Staff Assessment

HENRIETTA PEAKER PROJECT

Application For Certification (01-AFC-18)
Kings County

CALIFORNIA
ENERGY
COMMISSION

STAFF REPORT

DECEMBER 2001
(01-AFC-18)

Gray Davis, Governor

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CALIFORNIA ENERGY COMMISSION

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EXECUTIVE SUMMARY

INTRODUCTION

This Staff Assessment (SA) contains the California Energy Commission (Energy Commission) staff's evaluation of the Henrietta Peaker Project (HPP) Application for Certification (AFC) (01-AFC-18). The HPP electric generating plant is under the Energy Commission's jurisdiction and cannot be constructed or operated without the Energy Commission's certification.

Staff is an independent party in the proceedings. This SA is a staff document, presenting staff's independent analysis. It examines engineering and environmental aspects of the HPP, based on the information available at the time of document creation. The SA contains analyses similar to those contained in Environmental Impact Reports required by the California Environmental Quality Act (CEQA). It is not a Committee document nor is the SA a final or proposed decision on the proposal. The SA presents staff's conclusions and proposed conditions that apply to the design, construction, operation, and closure of the proposed facility, if certified.

The analyses contained in this SA are based upon information from: 1) the AFC; 2) subsequent amendments to the AFC; 3) responses to data requests, workshops and site visits; 4) supplementary information from federal, state and local agencies; and 5) existing documents and publications.

PROJECT LOCATION AND DESCRIPTION

On August 27, 2001, GWF Energy LLC (GWF) filed an Application for Certification (AFC), for its proposed Henrietta Peaker Project (HPP) with the California Energy Commission seeking approval to construct and operate a 91.4 megawatt (MW) natural gas-fired, simple-cycle electric generating facility. The plant will be owned and operated by GWF. The Energy Commission staff reviewed the AFC for data adequacy. The AFC was determined to be data adequate by the Energy Commission at its October 17, 2001 Business Meeting, thus beginning the Energy Commission's review of this project.

The proposed HPP would be located on a seven-acre fenced site within a 20-acre parcel west of Lemoore in unincorporated Kings County, California. See **PROJECT DESCRIPTION Figure 1 and 2** for the local setting of the project and **PROJECT DESCRIPTION Figure 3** for the site layout. If the project is certified, GWF plans to begin commercial operation during the summer of 2002.

Th HPP would be a 91.4 megawatt (MW), natural-gas-fired, simple-cycle power plant, with a 70-kilovolt (kV) switchyard and approximately 550 feet of new 70-kV transmission line. Natural gas for the facility will be delivered via approximately 2.2 miles of new 12-inch pipeline that would connect to the existing Southern California Gas Company natural gas pipeline.

Kings County and the Westlands Water District would supply water to the HPP from an existing Westlands Water District line immediately adjacent to the HPP site. The HPP

would utilize water treatment and recycling technology to achieve a near-zero discharge of wastewater. A licensed hauler would dispose of the small quantity of wastewater generated by the plant at an approved offsite disposal facility.

A more complete description of the project is contained in the **PROJECT DESCRIPTION** section of this SA.

PUBLIC AND AGENCY COORDINATION

In preparing the SA, staff coordinated its review with relevant local, state and federal agencies, such as the California Independent System Operator (Cal-ISO), San Joaquin Valley Air Pollution Control District, U.S. Fish and Wildlife Service, and California Department of Fish and Game.

Staff also participated in the Committee's Informational Hearing and Site Visit for the project on November 8, 2001 staff workshop. No interested members of the public attended this noticed hearing, and staff has received no written or oral public comments during its review.

STAFF'S ASSESSMENT

Each technical area section of this SA contains a discussion of impacts, and where appropriate, mitigation measures and conditions of certification. The SA includes staff's assessments of:

- the environmental setting of the proposal;
- impacts on public health and safety, and measures proposed to mitigate these impacts;
- environmental impacts, 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 closure;
- project alternatives;
- compliance of the project with all applicable laws, ordinances, regulations and standards (LORS) during construction and operation; and
- proposed conditions of certification.

OVERVIEW OF STAFF'S CONCLUSIONS

Environmental / System Impacts And LORS

Staff's analysis indicates that the project's environmental impacts can be mitigated to levels of less than significant in all areas. Staff's analysis also indicates that the project can be made to conform with all LORS. Below is a summary of the potential environmental impacts and LORS compliance for each technical area.

Technical Discipline	Environmental / System Impact	LORS Conformance
Air Quality	Impacts mitigated	yes
Biological Resources	Impacts mitigated	yes
Cultural Resources	Impacts mitigated	yes
Power Plant Efficiency	No Impacts	N/A
Power Plant Reliability	No Impacts	N/A
Facility Design	N/A	yes
Geology	Impacts mitigated	yes
Hazardous Materials	Impacts mitigated	yes
Land Use	Impacts mitigated	yes
Noise	Impacts mitigated	yes
Public Health	No Impacts	yes
Socioeconomics	No Impacts	yes
Traffic and Transportation	Impacts mitigated	yes
Transmission Line Safety	Impacts mitigated	yes
Transmission System Engineering	Impacts mitigated	yes
Visual Resources	Impacts mitigated	yes
Waste Management	Impacts mitigated	yes
Water and Soils	Impacts mitigated	yes
Worker Safety	Impacts mitigated	Yes

CONCLUSION AND RECOMMENDATION

Staff has completed its review of the GWF Henrietta Peaker Project. Staff finds that, with the adoption of the proposed conditions of certification specified in this SA, the project will have no unmitigated impacts and will comply with all identified LORS. Therefore, staff recommends Commission approval of this project.

HENRIETTA PEAKER PROJECT (01-AFC-18)
FINAL STAFF ASSESSMENT

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INTRODUCTION

PURPOSE OF THIS REPORT

This Staff Assessment (SA) presents the California Energy Commission staff's independent assessment of GWF Energy LLC's Application for Certification of the Henrietta Peaker Project (HPP).

The SA is a staff document. It is neither a Committee document, nor a draft decision or proposed decision. This document was prepared by Energy Commission staff.

The SA describes the following:

- the existing environmental setting;
- the proposed project;
- whether the facilities can be constructed and operated safely and reliably in accordance with applicable laws, ordinances, regulations and standards (LORS);
- the environmental consequences of the project including potential public health and safety impacts;
- cumulative analysis of the potential impacts of the project, along with potential impacts from other existing and known planned developments;
- mitigation measures proposed by the applicant, staff, interested agencies and intervenors that may lessen or eliminate potential impacts;
- the proposed conditions under which the project should be constructed and operated, if it is certified;
- project alternatives; and
- requirements for project closure.

The analyses contained in this SA are based upon information from: 1) the Application for Certification (AFC); 2) subsequent submittals; 3) responses to data requests; 4) supplementary information from local and state agencies and interested individuals; 5) existing documents and publications; and 6) independent field studies and research. The analyses for most technical areas include discussions of proposed conditions of certification. 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 SA presents conclusions and proposed conditions of certification that apply to the design, construction, operation and closure of the proposed facility.

The Energy Commission staff's analyses were prepared in accordance with Public Resources Code section 25500 et seq. and Title 20, California Code of Regulation

section 1701 et seq., and the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 15000 et seq.).

ORGANIZATION OF THE STAFF ASSESSMENT

Following Project Description, this SA contains staff's environmental, engineering, and public health and safety analysis of the proposed project for 19 technical areas. Each technical area is included in a separate chapter as follows: air quality, biological resources, cultural resources, hazardous materials/worker safety and fire protection, land use, noise and vibration, public health, socioeconomics, soil and water resources, traffic and transportation, transmission line safety and nuisance, visual resources, waste management, facility design, geology, mineral and paleontology, power plant efficiency, power plant reliability, transmission system engineering, and alternatives. These chapters are followed by a chapter containing an evaluation of project alternatives and a discussion of facility closure and project construction and operation compliance monitoring plans.

Each of the 19 technical area assessments includes a discussion of:

- laws, ordinances, regulations and standards (LORS);
- the regional and site-specific setting;
- project specific and cumulative impacts;
- mitigation measures;
- closure requirements;
- conclusions and recommendations; and
- conditions of certification for both construction and operation (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 AFCs to assess potential environmental impacts including potential impacts to public health and safety, potential measures to mitigate those impacts (Pub. Resources Code, section 25519), and compliance with applicable governmental laws or standards (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 shall be presented in a report (Cal. Code Regs., tit. 20 , section 1742.5).

In addition, staff must assess the completeness and adequacy of the health and safety standards, and the reliability of power plant operations (Cal. Code Regs., tit. 20, section 1743(b)). Staff is required to coordinate with other agencies to ensure that applicable laws, ordinances, regulations and standards 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. No Environmental Impact Report (EIR) is required because the Energy Commission's site certification program has been certified by the Resources Agency (Pub. Resources Code, section 21080.5 and Cal. Code Regs., tit. 14, section 15251 (k)). The Energy Commission acts in the role of the CEQA lead agency and is subject to all other portions of CEQA.

The staff's assessment is only one piece of evidence that will be considered by the Committee (two commissioners who have been assigned to this project) 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. 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 a decision. Within 30 days of the Energy Commission decision, any party may appeal the decision to the Energy Commission.

A Compliance Monitoring Plan and General Conditions will be assembled from conditions contained in the PSA 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. Staff's proposed Compliance Monitoring Plan and General Conditions are included at the end of the PSA.

PUBLIC AND AGENCY COORDINATION

In preparing the SA, the Committee conducted a publicly noticed hearing in order to receive comments from both interested agencies and the public. Staff conducted a publicly noticed Data Response and Issues workshop, and has coordinated its review with relevant local, state and federal agencies. These agencies included the California

Independent System Operator (Cal-ISO), San Joaquin Valley Air Pollution Control District, U.S. Fish and Wildlife Service, California Department of Fish and Game, and the Central Valley Regional Water Quality Control Board.

No comments, other than those of support, were received from members of the public, interested agencies, or intervenors regarding this project.

PROJECT DESCRIPTION

Testimony of Bob Eller

NATURE AND PURPOSE OF THE PROJECT

GWF Energy LLC (GWF) is seeking approval of an Application for Certification (AFC) for the construction and operation of the Henrietta Peaker Project (HPP). GWF proposes to build and operate the HPP, a 91.4-net-megawatt (MW) (annual average conditions), natural-gas-fired, simple-cycle power plant, with a 70-kilovolt (kV) switchyard and approximately 550 feet of new 70-kV transmission line. The proposed project will be located on a seven-acre fenced site within a 20-acre parcel in unincorporated Kings County, California.

Natural gas for the facility will be delivered via approximately 2.2 miles of new 12-inch pipeline that will connect to the existing Southern California Gas Company natural gas pipeline.

Kings County and the Westlands Water District will supply water to the HPP from an existing Westlands Water District line immediately adjacent to the HPP site. The HPP will utilize water treatment and recycling technology to achieve a near-zero discharge of wastewater. A licensed hauler will dispose of the small quantity of wastewater generated by the plant at an approved offsite disposal facility.

