste generator and will be responsible for proper hazardous waste handling. Such wastes will be collected in hazardous waste accumulation containers near the point of generation. The containers will be taken to the construction contractor's hazardous waste storage area and within 90 days will be delivered to an authorized hazardous waste management facility (BEP 1999a, AFC p. 7.11-5,14).

Although the Phase I ESA did not identify any conditions that would indicate a likelihood of onsite contamination, hazardous wastes could be generated during site preparation if contaminated soils are encountered during earth moving activities. Depending on the nature and extent of contamination present, additional hazardous wastes may require transportation offsite to a permitted facility.

OPERATION

Under normal operating conditions, the proposed facility will generate both nonhazardous and hazardous wastes.

Nonhazardous wastes generated during plant operation include trash, office wastes, empty containers, broken or used parts, used packing material, and used filters. The applicant estimates that about 70 cubic yards annually of such wastes will be generated (BEP 1999a, AFC p. 7.11-6). Metal parts and other materials such as paper, aluminum, and plastic will be recycled through brokers, when possible. Nonrecyclable solid wastes will be transported to the Blythe Sanitary landfill.

Routine project operation will generate a variety of hazardous wastes. BEP 1999a, AFC Table 7.11-1 summarizes the hazardous wastes that are expected to be generated, along with estimated amounts and planned management methods. Much of the hazardous waste generated is suitable for recycling. Used turbine lubricating oil will be collected for recycling by a licensed waste oil recycler (BEP 1999a, AFC p. 7.11-16). Every three to four years, air pollution control catalysts must be replaced in order to maintain their control efficiency. Spent catalyst will be returned to the manufacturer for metals reclamation or disposal. Liquid hazardous wastes consisting of solvents containing hazardous levels of heavy metals will be generated during pre-operational and periodic flushing and cleaning of pipes and the heat recovery steam generators (HRSG). A contractor will be used for such cleaning operations and will transport liquid wastes to an offsite facility licensed to manage such wastes.

IMPACT ON EXISTING WASTE DISPOSAL FACILITIES

The Blythe Sanitary Landfill is a permitted class III (nonhazardous) facility about seven miles north of Blythe. It is projected to remain operational until 2033 and accepted an average of about 74 tons per day of solid waste in 1999, with a maximum daily intake of 195 tons. The volume of nonhazardous waste expected from constructing and operating BEP is expected to be a fraction of one percent of the Blythe landfill's annual capacity. Even discounting the effects of recycling on

the total amount of non-hazardous wastes destined for landfilling, the amounts of waste generated during project construction and operation are insignificant relative to existing disposal capacity.

Three Class I landfills in California, at Kettleman Hills in King's County, Buttonwillow in Kern County, and Westmoreland in Imperial County, are permitted to accept hazardous waste. In total, there is in excess of twenty million cubic yards of remaining hazardous waste disposal capacity at these landfills, with remaining operating lifetimes of over 50 years. The amount of hazardous waste transported to these landfills has decreased in recent years due to source reduction efforts by generators, and the transport of waste out of state that is hazardous under California law, but not federal law.

Much of the hazardous waste generated during facility construction and operation will be recycled, such as used oil and spent catalysts. Even without recycling, the generation of hazardous waste from BEP would be a very small fraction (less than one percent) of existing capacity and will not significantly impact the capacity or remaining life of any of the state's Class I landfills.

CUMULATIVE IMPACTS

Due to the minor amounts of wastes generated during project construction and operation, the insignificant impacts on individual disposal facilities, and the availability of additional regional landfills in Riverside County, cumulative impacts will be insignificant for both hazardous and nonhazardous wastes.

FACILITY CLOSURE

During any type of facility closure (see staff's General Conditions section which discusses planned, unexpected temporary, and unexpected permanent closure), one concern is that project wastes not pose any potentially significant problem to the public, workers, or the environment. Staff believes that conditions of certification in the General Conditions section will adequately address waste management issues related to closure.

In the case of unexpected temporary closure, waste management practices normally required by LORS and already in-place (such as limiting hazardous waste accumulation time to 90 days and requiring proper containment) would likely be adequate to avoid significant problems. In addition, staff's General Conditions for Facility Closure require preparation of an on-site contingency plan which shall provide for removal of hazardous wastes and draining of all chemicals from storage tanks and other equipment for temporary closures exceeding 90 days.

An approved on-site contingency plan is also required to protect public health and safety in the case of unexpected permanent closure. The plan must provide for the removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment, and the safe shutdown of all equipment.

For planned permanent closure, BEP will develop a facility closure plan prior to commencement of closure which will detail compliance with LORS applicable at the time of closure (BEP 1999a, AFC p. 5.0-2). The decommissioning plan will attempt to maximize the recycling of all facility components. Chemicals will be drained from all equipment, and all wastes will be collected and disposed of in accordance with applicable LORS.

COMPLIANCE WITH APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Energy Commission staff concludes that BEP will be able to comply with all applicable LORS regulating the management of hazardous and non-hazardous wastes during facility construction and operation. The applicant is required to dispose of hazardous and non-hazardous wastes at facilities approved by the Regional Water Quality Control Board or the CAL EPA - Department of Toxic Substances Control. Because hazardous wastes will be produced during project construction and operation, BEP must acquire and maintain an EPA identification number as a hazardous waste generator. Accordingly, BEP will be required to properly store, package and label waste, use only approved transporters, prepare hazardous waste manifests, and keep detailed records. Pursuant to title 22, California Code of Regulations, section 67100.1 et seq., a hazardous waste source reduction and management review may be required, depending on the amounts of hazardous waste ultimately generated.

MITIGATION

BEP intends to implement the following mitigation measures during construction and operation of the proposed project:

- A hazardous waste reduction program will be developed to minimize the quantity of hazardous wastes generated. Management methods will include source reduction, recycling, treatment, and selection of less toxic materials.
- Nonhazardous wastes will be recycled whenever practical.

Staff has examined the waste management related measures proposed by BEP and concludes that, together with applicable LORS and the additional measure proposed by staff, such measures will adequately assure that no significant environmental impacts will result from the management and disposal of project-related waste.

CONCLUSIONS AND RECOMMENDATIONS

Management of the wastes generated during construction and operation of BEP will not result in any significant adverse impacts if the waste management measures proposed in the Application for Certification (99-AFC-8), the additional measure proposed by staff below, and the proposed conditions of certification are implemented.

Staff recommends that if potentially contaminated soil is unearthed during excavation at either the proposed site or linear facilities, as evidenced by discoloration, odor, or other signs, BEP have an environmental professional (as defined by American Society for Testing and Materials practice E 1527-97 Standard Practice for Phase I environmental Site Assessments) determine the need for sampling to confirm the nature and extent of contamination. If significant remediation may be required, BEP should also contact the Riverside County Hazardous Materials Department and the Cypress Field Office of the California Department of Toxic Substances Control for possible oversight.

CONDITIONS OF CERTIFICATION

WASTE-1 The project owner shall obtain a hazardous waste generator identification number from the Department of Toxic Substances Control prior to generating any hazardous waste.

Verification: The project owner shall keep its copy of the identification number on file at the project site and notify the CPM via the monthly compliance report of its receipt.

WASTE-2 Upon becoming aware of any impending waste management-related enforcement action, the project owner shall notify the CPM of any such action taken or proposed to be taken against it, or against any waste hauler or disposal facility or treatment operator with which the owner contracts.

Verification: The project owner shall notify the CPM in writing within 10 days of becoming aware of an impending enforcement action.

WASTE-3 Prior to the start of construction and prior to the start of operation, the project owner shall prepare and submit to the CEC CPM, for review and comment, a waste management plan for all wastes generated during construction and operation of the facility, respectively. The plans shall contain, at a minimum, the following:

- A description of all expected waste streams, including projections of frequency and hazard classifications; and
- Methods of managing each waste, including treatment methods and companies contracted with for treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans.

Verification: No less than 30 days prior to the start of construction, or a lesser time period mutually agreed upon, the project owner shall submit the construction waste management plan to the CPM for review. The operation waste management plan shall be submitted no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions within 30 days of notification by the CPM (or mutually agreed upon date). In the Annual Compliance Reports, the project owner shall document the actual waste management methods used during the year compared to planned management methods.

WASTE-4 The project owner shall have an environmental professional available for consultation during soil excavation and grading activities. The environmental professional shall meet the qualifications of such as defined by the American Society for Testing and Materials designation E 1527-97 Standard Practice for Phase I Environmental Site Assessments as evidenced by one of the following or similar credentials: (1) Certified Industrial Hygienist with experience in worker exposure monitoring, (2) Qualified Environmental Professional certification, (3) Registered Environmental Assessor II, or (4) Registered Professional Engineer with experience in remedial investigation and feasibility studies.

Verification: At least 30 days prior to the start of construction, the project owner shall submit the qualifications and experience of the environmental professional to the CPM for approval.

WASTE-5 If potentially contaminated soil is unearthed during excavation at either the proposed site or linear facilities as evidenced by discoloration, odor, or other signs, the environmental professional shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and file a written report to the project owner and CPM stating the recommended course of action, prior to any further construction activity at that location. If, in the opinion of the environmental professional, significant remediation may be required, the project owner shall contact representatives of the Riverside County Hazardous Materials and the Cypress regional office of the California Department of Toxic Substances Control for guidance and possible oversight.

Verification: The project owner shall submit any reports filed by the environmental professional to the CPM within 5 days of their receipt.

REFERENCES

BEP (Blythe Energy Project/Looper) 1999a. Submittal of Application for Certification - Blythe Energy Project, Volumes I and II. Submitted to the Energy Commission on December 9, 1999.

WORKER SAFETY AND FIRE PROTECTION

Testimony of Terri Wallace

INTRODUCTION

Worker safety and fire protection is governed by laws, ordinances, regulations, and standards (LORS), and enforced through regulations codified at the Federal, State, and local levels. Worker safety is of utmost priority at the project location and is documented through worker safety practices and training. Industrial workers at the facility operate process equipment and handle hazardous materials daily, and may face other hazards, which can result in accidents and serious injury. Protection measures are employed to either eliminate these hazards or minimize the risk through special training, protective equipment, and procedural controls.

The purpose of this analysis is to assess the adequacy of worker safety and fire protection measures proposed by Blythe Energy LLC for the Blythe Energy Project (BEP). Staff has reviewed the original Application for Certification (AFC) (BEP 1999a), Data Request Responses #1 (BEP 2000l), and the Adjustment to proposed El Paso Natural Gas pipeline route (BEP 2000s). Staff's analysis focused on determining whether the BEP has proposed adequate measures to:

- comply with applicable safety laws, ordinances, regulations and standards;
- protect the workers during construction and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

Staff has determined that the proposed project will comply with applicable LORS and will not present unusual industrial safety or fire protection problems. Issues regarding impact on local fire protection service and hazardous materials response are addressed through proposed conditions of certifications **WORKER SAFETY-4 and WORKER SAFETY-5**.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

FEDERAL

In December 1970 Congress enacted the Federal Occupational Safety and Health Act of 1970 (the OSH Act). The OSH Act mandates safety requirements in the workplace and is found in Title 29 of the United States Code, § 651 (29 U.S.C. §§ 651 through 678). Regulations enacted pursuant to the OSH Act can be found at Title 29 of the Code of Federal Regulations, under General Industry Standards, Parts 1910.1 through 1910.1450. The OSH Act clearly defines the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector. Most of the safety and health standards now in force under the Act for general industry represent a compilation of materials authorized by the OSH Act from

existing federal standards and national consensus standards. These include standards from the voluntary membership organizations of the American National Standards Institute (ANSI), and the National Fire Protection Association (NFPA) which publishes the National Fire Codes.

The congressional purpose of the Act is to "assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources," (29 USC § 651). The Federal Department of Labor promulgates and enforces safety and health standards that are applicable to all businesses affecting interstate commerce. The Department of Labor established the Occupational Safety and Health Administration (OSHA) in 1971 to discharge the responsibilities assigned by the Act.

Applicable Federal requirements include:

- 29 United States Code § 651 et seq. (Occupational Safety and Health Act of 1970)
- 29 Code of Federal Regulations Part 1910.1 - 1910.1450 (Occupational Safety and Health Administration Safety and Health Regulations)
- 29 Code of Federal Regulations Part 1952.170 – 1952.175 (Federal approval of California's plan for enforcement of its own Safety and Health requirements, in lieu of most of the Federal requirements found in 29 CFR Part 1910.1 – 1910.1450)

STATE

California passed the Occupational Safety and Health Act of 1973 ("Cal/OSHA"). California Labor Code § 6300. Regulations promulgated as a result of the Act are codified at Title 8 of the California Code of Regulations, beginning with Part 450 et seq. The California Labor Code requires that the State Standards Board adopt standards at least as effective as the federal standards that have been promulgated (Calif. Labor Code §142.3(a)). Health and safety laws promulgated by California meet or exceed the Federal requirements. Hence, California obtained federal approval of its State health and safety regulations in lieu of the federal requirements published at 29 CFR Parts 1910.1 - 1910.1450. The Federal Secretary of Labor, however, continually oversees California's program and will enforce any federal standard for which the State has not adopted a Cal/OSHA counterpart.

The State of California Department of Industrial Relations is charged with the responsibility for administering the Cal/OSHA plan. The Department of Industrial Relations is further split into six divisions to oversee, among other activities: industrial accidents, occupational safety and health, labor standards enforcement, statistics and research, and the State Compensation Insurance Fund (workers compensation).

Employers are responsible to insure that their employees are informed about workplace hazards and potential exposure in the work environment (Calif. Labor Code § 6408). Cal/OSHA's principal tool in ensuring that workers and the public are informed is the Material Safety Data Sheet (MSDS) (Title 8, California Code of

Regulations., Section 5194). This regulation was promulgated in response to California's Hazardous Substances Information and Training Act of 1990 (1980 Calif. § 874 and Calif. Labor Code §§ 6360-6399.7). It mirrored the Federal Hazard Communication Standard (29 CFR Part 1910.1200) which established an employee's "right to know" about chemical hazards in the workplace, but added the provision of applicability to public sector employers.

Finally, Title 8, California Code of Regulations, Section 3203 requires that employers establish and maintain a written Injury and Illness Prevent Program to identify workplace hazards and communicate those hazards to its employees through a formal employee training program (8 CCR 3203).

Applicable State requirements include:

- Title 8, California Code of Regulations, Section 339 - List of hazardous chemicals relating to the Hazardous Substance Information and Training Act
- Title 8, California Code of Regulations, Section 450 et seq. Cal / OSHA regulations
- Title 24, California Code of Regulations, Section 3 et seq. - incorporates the current edition of the Uniform Building Code
- Health and Safety Code Section 25500 et seq. - Risk Management Plan requirements for threshold quantity of listed acutely hazardous materials at the facility
- Health and Safety Code Section 25500- 25541 - Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at the facility

LOCAL

The California Building Standards Code Title 24, California Code of Regulations, Section 3 is comprised of eleven parts containing the building design and construction requirements relating to fire and life safety and structural safety. The Building Standards Code includes the electrical, mechanical, energy, and fire codes applicable to the project. Local planning /building & safety departments enforce the California Uniform Building Code.

National Fire Protection Association (NFPA) standards are published in the California Fire Code. The fire code contains general provisions for fire safety, including but not restricted to: 1) required road and building access; 2) water supplies; 3) installation of fire protection and life safety systems; 4) fire-resistive construction; 5) general fire safety precautions; 6) storage of combustible materials; 7) exits and emergency escapes; and 8) fire alarm systems. The California Fire Code is published at Part 9 of Title 24 of the California Code of Regulations.

Similarly the Uniform Fire Code Standards, a companion publication to the California Fire Code, contains standards of the American Society for Testing and Materials and the NFPA. It is the United State's premier model fire code. It is updated annually as a supplement and published every third year by the

International Fire Code Institute to include all approved code changes in a new edition.

Applicable local requirements include:

- 1998 Edition of California Fire Code and all applicable NFPA standards (Title 24, California Code of Regulations, Sections 901-907)
- Uniform Fire Code Standards
- California Building Code Title 24, California Code of Regulations, Section 3 et seq.

SETTING

The Blythe Energy Project site is located in southeastern California, approximately five miles west of the center of the City of Blythe. The site is east of the Blythe Airport Industrial Park, which is currently owned by Riverside County and operated by the City of Blythe. The Project site covers approximately 76 acres, about 30 acres of which would be occupied by a new generation plant and switchyard, and approximately 16 acres for evaporation ponds. The 76-acre site is bounded on the south by Hobsonway and on the east by Buck Boulevard. Hobsonway is a paved road running east-west parallel to and one-quarter mile north of Interstate 10. Buck Boulevard is an unpaved road, which runs north from Hobsonway. The north boundary of the property is on an easement dedicated for Riverside Drive. The City of Blythe has currently annexed the site and additional lands in the vicinity of the Airport as a part of its ultimate industrial park development in this area of the City.

Two fire stations, operated by the Riverside County Fire Department, are located near the site. Fire Station No. 45, as shown on **WORKER SAFETY AND FIRE PROTECTION Table 1**, is the closest station to the Blythe Energy Project site. The address is 17280 Hobsonway, about one mile west of the property. The second fire station, Station No. 43, is located in the City of Blythe at 140 West Barnard Street about five miles east of the project property.

Station No. 45 is composed of two fire engines with one used by full-time staff at the station and one used as backup for volunteer firefighters based around the City of Blythe. This fire station is staffed by two full-time trained firefighters. Additionally, they have 15 to 20 volunteer firefighters that can be called in for emergency situations. Response time to the site would be within 3 to 5 minutes. This fire station also provides fire-fighting support to the Blythe Airport.

The Riverside County Fire Department Station No. 43 has two full-time trained firefighters on full-time staff. Additionally, they have 15 to 20 volunteer firefighters that can be called in for emergency situations. The fire fighting equipment located at this station consists of two fire engines, one water tender, and a squad vehicle. Estimated response time to the Blythe Energy Project site is 5 to 7 minutes.

The Blythe Fire Department will provide fire protection to the area in coordination with Riverside County Fire Department through an automatic aid agreement. An

automatic aid agreement is when both fire departments are dispatched "automatically" when a call is received. The automatic aid agreement was recently modified as a condition of approval to the State Filing of Annexation No. 50 to include the proposed site for the BEP. The Blythe Fire Department is located at 201 North Commercial Street, approximately 5 miles east of the site. This fire department is based on 33 trained volunteer firefighters and one full-time fire marshal. Fire fighting equipment consists of four fire engines, one 50-foot ladder truck, one squad truck, and one quick response vehicle. Response time of the Blythe Fire Department to the project site is estimated to range from about 10 to 15 minutes.

All full-time Riverside County Fire Department personnel are HAZ MAT First Responder Operational qualified. "First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property or the environment from the effects of the release" (29 CFR § 1910.120). In the event of a sustained hazardous materials release, the Hazardous Materials Response Team (HIT Unit) of Riverside County Fire Department would provide response support. The HIT Unit is located in Beaumont, California (Riverside County Fire Department No. 20). Response time is approximately two hours to the site.

WORKER SAFETY AND FIRE PROTECTION Table 1 provides an outline of the equipment and personnel at each fire station.

WORKER SAFETY AND FIRE PROTECTION Table 1
Fire Station/Fire Protection Capabilities

Station	Response time	Equipment	Number of Firefighters
Station No. 45 17280 Hobsonway Blythe, CA (Riverside County Fire Department)	Approximately 3 to 5 minutes	2 – Type 1 Engine 1 – Type 4, Squad Vehicle	2 trained firefighters 15 to 20 volunteer firefighters
Station No. 43 140 West Barnard St. Blythe, CA (Riverside County Fire Department)	Approximately 5 to 7 minutes	2 – Type 1 Engine 1 – Water Tender 1 – Type 4, Squad Vehicle	2 trained firefighters 15 to 20 volunteer firefighters
Blythe Fire Department 201 North Commercial St. Blythe, CA (City of Blythe Fire Department)	Approximately 10-15 minutes	1 – 50-foot ladder truck 4 – Fire Truck 1 – Squad Vehicle 1 – Quick Response Vehicle	33 - Trained volunteer firefighters 1- Fire Marshal

Equipment types are defined as follows:

- The Fire Engine (Type 1) is a primary response unit. It has a 500 gallon water tank, a minimum of 1,000 gallon per minute (gpm) pump, and 2,400 feet of hose. This apparatus also has Basic Life Support (BLS) medical treatment capabilities.
- Fire Trucks are also primary response units, and have a 500-gallon water tank, a 1,250-gpm pump, 1,000 feet of hose and an aerial ladder with stream capability of 1000 gpm.
- Water Tender has a 1,250-gallon water supply, a 500-gpm pump.
- Type 4 squad is a four-wheel drive vehicle used for brush fire or watershed patrol.

The BEP project encompasses the construction and operation of a 520 MW natural gas-fired combined cycle power plant, and construction and operation of ancillary facilities, including transmission lines, a substation, and pipelines. The facility will incorporate two combustion turbine generators operating in combined cycle mode. Workers will be exposed to hazards typical of construction and operation of a gas-fired combined cycle facility.

The construction for the facility would range from 40 to 130 employees for the first several months during mobilization and site preparation, leading to a peak employment level which would occur around month 10, with an estimated onsite employment of 481. Construction of the gas pipeline interconnections will require a peak employment of about 140 workers in month 10 of the construction schedule.

Once the power plant and ancillary lines are constructed, an operation and maintenance crew will be required to run the plant. The BEP expects that about 20 permanent workers would be needed for operation and maintenance of the facility.

IMPACTS

PROJECT SPECIFIC IMPACTS

FIRE PROTECTION

Staff reviewed the information provided in the AFC regarding available fire protection services and equipment (BEP 1999a, AFC Section 2.3.2.1 Fire Protection Systems), to determine if the project would adequately protect workers and if it would impact the fire protection and emergency response services of the Fire Department. The project will rely on both onsite fire protection systems and the Fire Department's fire protection and emergency response services.

The information in the AFC indicates that the proposed fire protection system at the site will be adequate for fighting incipient fires, and that fighting major structural fires will require the services of the Fire Department. The proposed fire protection system at the site includes fire alarms, detection systems, fire hydrants, and hose

stations throughout the facility. Fixed fire suppression systems will be installed at determined fire risk areas, such as the transformers, turbine lubrication oil equipment, and cooling tower. The fire water system will be served directly from the raw water tank. The raw water tank is sized at approximately 600,000 gallons with approximately 150,000 gallons of reserved fire suppression capacity. The facility fire mains will also supply a vapor suppression system at the aqueous ammonia storage tank area. The system will be designed and operated in accordance with National Fire Protection Association (NFPA) standards and recommendations. Dedicated fire water supply will be designed in accordance with NFPA 850. Sprinkler systems will be installed in the Control/Administration Building and Fire Pump Building, as required by NFPA requirements. Hand-held fire extinguishers will be located throughout the facility in accordance with NFPA 10.

Table 3.0-2 (BEP 1999a, AFC page 3.3-29) summarizes the codes and standards and the design conditions applicable to the fire protection system. The protection systems will be installed and maintained according to applicable NFPA standards.

The City of Blythe is reviewing the AFC and will perform a needs assessment to evaluate and address fire service capabilities to the project. Staff's recommended condition of certification **WORKER SAFETY-4** will assure that the BEP's contribution to project-specific impacts to the City of Blythe's fire protection and emergency service capabilities are adequately mitigated.

In the event of a sustained hazardous materials release, the Hazardous Materials Response Team (HIT Unit) of Riverside County Fire Department is the closest hazardous materials release response support identified in the AFC. The HIT Unit is located in Beaumont, California with a response time of approximately two hours. Staff's recommended condition of certification **WORKER SAFETY-5** will assure that hazardous materials incident response including response time, available equipment and training, is adequately mitigated.

The applicant will be required to provide final diagrams and plans to staff and to the City of Blythe, prior to construction and operation of the project, to confirm the adequacy of the proposed fire protection measures. All Fire Department access roads, water mains, and fire hydrants shall be installed and operational during construction in accordance with Article 87 of the Fire Code. A final inspection by the City of Blythe will be required to confirm that the facility meets all the Fire and Building Code requirements.

WORKER SAFETY

Industrial environments are potentially hazardous, both during the construction and operation of facilities. Workers at the proposed BEP project may be exposed to loud noises, electrocution, chemical spills, hazardous waste, fires, explosions, moving equipment, falling equipment or structures, trenches, confined space entry and egress hazard problems; and may experience falls, trips, burns, lacerations and numerous other injuries. It is important for BEP to have well-defined policies and procedures, training, as well as hazard recognition and control at its facility to minimize such hazards and protect workers. BEP will be responsible for its

employees and for assuring that contractors comply with applicable LORS during construction and operation of all project related facilities including the transmission lines and pipelines.

Aqueous ammonia will be used onsite in conjunction with a catalyst to control NO_x from the turbines. The aqueous ammonia will be stored in tanks at an ammonia concentration ranging from 10 to 30 percent. Ammonia Refrigerant (R717) will also be used at the BEP as a refrigerant for inlet chilling. Storage and handling of ammonia and other hazardous chemicals used onsite is addressed in the Hazardous Materials Management Chapter. Fire suppression systems will be installed on equipment used to handle or store flammable materials, such as natural gas, hydrogen and flammable gas containers.

CUMULATIVE IMPACTS

The worker safety and fire hazards associated with the proposed construction and operation of the BEP may result in a cumulative impact on the fire protection and emergency service capabilities of the city and county Fire Departments**WORKER SAFETY-4** will adequately address any impacts on fire protection services, and will reduce to insignificant any potential cumulative impact.

MITIGATION

A Safety and Health Program will be prepared by the applicant to minimize worker hazards during construction and operation. Staff uses the phrase “Safety and Health Program” to refer to the measures that will be taken to ensure compliance with the applicable LORS during the construction and operational phases of the project.

CONSTRUCTION SAFETY AND HEALTH PROGRAM

The proposed BEP project includes construction and operation of two natural gas-fired combustion turbine generators equipped with evaporative combustion air coolers, two heat recovery steam generators equipped with duct burners, a condensing steam turbine generator, a mechanical draft cooling tower, electrical and natural gas infrastructure, an ammonia refrigeration plant, and water treatment facilities. Therefore, during the construction phase of the project, workers will be exposed to hazards typical of construction of a gas-fired combined cycle facility.

Construction Safety Orders are published at Title 8 of the California Code of Regulations beginning with section 1502 (8 CCR § 1502 et seq.). These requirements are promulgated by Cal/OSHA and are applicable to the construction phase of the project. The Construction Safety and Health Program will include the following:

- Construction Injury and Illness Prevention Program (Title 8, California Code of Regulations, Section 1509)
- Construction Fire Protection and Prevention Plan (Title 8, California Code of Regulations, Section 1920)

- Personal Protective Equipment Program (Title 8, California Code of Regulations, Sections 1514 - 1522)

Additional programs under General Industry Safety Orders (Title 8, California Code of Regulations, Sections 3200 - 6184), Electrical Safety Orders (Title 8, California Code of Regulations, Sections 2299 - 2974) and Unfired Pressure Vessel Safety Orders (Title 8, California Code of Regulations, Sections 450 - 544), which BEP will incorporate into its program, will include:

- Electrical Safety Program
- Unfired Pressure Vessel Safety Orders
- Equipment Safety Program
- Forklift Operation Program
- Excavation/Trenching Program
- Fall Prevention Program
- Scaffolding/Ladder Safety Program
- Articulating Boom Platforms Program
- Crane and Material Handling Program
- Housekeeping and Material Handling and Storage Program
- Hot Work Safety Program
- Respiratory Protection Program
- Employee Exposure Monitoring Program
- Confined Space Entry Program
- Hand and Portable Power Tool Safety Program
- Hearing Conservation Program
- Back Injury Prevention Program
- Hazard Communication Program
- Air Monitoring Program
- Heat and Cold Stress Monitoring and Control Program
- Pressure Vessel and Pipeline Safety Program

During construction, a hazard analysis will be performed to evaluate the hazards and develop appropriate programs/plans to address any hazards that are not included above.

The AFC includes adequate outlines of each of the above programs. Prior to construction of the BEP, detailed programs and plans will be provided pursuant to the condition of certification **WORKER SAFETY-1**.

OPERATION SAFETY AND HEALTH PROGRAM

Upon completion of construction and prior to operations at BEP, the Operations Safety and Health Program will be prepared pursuant to regulatory requirements of Title 8 of the California Code of Regulations. BEP's Operation Safety and Health Program will include the following programs and plans:

- Injury and Illness Prevention Program (Title 8, California Code of Regulations, Section 3203);
- Emergency Action Program/Plan (Title 8, California Code of Regulations, Section 3220);
- Fire Protection and Prevention Program (Title 8, California Code of Regulations, Section 3221); and
- Personal Protective Equipment Program (Title 8, California Code of Regulations, Section 3401-3411)

Additional programs under General Industry Safety Orders (Title 8, California Code of Regulations, Sections 3200 - 6184), Electrical Safety Orders (Title 8, California Code of Regulations, Sections 2299 - 2974) and Unfired Pressure Vessel Safety Orders (Title 8, California Code of Regulations, Sections 450 - 544), which BEP will incorporate into its program, will include:

- Motor Vehicle and Heavy Equipment Safety Program
- Forklift Operation Program
- Excavation/Trenching Program
- Fall Protection Program
- Scaffolding/Ladder Safety Program
- Crane and Material Handling Program
- Hazard Communication Program
- Hot Work Safety Program
- Respiratory Protection Program
- Electrical Safety Program
- Confined Space Entry Program
- Hand and Portable Power Tool Safety Program
- Housekeeping and Material Handling and Storage Program
- Hearing Conservation Program
- Back Injury Prevention Program
- Safe Driving Program
- Employee Exposure Monitoring Program
- Heat and Cold Stress Monitoring and Control Program

- Pressure Vessel and Pipeline Safety Program

The AFC includes adequate outlines of each of the above programs. Prior to operation of the proposed BEP, detailed programs and plans will be provided to Cal OSHA and Staff pursuant to the condition of certification **WORKER SAFETY-2**.

SAFETY AND HEALTH PROGRAM ELEMENTS

BEP provided the proposed outlines for both a Construction Safety and Health Program and an Operation Safety and Health Program. The measures in these plans are derived from applicable sections of state and federal law. The major items required in both Safety and Health Programs are as follows:

INJURY AND ILLNESS PREVENTION PROGRAM (IIPP)

BEP will submit an expanded Construction and Operations Illness and Injury Prevention Programs to Cal/OSHA for review and comment 30 days prior to both construction and operation of the project.

Cal/OSHA will review and provide comments on the IIPP as the result of an onsite consultation at BEP's request. A Cal/OSHA representative will complete a physical survey of the site, analyze work practices, and assess those practices that may likely result in illness or injury. This on-site consultation will give Cal/OSHA an opportunity to evaluate BEP's IIPP in conjunction with the activities occurring on site.

EMERGENCY ACTION PLAN

California regulations require an Emergency Action Plan (Title 8, California Code of Regulations, Sections 3220) which provides specific procedures to be followed in the event of an emergency situation. Potential emergencies include, but are not limited to, spill or release of hazardous materials, fire, explosion, or natural disaster. The plan must include:

- Emergency escape procedures and emergency escape route assignments
- Procedures to be followed by employees who remain to operate critical plant operations before evacuating
- Procedures to account for all employees after emergency evacuation has been completed
- Rescue and medical duties for employees
- Fire and emergency reporting procedures
- Alarm and communication system
- Names and phone numbers of personnel to contact in the event of an emergency
- Response procedures for ammonia release (or other hazardous materials)
- Training requirements

Staff proposes a condition of certification **WORKER SAFETY-2**, which requires BEP to submit a final Operation's Emergency Action Plan to Cal/OSHA for review and comment. Staff also proposes that BEP submit the latest revision to the Emergency Action Plan to the City of Blythe for review and approval to satisfy proposed conditions of certification **WORKER SAFETY-1** and **2**.

FIRE PREVENTION PLAN

California Code of Regulations requires a Construction and Operation Fire Prevention Plan (Title 8, California Code of Regulations, Section 3221). The plan will need to include the following topics:

- General requirements
- Fire hazard inventory, including ignition sources and mitigation
- Housekeeping and proper materials storage
- Employee alarm/communication system
- Portable fire extinguishers
- Fixed freighting equipment
- Fire control
- Flammable and combustible liquid storage
- Use of flammable and combustible liquids
- Dispensing and disposal of liquids
- Training
- Contact personnel
- Local fire protection services

Staff proposes that BEP submit a copy of the Fire Prevention Plan to the California Energy Commission compliance Project Manager (CPM) and City of Blythe the project for review and approval to satisfy proposed conditions of certification **WORKER SAFETY 1** and **2**.