GWF states that one of its primary goals of the HPP is the rapid introduction of new, more efficient, and environmentally superior power generation to meet California's power needs. If approved, GWF proposes to begin commercial operation of the HPP in the summer of 2002.

PROJECT LOCATION

The HPP site is located in the southwest quarter of Section 34, Township 19 South, Range 19, East Mount Diablo Base Meridian on Assessor's Parcel Number 027-190-065. The HPP site is on the eastern side of 25th Avenue, approximately one mile south of State Route (SR) 198 and directly south of and adjoining to the Pacific Gas and Electric Company (PG&E) Henrietta Substation. The power plant area will be accessed via a plant entrance and exit on 25th Avenue. **Project Description Figure 1** shows the regional location of the proposed generating facility. **Project Description Figure 2** provides a localized view of the facility, electric transmission line, natural gas supply line, and water supply line.

GWF has acquired a 20-acre parcel south and adjacent to the PG&E Henrietta Substation. The proposed project will be developed on the northwestern portion of the parcel using approximately seven acres. The temporary construction laydown and parking area will require an additional five acres. The proposed site layout for the HPP is shown in **Project Description Figure 3**.

POWER PLANT

The power plant will consist of two General Electric (GE) LM6000 PC Sprint combustion turbine generators (CTGs) equipped with water injection and selective catalytic reduction (SCR) systems that use aqueous ammonia to control nitrogen oxides (NOx) and an oxidation catalyst to control carbon monoxide (CO) and volatile organic compounds (VOCs). Air pollutant emissions from the HPP will be controlled to concentrations at or below Best Available Control Technology (BACT) levels for all criteria air pollutants.

Each CTG will generate an average of 46.9 MW (gross) output. The CTG exhaust gases will pass directly through the air pollution control systems before being discharged through an 85-foot-tall stack. Approximately 2.4 total MW will be consumed by the internal electrical demands of the plant, resulting in a net plant output of 91.4 MW.

Associated equipment includes the emission control systems necessary to meet the proposed emission limits. NOx emissions will be controlled to 3.6 or less parts per million by volume, dry (ppmvd), corrected to 15 percent oxygen by a combination of water injection into the combustor of the CTG and SCR system. CO emissions from the CTG will be controlled with an oxidation catalyst to 6 or less ppmvd at 15 percent oxygen. VOCs will be controlled to two or less ppmvd at 15 percent oxygen using the same oxidation catalyst.

The HPP will be a simple-cycle peaker plant. CTG combustion air will flow through the inlet air filter and evaporative cooler and associated air inlet ductwork, be compressed, and then flow to the CTG combustion section. Natural gas fuel will be injected into the compressed air in the combustion section and ignited. Water is injected in the combustor to reduce NOx formation, into the compressor to increase power production, and into the CTG inlet for evaporative cooling. The hot combustion gases will expand through the turbine section of the CTG, causing it to rotate and drive the electric generator and CTG compressors.

The project is expected to have a minimum overall annual capacity factor of approximately 50 percent. During the first few years of operation GWF expect to operate the HPP at a significantly higher capacity factor. The HPP will be dispatched by the California Department of Water Resources (DWR) under an existing power purchase agreement. To enable the project to respond to California's electrical transmission/distribution system demands, GWF is seeking a license to operate the facility up to 8,000 hours per year.

Project Description Figure 1, Regional Location

(Need a regional figure)

Project Description Figure 2
(Use AFC Layout)

Project Description Figure 3 – Site Layout

TRANSMISSION LINE AND NATURAL GAS FACILITIES

All electricity exported from the HPP will be delivered to the PG&E electrical transmission system. Electricity from the HPP will be transmitted through a new 550 foot long overhead transmission line to the Henrietta Substation, which is contiguous with the northern boundary of the facility.

Natural gas will be delivered to the facility via a new 2.2-mile pipeline that will tie into the Southern California Gas Company Line 800, along the Avenal Cutoff. The natural gas will be delivered at a gas pressure of 290 to 400 pounds per square inch gauge (psig). The natural gas will be pressurized by onsite compressors, as needed, and will then flow through gas scrubber/filtering equipment, a gas pressure control station, a fuel gas heater, and a flow metering station before entering the CTG.

WATER SUPPLY AND WASTE WATER TREATMENT

The HPP will not include a cooling tower and will, therefore, have a minimal water demand. The plant will require water for the CTG evaporative cooler, fire protection, plant general service, and domestic use. Bottled water will be used for drinking. The process water requirements will be met by Westlands Water District and Kings County. The water for HPP operation will be supplied under pre-existing contracts with the Westlands Water District (Central Valley Project entitlement) and Kings County (State Water Project entitlement).

The average annual water consumption for the HPP, assuming 8,000 hours of operation annually, is 150 acre-feet per year. Process wastewater from the HPP will be recycled to reduce the project's water supply requirements. Wastewater from the system will be recycled or disposed of off-site in accordance with applicable laws, ordinances, regulations, and standards (LORS).

CONSTRUCTION AND OPERATION

Construction of the generating facility, from site preparation and grading to commercial operation, is expected to take place over five months and will commence upon approval of the project by the Commission. Access to the HPP site will be from 25th Avenue. It is anticipated the materials and equipment will be delivered to the site by truck.

The average and peak workforce on the project during construction will be approximately 75 and 93, respectively, including construction craft persons and supervisory, support, and construction management personnel. Construction will be scheduled between 6 a.m. and 6 p.m., Monday through Saturday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. During the startup phase of the project, some activities will continue 24 hours a day, seven days a week. The construction period is scheduled to be five months in length. The peak construction workforce is expected to last from month 3 through month 4 of the construction period, with month 4 being the peak month.

The HPP will be operated remotely by GWF personnel. Operators and maintenance staff will be dispatched, as needed, from the nearby Hanford Cogeneration plant.

FACILITY CLOSURE

The HPP will be designed for an operating life of 30 years. 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 that exist at the time of closure. LORS pertaining to facility closure are identified in the technical sections of this assessment. Facility closure will be consistent with LORS in effect at the time of closure

ENVIRONMENTAL ASSESSMENT

AIR QUALITY

Testimony of William Walters and Lisa Blewitt

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 Henrietta Peaker Project (HPP), which will be located in Kings County.

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

- whether the HPP is likely to conform with applicable Federal, State and San Joaquin Valley Air Pollution Control District air quality laws, ordinances, regulations and standards, as required by Title 20, California Code of Regulations, section 1744 (b);
- whether the HPP 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
- whether the mitigation proposed for the HPP is adequate to lessen the potential impacts to a level of insignificance, as required by Title 20, California Code of Regulations, section 1744 (b).

In carrying out this analysis, the California Energy Commission staff formatted the analysis using the major issues identified in the California Environmental Quality Act's CEQA Air Quality Checklist.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

FEDERAL

Under the Federal Clean Air Act (40 CFR 52.21), there are two major components of air pollution control requirements for stationary sources, nonattainment New Source Review (NSR) and Prevention of Significant Deterioration (PSD). Nonattainment NSR is a permitting process for evaluation of those pollutants that violate federal ambient air quality standards. Conversely, PSD is a permitting process for evaluation of those pollutants that do not violate federal ambient air quality standards. The NSR analysis has been delegated by the U.S. Environmental Protection Agency (U.S. EPA) to the San Joaquin Valley Air Pollution Control District (SJVAPCD, or District). The U.S. EPA determines the conformance of the project with the PSD regulations. The PSD requirements apply only to those projects (known as major sources) that exceed 250 tons per year for any pollutant, or any new facility or stationary source category that is listed in 40 CFR Part 52.21(b)(1)(i)(a), and that emits 100 tons or more, per year of any criteria pollutant. The entire program, including both nonattainment NSR and PSD reviews, is referred to as the federal NSR program.

While, the HPP is considered a “minor source” under federal air quality regulations, it is a Title IV ‘acid rain’ program source; therefore, a Title V permit will be required.

The HPP is also subject to the federal New Source Performance Standards (NSPS) for the combustion turbines (40 CFR 60 Subpart GG). This regulation has pollutant emission requirements that are less stringent than those that will be required by NSR requirements for best available control technology (BACT).

The U.S. EPA reviews and approves the SJVAPCD (District) regulations and has delegated to the SJVAPCD the implementation of the federal NSR, Title V, and NSPS programs. The District implements these programs through its own rules and regulations which are, at a minimum, as stringent as the federal regulations. The NSR program is administered under District Rule 2201 and the NSPS program is administered by the rules in District Regulation IV. The Title V program is administered by the District under Rule 2520. In addition, the U.S. EPA has also delegated to the District the authority to implement the federal Clean Air Act Title IV “acid rain” program. The Title IV regulation requirements include obtaining a Title IV permit prior to operation, the installation of continuous emission monitors to monitor acid deposition precursor pollutants, and obtaining Title IV allowances for emissions of SOx. Rule 2540 implements the federal Title IV program. Therefore, compliance with the District’s rules and regulations will result in compliance with federal requirements.

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 project is subject to the following San Joaquin Valley Air Pollution Control District (District) Rules and Regulations:

Rule 1080 – Stack Monitoring

This rule grants the Air Pollution Control Officer the authority to request the installation and use of continuous emissions monitors (CEM’s), and specifies performance standards for the equipment and administrative requirements for record keeping, reporting, and notification.

Rule 1081 – Source Sampling

This rule requires adequate and safe facilities for use in sampling to determine compliance with emission limits, and specifies methods and procedures for source testing and sample collection.

Rule 2010 – Permits Required

This rule requires any person building, altering, replacing or operating any source which emits, may emit air contaminants, or may reduce emissions to first obtain authorization

from the District in the form of an Authority to Construct or a Permit to Operate. By the submission of an ATC application, GWF Energy LLC is complying with the requirements of the rule.

Rule 2201 – New and Modified Stationary Source Review Rule

The main function of the District's New Source Review Rule are to allow for the issuance of Authorities to Construct, Permits to Operate, the application of Best Available Control Technology (BACT) to new or modified permit source and to require the new permit source to secure emission offsets.

Section 4.1 – Best Available Control Technology

Best Available Control Technology is defined as: a) BACT levels that are contained in any State Implementation Plan and that have been approved by EPA; b) the most stringent emission limitation or control technique that has been achieved in practice for a class of source; or c) any other emission limitation or control technique which the District's Air Pollution Control Officer (APCO) finds is technologically feasible and is cost effective. BACT is required for NO_x, VOC, PM_{10} and SO_2 emissions from any new or modified emission unit that results in an emissions increase of 2 lb/day, and CO emissions that exceed 550 lb/day. In the case of HPP, BACT will apply for NO_x, VOC, CO, SO_2, and PM_{10} emissions from all point sources of the project.