PERSONAL PROTECTIVE EQUIPMENT PROGRAM

California regulations mandate that personal protective equipment (PPE) and first aid supplies are required whenever hazards are encountered which, due to process, environment, chemicals or mechanical irritants, can cause injury or impair bodily function as a result of absorption, inhalation or physical contact (Title 8, California Code of Regulations, Sections 3380-3400). BEP's operational environment will require PPE.

The BEP Program ensures that this project complies with the applicable requirements for PPE and provide employees with the information and training necessary to implement the program. BEP provided a satisfactory outline that identifies the minimum requirements of a proposed PPE program.

Requirements of BEP's program as outlined include:

- Determine and provide personal protective devices for specific jobs.
- Provide proper head protection requirements.
- Establish eye and face protection requirements.
- Identify body protection equipment requirements.
- Implement hand protection requirements.
- Define proper foot protection.
- Determine safety belts and life line job requirements.
- Establish procedures to prevent and protect personnel from electric shock.
- Identify onsite and offsite medical services and first aid requirements.
- Specify respiratory requirements for jobs.
- Training.

Staff evaluated BEP's PPE policies and determined that the proposed PPE Program contains the elements that will meet applicable regulations and will substantially reduce the potential impact upon workers.

General Safety

In addition to the specific plans and programs listed above, there are additional LORS applicable to the project, which are called "safe work practices". A listing of these requirements follows.

Motor Vehicle and Heavy Equipment Safety Program

This program concerns the operation and maintenance of vehicles, inspections, personal protective equipment and traffic safety training for employees working on, near, or with heavy equipment or vehicles. A safe driving training program will be included in the operations safety program.

Forklift Operation Program

Forklift operation will utilize only trained and certified operators. The training program will include safe fueling procedures and forklift driving.

Evacuation/Trenching Program

A Cal/OSHA permit is required for certain trenches, excavations, structures, scaffolding and dismantling. BEP's program will include:

- Shoring, sloping, and benching requirements
- Cal/OSHA permit requirements
- Inspection
- Air monitoring

- Access and egress

Fall Protection Program

Worker training will identify fall hazards and evaluate the appropriate protection devices, such as safety harnesses.

Scaffolding / Ladder Safety Program

Workers will be trained in the construction, inspection and proper use of ladder and scaffolding equipment, and the appropriate safety and protective equipment to use.

Articulating Boom Platforms Program

This program consists of:

- Inspection of equipment
- Load ratings
- Safe operating parameters
- Operator training

Crane and Material Handling Program

Only certified and licensed operators will be permitted to operate a crane. Worker training will include:

- Inspection of equipment
- Load ratings
- Safe operating parameters

Hot Work Safety Program

Hot work is any work that causes a spark and can ignite a fuel source, such as welding, cutting and brazing. Before proceeding with hot work, workers will request a work authorization from the project's assigned Safety Officer. The control operator, shift supervisor will determine if hot work is required. Before proceeding, the area will be inspected and the job posted. BEP's proposed Hot Work Safety Program will include:

- Welding and cutting procedures
- Fire watch
- Hot work permit
- Personal protective equipment
- Training

Employee Exposure Monitoring Program

Routine medical surveillance will be conducted on workers to evaluate and monitor individual exposure to hazardous conditions or substances. This program includes:

- Exposure evaluation
- Monitoring and reporting requirements
- Medical surveillance
- Training

Electrical Safety Program

BEP's Electrical Safety Program will include procedures for grounding, lock-out/tag-out, overhead and underground utilities, utility clearance and employee training. Lock-out/tag-out requirements are specified under Title 8 of the California Code of Regulations (Title 8, California Code of Regulations, Sections 2320.4, 2320.5, 2320.6, 2530.43, 2530.86, 3314, 3340 and 3341). These procedures reduce employee exposure to moving equipment, electrical shock, and hazardous and toxic materials. Lockout is the placement of a padlock, blank flange, or similar device on equipment to ensure it will not be operated until the lockout device is removed. Tag-out procedures utilize warning signs that warn personnel when equipment can't be energized until the lockout device is removed. Warning signs are also used to alert employees to the presence of hazardous and toxic materials. BEP's lock-out/tag-out program will include steps for applying and removing locks and tags, and employee training procedures.

Confined Space Entry

The California Code of Regulations identifies the minimal standards for preventing employee exposure to dangerous air contaminants and/or oxygen deficiency in confined spaces, where there is an oxygen-deficient atmosphere, a limited means of egress, or a source of toxic or flammable contaminants (Title 8, California Code of Regulations, Sections 5156-5168). Confined spaces include silos, tanks, vats, vessels, boilers, compartments, ducts, sewers, pipelines, vaults, bins and pits. BEP included an outline of its permit-required confined space entry program, which includes the following components:

- Air monitoring and ventilation requirements
- Rescue procedures
- Lock-out / tag-out and blocking, blinding, and blanking requirements
- Permit completion
- Training

Before entering a confined space, site personnel will evacuate or purge the space and disconnect the lines that provide access of substances into the space. The air in the vessel will be tested for oxygen deficiency and the presence of toxic and explosive gases and vapors. Employees will wear lifelines or safety harnesses when entering the confined space, and a person will be stationed outside the confined space to handle the line and summon assistance in case of emergency. Appropriate respirators will be available under hazardous conditions.

Hand and Portable Power Tool Safety Program

This program applies to construction and operations. It will include guarding and proper operations of power tools and worker training.

Housekeeping and Material Handling and Storage Program

This program concerns storage requirements, the proper handling of equipment, and keeping walkways and work surfaces clean and safe. Worker training includes good housekeeping practices.

Hearing Conservation Program

This program identifies high-noise environments and assigns hearing protective devices appropriate to the noise level. Although hearing protection is included in personal protective equipment, this program includes exposure monitoring and medical surveillance, along with worker training.

Back Injury Prevention Program

Worker training in this program will consider proper lifting practices and material handling procedures.

Hazard Communication Program

The Hazard Communications Standard establishes an employee's right to know about chemical hazards in the workplace. In accordance with federal and state requirements, BEP will prepare a list of hazardous substances and provide a Material Safety Data Sheet (MSDS) for each substance on the list found in the workplace. BEP will train workers to understand MSDSs and to work safely with hazardous substances. Worker training in this program will also include proper labeling, storage and handling of hazardous materials.

Respiratory Protection Program

Respiratory protection is also incorporated in the personal protective equipment. This program includes:

- Proper selection and use of a respirator
- Fit testing
- Medical requirements
- Inspection, repair, cleaning and storage of respirator
- Training

Heat and Cold Stress Monitoring and Control Program

This program includes personnel monitoring during periods of high or low temperature, prevention of heat and cold stress and controls for workers in hot or cold environments.

Pressure Vessel and Pipeline Safety Program

Workers at pressure vessels and pipelines will be trained in the following procedures:

- Line-breaking policy
- Equipment inspection and maintenance
- Blocking , bleeding, and blanking
- Communication

MITIGATION OF CUMULATIVE IMPACTS

The worker safety protection programs proposed by BEP will be applicable to the construction and operation of the BEP facility and will provide adequate protection for workers at that facility. The construction and operation of the BEP could result in impacts to the fire and emergency service capabilities of either the City of Blythe or the Riverside County Fire Department. If BEP provides funding for additional fire protection service capabilities and hazardous materials response as required by conditions of certification **WORKER SAFETY-4** and **WORKER SAFETY-5**, staff believes that the project will incorporate sufficient measures to ensure adequate levels of fire protection and emergency services, and will not result in a significant cumulative impact.

FACILITY CLOSURE

The project owner/operator is responsible for maintaining an operational fire protection system during closure activities. The project must also stay in compliance with all applicable health and safety LORS during that time.

CONCLUSION AND RECOMMENDATIONS

CONCLUSIONS

If BEP provides (1) a Construction Safety and Health Plan, and an Operation Safety and Health Plan, as required by conditions of certification. **WORKER SAFETY-1** and **2;** (2) the plans for the automatic fire extinguishing system, fire alarm system and construction plans to the Fire Department for review and approval, as required by condition of certification. **WORKER SAFETY-3,** (3) provides funding for additional fire protection service capabilities and hazardous materials response as required by condition of certification. **WORKER SAFETY-4** and **5,** staff believes that the project will incorporate sufficient measures to ensure adequate levels of worker safety and comply with applicable LORS.

RECOMMENDATIONS

If the Commission certifies the project, staff recommends that the Commission adopt the following proposed conditions of certification.

PROPOSED CONDITIONS OF CERTIFICATION

WORKER SAFETY-1 The project owner shall submit to the CPM a copy of the Project Construction Safety and Health Program, containing the following:

- a Construction Injury and Illness Prevention Program
- a Construction Fire Protection and Prevention Plan
- a Personal Protective Equipment Program

Protocol: The Construction Injury and Illness Prevention Program and the Personal Protective Equipment Program shall be submitted to the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) Consultation Service, for review and comment concerning compliance of the program with all applicable Safety Orders.

The Construction Fire Protection and Prevention Plan shall be submitted to the City of Blythe for review and acceptance.

Verification: At least 30 days prior to the start of construction, or a date agreed to by the CPM, the project owner shall submit to the CPM a copy of the Project Construction Safety and Health Program and the Personal Protective Equipment Program, with a copy of the cover letter transmittal of the programs to Cal/OSHA Consultation Services. The project owner shall provide a letter from the City of Blythe stating that they have reviewed and accepted the Construction Fire Protection and Prevention Plan.

WORKER SAFETY-2 The project owner shall submit to the CPM a copy of the Project Operation Safety and Health Program containing the following:

- an operation Injury and Illness Prevention Plan
- an emergency Action Plan
- an operation Fire Protection Plan
- a personal Protective Equipment Program

Protocol: The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) Consultation Service, for review and comment concerning compliance of the program with all applicable Safety Orders.

The Operation Fire Protection Plan and the Emergency Action Plan shall be submitted to the City of Blythe for review and acceptance.

Verification: At least 30 days prior to the start of operation, the project owner shall submit to the CPM a copy of the final version of the Project Operation Safety & Health Program. It shall incorporate Cal/OSHA's Consultation Service comments, stating that they have reviewed and accepted the specified elements of the proposed Operation Safety and Health Plan.

The project owner shall notify the CPM that the Project Operation Safety and Health Program (Injury and Illness Prevention Plan, Fire Protection Plan, the Emergency Action Plan, and Personal Protective Equipment requirements), including all records and files on accidents and incidents, is present on-site and available for inspection.

WORKER SAFETY-3 The project owner shall submit automatic fire extinguishing system plans, fire alarm system plans, and detailed architectural plan(s) to the City of Blythe for review and approval before beginning construction.

Verification: At least 30 days prior to the start of construction, or a date agreed to by the CPM, the project owner shall submit to the CPM a letter from the City of Blythe stating that they have received, reviewed and approved the automatic fire extinguishing system plans, fire system alarm plans, and construction plans.

WORKER SAFETY-4 Prior to erection of structures that pose a fire hazard at the project site, the project owner shall reach an agreement with the City of Blythe on the amount of fees and timing of payment (or other agreed to method) the project owner will provide to cover project-specific impacts associated with fire protection services to the project.

Verification: Not later than 30 days prior to erection of structures, the project owner shall provide the CPM with a copy of an agreement with the City of Blythe and the project owner for funding for project-specific impacts associated with fire protection.

WORKER SAFETY-5 Prior to the delivery of ammonia and natural gas to the site, the project owner shall enter into an agreement with the City of Blythe to provide adequate fire protection services and hazardous materials incident response for incidents involving ammonia and natural gas.

Verification: Thirty (30) days prior to the delivery of ammonia or natural gas to the site, the project owner shall provide the CPM with a copy of an agreement with the City of Blythe and the project owner for funding (or other agreed to method) to address project-specific impacts associated with hazardous materials response.

REFERENCES

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GEOLOGYAND PALEONTOLOGY

Testimony of Robert Anderson

INTRODUCTION

The geology and paleontology section discusses the project's potential impacts regarding geological hazards, geological and paleontological resources, and surface water hydrology. The purpose of this analysis is to verify that the applicable laws, ordinances, regulations, and standards (LORS) have been identified and that the project can be designed and constructed in accordance with all applicable LORS, and in a manner that protects environmental quality and assures public health and safety. Energy Commission staff's objective is to ensure that there will be no significant adverse impacts to significant geological and paleontological resources, and surface water hydrology during project construction, operation and closure. The section concludes with the staff's proposed monitoring and mitigation measures with respect to geological hazards, geological and paleontological resources, and surface water hydrology, with the inclusion of nine conditions of certification.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

The applicable LORS are listed in the AFC, in Sections 5.3, 5.5, and 5.8 (BEP 1999a). A brief description of the LORS for geological hazards and resources, surface water hydrology and paleontological resources follows:

FEDERAL

There are no federal LORS for geological hazards and resources, grading or paleontological resources for the proposed project.

STATE AND LOCAL

The California Building Code (CBC) 1998 edition is based upon the Uniform Building Code (UBC), 1997 edition, which was published by the International Conference of Building Officials. The CBC is a series of standards that are used in the investigation, design (Chapters 16 and 18) and construction (including grading and erosion control as found in Appendix Chapter 33). The CBC supplements the UBC's grading and construction ordinances and regulations.

The California Environmental Quality Act (CEQA) Guidelines Appendix G provides a checklist of questions that a lead agency should normally address if relevant to a project's environmental impacts.

- Section (V) (c) asks if the project will directly or indirectly destroy a unique paleontological resource or site or unique geological feature.
- Sections (VI) (a), (b), (c), (d), and (e) pose questions that are focused on whether or not the project would expose persons or structures to geological hazards.

- Sections (X) (a) and (b) pose questions about the project's effect on mineral resources.

The Standard Procedures, Measures for Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources (SVP 1994) are a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. They were adopted in October 1994 by a national organization of vertebrate paleontologists (the Society of Vertebrate Paleontologists).

SETTING

The proposed power plant expansion is located on the Palo Verde Mesa, along the western side of the Colorado River Basin in eastern Riverside County. The Colorado River basin in the site area is an area that has been faulted and downwarped making a structural trough which the Colorado River has cut and filled to a limited extent. No faults active or otherwise are known to cross the power plant location. Site surficial geology consists of older alluvium (also known as the Chemehuevi Formation) made up of locally loose to dense sands, silts and clays with subangular gravels. The older alluvium is massive (does not show clear bedding structure in nearby road cuts) and is locally moderately indurated. The soil unit overlying portions of the older alluvium at the site is designated as the Rositas fine sand. Soils along the utility corridors vary from fine sands to silty clayey loam (BEP 1999a, figure 7.14-1).

No permanent surface water bodies are located on or adjacent to the power plant footprint. The proposed power plant location is at an elevation of approximately 335 feet above mean sea level. This elevation places the site approximately 70 feet above the Colorado River Valley. Groundwater was encountered during the on-site geological investigation at 88.5 feet below existing grade (BEP 1999a, Page 7.16-3). The existing site drainage is sheet flow in nature and drains locally to the south and to the east. Surface water run-off from the power plant site is to be diverted into two eight-acre lined evaporation ponds that will also serve as storm water retention basins.

ANALYSIS AND IMPACTS

GEOLOGICAL HAZARDS

FAULTING AND SEISMICITY

The project is located within seismic zone 3 as delineated on Figure 16-2 of the 1998 edition of the California Building Code. Energy Commission staff reviewed the California Division of Mines and Geology publication "Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions," dated 1994 (CDMG 1994) and aerial photos of the proposed power plant footprint. Energy Commission staff visited the proposed power plant location on May 2, 2000,

and did not observe any surface faulting at the proposed power plant site on the ground or in aerial photos. No active faults are known to cross the proposed power plant footprint.

The nearest major active fault is the San Andreas fault. The San Andreas fault is located approximately 95 kilometers (60 miles) to the southwest of the site. The maximum credible earthquake estimated for the San Andreas fault in the vicinity of the site is a moment magnitude (M_W) 7.5 earthquake. The Applicant has estimated that the maximum credible earthquake for the San Andreas fault is a M_W 8.5 earthquake which would include rupture along the entire length of the fault. However, the applicant has used the maximum credible earthquake of M_W 7.5 in the vicinity of the power plant based upon a partial rupture along the San Andreas fault. This assessment is considered reasonable since the San Andreas has been known to rupture along individual or multiple rupture segments. The estimated peak horizontal ground acceleration at this site based upon the aforementioned earthquake is 0.13g. If the San Andreas fault were to rupture along its entire length, the peak horizontal ground acceleration at the site would be estimated to be approximately 0.15 to 0.2g. Several other faults are located within 100 kilometers of the site, but the design event earthquake using a deterministic approach is the M_W 7.9 earthquake on the San Andreas fault. Since the site is located in CBC seismic zone 3 the minimum required “z” value for peak horizontal ground acceleration is 0.3g. The 0.3g value required by the CBC is clearly more conservative than either the peak horizontal ground acceleration estimated from either a M_W 7.5 or 8.5 earthquake along the San Andreas fault, barring no major sympathetic earthquakes or aftershocks are generated in the vicinity of the site from either the M_W 7.5 or 8.5 earthquakes. The likelihood of major sympathetic earthquakes or aftershocks occurring in the vicinity of the proposed power plant is considered to be low due to the lack of known active faults in the vicinity of the site.