Section 4.2 – Offsets

Emissions offsets for new or modified sources are required when those sources exceed the following emission levels:

- Oxides of Nitrogen, NO_x – 10 tons/year
- Volatile Organic Compounds, VOC - 10 tons/year
- Carbon Monoxide, CO – 550 lbs/day
- PM_{10} – 80 lbs/day
- Sulfur Oxides, SO_x – 150 lbs/day

The HPP exceeds all of the above emission levels; therefore offsets are required for all five of these pollutants. The emission offsets provided shall be adjusted according to the distance of the offset from the project proposed site. The ratios are:

- internal or on-site source – 1 to 1
- within 15 miles of the same source – 1.2 to 1
- 15 miles or more from the source – 1.5 to 1

Section 4.2.5.3 allows for the use of interpollutant offsets (including PM_{10} precursors for PM_{10}) on a case-by-case basis, provided that the applicant demonstrates that the emissions increase will not cause a violation of any ambient air quality standard. The ratio for interpollutant trading shall be based on an air quality analysis and shall be equal to or greater than the minimum offsetting requirement (the distance ratios) of this rule.

Section 4.3 – Additional Source Requirements

Rule 4.3.2.1 requires that a new source not cause, or make worse, the violation of an ambient air quality standard as demonstrated through analysis with air dispersion models.

Rule 4.3.3 requires that the applicant of a proposed new major source demonstrate to the satisfaction of the District that all major stationary sources owned or operated by the applicant or any entity controlling or under common control with the applicant in California, which are subject to emission limitations, are in compliance or on a schedule for compliance with all applicable emission limitations and standards.

Rule 2520 – Federally Mandated Operating Permits

Requires that a project owner file a Title V Operating Permit application within 12 months of commencing operation. A project is subject to this requirement if any of the following apply: the project is a major stationary source (under PSD definitions), it has the potential to emit greater than 100 tons per year of a criteria pollutant, any equipment permitted is subject to New Source Performance Standards, the project is subject to Title IV Acid Rain program, or the owner is required to obtain a PSD Permit from EPA. The Title V Permit application requires that the owner submit information on the operation of the air polluting equipment, the emission controls, the quantities of emissions, the monitoring of the equipment as well as other information requirements. HPP will be required to file for a Title V operating permit within 12 months of commencing operation.

Rule 2540 – Acid Rain Program

A project greater than 25 MW and installed after November 15, 1990, must submit an acid rain program permit application to the District. The acid rain requirements will become part of the Title V Operating Permit (Rule 2520).

Rule 4001 – New Source Performance Standards

Specifies that a project must meet the requirements of the Federal New Source Performance Standards (NSPS), according to Title 40, Code of Federal Regulations, Part 60, Chapter 1. Subpart GG, which pertains to Stationary Gas Turbines, requires that NO_x concentrations are a function of the heat rate of combustion. In addition, the SO_2 concentration shall be less than 150 ppmv and the sulfur content of the fuel shall be no greater than 0.8 percent by weight.

Rule 4101 – Visible Emissions

Prohibits air emissions, other than water vapor, of more than No. 1 on the Ringelmann chart (20 percent opacity) for more than three minutes in any one hour.

Rule 4102 – Nuisance

Prohibits any emissions “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 person or public or which cause or have a natural tendency to cause injury or damage to business or property.”

Rule 4201 – Particulate Matter Concentration

Limits particulate emissions from sources such as the gas turbines, cooling towers, and emergency fire water pumps to less than 0.1 grain per dry standard cubic foot of exhaust gas.

Rule 4202 – Particulate Matter Emission Rate

The purpose of this rule is to limit particulate matter emissions by establishing allowable emission rates. The calculation methods for determining the emission rate based on process weight are specified. Gas and liquid fuels are excluded from the definition of process weight. Therefore, Rule 4202 does not apply to the proposed units.

Rule 4301 – Fuel Burning Equipment

Limits air contaminant emissions from fuel burning equipment. However, the proposed combustion turbines are exempt from this rule because they produce power primarily through the mechanical turning of the turbine blades.

Rule 4701 – Stationary Internal Combustion Engines

Limits NO_x, CO, and VOC emissions from internal combustion engines. Since the emergency diesel generator proposed for this project will be limited to less than 200 hours per year of non-emergency operation, it is exempt from this rule.

Rule 4703 – Stationary Gas Turbines

Establishes requirements for monitoring and record keeping for NO_x and CO emissions from new or modified stationary gas turbines with a designed power of 0.3 MW or higher. According to this rule, at 15 percent O_2, NO_x and CO concentrations must be less than 9 ppm and 200 ppm, respectively.

Rule 4801 – SO2 Concentration

Limits the emissions of sulfur compounds to no greater than 0.2 percent by volume calculated as SO_2 on a dry basis.

Rule 8010 – Fugitive Dust Administrative Requirements for Control of Fine Particulate Matter (PM-10)

Specifies the types of chemical stabilizing agents and dust suppressant materials that can (and cannot) be used to minimize fugitive dust from anthropogenic (man-made) sources. This rule shall remain in effect until April 30, 2002 or until the effective date of Rule 8011 (General Requirements), whichever occurs later.

Rule 8011 – General Requirements

Specifies the types of chemical stabilizing agents and dust suppressant materials that can (and cannot) be used to minimize fugitive dust from anthropogenic (man-made) sources. The rule also specifies test methods for visible dust emissions (VDE) opacity, a stabilized surface, soil moisture content, silt content for bulk materials, silt content for unpaved roads and unpaved vehicle/equipment traffic areas, and threshold friction velocity (TFV) to determine compliance. Records shall be maintained only for those days that a control measure was implemented, and kept for one year following project completion to demonstrate compliance. A fugitive dust management plan for unpaved roads and unpaved vehicle/equipment traffic areas is discussed as an alternative for Rule 8061 and Rule 8071.

Rule 8020 – Fugitive Dust Requirements for Control of Fine Particulate Matter (PM-10) from Construction, Demolition, Excavation, and Extraction Activities

Requires fugitive dust emissions during construction activities to not exceed an opacity limit of 40 percent for a period or periods aggregating to more than three minutes, in any one-hour, by means of water application or chemical dust suppressants. The rule also encourages the use of paved access aprons, gravel strips, wheel washers or other measures to limit mud and dirt carry-out onto paved public roads. This rule shall remain in effect until April 30, 2002 or until the effective date of Rule 8021 (Construction, Demolition, Excavation, Extraction and Other Earthmoving Activities), whichever occurs later.

Rule 8021 – Construction, Demolition, Excavation, Extraction and Other Earthmoving Activities

Requires fugitive dust emissions throughout construction activities (from pre-activity to active operations and during periods of inactivity) to comply with the conditions of a stabilized unpaved road surface and to not exceed an opacity limit of 20 percent, by means of water application, chemical dust suppressants, or constructing and maintaining wind barriers. A Dust Control Plan is also required and shall be submitted to the APCO at least 30 days prior to the start of any construction activities on any site that include 40 acres or more of disturbed surface area, or will include moving more than 2,500 cubic yards per day of bulk materials on at least three days. The provisions of this rule shall be effective beginning May 15, 2002.

Rule 8030 – Control of PM-10 from Handling and Storage of Bulk Materials

Limits the fugitive dust emissions from the handling and storage of bulk materials. It specifies that bulk materials be transported using wetting agents, allow appropriate freeboard space in the vehicles, or be covered. It also requires that stored materials be covered or stabilized. This rule shall remain in effect until April 30, 2002 or until the effective date of Rule 8031 (Bulk Materials), whichever occurs later.

Rule 8031 – Bulk Materials

Limits the fugitive dust emissions from the outdoor handling, storage and transport of bulk materials. Requires fugitive dust emissions to comply with the conditions of a stabilized unpaved road surface and to not exceed an opacity limit of 20 percent. It specifies that bulk materials be transported using wetting agents, allow appropriate freeboard space in the vehicles, or be covered. It also requires that stored materials be covered or stabilized. The provisions of this rule shall be effective beginning May 15, 2002.

Rule 8041 – Carryout and Trackout

Limits carryout and trackout during construction, demolition, excavation, extraction, and other earthmoving activities (Rule 8021), from bulk materials handling (Rule 8031), and from unpaved vehicle and equipment traffic areas (Rule 8071) where carryout has occurred or may occur. Specifies acceptable (and unacceptable) methods for cleanup of carryout and trackout. The provisions of this rule shall be effective beginning May 15, 2002.

Rule 8051 – Open Areas

Requires fugitive dust emissions from any open area having 3.0 acres or more of disturbed surface area, that has remained undeveloped, unoccupied, unused, or vacant for more than seven days to comply with the conditions of a stabilized unpaved road surface and to not exceed an opacity limit of 20 percent, by means of water application, chemical dust suppressants, paving, applying and maintaining gravel, or planting vegetation.

Rule 8060 – Control of PM-10 from Paved and Unpaved Roads

Specifies the width of paved shoulders on paved roads and guidelines for medians. Requires paving, landscaping, and/or the use of chemical dust suppressants on unpaved roadways, shoulders and medians. This rule shall remain in effect until April 30, 2002 or until the effective date of Rule 8061 (Paved and Unpaved Roads), whichever occurs later.

Rule 8061 – Paved and Unpaved Roads

Specifies the width of paved shoulders on paved roads and guidelines for medians. Requires gravel, roadmix, paving, landscaping, watering, and/or the use of chemical dust suppressants on unpaved roadways to prevent exceeding an opacity limit of 20 percent. Exemptions to this rule include “any unpaved road segment with less than 75 vehicle trips for that day”. The provisions of this rule shall be effective beginning May 15, 2002.

Rule 8070 – Fugitive Dust Requirements for Control of Fine Particulate Matter (PM-10) from Vehicle and/or Equipment Parking, Shipping, Receiving, Transfer, Fueling and Service Areas

This rule intends to limit fugitive dust from unpaved parking areas one acre or larger by using water, chemical suppressants or gravel. It also requires that the affected owners/operators shall remove tracked out mud and dirt onto public roadways once a day. This rule shall remain in effect until April 30, 2002 or until the effective date of Rule 8071 (Unpaved Vehicle/Equipment Traffic Areas), whichever occurs later.

Rule 8071 – Unpaved Vehicle/Equipment Traffic Areas

This rule intends to limit fugitive dust from unpaved vehicle and equipment traffic areas one acre or larger by using gravel, roadmix, paving, landscaping, watering, and/or the use of chemical dust suppressants to prevent exceeding an opacity limit of 20 percent. Exemptions to this rule include “unpaved vehicle and equipment traffic areas on any day which less than 75 vehicle trips occur”. The provisions of this rule shall be effective beginning May 15, 2002.

Rule 8081 – Agricultural Sources

This rule intends to limit fugitive dust from off-field agricultural sources exempted from Rules 8031 (Bulk Materials), 8061 (Paved and Unpaved Roads), and 8071 (Unpaved Vehicle/Equipment Traffic Areas). Requires fugitive dust emissions to comply with the conditions of a stabilized surface and to not exceed an opacity limit of 20 percent. The provisions of this rule shall be effective beginning May 15, 2002.

SETTING

METEOROLOGICAL CONDITIONS

The climate of the San Joaquin Valley is controlled by a semi-permanent subtropical high-pressure system that is located off the Pacific Ocean. In the summer, this strong high-pressure system results in clear skies inland and coastal fog. The project site generally experiences temperatures similar to inland areas. Very little precipitation occurs during the summer months because storms are blocked by the high-pressure system. Beginning in the fall and continuing through the winter, the high pressure system weakens and shifts south, allowing storm systems to move through the area. Weather patterns are more variable during these months. The project site receives an annual average rainfall of 7.95 inches.