LIQUEFACTION, HYDROCOMPACTION, SUBSIDENCE, EXPANSIVE SOILS, AND CORROSION

Liquefaction is a condition in which a cohesionless soil may lose shear strength due to a sudden increase in pore water pressure. One of the parameters used to assess the potential for liquefaction is the depth to ground water at the site under study and another is the level of strong ground shaking at the site of consideration. Generally the depth to ground water at a site should be less than 50 feet for liquefaction to be possible. The depth to groundwater beneath the site was determined during the on-site geological investigation to be 88.5 feet below existing grade. Because the alluvium under the site is dense, the depth to ground water is in excess of 50 feet below existing grade, and the estimated peak horizontal ground acceleration at the site is low (less than 0.2g), the potential for liquefaction at the power plant site is considered to be negligible.

One proposed natural gas line route crosses underneath the Colorado River. The sediments at the crossing are considered to be saturated and unconsolidated since the proposed pipeline crossing elevation is lower than the local groundwater elevation, and the sediments were deposited by the river. The sediments at the crossing site may locally amplify the peak horizontal ground acceleration that may

be experienced at the El Paso BEP natural gas line river crossing. The combination of the unconsolidated, saturated sediments and the moderate peak horizontal ground accelerations at the river crossing point to a potential for liquefaction at and adjacent to the proposed natural gas line Colorado River crossing. The applicant has indicated that Riverside County has also identified portions of the Palo Verde Valley as prone to liquefaction. This is due to local soils being deep (in some areas reported to be 700 feet thick (BEP 1999a, Page 7.16-5), unconsolidated and cohesionless, with areas where ground water is less than 110 feet below existing grade. This would indicate that the potential exposure of the El Paso/BEP natural gas line is relatively higher than the exposure potential to liquefaction to the Southern California Gas Company/BEP natural gas line, whose alignment is further away from the Colorado River.

Hydrocompaction is the process of the loss of soil volume upon the application of water. The applicant is aware of the potential of collapsing soils and has indicated that they will assess the power plant footprint and linear facilities with respect to collapsing soils prior to developing the final design of the project. The reworking of the upper five feet of soil at selected areas of the power plant site to mitigate the potential for settlement will also mitigate the potential for collapsing soils in the upper five feet of the soil column since the soil matrix will be densified by the recompaction and moisture conditioning process required for placement of an engineered fill.

The applicant is proposing to pump groundwater from wells to be installed at or near the proposed power plant. The project site alluvium and soils are locally dense below a depth of five feet below existing grade; staff has therefore determined that there is no significant potential for subsidence due to groundwater withdrawal or dynamic compaction at the proposed power plant footprint. The applicant's consultant has recommended that the top five feet of soil at selected areas of the power plant location be removed, compacted, and moisture conditioned (BEP 1999a, Appendix 7.16, Page 1) in order to densify the soils so that foundation elements of the power plant may be built.

Soils that contain a high percentage of expansive clay minerals are prone to expansion, if subjected to an increase in water content. Expansive soils are usually measured with an index test such as the expansive index potential. In order for a soil to be a candidate for testing, the soil must have a high clay content and the clay must have a high shrink-swell potential and a high plasticity index. The soil unit at the proposed power plant site is the Rositas fine sand. The applicant's consultant has indicated that the potential for soil swell from soil samples tested was 1.5%. This indicates that shrink-swell potential for on tested on-site soil is low (BEP 1999a, Page 7.16-7). Since the soil has a low shrink-swell potential, the potential for expansive soil at the site is negligible.

Soils in the vicinity of the site and linear facilities have been known to be corrosive and the applicant was recommended by their consultant to consult with a corrosion engineer. The applicant's consultant analyzed the corrosion potential for on-site soils. The consultant found that the on-site soils tested had a pH of 8.8 (alkali soil), a chloride concentration of 60 parts per million, and a resistivity value of 3,342 ohm-

cm (BEP 1999a, Appendix 7.16, Page 20). The applicant's consultant also analyzed the water soluble sulfate content of on-site soils. The water soluble sulfate content was reported by the consultant to be 20 parts per million (BEP 1999a, Appendix 7.16, Page 21). The concentration of water soluble sulfate reported is considered to be low. Based upon the reported chloride, pH, and soil resistivity potentials, the potential for corrosion is considered to be moderate.

LANDSLIDES

No landslides were observed on or adjacent to the proposed power plant footprint during a staff site visit on May 2, 2000. Landsliding potential at the proposed power plant site is considered to be low, since the proposed power plant is located on a broad, gently to moderately sloping alluvial fan.

GEOLOGICAL AND PALEONTOLOGICAL RESOURCES

There are no known geological or paleontological resources at the proposed power plant location or along the proposed linear facility alignments.

Regarding paleontological resources, Commission staff has reviewed the paleontological resources assessments (BEP 1999a, appendix 7.15). Geology at the power plant footprint and the transmission line location is made up of older (Pleistocene to Pliocene age) alluvium, which is also regarded as the Chemehuevi Formation. Energy Commission staff at the power plant site observed no fossils during a site visit on May 2, 2000. No significant paleontological resources were reported found by the applicant's paleontologist during field surveys of the proposed power plant site and linear facilities. Minor paleontological resources (mineralized root casts) have been reported in the vicinity of Hobsonway, but not at the project site or along the linear facility alignments. The Chemehuevi Formation has been identified as containing mammoth fossil fragments upriver and east of the Colorado river in the Colorado River Basin between Parker Dam and Blythe, however, no vertebrate fossil materials are know to exist at the proposed power plant location or along the proposed linear facilities. The presence of mammoth fossil fragments in the Chemehuevi Formation is considered by Commission staff to be significant with respect to paleontological resources, but the potential of encountering such resources is considered to be low. Energy Commission staff has proposed conditions of certification that will enable the applicant to mitigate impacts upon paleontological resources to a less than significant level should they be encountered during construction, operation, and closure of the project.

SURFACE WATER HYDROLOGY

The proposed power plant location is hydraulically connected to the Palo Verde Mesa. The power plant footprint is not located in a 100 year flood zone as it is located in zone "D," an area of undetermined flooding as depicted on the Federal Emergency Management Agency Flood Insurance Rate Map Index for Riverside County, California (FEMA, 1996). Minimum grade for the power plant area will be 1 per cent and all drainage will be directed away from buildings within the footprint. A portion of the on-site drainage is to be captured in the ephemeral stream channel on site and discharged off site to the east. The 100-year 24-hour storm event precipitation amount is 3.7 inches (NOAA 1973). The storage capacity of the storm

water retention basins/evaporation ponds is 62 acre-feet. The normal estimated volume utilized is estimated to be 35 acre-feet (BEP 199A, Page 2-25). The 100-year 24 hour storm event is estimated to contribute an additional 7 acre-feet to the 35 acre-feet of pond capacity used during normal operation of the facility. This leaves an evaporation pond net capacity of 20 acre-feet. Run-off during a 100-year 24-hour storm event should not overwhelm the capacity of the proposed surface water drainage system. A flood control dam is proposed to be constructed on the McCoy Wash. The vicinity of the power plant footprint is neither adversely affected nor benefited by the dam, since the position of the McCoy Wash affected by the dam is not hydraulically connected to the site. A second smaller (18 acre) drainage area is located down slope and east of the power plant footprint. This drainage area does not affect the proposed power plant either, since the drainage is down slope of the proposed power plant.

SITE SPECIFIC IMPACTS

Energy Commission staff consider that there is a low probability that vertebrate fossils will be encountered during construction of the power plant and related linear facilities. This is based upon the discovery of mammoth fossil remains discovered in the Chemehuevi Formation both east of the Colorado River and between Parker and Blythe. However, excavations, drilling, clearing and brushing operations, and grading of the older alluvium (Chemehuevi Formation) at the power plant site and related linear facilities associated with construction of the project are considered to be a minor potential impact to paleontological resources, if the applicant complies with the proposed conditions of certification for paleontological resources. The adoption and implementation of the proposed conditions of certification for paleontological resources should mitigate any potential impacts to paleontological resources associated with the construction of this project.

Crossing of local drainages by proposed linear facilities are proposed to present a minimum impact on surface water resources. One proposed natural gas pipeline is proposed to cross underneath the Colorado River. This crossing is anticipated to have no impact on surface water hydrology. Area storm water run-off on the existing site is sheet flow to the south. Storm water run-off is proposed to be managed through the proposed power plant's drainage control plan and by complying with the proposed conditions of certification for the **Soil and Water Resources** section of this document. None of the geological hazards identified by the applicant or by Energy Commission staff are considered to be significantly impacted by the construction and operation of the proposed project. In conclusion, the project is not likely to have any significant impact on geological or paleontological resources, or surface water resources, and is likely to withstand the above described geological hazards.

CUMULATIVE IMPACTS

It is staff's opinion that the potential for a significant adverse cumulative impact on paleontological resources, geological resources, or surface water hydrology is unlikely, if the BEP is constructed according to the proposed conditions of certification. This opinion is based on the fact that the site is not known to have significant paleontological or geological resources.

FACILITY CLOSURE

A definition and general approach to closure is presented in the **General Conditions** section of this document. Facility closure activities are not anticipated to impact geological or paleontological resources. This is due to the fact that no paleontological or geological resources are known to exist at the power plant location. In addition, decommissioning and closure of the power plant should not negatively affect geological or paleontological resources since the majority of the ground disturbed in plant decommissioning and closure would have been disturbed in the construction of the plant. Surface water hydrology impacts will depend upon the closure activities proposed.

RESPONSE TO PUBLIC AND AGENCY COMMENTS

As of October 3, 2000, no comments were received by Energy Commission staff regarding geological hazards, geological resources, paleontological resources. On October 3, 2000, Energy Commission staff received comments on the Preliminary Staff Assessment for the Blythe Energy Project from the Palo Verde Irrigation District (PVID 2000, page 4). The date of the letter including the comments was September 22, 2000. The first comment asked if the first sentence in the surface water hydrology section should be changed to state that the project site is hydraulically connected to the Palo Verde Valley. The answer is no since the staff assessment passage in question deals with surface water hydrology and not ground water hydrology. The second comment indicates that topography east of the site is at a higher elevation than the project, and that the existing surface water flows off the site to the southwest. Energy Commission staff note that the proposed grading will divert some of the surface water flow to the ephemeral stream channel. However a small amount of surface water run-off may flow off-site to the south-southwest. The third comment indicates that the project site is to be located on the lower Palo Verde Mesa. This comment is noted by Energy Commission staff, and the last two sentences of the passage entitled “Surface Water Hydrology” within this section of the staff assessment have been clarified to reflect the relationship of the smaller drainage area to the power plant location.

MITIGATION

Based upon the literature and archives search, field surveys and the preliminary geotechnical investigation for the project, the applicant has proposed monitoring and mitigation measures to be followed during the construction of the power plant, related natural gas supply line, electrical transmission line, and the waste water pipelines. The proposed conditions of certification are to allow the Energy Commission Compliance Project Manager (CPM) and the applicant to adopt a compliance monitoring scheme that will ensure LORS applicable to geological hazards, geological and paleontological resources, and surface water hydrology for the project are complied with.

CONCLUSION AND RECOMMENDATIONS

The applicant will likely be able to comply with applicable LORS. The project should have no adverse impact with respect to geological and paleontological resources and surface water hydrology. Staff proposes to ensure compliance with applicable LORS for geological hazards, geological and paleontological resources and surface water hydrology with the adoption of the proposed conditions of certification listed below, and the conditions of certification for surface water hydrology located in the **Soil and Water Resources** section of this document.

PROPOSED CONDITIONS OF CERTIFICATION

GEO-1 Prior to the start of construction, the project owner shall assign to the project an engineering geologist(s), certified by the State of California, to carry out the duties required by the 1998 edition of the California Building Code (CBC) Appendix Chapter 33, Section 3309.4. The certified engineering geologist(s) assigned must be approved by the Compliance Project Manager (CPM). The functions of the engineering geologist can be performed by the responsible geotechnical engineer, if that person has the appropriate California license.

Verification: At least thirty (30) days [(or a lesser number of days mutually agreed to by the project owner and the Compliance Project Manager (CPM)] prior to the start of construction, the project owner shall submit to the CPM for approval the name(s) and license number(s) of the certified engineering geologist(s) assigned to the project. The submittal should include a statement that CPM approval is needed. The CPM will approve or disapprove of the engineering geologist(s) and will notify the project owner of its findings within 15 days of receipt of the submittal. If the engineering geologist(s) is subsequently replaced, the project owner shall submit for approval the name(s) and license number(s) of the newly assigned individual(s) to the CPM. The CPM will approve or disapprove of the engineering geologist(s) and will notify the project owner of the findings within 15 days of receipt of the notice of personnel change.

GEO-2 The assigned engineering geologist(s) shall carry out the duties required by the 1998 CBC, Appendix Chapter 33, Section 3309.4 Engineered Grading Requirement, and Section 3318.1 – Final Reports. Those duties are:

1. Prepare the Engineering Geology Report. This report shall accompany the Plans and Specifications when applying to the CBO for the grading permit.
2. Monitor geologic conditions during construction.
3. Prepare the Final Engineering Geology Report.

Protocol: The Engineering Geology Report required by the 1998 CBC Appendix Chapter 33, Section 3309.3 Grading Designation, shall include an adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the

proposed development, and an opinion on the adequacy of the site for the intended use as affected by geologic factors.

The Final Engineering Geology Report to be completed after completion of grading, as required by the 1998 CBC Appendix Chapter 33, Section 3318.1, shall contain the following: A final description of the geology of the site and any new information disclosed during grading; and the effect of same on recommendations incorporated in the approved grading plan. The engineering geologist shall submit a statement that, to the best of his or her knowledge, the work within their area of responsibility is in accordance with the approved Engineering Geology Report and applicable provisions of this chapter.

Verification: (1) Within 15 days after submittal of the application(s) for grading permit(s) to the CBO, the project owner shall submit a signed statement to the CPM stating that the Engineering Geology Report has been submitted to the CBO as a supplement to the plans and specifications and that the recommendations contained in the report are incorporated into the plans and specifications. (2) Within 90 days following completion of the final grading, the project owner shall submit copies of the Final Engineering Geology Report required by the 1998 CBC Appendix Chapter 33, Section 3318 Completion of Work, to the CBO, and to the CPM on request.

PAL-1 Prior to the start of any project-related construction activities (defined as any construction-related vegetation clearance, ground disturbance and preparation, and site excavation activities), the project owner shall ensure that the designated paleontological resource specialist approved by the CPM is available for field activities and prepared to implement the conditions of certification.

The designated paleontological resources specialist shall be responsible for implementing all the paleontological conditions of certification and for using qualified personnel to assist in this work.

Protocol: The project owner shall provide the CPM with the name and statement of qualifications for the designated paleontological resource specialist.

The statement of qualifications for the designated paleontological resources specialist shall demonstrate that the specialist meets the following minimum qualifications: a degree in paleontology or geology or paleontological resource management; and at least three years of paleontological resource mitigation and field experience in California, including at least one year's experience leading paleontological resource mitigation and field activities.

The statement of qualifications shall include a list of specific projects the specialist has previously worked on; the role and responsibilities of the specialist for each project listed; and the names and phone numbers of contacts familiar with the specialist's work on these referenced projects.

If the CPM determines that the qualifications of the proposed paleontological resource specialist do not satisfy the above requirements, the project owner shall submit another individual's name and qualifications for consideration.

If the approved, designated paleontological resource specialist is replaced prior to completion of project mitigation, the project owner shall obtain CPM approval of the new designated paleontological resource specialist by submitting the name and qualifications of the proposed replacement to the CPM, at least ten (10) days prior to the termination or release of the preceding designated paleontological resource specialist.

Should emergency replacement of the designated specialist become necessary, the project owner shall immediately notify the CPM to discuss the qualifications of its proposed replacement specialist.

Verification: At least sixty (60) days prior to the start of construction (or a lesser number of days mutually agreed to by the project owner and the CPM), the project owner shall submit the name and resume and the availability for its designated paleontological resource specialist, to the CPM for review and approval. The CPM shall approve or disapprove of the proposed paleontological resource specialist.

At least ten (10) days prior to the termination or release of a designated paleontological resource specialist, the project owner shall obtain CPM approval of the replacement specialist by submitting to the CPM the name and resume of the proposed new designated paleontological resource specialist. Should emergency replacement of the designated specialist become necessary, the project owner shall immediately notify the CPM to discuss the qualifications of its proposed replacement specialist.

PAL-2 Prior to the start of project construction, the designated paleontological resource specialist shall prepare a Paleontological Resources Monitoring and Mitigation Plan to identify general and specific measures to minimize potential impacts to sensitive paleontological resources, and submit this plan to the CPM for review and approval. After CPM approval, the project owner's designated paleontological resource specialist shall be available to implement the Monitoring and Mitigation Plan, as needed, throughout project construction.

Protocol: The project owner shall develop a Paleontological Resources Monitoring and Mitigation Plan in accordance with the guidelines of the Society of Vertebrate Paleontologists (SVP 1994) that shall include, but not be limited to, the following elements and measures:

- A discussion of the sequence of project-related tasks, such as any pre-construction surveys, fieldwork, flagging or staking; construction monitoring; mapping and data recovery; fossil preparation and recovery; identification and inventory; preparation of final reports; and transmittal of materials for curation;

- Identification of the person(s) expected to assist with each of the tasks identified within this condition for certification, and a discussion of the mitigation team leadership and organizational structure, and the inter-relationship of tasks and responsibilities;
- Where monitoring of project construction activities is deemed necessary, the extent of the areas where monitoring is to occur and a schedule for the monitoring;
- An explanation that the designated paleontological resource specialist shall have the authority to halt or redirect construction in the immediate vicinity of a vertebrate fossil find until the significance of the find can be determined;
- A discussion of equipment and supplies necessary for recovery of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;
- Inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meets the Society of Vertebrate Paleontologists standards and requirements for the curation of paleontological resources; and
- Identification of the institution that has agreed to receive any data and fossil materials recovered during project-related monitoring and mitigation work, discussion of any requirements or specifications for materials delivered for curation and how they will be met, and the name and phone number of the contact person at the institution.

Verification: At least forty-five (45) days prior to the start of construction (or a lesser number of days mutually agreed to by the project owner and the CPM), the project owner shall provide the CPM with a copy of the Paleontological Resources Monitoring and Mitigation Plan prepared by the designated paleontological resource specialist for review and approval. If the plan is not approved, the project owner, the designated paleontological resource specialist, and the CPM shall meet to discuss comments and negotiate necessary changes.

PAL-3 Prior to the start of construction, and throughout the project construction period as needed for all new employees, the project owner and the designated paleontological resource specialist shall prepare, and the owner shall conduct CPM-approved training to all project managers, construction supervisors, and workers who operate ground disturbing equipment. The project owner and construction manager shall provide the workers with the CPM-approved set of procedures for reporting any sensitive paleontological resources or deposits that may be discovered during project-related ground disturbance.

Protocol: The paleontological training program shall discuss the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources.

The training shall also include the set of reporting procedures that workers are to follow if paleontological resources are encountered during project activities. The training program shall be presented by the designated paleontological resource specialist and may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern.

Verification: At least thirty (30) days prior to the start of project construction (or a lesser number of days mutually agreed to by the project owner and the CPM), the project owner shall submit to the CPM for review and approval, the proposed employee training program and the set of reporting procedures the workers are to follow if paleontological resources are encountered during project construction.

If the employee training program and set of procedures are not approved, the project owner, the designated paleontological resource specialist, and the CPM shall meet to discuss comments and negotiate necessary changes, before the beginning of construction.

Documentation for training of additional new employees shall be provided in subsequent Monthly Compliance Reports, as appropriate.

PAL-4 The designated paleontological resource specialist shall be present at all times he or she deems appropriate to monitor construction-related grading, excavation, trenching, and/or augering in areas where potentially fossil-bearing sediments have been identified. If the designated paleontological resource specialist determines that full-time monitoring is not necessary in certain portions of the project area or along portions of the linear facility routes, the designated specialist shall notify the project owner.

Verification: The project owner shall include in the Monthly Compliance Reports a summary of paleontological activities conducted by the designated paleontological resource specialist.

PAL-5 The project owner, through the designated paleontological resource specialist, shall ensure recovery, preparation for analysis, analysis, identification and inventory, the preparation for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during the monitoring, data recovery, mapping, and mitigation activities related to the project.

Verification: The project owner shall maintain in its compliance files copies of signed contracts or agreements with the designated paleontological resource specialist and other qualified research specialists who will ensure the necessary data and fossil recovery, mapping, preparation for analysis, analysis, identification and inventory, and preparation for and delivery of all significant paleontological resource materials collected during data recovery and mitigation for the project. The project owner shall maintain these files for a period of three years after completion and approval of the CPM-approved Paleontological Resources Report and shall keep these files available for periodic audit by the CPM.

PAL-6 The project owner shall ensure preparation of a Paleontological Resources Report by the designated paleontological resource specialist. The Paleontological Resources Report shall be completed following completion of the analysis of the recovered fossil materials and related information. The project owner shall submit the paleontological report to the CPM for approval.

Protocol: The report shall include (but not be limited to) a description and inventory list of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the paleontological resource specialist that project impacts to paleontological resources have been mitigated.

Verification: The project owner shall submit a copy of the Paleontological Resources Report to the CPM for review and approval under a cover letter stating that it is a confidential document. The report is to be prepared by the designated paleontological resource specialist within 90 days following completion of the analysis of the recovered fossil materials.

PAL-7 The project owner shall include in the facility closure plan a description regarding facility closure activity's potential to impact paleontological resources. The conditions for closure will be determined when a facility closure plan is submitted to the CPM twelve months prior to closure of the facility. If no activities are proposed that would potentially impact paleontological resources, then no mitigation measures for paleontological resource management are required in the facility closure plan.

Protocol: The closure requirements for paleontological resources are to be based upon the Paleontological Resources Report and the proposed grading activities for facility closure.

Verification: The project owner shall include a description of closure activities described above in the facility closure plan.

REFERENCES

BEP (Blythe Energy Project/Looper) 1999a. Submittal of Application for Certification - Blythe Energy Project, Volumes I and II. Submitted to the Energy Commission on December 9, 1999.

CDMG (California Division of Mines and Geology). 1994. Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions, Scale: 1:750,000.

FEMA (Federal Emergency Management Agency). 1996. Flood Insurance Rate Map Index for Riverside County, California) dated November 20, 1996.

NOAA (National Oceanic and Atmospheric Administration). 1973. Precipitation-Frequency Atlas of the Western United States, Volume XI-California, Figure 43.

PVID (Palo Verde Irrigation District). 2000. Letter Providing Comments on the Preliminary Staff Assessment Report, Blythe Energy Power Plant Project, Application for Certification, dated September 22, 2000. Submitted to the Energy Commission on October 3, 2000.

SVP (Society of Vertebrate Paleontologists). 1994. Measures for Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources: Standard Procedures. October 1994.

TRANSMISSION LINE SAFETY AND NUISANCE

Testimony of Obed Odoemelam, Ph.D.

INTRODUCTION

Energy from the proposed Blythe Energy Project (BEP) will be transmitted to the Western Area Power Administration (Western) transmission system through three existing 161 kV overhead lines. The first two are the Parker to Blythe Nos. 1 and 2 lines. The third is the Blythe to Knob line. According to the applicant, Blythe Energy, (BEP1999a, pages 7.17-1, 8.0-7 and 8.0-9), Western plans to upgrade this 161 kV system to 230 kV, therefore, the proposed tie-in lines will be built to accommodate operation at 161 kV or 230 kV. Connection to these Western lines will be made at locations immediately east of the BEP's switchyard and north of Western's existing Blythe Substation. The BEP site was chosen, in part, because of its proximity to this Blythe Substation, which primarily is a switch station for the area's 161 kV lines.

Since the lines are to be connected to Western's transmission system, they will be designed, as noted by the applicant (BEP 1999a, page 8.0-14), according to existing Western guidelines and construction practices reflecting compliance with applicable laws, ordinances, regulations and standards (LORS). The purpose of this analysis is to assess the proposed construction and operational plan for incorporation of the measures necessary for such compliance. If compliance is established, staff will recommend approval of the line with respect to the issues of concern; if not, staff will recommend revisions as appropriate.

Staff's analysis will focus on the following issues, which relate primarily to the physical presence of the line, or secondarily to the physical interactions of line electric and magnetic fields.

- Aviation safety;
- Interference with radio-frequency communication;
- Audible noise;
- Fire hazards;
- Hazardous shocks;
- Nuisance shocks; and
- Electric and magnetic field (EMF) exposure.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Discussed below by subject area are design-related LORS applicable to the physical impacts of transmission lines as proposed for the Blythe Energy Project. The impacts of concern are addressed through specific federal or state regulations or through established industry standards and practices. There presently are no

local laws or regulations specifically aimed at the physical structure or dimensions of electric power lines to limit the impacts noted above.

AVIATION SAFETY

Any hazard to area aircraft relates to the potential for collision with the line in the navigable air space. The applicable federal LORS as discussed below are intended to ensure the distance and visibility necessary to avoid such collisions.

FEDERAL

- Title 14, Part 77 of the Federal Code of Regulations (CFR), "Objects Affecting the Navigation Space". Provisions of these regulations specify the criteria used by the Federal Aviation Administration (FAA) for determining whether a "Notice of Proposed Construction or Alteration" is required for potential obstruction hazards. The need for such a notice depends on factors related to the height of the structure, the slope of an imaginary surface from the end of nearby runways to the top of the structure, and the length of the runway involved. Such notification allows the FAA to ensure that the structure is located to avoid any significant hazards to area aviation.
- FAA Advisory Circular (AC) No. 70/460-2H, "Proposed Construction and or Alteration of Objects that may Affect the Navigation Space" This circular informs each proponent of a project that could pose an aviation hazard of the need to file the "Notice of Proposed Construction or Alteration" (Form 7640) with the FAA.
- FAA AC No. 70/460-1G, "Obstruction Marking and Lighting". This circular describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.

INTERFERENCE WITH RADIO-FREQUENCY COMMUNICATION

Transmission line-related radio-frequency interference is one of the indirect effects of line operation produced by the physical interactions of line electric fields. The level of such interference usually depends on the magnitude of the electric fields involved. Because of this, the potential for such impacts could be assessed from field strength estimates obtained for the line. The following regulations are intended to ensure that such lines are located away from areas of potential interference and that any interference is mitigated whenever it occurs.

FEDERAL

- Federal Communications Commission (FCC) regulations in Title 47 CFR, Section 15.25. Provisions of these regulations prohibit operation of any devices producing force fields, which interfere with radio communications, even if (as with transmission lines) such devices are not intentionally designed to produce radio-frequency energy. Such interference is due to the radio noise produced by the action of the electric fields on the surface of the energized conductor. The process involved is known as corona discharge but

is referred to as spark gap electric discharge when it occurs within gaps between the conductor and insulators or metal fittings. When generated, such noise manifests itself as perceivable interference with radio or television signal reception or interference with other forms of radio communication. Since the level of interference depends on factors such as line voltage, distance from the line to the receiving device, orientation of the antenna, signal level, line configuration and weather conditions, maximum interference levels are not specified as design criteria for modern transmission lines. The FCC requires each line operator to mitigate all complaints about interference on a case-specific basis. Staff usually recommends specific conditions of certification to ensure compliance with this FCC requirement.

STATE

- General Order 52 (GO-52), California Public Utilities Commission (CPUC). Provisions of this order govern the construction and operation of power and communications lines and specifically deal with measures to prevent or mitigate inductive interference. Such interference is produced by the electric field induced by the line in the antenna of a radio signal receiver.

Several design and maintenance options are available for minimizing these electric field-related impacts. When incorporated in the line design and operation, such measures also serve to reduce the line-related audible noise discussed below.

AUDIBLE NOISE

INDUSTRY STANDARDS

There are no design-specific federal regulations to limit the audible noise from transmission lines. As with radio noise, such noise is limited instead through design and maintenance standards established from industry research and experience as effective without significant impacts on line safety, efficiency maintainability and reliability. All high-voltage lines are designed to assure compliance. Such noise usually results from the action of the electric field at the surface of the line conductor and could be perceived as a characteristic crackling, frying or hissing sound or hum. Since (as with communications interference), the noise level depends on the strength of the line electric field, the potential for occurrence can be assessed from estimates of the field strengths expected during operation. Such noise is usually generated during wet weather and from lines of 345 kV or higher. It is, therefore, not generally expected at significant levels from lines of less than 345 kV such as the one proposed for BEP. Research by the Electric Power Research Institute (EPRI 1982) has validated this by showing the fair-weather audible noise from modern transmission lines to be generally indistinguishable from background noise at the edge of a 100-ft right-of-way.

NUISANCE SHOCKS

INDUSTRY STANDARDS

There are no design-specific federal regulations to limit nuisance shocks in the transmission line environment. For modern high-voltage lines, such shocks are effectively minimized through grounding procedures specified in the National Electrical Safety Code and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE). Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result mostly from direct contact with metal objects electrically charged by fields from the energized line. Such electric charges are induced in different ways by the line electric and magnetic fields. As with lines of the type proposed, the applicant will be responsible in all cases for ensuring compliance with these grounding-related practices within the right-of-way. Staff usually recommends specific conditions of certification to ensure that such grounding is made within the right-of-way by both the applicant and property owners.

FIRE HAZARDS

The fire hazards addressed through the following regulations are those that could be caused by sparks from conductors of overhead lines or that could result from direct contact between the line and nearby trees and other combustible objects.

STATE

- General Order 95 (GO-95), CPUC, “Rules for Overhead Electric Line Construction” specifies tree-trimming criteria to minimize the potential for power line-related fires.
- Title 14, California Code of Regulations (CCR), Section 1250, “Fire Prevention Standards for Electric Utilities” specifies utility-related measures for fire prevention.

HAZARDOUS SHOCKS

The hazardous shocks that are addressed by the following regulations and standards are those that could result from direct or indirect contact between an individual and the energized line. Such shocks are capable of serious physiological harm or death and remain a driving force in the design and operation of transmission and other high-voltage lines.

STATE

- GO-95, CPUC, “Rules for Overhead Line Construction”. These rules specify uniform statewide requirements for overhead line construction regarding ground clearance, grounding, maintenance and inspection. Implementing these requirements ensures the safety of the general public and line workers.
- Title 8, CCR, Section 2700 et seq., “High Voltage Electric Safety Orders”. These safety orders establish essential requirements and minimum standards

for safely installing, operating, and maintaining electrical installations and equipment.

INDUSTRIAL STANDARDS

There are no design-specific federal regulations to prevent hazardous shocks from power lines. Safety is assured through compliance with the requirements in the National Electrical Safety Code, Part 2: Safety Rules for Overhead Lines. These provisions specify the minimum national safe operating clearances applicable in areas where the line might be accessible to the public. They are intended to minimize the potential for direct or indirect contact with the energized line.

ELECTRIC AND MAGNETIC FIELD (EMF) EXPOSURE

The possibility of deleterious health effects from electric and magnetic field exposure has increased public concern in recent years about living near high-voltage lines. Both fields occur together whenever electricity flows, hence the general practice of considering exposure to both as EMF exposure. As noted by the applicant, (BEP 1999a, pages 7.17-3), the available evidence has not established that such fields pose a significant health hazard to exposed humans. However, staff considers it important, as does the CPUC, to note that while such a hazard has not been established from the available evidence, the same evidence does not serve as proof of a definite lack of a hazard. Staff, therefore considers it appropriate, in light of present uncertainty, to reduce such fields to some degree, where feasible, until the issue is better understood. The challenge has been to establish how far to reduce them without affecting line safety, and reliability.

While there is considerable uncertainty about the EMF/health effects issue, the following facts have been established from the available information and have been used to establish existing policies:

- Any exposure-related health risk to the exposed individual will likely be small.
- The most biologically significant types of exposures have not been established.
- Most health concerns are about the magnetic field.
- The measures employed for such field reduction can affect line safety, reliability, efficiency and maintainability, depending on the type and extent of such measures.