Average temperature and precipitation data have been collected at the Hanford Station, located 19 miles east northeast from the project site . The data indicate that July is usually the warmest month of the year. In the fall and spring, the afternoon temperatures are mild, in the 60s and 70s, while nights are cooler, in the 40s and 50s. In the winter, temperatures are cool in the afternoon and crisp at night. The coldest month is usually January.

Predominant surface winds in the project area are from the west-southwest and the west. The wind speeds are higher during the spring and summer months.

Along with the wind flow, atmospheric stability and mixing heights are important factors in the determination of pollutant dispersion. Atmospheric stability reflects the amount of atmospheric turbulence and mixing. In general, the less stable an atmosphere, the greater the turbulence, which results in more mixing and better dispersion. The mixing height, measured from the ground upward, is the height of the atmospheric layer in which convection and mechanical turbulence promote mixing. Good ventilation results from a high mixing height and at least moderate wind speeds with the mixing layer.

EXISTING AIR QUALITY

The project is located within the jurisdiction of the San Joaquin Valley Air Pollution Control District (District). The applicable federal and California ambient air quality standards (AAQS) are presented in **AIR QUALITY Table 1**. As indicated in this table, the averaging times for the various air quality standards (the duration over which they are measured) range from one-hour to annual average. The standards are read in parts per million (ppm), or in milligrams or micrograms of pollutant per cubic meter of air (mg/m^3 and $\mu g/m^3$).

The U.S.EPA, CARB, and the local air district classify an area as attainment, unclassified, or nonattainment, depending on whether or not the monitored ambient air quality data show compliance, insufficient data is available, or non-compliance with the ambient air quality standards, respectively. The HPP is located in an unincorporated area of Kings County and, as stated above, is under the jurisdiction of the San Joaquin Valley Air Pollution Control District. This area is designated as nonattainment for both

the federal and state ozone and PM_{10} standards. **AIR QUALITY Table 2** summarizes federal and state attainment status of criteria pollutants for Kings County.

AIR QUALITY: Table 1
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	1 Hour	0.12 ppm (235 µg/m^3)	0.09 ppm (180 µg/m^3)
	8 Hour	0.08 ppm (160 µg/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 (NO_2)	Annual Average	0.053 ppm (100 µg/m^3)	—
	1 Hour	—	0.25 ppm (470 µg/m^3)
Sulfur Dioxide (SO_2)	Annual Average	80 µg/m^3 (0.03 ppm)	—
	24 Hour	365 µg/m^3 (0.14 ppm)	0.04 ppm (105 µg/m^3)
	3 Hour	1300 µg/m^3 (0.5 ppm)	—
	1 Hour	—	0.25 ppm (655 µg/m^3)
Respirable Particulate Matter (PM_{10})	Annual Geometric Mean	—	30 µg/m^3
	24 Hour	150 µg/m^3	50 µg/m^3
	Annual Arithmetic Mean	50 µg/m^3	—
Respirable Particulate Matter ($PM_{2.5}$)[a]	Annual Arithmetic Mean	—	15 µg/m^3
	24 Hour	—	65 µg/m^3
Sulfates (SO_4)	24 Hour	—	25 µg/m^3
Lead	30 Day Average	—	1.5 µg/m^3
	Calendar Quarter	1.5 µg/m^3	—
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.010 ppm (26 µg/m^3)
Visibility Reducing Particulates	1 Observation (8 hour)	—	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.

Note(s):

a. Recent court decisions have delayed the implementation of the PM2.5 standards.

AIR QUALITY: Table 2
Federal and State Attainment Status for Kings County

Pollutant	Attainment Status [a]	
	Federal	State
Ozone – One hour	Severe Nonattainment	Severe Nonattainment
CO	Unclassified/Attainment	Unclassified
NO_2	Unclassified/Attainment	Attainment
SO_2	Unclassified	Attainment
PM_{10}	Serious Nonattainment	Nonattainment
Lead	No Designation	Attainment

Note(s):
a. Obtained from 40 CFR 81 and SJVAPCD web site (www.valleyair.org/aqinfo/attainment.htm)

The project site is in Kings County, located west of the City of Lemoore. The monitoring station closest to the proposed project site is the Hanford Station, approximately 19 miles to the ENE. There is also a monitoring station in Corcoran, approximately 22 miles to the southeast. However, these stations do not measure all criteria pollutant concentrations, and data from other stations are necessary. Monitoring stations at Visalia (Tulare County), at Fresno and Parlier (Fresno County), and at Oildale and Bakersfield (Kern County) are also located near the project site. Gaseous pollutants monitored at these stations include ozone, CO, NO_x, SO_2 and PM_{10}. For the analysis, the maximum criteria pollutant concentration from the past three years (1998-2000) from representative monitoring stations were used for each limit as the background value. For the pollutants monitored at the Hanford monitoring site (ozone, PM_{10} and NO_2), the data from that site are shown in Table 3. For pollutants not monitored at Hanford (CO and SO_2), the highest values from the Fresno (CO) and Bakersfield (SO2) monitoring stations are shown in Table 3. These background values, as well as the most restrictive AAQS, either federal or state, are shown in **AIR QUALITY Table 3**.

AIR QUALITY: Table 3
Ambient Air Quality Monitoring Data for HPP (ppm)

Pollutant	Averaging Time	1998	1999	2000	Most Restrictive Ambient Air Quality Standard
Ozone	1 hour	0.143	0.14	0.124	0.09
	Number of Exceedances	27	28	48	
	8 hour	0.113	0.111	0.110	0.08
	Number of Exceedances	31	25	51	
PM_{10} ($\mu g/m^3$)	24 hour	146	143	119	50
	Number of Exceedances[a]	90	102	99	
	Annual Geometric Mean	29.8	41.6	41.9	30
	Annual Arithmetic Mean	39.15	53.38	49.0	50
NO_2	1 hour	0.086	0.086	0.072	0.25
	Annual	0.0143	0.0160	0.014	0.053
CO	1 hour	9	11.9	---	20
	8 hour	5.875	5.525	5.24	9
SO_2	1 hour	---	0.011	---	0.25
	3 hours	---	---	---	0.5
	24 hours	---	0.0063	---	0.04
	Annual	---	0.0032	---	0.03

Note(s):

a. Days above standard (calculated). Because PM10 is monitored approximately every six days, the potential number of violation days is calculated by multiplying the monitored violations by six.

Visibility

The conditions of visibility in the region of the project site are dependent upon the relative humidity natural to the area and the intensity of both particulate and gaseous pollution in the atmosphere. The most straightforward characterization of visibility is probably the visual range (the greatest distance that a large dark object can be seen). However, in order to characterize visibility over a range of distances, it is more common to analyze the changes in visibility in terms of the change in light-extinction that occurs over each additional kilometer of distance (1/km). In the case of a greater light-extinction, the visual range will decrease.

The San Joaquin Valley Air Basin is currently designated as unclassified for visibility reducing particles.

PROJECT DESCRIPTION AND EMISSIONS

This section describes the project construction and the operating design and criteria pollutant control devices as described in the AFC (GWF 2001a).

CONSTRUCTION

The primary emission sources during construction of the HPP will be heavy equipment and fugitive dust from disturbed areas as a result of site and transmission line construction. The HPP involves the following improvements and ancillary facilities.

- The site is relatively flat and the primary excavation is associated with the on-site storm water pond. Approximately 11,500 cubic yards of cut and 11,500 cubic yards of fill are anticipated to achieve the final balanced site grading.
- A 16.5-foot long water interconnection pipeline (from the site property boundary) to an existing Westlands Water District line immediately adjacent to the HPP site.
- A 70-kV electric transmission line, approximately 550-foot long, to the existing 70kV Henrietta Substation bus owned by PG&E.
- Approximately 2.2 miles of new 12-inch natural gas interconnection pipeline to the existing SoCalGas Line 800 gas transmission pipeline.

The construction of the transmission and natural gas lines are not included in the air quality construction impact modeling because the emissions from the construction of the 550-foot transmission line is considered negligible. The emissions associated with the construction of the offsite linears are less than those associated with the on-site construction and occur over a wider area.

The proposed project construction schedule for the HPP will extend over approximately five months, based on construction activities being scheduled between 6 a.m. to 6 p.m., Monday through Saturday. Additional hours may be necessary to make up schedule deficiencies, complete critical construction activities, and during the startup phase of the project, where some activities will continue 24 hours a day, seven days a week. A 20 hour per day assumption was used in the construction emissions modeling for a conservative analysis (GWF 2001b). A 12 hour per day assumption was used for the linear construction emission estimates only (GWF 2001b).

During the construction period, air emissions will be generated from the exhaust of heavy equipment such as bulldozers, excavators, lifts, compressors, paving equipments, and from fugitive dust generated from activities such as clearing, grading, and preparation of the site. **AIR QUALITY Table 4** summarizes the different levels of criteria pollutants that will be generated from the construction activities at the site.

AIR QUALITY: Table 4
Estimated Construction Emissions for HPP

Emissions Rate	NO_x	CO	PM_{10}	SO_x	VOC	Fugitive PM_{10}
Main Site and Switchyard [a]						
On-Site Maximum Hourly (lb/hr)	26.9	35.8	0.9	0.52[e]	2.5	0.57[c]
On-Site Maximum Monthly (ton/mo)	7.02	9.34	0.23	0.14[e]	0.65	0.15
On-Site Tons per Year (tpy)	29.1	42.3	0.9	0.56[e]	2.8	0.75[d]
Transmission Line and Natural Gas Pipeline [b]						
NG Pipeline Maximum Hourly (lb/hr)	18.7	10.0	1.4	0.34[e]	1.4	0.40[f]
NG Pipeline Monthly (ton/mo)	2.92	1.57	0.22	0.05[e]	0.22	0.07[f]
NG Pipeline Tons per Year (tpy)	7.8	4.4	0.6	0.14[e]	0.6	0.22[f]
Transmission Line Maximum Hourly (lb/hr)	< 0.1	< 0.1	< 0.1	< 0.1[e]	< 0.1	Neg.
Transmission Line Monthly (ton/mo)	0.015	0.006	0.001	0.0002[e]	0.001	Neg.
Transmission Line Tons Per Year (tpy)	< 0.1	< 0.1	< 0.1	< 0.1[e]	< 0.1	Neg.

Note(s):
a. Data Response #1 (GWF 2001b) Table 8.1-12 (Revised). Assumed 26.07 days/month at 20 hours/day for main site and switchyard construction. Assumed 2000 lb/ton.
b. Data Response #1 (GWF 2001b) Table 8.1-12 (Revised). Assumed 26.07 days/moth at 12 hours/day for transmission line and natural gas pipeline construction. Assumed 2000 lb/ton.
c. Data Response #1 (GWF 2001b), Attachment 2.1-2. Maximum 24-hour fugitive dust emissions are based on 0.11 ton/acre/month (Midwest Research Institute, 1996) PM_{10}, 20-hour workdays and 50 percent control efficiency.
d. Data Response #1 (GWF 2001b), Attachment 2.1-2. Annual fugitive dust emissions (lb/hr) are based on 5 months disturbance, assume one half of the plant site disturbed at any given time, 6 days per week, 20-hour workdays and assume 50 percent control efficiency.
e. Corrected to 0.05 percent sulfur content diesel.
f. Staff assumption of 30 feet x 2.2 miles of disturbed area (i.e. 8 acres) total, 2.67 acres per month based on the 3 month, 12-hour per day construction schedule for the natural gas pipeline.
Neg. - Negligible

The equipment emissions provided above are based on South Coast Air Quality Management District's 1993 CEQA Air Quality Handbook, Table A9-8-A emission factors and load factors, and the estimated number of operational hours for each piece of equipment throughout project construction outlined in the AFC (GWF 2001a). The emission estimates provided above for construction vehicles do not include the potential emission reductions that will occur based on the application of tailpipe emission controls. As such vehicle emissions may be overestimated. The fugitive PM10 emissions are estimated assuming 50 percent control efficiency from frequent water applications on active construction surfaces during hours of construction (or other equivalent dust suppression measures). These measures are proposed by the applicant, to be implemented as discussed in the AFC (GWF 2001a, pages 8.1-22, 23).

Staff's review of the Applicant's emission calculations indicates that the Applicant used an incorrect diesel sulfur content (0.25 percent sulfur, versus the maximum California allowable diesel fuel sulfur content of 0.05 percent sulfur), which overstates the SO_2 emissions by a factor of five. The SO_2 emissions shown in **AIR QUALITY Table 4** have been corrected to 0.05 percent sulfur diesel.

OPERATIONAL PHASE

EQUIPMENT DESCRIPTION

The major equipment proposed in the application includes the following.

- Two General Electric (GE) LM6000 PC Sprint simple-cycle combustion turbine generators (CTG), each with a base load nominal output of 46.9 MW at annual average conditions (63°F, 60 percent relative humidity). Each CTG will fire only natural gas and will have evaporative cooling system installed on the inlet air for use when the ambient temperature exceeds 50°F. Each CTG will include dry low-NOx combustors for NOx reduction.
- A continuous emission monitoring (CEM) system for NOx, CO, and oxygen.
- Onsite 70-kilovolt (kV) switchyard.
- Approximately 550 feet of new 70-kV electric transmission line.
- Approximately 2.2 miles of new 12-inch natural gas interconnection pipeline to the existing Southern California Gas Company (SoCalGas) Line 800 gas transmission pipeline.
- A 16.5-foot long water interconnection pipeline (from the site property boundary) to an existing Westlands Water District line immediately adjacent to the HPP site.
- A 397 horsepower Caterpillar Model 3306 diesel-fired emergency IC engine powering a 250-kilowatt generator installed for backup facility power and as an emergency driver for the firewater pump. The emergency engine emissions will be controlled through the use of a turbocharged intercooled/aftercooled engine with positive crankcase ventilation.

EQUIPMENT OPERATION

GWF Energy LLC has proposed to build and operate the Henrietta Peaker Project (HPP) on a seven-acre, fenced site within a 20-acre parcel in unincorporated Kings County, California. The site is located approximately 10 miles southwest of Lemoore and 20 miles southwest of Hanford. The property is located on the eastern side of 25th Avenue, approximately one mile south of State Route 198 and directly south of and adjacent to the Pacific Gas and Electric Company (PG&E) Henrietta Substation. The power plant area will be accessed from 25th Avenue.

The HPP will develop the site for power production with two stationary, natural gas-fired combustion turbines operating in simple cycle mode. Each combustion turbine generator (CTG) will generate an average of 46.9 MW. Approximately 2.4 total MW will be consumed by the internal electrical demands of the plant, resulting in a net plant output of 91.4 MW. Each CTG will feature dry low-NO_x combustors for emission control. Each CTG will also be equipped with a selective catalytic reduction (SCR) emission control system that uses aqueous ammonia in the presence of a catalyst to reduce the NO_x concentration in the exhaust gases. An oxidation catalyst will also be incorporated into the emissions control system to control carbon monoxide (CO) and volatile organic compound (VOC) emissions. Accessories for each CTG include inlet air filters with silencers, evaporative inlet air coolers, turbine/generator control system, lube oil cooling system, compressor wash system, fire detection and protection system, generator cooling system, hydraulic starting system and acoustical enclosures.

The HPP will not include a cooling tower and will, therefore, have a minimal water demand. The plant will require water for the CTG evaporative coolers, fire protection,

plant general services, and domestic use. Westlands Waster District and Kings County will provide process water to the HPP from an existing water line adjacent to the HPP site. Drinking water for the facility will be provided by a local bottled-water vendor. The site will utilize water treatment and recycling technology to achieve a near-zero discharge of wastewater from the HPP. Small quantities (less than one gallon per minute) of process wastewater from the plant will be collected on site and periodically transported from the plant via licensed haulers for offsite recycle or disposal.

The HPP will be operated by operations and maintenance employees from other existing GWF facilities in the area. Operations and maintenance personnel will be dispatched from the Hanford Cogeneration plant to the facility, as needed, to operate the HPP. GWF has executed a contract with the California Department of Water Resources that provides for 4,000 hours per year of dispatchable power sales. GWF is seeking a license to operate the plant up to 8,000 hours per year. GWF wishes to retain the flexibility to operate the plant for sale of electricity beyond the contracted hours, contingent upon demand requirements of the Independent System Operator – managed transmission distribution system. The project is expected to have an overall annual capacity factor of approximately 50 percent or more. However, the exact operational profile of the plant cannot be defined, because the facility will be operated to satisfy the demand of the state's transmission distribution system.

EMISSION CONTROLS

The exclusive use of pipeline-quality natural gas, a relatively clean-burning fuel, will limit the formation of VOC, PM_{10}, and SO_2 emissions. Natural gas contains very little noncombustible gas or solid residues and a small amount of reduced sulfur compounds including mercaptan, thus resulting in relatively low emissions of the above-mentioned pollutants.

Each combustion turbine generator (CTG) will have an evaporative cooling system installed on the inlet air for maximum efficiency on hot days (>50°F). In addition, the CTG will be equipped with a dry low NO_x combustion system to control the nitrogen oxide (NO_x) concentration exiting each CTG. Post-combustion NO_x control will be provided using a selective catalytic reduction (SCR) system. The SCR system will use aqueous ammonia to reduce the nitrogen oxides to 3.6 or less parts per million by volume, dry (ppmvd) at 15 percent oxygen (O_2) in the exhaust gas. The SCR equipment will include a reactor chamber, catalyst modules, ammonia storage, ammonia vaporization and injection system, and monitoring equipment. Carbon monoxide (CO) and volatile organic compounds (VOC) will be controlled at the CTG combustor and by an oxidation catalyst. CO will be limited 6 or less ppmvd at 15 percent O_2, and VOC will be limited to 2 or less ppmvd at 15 percent O_2. Particulate emissions will be controlled using natural gas as the sole fuel for the CTG. In addition, the CTGs will employ high-efficiency inlet air filtration.

An 85-foot-tall stack will be provided to release the exhaust gas into the atmosphere. Continuous emission monitors (CEMs) will be installed on the exhaust stack for NO_x, CO and oxygen to assure adherence with the proposed CTG emission limits. The CEM system will generate reports of emissions data in accordance with permit requirements

and will send alarm signals to the plant control room when the level of emissions approaches or exceeds pre-selected limits.

The emergency diesel generator will be operated in the event of utility power interruption and up to 200 hours per year for maintenance and required testing. Add-on controls have not been used in practice for this type of source, due to limited operation of the generator. The “best available control technology” (BACT) includes requiring a turbocharged intercooled/aftercooled engine with positive crankcase ventilation and operation with low-sulfur diesel fuel and restricted hours of operation.

PROJECT OPERATING EMISSIONS

Air emissions will be generated from operating the major project components. **AIR QUALITY Table 5** through **AIR QUALITY Table 8** summarizes the estimated levels of the different criteria pollutants from the turbine and emergency diesel generator. To assess worst-case annual emissions for the turbines and the emergency diesel generator, the following assumptions were made.

- During the first and fourth quarters, each turbine will experience 50 startup/shutdown events and 2,000 hours of operation at 100 percent load.
- During the second and third quarters, each turbine will experience 100 startup/shutdown events and 2,000 hours of operation at 100 percent load.
- Emissions were calculated assuming an annual average temperature of 63°F.
- Turbine is assumed to operate for 8,000 hours per year.
- Maximum hourly and daily emission levels presented in Table 5 are guaranteed by the Applicant, and consider the likely worst-case ambient conditions and one startup.
- The guaranteed emission levels for NO_x, CO and VOC are 3.6 ppm, 6.0 ppm, and 2.0 ppm, respectively, referenced to 15 percent O_2.
- Turbine emissions based on hourly emission rates provided by the manufacturer. PM_{10} emissions include both filterable (front-half) and condensable (back-half) particulates.
- Condensable PM_{10} and SO_2 emissions from the Turbines reflect a maximum sulfur content of 0.25 grains per 100 standard cubic feet.
- Ammonia slip emissions are guaranteed at 10 ppm referenced to 15 percent O_2.
- Diesel generator emissions are based on 24-hours per day (maximum emergency use) and 200 hours per year of operation (maximum non-emergency use).
- SO_2 emissions for the diesel generator are estimated using an emission factor for stationary diesel engines from U.S. EPA AP-42 Section 3.3. These emissions, like those presented for the construction diesel emissions, are overstated by the Applicant by a factor of five and corrected herein.

Actual emissions from the facility will vary depending on electricity demands from California, but will always be less than the emission limits specified by the District and in this assessment.

Air Quality: Table 5
HPP Maximum Hourly and Daily Turbine Emissions
Normal Operations (lbs)

Pollutant	Hourly Emissions Per Turbine	Daily Emissions Per Turbine[a]
NO_x	6.21	150.5
CO	6.25	151.5
PM_{10}	3.3	79.2
SO_2	0.33	7.9
VOC	1.17	28.08
Ammonia	6.25	150

Source: SJVAPCD (SJVAPCD 2001b)
Note(s):
a. Includes one startup.

Two gas turbine operational modes are evaluated to assess maximum, or "worst-case" emissions from the gas turbine: base-load and startup/shutdown modes. Hourly emission rates are calculated from equipment vendor estimates for two load conditions (60 and 100 percent) and at a range of three ambient temperatures (15°F, 63°F, and 115°F, at 92, 60, and 21 percent relative humidity, respectively). These are presented in **AIR QUALITY Table 6**. Emission rates include the effect of ammonia injection, oxidation catalysts, and SCR emission controls.

Air Quality: Table 6
HPP Expected Criteria Pollutant Emission Rates for the Turbine with SCR and Oxidation Catalyst During Normal Operation (pounds per hour, lb/hr)

		Ambient Temperature		
CTG Load	**Pollutant**	**15 °F**	**63 °F**	**115°F**
100%	NO_X	6.21	5.90	5.30
	CO	6.25	2.44	0.80
	PM_{10}	3.3	3.3	3.2
	SO_2	0.32	0.33	0.27
	VOC	1.17	0.33	0.20
60%	NO_X	4.28	4.10	3.78
	CO	4.02	1.64	0.59
	PM_{10}	3.2	3.2	3.2
	SO_2	0.22	0.21	0.19
	VOC	0.72	0.15	0.14

From AFC (GWF 2001a) Table 8.1-14, pg. 8.1-49. Maximum emission rates at 100 percent load and 63°F from FDOC (SJVAPCD 2001a) pages 5-8.