STATE

In California, the CPUC (which regulates the installation and operation of high-voltage lines in California) has determined that only no-cost or low-cost measures are presently justified in any effort to reduce power line fields beyond levels existing before the present health concern arose. The CPUC has further determined that such reduction should be made only in connection with new or modified lines. It required each utility within its jurisdiction to establish EMF-reducing design guidelines for all new or upgraded power lines and related facilities within their respective service areas. The CPUC further established specific limits on the resources to be used in each case for field reduction. Such limitations were

intended by the CPUC to apply to the cost of any redesign to reduce field strength or relocation to reduce exposure. Utilities not within the jurisdiction of the CPUC voluntarily comply with these CPUC requirements. This PUC policy resulted from assessments made to implement CPUC Decision 93-11-013 of 1989.

In keeping with this CPUC policy, staff requires evidence that each proposed line will be designed according to the EMF-reducing design guidelines applicable to the utility service area involved. These field-reducing measures can impact line operation if applied without appropriate regard for environmental and other local issues bearing on safety, reliability, efficiency and maintainability. It is, therefore, up to each applicant to ensure that such measures are applied in ways that do not create significant impacts on line operation. The extent of such applications will be reflected by the ground-level field strengths as measured during operation. When estimated or measured for the line, such field strengths can be used by staff and other regulatory agencies for comparison with fields of lines of similar voltage and current-carrying capacity. Such field strengths can be estimated for any given design using established procedures. Estimates are specified for a height of one meter above the ground in units of kilovolts per meter (kV/m) for the electric field, and milligauss (mG) for the companion magnetic field. Their magnitude depends on line voltage (in the case of electric fields), the geometry of the structures, degree of cancellation from nearby conductors, distance between conductors and, in the case of magnetic fields, amount of current in the line.

Since each new line in California is currently required to be designed according to the EMF-reducing guidelines of the utility in the service area involved, their fields are required under existing CPUC policies to be similar to fields from similar lines in that service area. A condition of certification is usually proposed by staff to ensure implementation of the reduction measures necessary. The applicable condition for this project is TLSN-1.

INDUSTRIAL STANDARDS

No federal regulations have been established specifying environmental limits on the strengths of fields from power lines. However, the federal government continues to conduct and encourage research necessary for an appropriate policy on the EMF issue.

In the face of the present uncertainty, several states have opted for design-driven regulations ensuring that fields from new lines are generally similar to those from existing lines. Some states (Florida, Minnesota, New Jersey, New York, Montana) have set specific environmental limits on one or both fields in this regard. These limits are, however, not based on any specific health effects. Most regulatory agencies believe, as does staff, that health-based limits are inappropriate at this time. They also believe that the present knowledge of the issue does not justify any retrofit of existing lines.

Before the present health-based concern developed, measures to reduce field effects from power line operations were mostly aimed at the electric field component, whose effects can manifest as the previously noted radio noise, audible

noise and nuisance shocks. The present focus is on the magnetic field because only it can penetrate building materials to potentially produce the types of health impacts at the root of the present concern. As one focuses on the strong magnetic fields from the more visible transmission and other high-voltage power lines, staff considers it important for perspective, to note that an individual in a home could be exposed for short periods to much stronger fields while using some common household appliances (National Institute of Environmental Health Services and the U.S Department of Energy, 1995). Scientists have not established which of these types of exposures would be more biologically meaningful in the individual. Staff notes such exposure differences only to show that high-level magnetic field exposures regularly occur in areas other than the power line environment.

SETTING

The proposed lines are located in an area with five existing 161 kV lines. According to information from the applicant (BEP 1999a, pages 7.17-2), the area around the existing and proposed lines is either open space or used for citrus cultivation. There are no nearby residences or occupied buildings, meaning that the long-term residential field exposures of the present concern would be insignificant with respect to these lines. The width of each line right-of-way will be 100 feet (BEP 1999a, page 8.0.14).

PROJECT DESCRIPTION

According to information from the applicant (BEP 1999a, pages 7.17-1, 8.0-10 and 8.0-14), the proposed tie-in system will consist of the segments listed below.

- One 230 kV overhead line of 450 feet (and operable at 161 kV), connecting the proposed project switchyard to the Parker-Blythe line;
- One new, 230 kV overhead line of 650 feet (and operable at 161 kV) connecting the project switchyard to the Parker-Headgate-Blythe line;
- One 230 kV overhead line of 600 feet connecting to the existing Blythe Substation using a segment of the existing Parker-Blythe line; and
- One new 230 kV BEP Substation, capable of operation at 161 kV, and located adjacent to BEP and 2000 feet north of the existing 161 kV Blythe Substation.

Each line will be supported on wooden poles designed to provide a ground clearance of at least 34 feet. The applicant has provided details of these structures. Construction and operation will be according to Western's standards and practices reflecting compliance with existing LORS.

IMPACTS

GENERAL IMPACTS

Requirements of GO-95 and Title 8, California Code of Regulations, Section 2700 et seq. in the LORS section provide the minimum regulatory requirements necessary

to avoid the direct or indirect contact previously discussed in connection with hazardous shocks and aviation hazards. Of secondary concern are the field-related impacts manifesting as nuisance shocks, radio noise, communications interference and magnetic field exposure. The relative magnitude of such impacts would be reflected in the field strengths characteristic of a given line design. Since the field-reducing measures can affect line operations, the extent of their implementation, together with related field strengths, will vary according to environmental and other local conditions bearing on line safety, efficiency, reliability and maintainability. Therefore, these field-reducing measures will vary from one service area to the other according to prevailing conditions. It would be up to each project proponent to apply such measures to the extent appropriate for the geographic area involved. The potential for all these impacts is assessed separately for each proposed project

PROJECT SPECIFIC IMPACTS

AVIATION SAFETY

According to the applicant (BEP 1999a page 7.17-5) the Blythe Airport is located approximately one mile from the project site. Because of this proximity, the applicant consulted with the FAA on any related aviation hazards, although an FAA permit would not be required judging by present FAA criteria. In their formal response to the applicant on November 11, 1999, the FAA indicated that BEP and its related lines would not pose a significant hazard to area aviation. The FAA further stated that safety markings would be unnecessary. Given this FAA determination, staff does not expect BEP and its related transmission lines to pose any aviation hazards in this area of existing lines for which the collisions of concern have not been recorded.

INTERFERENCE WITH RADIO-FREQUENCY COMMUNICATION

The previously noted corona-related communications interference is most commonly caused by irregularities (such as nicks and scrapes on the conductor surface), sharp edges on suspension hardware and other irregularities around the conductor surface. The line will be constructed according to Western's standards, which minimize the potential for such surface irregularities. The potential for such corona-related interference is usually of concern only for lines of 345 kV and above and not this 230 kV line. However, if such corona noise were to be generated, no interference-related complaints would be expected given the absence of residences in the project area. The previously noted provisions of the related FCC regulations are important in requiring each project owner to ensure mitigation of any such interference to the satisfaction of the affected individual. Staff has proposed a condition of certification **(TLSN-2)** in this regard. Staff's proposed **TLSN-1** will ensure compliance with GO-52, which also deals with the radio interference problem.

AUDIBLE NOISE

As with radio noise, the line's low-corona design will minimize the potential for corona-related audible noise. This means, as noted by the applicant (BEP 1999a, page 7.17-4), that the line will not add significantly to existing background noise

levels in the area. For an assessment of the noise from all phases of the proposed power plant and related facilities, please refer to staff's analysis in the **Noise** section.

FIRE HAZARDS

As is current Western policy, adequate fire prevention and suppression measures will be implemented in the area around the proposed line as required by related regulations and industry practices. Compliance with GO 95 requirements will ensure the clearance necessary to prevent fires from direct contact between the proposed line, trees and other objects (BEP 1999a, page 7.17-6). Staff has proposed a specific condition of certification, **TLSN-4,** to prevent accumulation of combustible materials that could contribute to such fires.

HAZARDOUS SHOCKS

As noted by the applicant (BEP 1999a, page 4-6), the proposed line will be constructed (as is present Western practice) according to the requirements of GO-95 which prevent hazardous shocks from direct or indirect human contact with an overhead, energized line. Therefore, staff does not expect these lines to pose any such hazards to humans and recommends condition of certification **TLSN-1** to ensure implementation of the GO-95-related measures.

NUISANCE SHOCKS

As with current Western practice, the potential for nuisance shocks will be minimized in the line areas through standard grounding procedures. Ensuring GO-95-required ground clearance as intended will minimize the potential for the electrical charging for which such grounding would be necessary. Staff recommends condition for certification **TLSN-5** to ensure the grounding necessary.

ELECTRIC AND MAGNETIC FIELD EXPOSURE

The applicant presented the strengths of the typical 230 kV line in assessing the strengths of the electric and magnetic fields from the proposed BEP lines. They noted that, for a 230 kV line of the proposed Western design, an electric field strength of 2.0 kV/m would result at the point of maximum strength within the right-of-way. This would decrease to 0.01 kV/m at about 200 feet away. The magnetic field at the same point of maximum impact would be 58 mG, diminishing to 2 mG about 200 feet away. Since the proposed line designs are in keeping with Western's field-reducing guidelines, any exposures within the right-of way would be similar to those expected from typical Western designs. For the proposed and other high-voltage lines, the edge of the right-of-way would mark the beginning of the long-term residential exposures at the root of the present health concern. Since there are no residences or occupied buildings in the vicinity of the proposed lines, no such long-term exposures would be expected. Staff has recommended condition of certification **TLSN-3** to verify that the fields are reduced within, and outside the edges of the rights-of-way to the extent expected from the use of Western's EMF-reducing designs as proposed.

CUMULATIVE IMPACTS

The strengths of electric and magnetic fields from the proposed and similar lines are usually influenced by the interaction of fields from nearby lines. Field measurements at the interaction points of maximum field strengths will be required by staff for the areas within and without the rights-of-way. These should reflect the cumulative exposures from the contribution of the proposed and nearby lines. Similarity to exposures within the Western transmission system would reflect compliance with the present CPUC requirements.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Since electric or magnetic field health effects have neither been established nor ruled out for lines such as those proposed for this project, the public health significance of any project-related field exposure cannot be characterized with certainty. The long-term, mostly residential magnetic exposure at the root of the present health concern will be insignificant for the proposed BEP lines, limiting any health concerns. The potential for nuisance shocks will be minimized through grounding and other field-reducing measures to be implemented by the applicant in keeping with current Southern California Edison practices which reflect compliance with GO-95 and Title 8, Section 2700 et seq. of the California Code of Regulations. Although BEP will be located in the vicinity of Blythe Airport, the FAA has determined that these transmission lines will not pose a significant hazard to area navigation. The use of low-corona line design will minimize the potential for corona noise which even if generated at significant levels would not lead to interference-related complaints given the absence of human residences in the area around the lines.

RECOMMENDATIONS

Since the proposed 161 kV lines and their possible 230 kV upgrade will be designed according to the applicable safety and field-reducing guidelines, and routed through areas without residences, staff recommends approval with specific regard to the line-related impacts of concern in this analysis. If such approval is granted, staff recommends that the Commission adopt the following conditions of certification to ensure implementation of the measures necessary to achieve the field levels assumed by the applicant with respect to the proposed Western designs.

CONDITIONS OF CERTIFICATION

TLSN-1 The project owner shall construct the proposed transmission lines according to the requirements of CPUC's GO-95, GO-52, Title 8, Group 2., High Voltage Electrical Safety Orders, Sections 2700 through 2974 of the California Code of Regulations, and Western's EMF-reduction guidelines.

Verification: Thirty days before starting construction of the transmission line or related structures and facilities, the project owner shall submit to the Commission's

Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming that the lines will be constructed according to the requirements stated in the condition.

TLSN-2 The project owner shall ensure that every reasonable effort will be made to identify and correct, on a case-specific basis, any complaints of interference with radio or television signals from operation of the project-related lines and associated switchyards.

The project owner shall maintain written records for a period of five years, of all complaints of radio or television interference attributable to plant operation together with the corrective action taken in response to each complaint. All complaints shall be recorded to include notations on the corrective action taken. Complaints not leading to a specific action, or for which there was no resolution should be noted and explained. The record shall be signed by the project owner and also the complainant, if possible, to indicate concurrence with the corrective action or agreement with the justification for a lack of action.

Verification: All reports of line-related complaints shall be summarized for the project-related lines and included during the first five years of plant operation in the Annual Compliance Report.

TLSN-3 The project owner shall engage a qualified consultant to measure the strengths of the line electric and magnetic fields from the line before and after they are energized. Measurements should be made at representative points (1) along the edge of the right-of-way, (2) inside the right-of-way of the proposed lines and (3) along and inside the right-of-way of a Western line of the same voltage and current-carrying capacity. These measurements should be completed not later than 6 months after the start of operations.

Verification: The project owner shall file copies of the pre-and post-energization measurements and measurement of a representative Western line, with the CPM within 60 days after completion of the measurements.

TLSN-4 The project owner shall ensure that the right-of-way of the proposed lines are kept free of combustible material, as required under the provisions of Section 4292 of the Public Resources Code and Section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first five years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the right-of-way and provide such summaries in the Annual Compliance Report.

TLSN-5 The project owner shall ensure that all permanent metallic objects within the right-of-way of the project-related lines are grounded according to industry standards regardless of ownership.

Protocol: In the event of a refusal by any property owner to permit such grounding, the project owner shall so notify the CPM. Such notification shall include, when possible, the owner's written objection. Upon receipt of such

notice, the CPM may waive the requirement for grounding the object involved.

Verification: At least 30 days before the lines are energized, the project owner shall transmit to the CPM a letter confirming compliance with this condition.

REFERENCES

BEP (Blythe Energy Project) 1999a. Application for Certification, Volumes I and II, Pastoria Energy Facility Project (AFC-99-8). Submitted to the California Energy Commission on December 9, 1999.

Electric Power Research Institute (EPRI) 1982. Transmission Line Reference Book: 345 kV and Above.

Energy Commission Staff 1992. High Voltage Transmission Lines: Summary of Health Effects Studies. California Energy Commission Publication, P700-92-002

National Institute of Environmental Health Services 1998. An Assessment of the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields. A Working Group Report, August, 1998.

TRANSMISSION SYSTEM ENGINEERING

Testimony of Linda Davis

INTRODUCTION

The Transmission System Engineering (TSE) analysis provides the basis for the findings in the Energy Commission's decision. This final staff analysis indicates whether or not the transmission facilities associated with the proposed project conform to all applicable laws, ordinances, regulations and standards (LORS) required for safe and reliable electric power transmission.

Blythe Energy LLC proposes to connect their project, the Blythe Energy Project (BEP), to the Western Area Power Administration's (Western) Desert Southwest (DSW) transmission system. Western is responsible for ensuring electric system reliability for Western's transmission system and determines both the standards necessary to achieve reliability and whether a proposed project conforms with those standards. The California Integrated System Operator (Cal-ISO) is responsible for insuring reliability for the portion of the adjoining California transmission system owned by Cal-ISO participating transmission owners. The Cal-ISO is not the interconnection authority for Western's system, but may provide technical consultation to staff on Western's determinations and findings related to applicable reliability standards and the need for additional transmission facilities. Staff anticipates that the authors of Western's studies and Cal-ISO staff will be available and where appropriate, will provide expert witness testimony on Western's studies in the adjudicatory hearings to support the Commission's findings.

Staff's analysis also evaluates the power plant switchyard, outlet line, termination facilities and outlet alternatives identified by the applicant and provides proposed conditions of certification to ensure that the project complies with applicable LORS during the design, construction, operation and potential closure of the project.

Public Resources Code, section 25523 requires the Energy Commission to "prepare a written decision which includes: findings regarding conformity of the proposed site and related facilities with public safety standards, and with other relevant local, regional, state, and federal standards, ordinances, and laws." Under the California Environmental Quality Act (CEQA) the Energy Commission must conduct an environmental review of the "whole of the action," which may include facilities not licensed by the Energy Commission (California Code of Regulations, tit. 14, §15378). Therefore, the Energy Commission must identify and evaluate the environmental effects of construction and operation of any new or modified transmission facilities beyond the project's interconnection with the existing transmission system that are required as a result of the power plant addition to the California transmission system.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

- Title 8, California Code of Regulations, section 2700 et seq., High-Voltage Electrical Safety Orders apply to all electrical installations and electrical equipment operating or intended to operate on systems more than 600 volts and to all work performed on, or in proximity to, such electrical installations. These orders apply in all places of employment in California with certain exceptions for facilities under California Public Utilities Commission (CPUC) jurisdiction (Title 8, California Code of Regulations, section 2706 (a) (2)). Compliance will ensure application of essential requirements and minimum standards for the installation, operation, and maintenance of electrical equipment to provide practical safety and freedom from danger to personnel. These orders are not a design specification.
- Western's interconnection guidelines prescribing the technical requirements for generators connected to the Western electrical system. Western interconnection guidelines address standards related to design, construction, operation and maintenance for wholesale generators and/or loads. (Western's equivalent to CPUC rule 21)
- CPUC General Order 95 (GO-95) or National Electric Safety Code standards for construction of overhead transmission voltage facilities. Compliance will ensure adequate service and safety to persons engaged in the construction, maintenance, operation or use of overhead electric lines and to the public in general.
- Western Systems Coordinating Council (WSCC) Reliability Criteria provides the performance standards used in assessing the reliability of the interconnected system. These Reliability Criteria require the continuity of service to loads as the first priority and preservation of interconnected operation as a secondary priority. The WSCC Reliability Criteria includes the Reliability Criteria for Transmission System Planning, Power Supply Design Criteria, and Minimum Operating Reliability Criteria. Analysis of the WSCC system is based to a large degree on WSCC Section 4 "Criteria for Transmission System Contingency Performance" which requires that the results of power flow and stability simulations verify established performance levels. Performance levels are defined by specifying the allowable variations in voltage, frequency and loading that may occur on systems other than the one in which a disturbance originated. Levels of performance range from no significant adverse effect outside a system area during a minor disturbance (loss of load or facility loading outside emergency limits) to a performance level that only seeks to prevent system cascading and the subsequent blackout of islanded areas. While controlled loss of generation, load, or system separation is permitted in extreme circumstances, their uncontrolled loss is not permitted. (WSCC 1998).
- North American Electric Reliability Council (NERC) Planning Standards provides policies, standards, principles and guides to assure the adequacy and security of the electric transmission system. With regard to power flow and stability simulations, these Planning Standards are similar to WSCC's

Criteria for Transmission System Contingency Performance. The NERC planning standards provide for acceptable system performance under normal and contingency conditions, however the NERC planning standards apply not only to interconnected system operation but also to individual service areas (NERC 1998).

- Cal-ISO Scheduling Protocols and Dispatch Protocols require conformance with NERC, WSCC, and Local Area Reliability and Planning Criteria. These standards may be applied in staff's assessment of the system reliability implications of the BEP. Also of major importance to BEP, and other privately funded projects which may sell through the California Power Exchange (Cal-PX), are the Cal-ISO Day/Hour Ahead Inter-zonal Congestion Management Scheduling Protocol (SP 10), the Transmission System Loss Management Scheduling Protocol (SP 4), and the Creation of the Real Time Merit Order Stack (SP 11). The Congestion Management Scheduling Protocol provides that the operation of power plants not violate system criteria when market participants request generation dispatch or the use of major interties. The Real Time Merit Order Stack is developed based on increasing energy bid prices so that the least cost bids are accepted early on and if congestion is anticipated the highest bids are not selected. The Transmission System Loss Management Scheduling Protocol uses the Cal-ISO power flow model to identify total transmission losses at each generating unit and scheduling point. Additional calculations are performed to determine the generating units net power output to meet their scheduled obligations (Cal-ISO 1998a, Cal-ISO 1998b).

SETTING

PROJECT DESCRIPTION

BEP is a new 520 MW generation project proposed to be located on a 15-acre site (within a 76-acre parcel) five miles west of the city of Blythe, and two thousand feet north of the existing Blythe 161 kV substation. The applicant proposes to install a new maximally efficient merchant power plant to produce electricity for sale to regional markets in Southern California, Arizona, and the surrounding area (BEP 1999a, p1.0-1). The proposed 520 MW combined cycle unit would be composed of two 170 MW combustion turbine generators, two heat recovery steam generators, and one 180 MW steam turbine generator.

The project will connect to two existing 161 kV Western owned transmission lines via three new tie lines. There will be one 650 foot tie line intercepting the Parker-Headgate-Blythe 161 kV line creating a 'Project'-Headgate Rock-Parker 161 kV line. A second 450 foot tie line will intercept the Blythe-Parker 161 kV line creating a 'Project'-Parker 161 kV line. And the third 600 foot tie line will also intercept the Blythe-Parker 161 kV line creating a 'Project'-Blythe 161 kV line (Blythe, 1999. page 8.0-7 and figure 8.0-5). There will be a new 161/230 kV substation built adjacent to the new generation plant facility which will be built for operation at 161 kV and 230 kV. In addition to the three tie lines which will originate from the new project

substation, the new substation will be built to allow for potential future termination of three additional lines. This expanded capability is being built to coordinate with Western and other regional transmission owner plans to upgrade the area's transmission service from 161 kV to 230 kV. The routes for the three potential future additional tie lines between the existing Blythe 161 kV substation and the project's 161/230 kV substation are part of the scope of this project for purposes of staff's analysis. The physical routes of the three initial tie lines plus the three potential future lines are illustrated in AFC figure 8.0-8.

EXISTING FACILITIES AND RELATED SYSTEMS

The following electric facilities are located near the BEP site and transmission line routes. The Blythe substation is situated south of the main power plant structure and connected to several transmission lines connected to other substations in the region. The transmission lines are typically supported by wooden H-frame structures. At the receiving substations, the power may be transformed (i.e., stepped down) to lower voltages (60 kV and less) for distribution to various communities and businesses. The five transmission lines (BEP1999a, pages 8.0-7-8) that exit Blythe substation include:

- Parker-Blythe 161 kV; Western owned. Sixty miles long. Portion of Western's 'South of Parker' transmission system extending southward from Parker Dam to Blythe;
- Parker-Headgate-Blythe 161 kV; Western owned. Sixty-five miles long. Portion of Western's 'South of Parker' transmission system extending southward from Parker Dam to Headgate and Blythe;
- Knob-Blythe 161 kV; Western owned Sixty miles long Portion of Western's 'South of Parker' transmission system extending southward from Blythe to Knob (Yuma Arizona area);
- Niland-Blythe 161 kV; Imperial Irrigation District (IID) owned. Sixty miles long. Extends south from Blythe to IID's Niland substation;
- Eagle Mountain-Blythe 161 kV; Southern California Edison owned. Seventy miles long. Extends west to Eagle Mountain substation.

Two additional regional transmission paths are noted as 'critical' in the AFC (Western, 2000b. page 3). These paths are major avenues of power transmission within, or through, the DSW region and are modeled and analyzed (Western 2000b, page 9) in the AFC's Transmission System Analysis:

East of the River (major WSCC intertie path between Arizona and Southern California.)

- Navajo-McCullough 500 kV
- Moenkopi-Eldorado 500 kV
- Liberty-Mead 345 kV
- Palo Verde-Devers 500 kV

- Palo Verde – North Gila 500 kV
- Mead-Phoenix 500 kV

Path A (path is local to the study area, but critical to Western's area operations)

- Parker – Blythe 161 kV
- Parker-Bouse 161 kV
- Parker-Headgate 1671 kV

Western and IID have several proposed additions to the DSW Transmission system with on-line dates prior to the proposed operating date of BEP. The identified planned projects (Western 2000b, page 4) were added to Western's transmission system analysis modeling to create a starting point from which to analyze the transmission impacts of the project.

To further enhance understanding of the potential impacts and interconnection requirements of BEP, the transmission analysis was expanded to look at the effect of BEP with an interconnection voltage at 230 kV versus 161 kV. Further motivation for identifying the interconnection impacts and requirements for project interconnection at 230 kV is the likelihood that at some future point in time, the existing 161 kV system will be upgraded to 230 kV (BEP 1999a, page 8.0-9). The transmission system analysis also represented two new proposed independent power producer projects connected to Western's transmission system: the 570 MW South Point project to be connected south of Davis substation near Topoc Arizona, and the 620 MW Griffith project to be connected near McConnico substation in the Kingman Arizona area. These projects are expected to have interconnection completed in the 2001-2002 timeframe (Western 2000b. page 1).

INTERCONNECTION FACILTIES ANALYSIS

PROJECT SUBSTATION

BEP proposes to construct a new substation located adjacent to the project generation facility and 2000 feet north of the existing 161 kV Blythe substation. It is expected that the new substation will be owned and operated by Western. The construction of the new substation and related tie lines will be for 230 kV, with both 161 kV and 230 kV operation supported at the new substation. This will allow for a phased approach to integrating planned area transmission system improvements and the future anticipated area upgrade to 230 kV. (BEP1999a, Page 8.0-10).

In addition to the three initial tie lines planned for the project, the substation is being designed with three additional line termination positions. With this additional capability Western will have the option of using the new project substation as the area's high voltage transmission hub in place of the existing Blythe 161 kV substation, if and when the area transmission system upgrades to 230 kV. The routes for the three potential future additional tie lines between the existing Blythe

161 kV substation and the project's 161/230 kV substation are part of the scope of this project for purposes of staff's analysis.

TRANSMISSION LINE CONNECTION

Three 230 kV generator tie lines will interconnect the generator step up transformers to the new project substation switchyard using overhead construction. Each of these generator tie lines will serve one of the new plant unit generators with each generator tie line terminating at a 230 kV position. A 161/230 kV auto-transformer will connect the aggregated plant output to the 161 kV side of the new switchyard bus which will connect to the existing 161 kV transmission system. Please refer to BEP 1999a Figure 8.0-6 for a single-line illustration of the project's new substation.

Three transmission tie lines will connect the project to the existing 161 kV transmission system. There will be one 650 foot tie line intercepting the Parker-Headgate-Blythe 161 kV line creating a 'Project'-Headgate Rock-Parker 161 kV line. A second 450 foot tie line will intercept the Blythe-Parker 161 kV line creating a 'Project'-Parker 161 kV line. And the third 600 foot tie line will also intercept the Blythe-Parker 161 kV line creating a 'Project'-Blythe 161 kV line. The proposed conductor will be 1272 MCM ACSR. The project tie line structures will be wooden H-frame type construction except for angle structures which will be 3-pole type construction.

Western design standards will be used. The final designed project tie lines will be sized to accommodate continuous full plant output, and line construction will meet or exceed Western's, GO- 95 or National Electric Safety Code (NESC) specifications, in accordance with recommended conditions of certification **TSE-1a and TSE-1d.**

SYSTEM RELIABILITY ANALYSIS

INTRODUCTION

A system reliability study is performed to determine the effects of connecting a new power plant to the existing electric grid. The study should not only identify impacts but also ways negative impacts can be minimized or negated. Any new transmission facilities such as the power plant switchyard, the outlet line, and, or downstream facilities, required for connection to the grid are considered part of the project and are subject to the full AFC review process.

Western is the transmission owning agency that will provide transmission service to the project as well as being the agency responsible for maintaining reliability of Western's interconnected grid. As such, Western will perform the analysis identifying impacts, recommend the interconnection facilities and any mitigation of downstream facilities required to maintain system reliability, and Western will ultimately approve the final interconnection requirements for the project.

Completion of pending WSCC peer review, completion of a final Facilities Study by Western, and any future issuance of an interconnection agreement from Western, will assure conformance with NERC, WSCC and Western reliability criteria. Condition of certification **TSE-1e** is recommended to provide for Energy Commission review of the WSCC Peer Review report, Western's final Facility Study, and the Western/BEP interconnection agreement.

SYSTEM RELIABILITY STUDY

A system reliability study determines whether the new project would cause thermal overload violations, voltage deviation violations (voltages too high or low), and/or electric system instability (excessive oscillations). In addition to the above analysis, studies are performed to verify that sufficient reactive power (see Definition of Terms) is available. The reliability evaluation must be conducted for all credible "emergency" conditions. Emergency conditions could include the loss of a single or double circuit line, the loss of a transformer or generator, or a combined loss of these facilities. The criteria used in this evaluation include the WSCC Planning Criteria, NERC Planning Standards, and Western's Reliability Criteria for System Planning.

Subsequent to the applicant's request to Western for interconnection service, Western completed a Preliminary Interconnection Study in February of 1999. The Preliminary Interconnection Study defined options at 161 kV and 230 kV for interconnecting the BEP. In the May 26, 2000 supplemental filings to the AFC, the applicant submitted Western's follow-up reports to its Preliminary Interconnection Study, "Integration of the Proposed Blythe Generation to Western Area Power Administration Desert South West Region Transmission System, progress report" (Western 2000d). This report included an evaluation of the impact to the Western transmission system with the addition of BEP. Western's report with appendices (Western 2000d) is the primary reference used by staff in the current TSE analysis of BEP's impact to transmission reliability.

Given the effect of the project on the DSW system, Western notes it will review the results of this study with neighboring utilities (Western 2000d, Executive Summary). Western's analysis does indicate potential impacts beyond their system. For example, overload of an SCE transformer at Eagle Mountain substation. Edison's transmission assets at Eagle Mountain substation are part of the Cal-ISO controlled transmission system. The existence of potential criteria violating impacts to non-Western transmission assets may expand the review and approval authority to include broader regional reliability and planning forums, specifically WSCC and the Southwestern Regional Transmission Association (SWRTA).

SCOPE OF RELIABILITY STUDIES

Western performed power flow, short circuit and dynamic stability studies. Per the applicant, post transient studies will be done as part of the WSCC study review process. (BEP 2000l, data response #70.)

Following are power flow base case assumptions and modifications to Western's starting data: 1999 WSCC year 2002 Heavy Summer Base Case, Wats2002HS-01:

Power Flow Base Case Assumptions:

Transmission Line/Generators:	2002 Heavy Summer Pk (MW)
California Oregon Intertie	4,244 MW
East of River Path	4,789 MW
West of River Path	7,129 MW
SCIT (so cal generation)	14,561 MW

A. Modifications to WSCC 2002 Base Case, with the Project:

- Add 520 MW BEP generator near Blythe;
- Add 570 MW South Point project in Arizona and a new related 230/69 kV substation connected to the Parker-Davis #1 230 kV line;
- Add 620 MW Griffith Project in Arizona near McConnico substation connected via a new 8 mile line from Griffith Project to McConnico sub;
- New 230 kV line between Hilltop and North Havasu substation which is part of a Citizen's Utility sponsored project called 'Kingman-Havasu Transmission Line Project'.
- Some scenarios included upgrade of Western and IID 161 kV lines to 230 kV, and upgrade of SCE Eagle Mountain 230/161 kV transformer to 200MVA.

(Western 2000b, pages 4-6)

Western's analysis was grouped into 4 Cases. The following summarizes each

Case 1a- Examined performance of DSW system at 161 kV.

Case 1b- Same as Case 1a, except for increase of East of River flows to 7500 MW.

Case 2- Upgrade of Blythe-Niland, and Blythe-Knob-Gila from 161 kV to 230 kV. Project interconnection voltage increased from 161 kV to 230 kV.

Case 3- Upgrade of Blythe-Niland, and Blythe-Knob-Gila from 161 kV to 230 kV. Project interconnection voltage increased from 161 kV to 230 kV. SCE Eagle Mountain 161/230 kV transformer upgraded from 70 MVA to 230 MVA.

Case 4- Upgrade of Blythe-Niland, and Blythe-Knob-Gila from 161 kV to 230 kV. Project interconnection voltage increased from 161 kV to 230 kV. SCE Eagle Mountain 161/230 kV transformer upgraded from 70 MVA to 230 MVA. Addition of a second Blythe-Niland 230 kV line.

POWER FLOW STUDY RESULTS

The general criteria for identifying thermal overloads uses transmission system power flow simulation modeling under normal (i.e. all elements in service) and emergency (i.e. one or more system elements out of service) conditions. Western's Reliability Criteria for System Planning (Western 2000d, page 9) indicates that normal overloads are identified as any transmission facility (i.e., transformer bank, transmission line) exceeding 80% of its normal continuous rating. Likewise, contingency (emergency) overloads are identified as any transmission facility exceeding 100% of its continuous rating.

The power flow studies conducted for BEP indicate that some normal and emergency condition overloads were identified for the various study scenarios, Case 1 through Case 4, attributable to BEP. The specific overloaded facilities are provided in tables in Western's May 2, 2000 transmission study progress report section "Summary of Power Flow Results" (Western 2000d, Section XI tables). The following table summarizes the number of identified overloads.