It should be noted that these "expected" emission rates are not guaranteed and are not necessarily reflected in the facility emission limits or emission offset calculations, which are both based on the guaranteed maximum emission levels.

For the emergency diesel generator, emission rates are provided by the applicant and guaranteed by the manufacturer. These are given in **AIR QUALITY Table 7**.

Air Quality: Table 7
HPP Criteria Pollutant Emission Rates
For the Emergency Diesel Generator

Pollutant	Emissions (Total g/hp-hr)	Emissions (Total lb/hr)	Emissions (Total lb/day)
NO_x	5.09	4.45	5.09
CO	1.13	0.99	1.13
PM_{10}	0.13	0.11	0.13
SO_2 [a]	0.171	0.15	0.171
VOC	0.14	0.12	0.14

From FDOC (SJVAPCD 2001a) pages 7 and 11-12.

Note(s):

a. SOx determined from mass balance assuming a sulfur content of 0.05 percent in the diesel fuel.

The annual emission limits for the turbines and emergency engine are shown in **AIR QUALITY Table 8.**

Air Quality: Table 8
HPP Maximum Annual Emissions (lb/year)

Pollutant	Turbines (2)	Emergency Diesel Generator	Total Emissions
NO_x	99,020	891	99,911
CO	43,660	198	43,858
PM_{10}	52,800	23	52,823
SO_2	5,280	30	5,310
VOC	5,688	25	5,713
Ammonia	100,000	--	100,000

From FDOC (SJVAPCD 2001a) pages 11-15.

The emissions listed in **AIR QUALITY Table 8** are the maximum annual permitted emissions. The annual turbine emissions of CO and VOC are based on the expected emissions profile provided in **AIR QUALITY Table 6**, while the NO_x emissions are more closely based on the maximum hourly emissions presented in **AIR QUALITY Table 5**. The actual annual emissions for these pollutants may be considerably lower than the amounts presented above, especially during years when the annual turbine operations are less than the 8,100 hour per year per turbine operation limit.

STARTUP

Expected emission rates for NO_x, CO, SO_2, PM_{10} and VOC during startup and shutdown events are summarized in **AIR QUALITY Table 9**.

Air Quality: Table 9
HPP Criteria Pollutant Emission Rates for the Turbine During Startup and Shutdown

Pollutant	Emissions (Total lb/hr)[a]
NO_x	7.7
CO	7.7
PM_{10}	3.14
SO_2	0.33
VOC	0.68[b]

Note(s):

a. From AFC (GWF 2001a), Table 8.1-15, pg. 8.1-49. Total emissions (per turbine) during an hour assuming 10 minutes of startup emissions added to 50 minutes of baseload operating emissions.

b. From FDOC (SJVAPCD 2001a) pg. 7.

The Applicant has indicated that they may require as many as 100 startups for each turbine in each of the second and third quarters and 50 startups for each turbine in each of the first and fourth quarters.

INITIAL COMMISSIONING

The initial commissioning of a power plant refers to the time frame between the completion of the construction and the reliable production of electricity for sale on the market. For most power plants operating emission limits usually do not apply during the initial commissioning procedures.

Startup and commissioning for the HPP CTGs is estimated to occur over approximately two-weeks from first fire to full load commercial operation. As a worst-case scenario, it is assumed that the HPP will perform startup and commissioning on both of the units in parallel. In reality, however, each CTG will need to be commissioned on a slightly staggered schedule to best utilize on-site personnel and resources.

The owner will minimize emissions of CO, NO_X, and other pollutants by limiting the test time of each commissioning activity to the shortest duration feasible. The NO_X and CO catalyst will be installed at the earliest possible time in the testing cycle, consistent with manufacturer's recommendations.

Prior to initial startup of each CTG, a continuous emissions monitoring (CEM) system will be installed, tested, and calibrated to measure criteria pollutants during startup and commissioning.

The operation of the CTG without abatement will be limited to those commissioning activities whereby the SCR and CO catalyst must not be installed.

The range of commissioning activities for each CTG includes the following: 1) first fire; 2) full speed no load operation; 3) synchronization and load test; 4) synchronization and load incrementally; 5) off-line for loading SCR catalyst; 6) operation with SCR catalyst; 7) final plant tuning; 8) performance test; and 9) reliability run. Fuel consumption data and load conditions for each commissioning event are provided in **AIR QUALITY Table 10**. Fuel flow per commissioning even is tied to load conditions, with first fire and full

speed no load (FSNL) events at zero; synchronization and load testing under variable loads from zero to 100 percent; and after the catalyst bed is loaded, optimization and catalyst/CEM certification is performed from 60 to 100 percent load and final plant tuning, performance testing, and reliability run at 100 percent load.

AIR QUALITY: TABLE 10
Initial Turbine Commissioning Emissions

Commissioning Activities	Calendar Duration (Days)	Firing Duration (Hours)	Fuel Flow (MMBtu/hr, LHV)	Exhaust Flow (1000 lb/hr)	CO	NOx	VOC	NH3
					ppmvd @ 15 percent O2			
First Fire	1	8	90.3	517	204	72	8.8	0
Full Speed, No Load Test	2	16	90.3	517	204	72	8.8	0
Synchronization And Load Test	1	8	90.3 to 398.3	517 to 1,035	48 to 204	50 to 72	1.2 to 8.8	0
Synchronization And Load Incrementally	1	8	90.3 to 398.3	517 to 1,035	48 to 204	50 to 72	1.2 to 8.8	0
Outage – Load SCR Catalyst	3	0	0	0	0	0	0	0
Operation with SCR Catalyst	1	---	274.0 to 398.3	863 to 1,035	6.0	3.6	0.3	10.0
Final Plant Tuning	1	8	274.0 to 398.3	863 to 1,035	6.0	3.6	0.3	10.0
Performance Test	0.5	4	274.0 to 398.3	863 to 1,035	6.0	3.6	0.3	10.0
Reliability Run	0.5	4	274.0 to 398.3	863 to 1,035	6.0	3.6	0.3	10.0

Data Response # 5 (GWF 2001b), Attachment 2.1-7, “Commissioning Emissions Table”.
Note(s):
a. Emission values for NOx and CO provided in the vendor data were doubled.
b. To assess the commissioning impacts for PM10 and SO2, the highest emissions (no catalyst) presented in the AFC for PM10 (front and back catch) and SO2 under 100 percent load conditions (3.0 lb/hr and 0.32 lb/hr, respectively) were assumed.
c. Emissions were modeled with the synchronization/idle exhaust gas flow rate of 517,320 lb/hr at an ambient temperature of 63°F (Case 102).

PROJECT IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AIR QUALITY – Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?		X		
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		X		
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?				X
d. Expose sensitive receptors to substantial pollutant concentrations?		X		
e. Create objectionable odors affecting a substantial number of people?			X	

DISCUSSION OF IMPACTS

A. Air Quality Plan Assessment – Less Than Significant With Mitigation Incorporated

The proposed project is located in an unincorporated portion of Kings County, and is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD, or District). The area is designated as nonattainment for both federal and state ozone and PM_{10} standards. Ozone is classified by federal and state standards as severe nonattainment. PM_{10} is designated as serious nonattainment and nonattainment by federal and state standards, respectively. The area either attains the federal and state standards or cannot be classified for each of the other criteria pollutants (i.e. NO_2, CO and SO_2).

The District is the lead agency for managing air quality and coordinating planning efforts within Kings County portion of the San Joaquin Valley Air Basin so that the ozone and PM_{10} standards are attained in a timely fashion. The District is responsible for developing that portion of the State Implementation Plan (SIP), and the Air Quality Management Plan (AQMP), that deals with certain stationary and area source controls and, in cooperation with the transportation planning agencies (TPAs), the development of transportation control measures (TCMs). The California Air Resources Board (CARB) is responsible for submitting the SIP to U.S. EPA.

The SJVAPCD rules and regulations specify the emissions control and offset requirements for new sources such as the Henrietta Peaker Project. Best Available Control Technology (BACT) will be implemented, and emission reduction credits (ERCs), obtained by the applicant and approved and certified by the SJVAPCD, will fully mitigate project nonattainment pollutant (including precursors) emissions so that they would be consistent with the strategies and future emissions anticipated under the AQMP.

The District issued a Final Determination of Compliance (FDOC) on October 26, 2001 for the Henrietta Peaker Power Plant (SJVAPCD 2001a) and they determined that the project complied with all District Rules and Regulations. The District is currently in the process of making minor adjustments to the hourly and daily emission limits listed in the conditions of the FDOC and will reissue the FDOC sometime in late December.

B. Ambient Air Quality Assessment – Less than Significant With Mitigation Incorporated

The Applicant must demonstrate that the HPP will not cause or contribute to exceeding any State or Federal AAQS. To evaluate the project's potential impacts on the existing ambient air pollutant levels, the Applicant performed an air dispersion modeling analysis, both for construction activities and plant operations. Air dispersion modeling provides estimates of the ground level concentrations of the pollutants emitted by the proposed project.

The Applicant's modeled impacts were then added to the highest recorded ambient concentrations measured during 1998 through 2000 at the available monitoring stations, as shown in **AIR QUALITY Table 3**. Staff compared the results of the modeling analysis with the ambient air quality standards for each respective air contaminant to determine whether the project's emission impacts would cause a new violation of the ambient air quality standards, or contribute to an existing violation.

With the exception of the project's construction and operations PM_{10} emission impacts, the project is not expected to cause any new violations or measurably contribute to any existing violations of any ambient air quality standards. The project's operating emissions are being controlled to the greatest feasible extent and the emissions of all nonattainment pollutants, and their precursors (NO_x, VOC, PM_{10} and SO_2) are being fully offset so that the project's operating emissions balance is a net emission decrease for the air basin. The projects construction PM_{10} emissions are being controlled to the greatest feasible extent and staff is recommending the that the emission offsets be surrendered prior to project construction so that the project's construction emission balance is also a net emission decrease for the air basin.

C. Cumulative Impacts – No Impact

The SJVAPCD has not identified any other sources within a six-mile radius of the HPP that have received construction permits but are not yet operational or that are in the permitting process or that may enter the process. Therefore, there are no cumulative sources to create cumulative impacts and no air quality impact analysis was required for this project.

D. Existing Residential and Sensitive Receptors—Less than Significant with Mitigation Incorporated

Power Plant Site

The site is located in a sparsely populated area in an unincorporated portion of Kings County. The site is located approximately 10 miles southwest of Lemoore, California. The nearest public receptors are workers, residences, and the two neighboring businesses. The nearest residences are approximately 1.25 miles north northeast of the project site. The nearest businesses are the New Star facility located approximately 0.7 miles south of the project site; and the Lemoore Naval Air Station (NAS), which is located approximately one mile north of the facility. There are no schools, hospitals, elderly care facilities, or other special types of air pollution sensitive receptor facilities known to exist within the general vicinity (i.e. within a one mile radius) of the project site. The closest known sensitive receptor is the Empire School located approximately 3.9 miles east of the HPP.

Linear Facilities

The proposed 70-kV transmission line will cross the site to the north and connect with the existing PG&E Henrietta Substation (approximately 550 feet), which is to the north of and contiguous with the project site. This construction will affect the same general population as the main site construction. Water will be supplied from an existing Westlands Water District line via a 16.5-foot long interconnection immediately adjacent to the HPP site on 25th Avenue; again affecting the same general population as the on-site construction activities.

The proposed 12-inch natural gas supply pipeline will cross the site to the south and travel south along 25th Avenue for approximately 2.2 miles connecting to the existing Southern California Gas Company (SoCalGas) Line 800 transmission pipeline, approximately one mile south of the intersection of 25th Avenue and the Avenal Cutoff. This pipeline will be built in a sparsely populated region to the south of the project site. However, a few residences may be located within a quarter-mile of the natural gas pipeline route.

There are no known schools, hospitals, parks, or other sensitive land uses located within one-mile of the proposed offsite transmission, water and natural gas pipeline routes.

Temporary Construction Emissions

The proposed project would generate temporary emissions from constructing the on-site HPP power generating facilities, including the water pipeline and transmission lines, and the associated offsite natural gas pipeline. The modeling analysis indicates that there are no significant impacts expected as a result of the construction's NO_x, SO_x, VOC or CO emissions. However, the PM_{10} emissions from the project's construction activities have the potential to contribute to existing violations of ambient air quality standards. As a result, without mitigation some residential land uses would have the potential to experience short-term adverse air quality impacts. However, the project is being required to conduct extensive construction PM_{10} emissions mitigation to reduce the

impacts from the construction activities, including offsetting the construction emissions to a net negative emission balance. Additionally, there will be no long-term significant air quality impacts from the temporary construction emissions.

Operation Emissions

The proposed project would generate a substantial level of criteria pollutant emissions from operating the 91.4 megawatt (MW) natural gas-fired simple cycle power plant. The modeling analysis indicates that there are no significant impacts expected as a result of the operating NO_x, SO_x, VOC or CO emissions. However, the PM_{10} emissions from the project's operation activities have the potential to marginally contribute (maximum impact at any location is less than 0.3 percent of the 24-hour CAAQS and less than 0.04 percent of the annual CAAQS) to existing violations of ambient air quality standards. However, the project has fully offset all PM_{10} and PM_{10} precursor emissions through the purchase of emission reduction credits. In addition to these emissions being offset, the closest sensitive receptors are located over one-mile from the proposed site and are not located at high elevations. As a result, it is assumed that the criteria pollutant emission generated from this project would not cause any measurable PM_{10} impacts to sensitive receptors.

E. Odor Assessment – No Impact

No impact is anticipated from the operation of the main power facilities, as no significant emissions of odorous compounds will result from the gas turbines or emergency generator exhausts under normal operations. The stack emissions of ammonia will be limited to 10 ppm on a 24-hour basis. There is the potential for somewhat higher short-term ammonia emission concentrations (i.e., concentration spikes) being emitted from the stack, particularly during startup, shutdown or during load swings. However, after dispersion the maximum ammonia concentrations at ground level will be well below the odor threshold. Odors resulting from accidents could occur, please see the Hazardous Material Section for further discussion of the consequence analysis of ammonia storage and handling accidents.

Additionally, no odors are expected from the operation of the zero discharge wastewater treatment system, or any other auxiliary system at the project site.

MODELING APPROACH

The Applicant performed an air dispersion modeling analysis to evaluate the project's potential impacts on the existing ambient air pollutant levels, both during construction and operation. An air dispersion modeling analysis usually starts with a conservative screening level analysis. Screening models use very conservative assumptions, such as the meteorological conditions, which may or may not actually occur in the area. The impacts calculated by screening models, therefore, can be double or more than the actual or expected impacts. If the screening level impacts are significant, a 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.

The applicant has used the U.S. EPA's Industrial Source Complex (ISC) Model, version 00101, to estimate the impacts of the project's estimated NO_X, PM_{10}, CO and SO_X emissions resulting from project construction and operation. The ISC model is a

steady-state Gaussian plume model, appropriate for regulatory use that can be used to assess pollution concentrations from a wide variety of sources associated with an industrial source complex.

For the one-hour construction NO_x modeling the Applicant provided a refined modeling analysis using the ozone limiting method (OLM). This method calculates the maximum NO to NO_2 conversion using ozone concentration files to determine maximum one-hour NO_2 concentrations assuming that 10 percent of the tailpipe NO_x is NO_2 and that there is a 100 percent conversion of NO to NO_2 through a chemical reaction with the ozone. This method is somewhat conservative in that it does not consider mixing or ozone consumption limitations in determining maximum NO_2 concentrations. This is a modeling method accepted by the USEPA and CARB for one-hour NO_2 modeling. In order to use this method the Applicant had to find both representative meteorological data and ozone concentration data. No ozone files could be found to model using the 1968 Lemoore meteorological file. However, the Applicant was able to obtain a meteorological data set from the Fresno Air Terminal for 1993 and 1994, which it modeled using available 1993 and 1994 hourly ozone files.

A description of the modeling analyses are provided in Section 8.1.4.3 of the AFC (GWF 2001a, pages 8.1-25 to –29). The applicant utilized hourly meteorological data collected at Lemoore NAS for the year 1968, as recommended by SJVAPCD.

CONSTRUCTION IMPACTS

The following section discusses the project's short-term direct construction ambient air quality impacts, as estimated by the Applicant and, as necessary, separately estimated by Energy Commission staff.

Applicant Construction Impact Analysis

The Applicant modeled the emissions of the HPP on-site construction activities using the hour-of-day emission factors available in the ISCST3 dispersion model for all averaging periods, except annual. Annual averages were calculated by ISCST3 using annualized emission rates over an entire year. A simplified approach of six surrogate point source stacks for construction equipment emission and a site-wide volume source for fugitive dust modeling was employed. **AIR QUALITY Table 11** provides the results of this modeling analysis.

AIR QUALITY: Table 11
Henrietta Peaker Project Ambient Air Quality Impact
Applicant Construction ISC Modeling Results

Pollutant	Averaging Period	Project Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)[b]	Total Impact ($\mu g/m^3$)	Limiting Standard ($\mu g/m^3$)	Type of Standard	Percent of Standard
NO_2	1-Hour	293 [c]	165	458	470	CAAQS	97
	Annual	29.1	30.2	59.3	100	NAAQS	59
PM_{10}	24-Hour	73.5	146	219.5	50	CAAQS	439
	Annual	5.6	41.9	47.5	30	CAAQS	158
CO	1-Hour	1,475	13,685	15,160	23,000	CAAQS	66
	8-Hour	729	6,528	7,257	10,000	CAAQS	73
SO_2	1-Hour	21[a]	28.8	49.8	655	CAAQS	8
	3-Hour	14[a]	25.9	39.9	1,300	NAAQS	3
	24-Hour	6[a]	16.5	22.5	105	CAAQS	21
	Annual	0.6[a]	8.5	9.1	80	NAAQS	11

From Data Response #1 (GWF 2001b), Attachment 2.1-3, Table 8.1-26 (New).
Note(s):
a. Adjusted to reflect the fuel sulfur correction to 0.05 percent.
b. Adjusted to reflect the highest concentration listed in **AIR QUALITY Table 3.**
c. From Supplemental Data Response #4 (GWF 2001c) based on the Ozone Limiting Method using meteorological data from the Fresno Air Terminal for 1993 and 1994.

As can be seen from the modeling results provided in Table 11, the construction PM_{10} 24-hour and annual impacts significantly exceed the ambient air quality standards and are therefore significant. Additionally, staff is concerned that the potential PM_{10} emissions from the project construction are underestimated as the Applicant's calculations do not fully account for all of the potential fugitive dust generation mechanisms; however, the modeling assumptions used by the Applicant are overly conservative and almost certainly result in an overall overestimation of the project's construction PM_{10} concentrations. An initial modeling run conducted by staff, which adjusted the stack diameter of the point sources to a more reasonable value of four inches and adjusted the initial vertical mixing height of the fugitive dust volume source to a more reasonable value of five meters resulted in the modeled PM_{10} emissions concentrations to drop by more than a factor of two.

The maximum project construction impacts are predicted to occur at the fence line and they decrease significantly with increasing distance from the fence line. Additionally, residential receptors are not present at the fence line so the maximum PM_{10} concentration at the maximum exposed residence will be significantly lower than that shown above. A review of the Applicant's modeling results shows that at a distance of one mile from the site the maximum PM_{10} 24-hour concentration is less than 1/15th the maximum fence line concentration shown in Table 11, and the maximum PM_{10} annual concentration is less than 1/65th the maximum fence line concentration.

OPERATION IMPACTS

The following section discusses the project's direct ambient air quality impacts, as estimated by the Applicant and reviewed and approved by both the District and Energy Commission staff. The applicant performed a number of direct impact modeling

analyses for this project including ambient air quality impact modeling and fumigation modeling.

Operation Modeling Analysis

A refined modeling analysis was performed by the Applicant to identify offsite criteria pollutant impacts from operational emissions of the proposed project. The impact modeling analysis included both maximum operating and startup/shutdown scenarios to determine maximum short-term and annual emission impacts. Hourly emission rates were calculated from equipment vendor estimates for two load conditions (60 and 100 percent) and at a range of three ambient temperatures (15°F, 63°F, and 115°F, at 92, 60, and 21 percent relative humidity, respectively). The annual emissions modeling assumed turbine operation at 100 percent load and an annual average temperature of 63°F for 8,000 hours per year. Startup/shutdown mode, including 300 startups and 300 shutdowns, accounts for an additional 100 hours. The remainder of time is turbine downtime. In the modeling analysis the diesel generator was assumed to operate for 15 minutes per week for reliability confirmation (13 hours/year of operation).

The ISCST3 model (Version 00101) was used for the refined modeling analysis. For this refined modeling analysis, the Applicant conducted a Good Engineering Practice (GEP) stack height analysis using the Building Profile Input Program (BPIP) Version 98086, and downwash effects were modeled for the facility using the ISCST3 model. NAS Lemoore meteorological data from 1968 were obtained from the SJVAPCD for the Henrietta area and used in the modeling analysis.