STUDY SCENARIO	Number of N-0 Overloads	Number of N-1 Overloads	Number of Overloaded Facilities Under N-1	Maximum Overloaded Facility Under N-1
Case 1a, without BEP	1	21	1	Palo Verde-N.Gila 500 kV, 101%
Case 1a, with BEP	3	75	3	Eagle Mtn XFMR, 261%
Case 1b, without BEP	0	12	3	McConnico-Davis 230 kV, 113%
Case 1b, with BEP	3	91	8	Eagle Mtn XFMR, 261%
Case 2, with BEP (no violations w/o BEP)	3	89	6	Eagle Mtn XFMR, 261%
Case 3, with BEP (no sum.data w/o BEP)	2	58	5	Knob-Pilot Knob 161kV, 156%
Case 4, with BEP (no sum.data w/o BEP)	1	35	3	Havasu–N.Havasu 161kV, 114%

Western's May 2, 2000 transmission study report cites the following:

- Project can be successfully integrated with the 'DSW South of Parker' transmission system;
- Under all circumstances, including N-1 criteria, the project will be required to operate in a manner that maintains system reliability criteria. This may include a Remedial Action Scheme (RAS) as prescribed by Western;
- For the Blythe Project to be able to dispatch its maximum generation into the DSW system, previously planned upgrades to the operation of the Blythe-Niland at 230 kV and an upgrade of the SCE transformer (at Eagle Mountain sub) from 72 MVA to 200 MVA are required**.** (emphasis added.) (Western 2000d, page 9.)

Subsequent to Western's May 2, 2000 transmission study report, the applicant provided information identifying the Western, SCE and IID facilities with contingency related overloads which the impacted transmission owners have attributed to the BEP, and the type of mitigation acceptable to the impacted transmission owners (CEC, 2000x). The following table summarizes this information.

Overloaded Facility	Mitigation Option	Comments
Havasu – N. Havasu 161 kV line	Line reconductoring	Western is currently reconductoring this line as part of the South Point project. Completion of work is expected prior to summer of 2001.
Knob – Pilot Knob 161 kV line	Operating procedure	Operating procedure will require reduced output from BEP.
Eagle Mountain 230/161kV transformer	Replacement	Capacity to be increased from 70MVA to 200MVA. SCE owned equipment.
Niland 161/92 kV transformer	Operating procedure	Operating procedure will require reduced output from BEP. IID owned equipment.
El Centro 230/161 kV transformer	Remedial action scheme (RAS) automatic operating procedure	Remedial action scheme will require tripping of BEP units. IID owned equipment. IID may install a series capacitor to the existing El Centro-Imperial Valley 230 kV line related to future planned 230 kV enhancements to the Desert Southwest transmission system. If implemented, this will relieve the need for the RAS.

Western's identification of acceptable mitigation solutions to be provided in their future final Detailed Facilities Study report and subsequent Interconnection Agreement, are recommended below as conditions of certification **TSE-1e & TSE-1e**. The identification of mitigation for non-Western assets impacted by BEP (including but not limited to SCE and IID transformers noted above) via the WSCC Peer Review Process will also be required. Results of the WSCC Peer Review are also recommended below as condition of certification **TSE-1e**.

STABILITY STUDY RESULTS

A stability study was performed to ensure that the transmission system remains in operating equilibrium during normal and abnormal operating conditions with BEP connected to the system.

The following outages and/or disturbances were modeled by simulating a three-phase fault.

1. Blythe-Niland 230 kV line outage, without power system stabilizers on new market generators. Results stable;
2. Blythe-Niland 230 kV line outage, with power system stabilizers on new market generators. Results stable;
3. Blythe-Niland 230 kV line outage, with power system stabilizers on new market generators a second Blythe-Niland 230 kV line. Results stable.

Western concluded that "Stability was maintained for all faults studied without generator dropping or other remedial action schemes. Results also show that the integration of Blythe Energy plant has no significant impact on the stability of the EOR transfer path" (Western 2000d, section XIV Transient Stability Analysis, page S-01).

SHORT CIRCUIT STUDY RESULTS

Western used the system model from Case 3, 161-to-230 kV upgrades and upgrade of Eagle Mountain transformer, as the system condition for testing BEP's contribution to short circuit fault duty at several area busses. The 'pre-project' comparison case was system scenario Case 1. Western concluded that "No fault duty problems are observed" (Western 2000d, page 12). Impacts to non-Western assets, especially SCE's equipment at the Blythe Substation, are not addressed yet. The results of WSCC Peer Review will be required to finalize findings in this area. Although there is some uncertainty as to potential equipment replacement, it is very likely that any work identified will be within the fence line of existing transmission related facilities, and any future identified facility upgrades related to fault duty will have no significant environmental impacts.

POST TRANSIENT VOLTAGE STUDY RESULTS

The applicant has stated that post transient studies will be done as part of the WSCC study review process. (BEP 2000l and BEP 2000p. data response #70). Submittal of results of the WSCC study review or WSCC Peer Review is recommended in condition of certification **TSE-1e**.

ALTERNATIVE TRANSMISSION LINE ROUTES

One transmission line route alternative was considered by the applicant and Western. The alternative considered was an interconnection plan in which the project substation was dedicated to the project along with two transmission tie lines built from the new project substation to the existing Blythe 161 kV substation. This option was rejected because the existing Blythe 161 kV substation does not have the space to add two new positions and would require expansion including new land. In addition, the ability to build two tie lines at 230 kV construction standards is hampered due to Blythe substation's equipment clearance space limitations. Additionally, if the area were to upgrade to 230 kV in the future, the existing substation would require major reconstruction to enable 230 kV service to any upgraded existing 161 kV lines. (BEP 1999a, page 8.0-14)

CUMULATIVE IMPACTS ANALYSIS

There are no projects in California with preceding AFCs or licenses electrically proximate to BEP. Therefore, no cumulative impact analysis is needed or has been performed by staff.

FACILITY CLOSURE

Staff suggests that the LORS discussed below (CPUC General Order-95, and Western's generator interconnection standards) be utilized for purposes of assuring safe and reliable conditions in the event of facility closure. Even though Western is not under the jurisdiction of the CPUC, GO-95 as applied in the context of plant closure would provide guidance and reference in the event of plant closure. As they pertain to plant closure, these particular LORS are within general good engineering practice, and would not be overly cumbersome on the applicant or the interconnecting transmission owner (TO), Western, if plant closure were enacted under any of the three plant closure scenarios evaluated below.

The parallel operation of generating stations is controlled, in part by Western's interconnection standards, and criteria for parallel operation (Western's equivalent to CPUC Rule 21). Western's applicable rules and standard utility practices for interconnecting parallel generating units provide for the transmission system operator to have control of breakers and disconnect switches where the outlet lines terminate, as well as general control over the interconnected generators. Prior to construction and interconnection of a generating unit, the TO and the system operator review and comment on the plans and specifications for the power plant and termination equipment that are important to safe and reliable parallel operation[1] and inspect the interconnection facilities. Contractual provisions may be developed to provide backup, or other power service, and codify procedures to be followed during parallel operation. Within these contractual provisions, procedures for operation in cases of planned, unexpected temporary closure, and unexpected permanent closure, must be developed or verified to facilitate effective communication and coordination between the generating station owner, generating station operator, and the transmission system operator (Western) to ensure safety and system reliability.

CPUC General Order 95, Rule 31.6 requires that "lines or portions of lines permanently abandoned shall be removed by their owners so that such lines shall not become a public nuisance or a hazard to life or property." Recommended condition of certification **TSE-1a** requires compliance with this rule.

The ability of the above LORS to reasonably assure safe and reliable conditions in the event of facility closure was evaluated for the following three scenarios:

PLANNED CLOSURE

This type of closure occurs in a planned and orderly manner such as at the end of its useful economic or mechanical life or due to gradual obsolescence. Under such circumstances, the requirement for the owner to provide a closure plan 12 months prior to closure, in conjunction with applicable LORS, is considered sufficient to provide adequately for safety and reliability. For instance, a planned closure

[1] As an example, the TO has control over the generating unit breakers so that only when the TO's line crews have completed maintenance, for instance, and are clear of the line or other facilities, could the unit reclose the system.

provides time for the owner to coordinate with the TO[2] to assure (as one example) that the TO's system will not be closed into the outlet thus energizing the project substation. Alternatively, the owner may coordinate with the TO to maintain some power service via the outlet line to supply critical station service equipment or other loads.

UNEXPECTED TEMPORARY CLOSURE

This unplanned closure occurs when the facility is closed suddenly and/or unexpectedly for a short term due to unforeseen circumstances such as a natural or other disaster or emergency. During such a closure the facility cannot insert power into the utility system. Closures of this sort can be accommodated by establishment of an on-site contingency plan (see General Conditions Including Compliance Monitoring and Closure Plan).

UNEXPECTED PERMANENT CLOSURE

This unplanned closure occurs when the project owner abandons the facility. This is considered to be a permanent closure. This includes unexpected closure where the owner remains accountable for implementing the on-site contingency plan. It can also include unexpected closure where the project owner is unable to implement the contingency plan, and the project is essentially abandoned. An on-site contingency plan, that is in place and approved by the CPM prior to the beginning of commercial operation of the facilities, will be developed to assure safety and reliability (see General Conditions Including Compliance Monitoring and Closure Plan).

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Staff has received Western's report, "Integration of the Proposed Blythe Generation to Western Area Power Administration Desert South West Region Transmission System, progress report", dated February 8, 2000 (BEP 2000b) and May 2, 2000 (Western 2000d), and additional information clarifying which system impacts are attributable specifically to BEP (CEC 2000x).

Western's reports indicate that reliability criteria will be met with replacement of one existing SCE owned 230/161 kV transformer located within Eagle Mountain substation west of Blythe. No new downstream linear facilities or enhancements to existing linear facilities are triggered by, or will be required, for the interconnection of the OMGP to meet NERC, WSCC and Western reliability criteria; staff concurs.

[2] The TO (the transmission system owner to which the project is interconnected) in this instance is Western. Western is not under the jurisdiction of the CPUC or the Cal-ISO.

RECOMMENDATIONS

Staff proposes the following conditions of certification to insure system reliability and conformance with LORS.

CONDITIONS OF CERTIFICATION

TSE-1 The project owner shall ensure that the design, construction and operation of the proposed transmission facilities will conform to the requirements listed below. The substitution of Compliance Project Manager (CPM) approved "equivalent" equipment and equivalent substation configurations is acceptable.

a) The power plant switchyard and outlet line shall meet or exceed the electrical, mechanical, civil and structural requirements of CPUC General Order 95 or National Electric Safety Code (NESC), Title 8, CCR, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", and related industry standards.
b) Termination facilities shall comply with Western's applicable interconnection standards
c) Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.
d) The project conductors shall be sized to accommodate the full output from the 520 MW plant.
e) The project owner shall provide:
   i) Western's final Detailed Facility Study (DFS) including a description of facility upgrades, operational mitigation measures, and/or Remedial Action Scheme (RAS) sequencing and timing if applicable,
   ii) Results of WSCC Peer Review including a determination whether impacts to, and any mitigation for, non-Western transmission facilities are attributable to the project,
   iii) Executed Facility Interconnection Agreement for the project transmission interconnection with Western.

Verification: At least 60 days prior to the start of construction of transmission facilities, the project owner shall submit to the CPM for approval:

a) Design drawings, specifications and calculations conforming with CPUC General Order 95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", and related industry standards, where applicable, for the poles/towers, foundations, anchor bolts, conductors, grounding systems and major switchyard equipment.
b) For each element of the transmission facilities identified above, the submittal package to the CPM shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on

"worst case conditions"[3] and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", and related industry standards.

c) Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in responsible charge, a route map, and an engineering description of equipment and the configurations covered by requirements **TSE-1** a) through e) above. The Detailed Facilities Study and executed interconnection agreement shall be provided concurrently. Substitution of equipment and substation configurations shall be identified and justified by the project owner for CPM approval.

TSE-2 The project owner shall inform the CPM of any impending changes, which may not conform to the requirements **TSE-1** a) through e), and have not received CPM approval, and request approval to implement such changes. A detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change shall accompany the request. Construction involving changed equipment or substation configurations shall not begin without prior written approval of the changes by the CPM.

Verification: At least 60 days prior to the construction of transmission facilities, the project owner shall inform the CPM of any impending changes which may not conform to requirements of TSE-1 and request approval to implement such changes.

TSE-3 The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM approved changes thereto, to ensure conformance with CPUC GO-95 or NESC, Title 8, CCR, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", Western's interconnection standards, and related industry standards. In case of non-conformance, the project owner shall inform the CPM in writing, within 10 days of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM:

a) "As built" engineering description(s) and one-line drawings of the electrical portion of the facilities, signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", Western's interconnection standards, related industry standards, and these conditions shall be provided concurrently.

b) An "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered

[3] Worst case conditions for the foundations would include for instance, a dead-end or angle pole.

engineer in responsible charge or acceptable alternative verification. “As built” drawings of the mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the “Compliance Monitoring Plan”.

c) A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in responsible charge.

REFERENCES

Cal-ISO (California System Operator). 1998a. Cal-ISO Tariff Scheduling Protocol, posted April 1998, Amendments 1, 4, 5, 6, and 7 Incorporated.

Cal-ISO (California System Operator). 1998b. Cal-ISO Dispatch Protocol, posted April 1998.

BEP (Blythe Energy, LLC), 1999a. Application for Certification, Blythe Energy Project (99-AFC-8). Submitted to the Energy Commission, December 8, 1999.

BEP (Blythe Energy, LLC), 2000e. Integration of the Proposed Blythe Generation to Western Area Power Administration Desert South West Region Transmission System, February 8 2000 Progress Report. Submitted by applicant to the Energy Commission, March 15, 2000.

CEC (California Energy Commission), 2000x. September 19, 2000 Blythe Energy Project PSA Workshop Summary, TSE Section. Docketed and served September 27, 2000.

Western (Western Area Power Administration). 2000d. Integration of the Proposed Blythe Generation to Western Area Power Administration Desert South West Region Transmission System (Impact Study), May 26, 2000 Progress Report. (report dated May 2, 2000.)

NERC (North American Electric Council). 1998. NERC Planning Standards, September 1997.

WSCC (Western Systems Coordinating Council). 1997. Reliability Criteria, August 1998.

DEFINITION OF TERMS

ACSR	Aluminum cable steel reinforced. A composite conductor made up of a steel core surrounded by aluminum wire.
Ampacity	Current-carrying capacity, expressed in amperes, of a conductor at specified ambient conditions at which damage to the conductor is nonexistent or deemed acceptable based on economic, safety, and reliability considerations.
Ampere	The unit of current flowing in a conductor.
Bundled	Two conductors, 18 inches apart.
Bus	Conductors that serve as a common connection for two or more circuits.
Conductor	The part of the transmission line (the wire) which carries the current.
Congestion Management	A scheduling protocol which provides that dispatched generation and transmission loading (imports) will not violate criteria.
Emergency Overload	An exceedance of a transmission components emergency thermal rating under an emergency condition. See Single Contingency, N-1.
Kcmil or kcm	Thousand circular mil. A unit of the conductor's cross sectional area. When divided by 1,273, the area in square inches is obtained.
Kilovolt (kV)	A unit of potential difference, or voltage, between two conductors of a circuit, or between a conductor and the ground.
L-1	The outage of a single line.
Megavar	One megavolt ampere reactive.
Megavars	Megavolt-Ampere-Reactive. One million Volt-Ampere-Reactive. Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system.
Megavolt ampere (MVA)	

Megawatt (MW)	A unit of power equivalent to 1,341 horsepower.
Normal Operation	When all customers receive the power they are entitled to without interruption and at steady voltage, and no element of the transmission system is loaded beyond its continuous rating.
N-1 Condition	See Single Contingency. Also called an L-1, T-1 or G-1.
Outlet	Transmission facilities (circuit, transformer, circuit breaker, etc.) linking generation facilities to the main grid.
Power Flow Analysis	A power flow analysis is a forward looking computer simulation of essentially all generation and transmission system facilities that identifies overloaded circuits, transformers and other equipment and system voltage levels.
Reactive Power	Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system. An adequate supply of reactive power is required to maintain voltage levels in the system.
Remedial Action Scheme (RAS)	A remedial action scheme is an automatic control provision, which, for instance, will trip a selected generating unit upon a circuit overload.
SF6	Sulfur hexafluoride. Used asan insulating medium.
Single Contingency	Also known as emergency or N-1 condition, occurs when one major transmission element (circuit, transformer, circuit breaker, etc.) or one generator is out of service.
Solid dielectric cable	Copper or aluminum conductors that are insulated by solid polyethylene type insulation and covered by a metallic shield and outer polyethylene jacket.
Thermal rating	See ampacity.
TSE	Transmission System Engineering.
Undercrossing	A transmission configuration where a transmission line crosses below the conductors of another transmission line, generally at 90 degrees.
Underbuild	A transmission or distribution configuration where a transmission or distribution circuit is attached to a transmission tower or pole below (under) the principle transmission line conductors.