The Applicant's predicted maximum hourly concentrations of the nonreactive pollutants are summarized in **AIR QUALITY Table 12.**

Air Quality: Table 12
Henrietta Peaker Project Ambient Air Quality Impact
Applicant Routine Plant Operation ISC Modeling Results

Pollutant	Averaging Period	Project Impact ($\mu g/m^3$)[a]	Background ($\mu g/m^3$)[b]	Total Impact ($\mu g/m^3$)	Limiting Standard ($\mu g/m^3$)	Type of Standard	Percent of Standard
NO_2	1-Hour	73.0	165	238	470	CAAQS	51
	Annual	0.02	30.2	0.2	100	NAAQS	30
PM_{10}	24-Hour	0.14	146	**146**	50	CAAQS	**292**
	Annual	0.01	41.9	**41.9**	30	CAAQS	**140**
CO	1-Hour	16.2	13,685	13,701	23,000	CAAQS	60
	8-Hour	1.17	6,528	6,529	10,000	CAAQS	65
SO_2	1-Hour	11.7	28.8	40.5	655	CAAQS	6
	3-Hour	3.26	25.9	29.2	1,300	NAAQS	2
	24-Hour	0.09	16.5	16.6	105	CAAQS	16
	Annual	<0.01	8.5	8.5	80	NAAQS	11

From AFC (GWF 2001a), Table 8.1-19, page. 8.1-52.
Note(s):
a. Worst-case impact for applicable averaging time.
b. Adjusted to reflect the highest concentration listed in **AIR QUALITY Table 3.**

The Applicant's modeling results indicate that the project's operational impacts would not create violations of NO_2, SO_2 or CO standards, but could further exacerbate

violations of the PM_{10} standards. In light of the existing PM_{10} non-attainment status for the project site area, the modeled impacts are considered to be significant.

The Applicant modeled the initial commissioning based on the information provided in **AIR QUALITY Table 10**, assuming both CTGs being commissioned at the same time, with short-term emission estimates that reflect higher commissioning emission rates. The modeling analysis performed incorporates maximum emissions for all averaging times for each criteria pollutant modeled. The commissioning modeling results are provided in **AIR QUALITY Table 13**.

AIR QUALITY: TABLE 13
Commissioning Modeling Analysis Results

Pollutant	Averaging Period	Project Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)[a]	Total Impact ($\mu g/m^3$)	Limiting Standard ($\mu g/m^3$)	Type of Standard	Percent of Standard
NO_2	1-Hour	27.07	165	192	470	CAAQS	41
CO	1-Hour	45.81	13,685	13,731	23,000	CAAQS	60
	8-Hour	15.9	6,528	6,539	10,000	CAAQS	65
PM_{10}	24-Hour	0.28	146	**146**	50	CAAQS	**293**
SO_2	1-Hour	0.33	28.8	29.1	655	CAAQS	4
	3-Hour	0.26	25.9	26.2	1,300	NAAQS	2
	24-Hour	0.030	16.5	16.5	105	CAAQS	16

Data Response # 5 (GWF 2001b), Attachment 2.1-9, Table 8.1-29 (New), "Commissioning Modeling Results".
Note(s):
a. Adjusted to reflect the highest concentration listed in **AIR QUALITY Table 3.**

As can be seen from the modeling results provided in Table 13, the commissioning PM_{10} 24-hour impacts significantly exceed the ambient air quality standard and is therefore significant.

Fumigation Modeling Impact Analysis

There is the potential that higher short-term concentrations may occur during fumigation conditions that are caused by the rapid mixing of the plume to ground level. Fumigation conditions are generally only compared to one-hour standards. The applicant analyzed the air quality impacts under fumigation conditions from the project turbine using the SCREEN3 model (Version 96043). The results of the analysis, as shown in **AIR QUALITY Table 14**, indicate that the fumigation impacts would not exceed applicable 1-hour AAQS.

Air Quality: Table 14
Maximum 1-Hour HPP Fumigation Impacts

Pollutant	Maximum Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)[a]	Total ($\mu g/m^3$)	Standard ($\mu g/m^3$)	Standard
CO	1.02	13,685	13,686	23,000	CAAQS
NO_2	1.02	165	166	470	CAAQS
SO_2	0.044	28.8	28.8	655	CAAQS

From AFC (GWF 2001a), Table 8.1-20, page. 8.1-53.
Note(s):
a. Adjusted to reflect the highest concentration listed in **AIR QUALITY Table 3.**

Secondary Pollutant Impacts

The project's gaseous emissions of NO_x, SO_2, VOC and ammonia can contribute to the formation of secondary pollutants, ozone and PM_{10}. There are air dispersion models that 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 modeling to determine ozone impacts. There are no regulatory agency models approved for assessing single source ozone impacts. However, because of the known relationship of NO_x and VOC emissions to ozone formation, it can be said that the emissions of NO_x and VOC from the HPP do have the potential, if left unmitigated to contribute to higher ozone levels in the region.

Secondary PM_{10} formation is the process of conversion from gaseous reactants to particulate products. The process of gas-to-particulate conversion is complex and depends on many factors, including local humidity and the presence of other compounds. Currently, there are no agency (EPA or CARB) recommended models or procedures for estimating nitrate or sulfate formation. However, because of the known relationship of NO_x and SO_2 emissions to secondary PM_{10} formation, it can be said that the emissions of NO_x and SO_2 from the HPP do have the potential, if left unmitigated to contribute to higher PM_{10} levels in the region.

Since the project is proposing to fully mitigate all NO_x, VOC, and SO_2 emissions the project will mitigate its secondary pollutant formation impacts from those pollutants.

The ammonia emission from the project are due to the existence of the SCR system which controls the NO_x emissions, and are the result of unreacted ammonia or "ammonia slip" that remains in the exhaust after passing through the SCR catalyst system. While the ammonia emissions are recognized as a necessary by-product of the NO_x control system, staff still encourages the Applicant to control their ammonia slip emissions to the lowest possible extent, while maintaining the guaranteed NO_x emission limit.

VISIBILITY IMPACTS

A visibility analysis of the project's gaseous emissions is required under the Federal Prevention of Significant Deterioration (PSD) permitting program. The HPP project is not subject to PSD permitting, because it does not trigger the emission limits for such a review, so no visibility analysis was completed for this project. The nearest Class I area, Sequoia National Park is more than 50 miles from the project site and is not in the primary wind direction from the project site. Due to the distance to Class I areas, and the fact that this project is not a major stationary source the project's visibility impacts on Class 1 areas are considered insignificant.

MITIGATION

Construction Mitigation

As described in the applicable LORS section, District Regulation VIII rules limit fugitive dust during the construction phase of a project. Staff will recommend that construction emission impacts be mitigated to the greatest extent feasible include all feasible

measures from the LORS, as well as, other measures considered necessary by staff to fully mitigate the construction emissions.

Applicant's Proposed Mitigation

In the AFC (GWF 2001a) the Applicant has proposed two construction mitigation measures. The Applicant has proposed to provide and employ a Construction Fugitive Dust Mitigation Plan that will need to be approved by the Energy Commission prior to initiating construction. Additionally, the Applicant has proposed to use fugitive dust suppression with water to mitigate construction-related emissions.

The Applicant is not currently proposing to use engine emission mitigation measures, such as ensuring all heavy duty construction vehicle engines are tuned to the manufacturer's specifications; use Catalyzed Diesel Particulate Filters (CDPF); use Ultra Low Sulfur Diesel fuel, with a sulfur content of 15 ppm or less (ULSD); or have Diesel engines certified to EPA and CARB 1996 or newer off-road equipment emission standards.

Staff Proposed Mitigation

Staff is recommending Conditions of Certification **AQ-C1** and **AQ-C2** that require all feasible construction PM_{10} emission mitigation measures be used, including those proposed by the Applicant.

The PM_{10} construction emissions can also be partially mitigated by the emission reduction credits (ERCs) that the Applicant has acquired for the operation phase of the project. Staff recommends, in Condition of Certification **AQ-C3**, as an additional construction mitigation, that the project's operating phase emission reduction credits be surrendered prior to the initiation of construction.

Operations Mitigation

Applicant's Proposed Mitigation

Emission Controls

As discussed in the project description section, for the CTGs the Applicant will employ Best Available Control Technology (BACT) in the form of dry low NO_x (DLN) combustors, SCR with ammonia injection, an oxidation catalyst, and operate exclusively on pipeline quality natural gas to limit the project's emission levels. The following BACT emission rates are guaranteed for each CTG during normal operation:

- NO_x: Emissions # 3.6 ppmvd @ 15 percent O_2 and 6.21 lb/hr (3-hr rolling average)
- CO: Emissions # 6.0 ppmvd @ 15 percent O_2 and 6.25 lb/hr (3-hr rolling average)
- VOC: Emissions # 2.0 ppmvd @ 15 percent O_2 and 1.17 lb/hr (3-hr rolling average)
- PM_{10}: Emissions # 3.3 lb/hr

- SO_x: Emissions # 0.33 lb/hr
- NH3: Emissions # 10 ppmvd @ 15 percent O_2 (24-hour rolling average)

Additionally, the emergency diesel generator will have to meet SJVAPCD BACT requirements. SJVAPCD provides the following BACT control technology or emission limits for the emergency engine:

- NOx: Turbocharger and intercooler/aftercooler emissions # 5.09 g/bhp-hr (grams per engine brake horsepower hour)
- VOC: Positive Crankcase Ventilation (PCV)
- PM_{10}: Emissions # 0.13 g/hp-hr
- SO_x: Only CARB-certified diesel fuel with 0.05 percent sulfur by weight or very low sulfur diesel fuel (15 ppmv or less) where available.

Emission Offsets

To fully mitigate the maximum project emissions, offsets (mitigation) are required for NO_x, PM_{10}, VOC and SO_2. District Rule 2201 requires that the Applicant provide emission offsets, in the form of banked ERCs, for the project's emissions of NO_x and PM10. For CEQA compliance, the Energy Commission requires that all non-attainment pollutants and their precursors that do not require offsets by District regulation be mitigated at a minimum 1:1 ratio (i.e. for HPP such pollutants are VOC and SO_2). The Applicant intends to provide offsets for the HPP VOC and SO_2 emissions using the District's distance offset ratio formula as an additional air quality benefit of the project. **AIR QUALITY Table 15** shows the Applicant's estimate of the emission liabilities that need to be mitigated.

AIR QUALITY: Table 15
HPP Annual Emission Liability (lb/year)

	NO_x	VOC	PM_{10}	SO_2	CO
Turbine Emissions (2) [a]	**99,020**	5,688	**52,800**	5,280	43,660
District Offset Threshold	20,000	20,000	29,200	54,750	200,000
District Offset Liability	79,020	--	23,600	--	--
Applicants Offset Proposal	79,020	5,688	52,800	5,280	--

FDOC (SJVAPCD 2001a) Section VII, pages 9-11 and 19-23.
Note(s):
a. The maximum annual emission is the sum of the maximum quarterly potential to emit (PE). The maximum emissions from each CTG during the first and fourth quarters will occur when each unit undergoes fifty (50) startup/shutdown events and 2,000 hours of operation at 100 percent load. The maximum emissions from each CTG during the second and third quarters will occur when each unit undergoes one hundred (100) startup/shutdown events and 2,000 hours of operation at 100 percent load.

Emergency equipment that is used exclusively as emergency standby equipment for electrical power generation, or any other emergency equipment as approved by the APCO that does not operate more than 200 hours per year for non-emergency purposes and is not pursuant to voluntary arrangements with a power supplier to curtail power, is exempt by District rules from providing emission offsets. The emergency engine emissions are minor and are within the safety margin that the Applicant is using to determine their emission offset requirements. A minimum offset ratio of greater than 1:1 is proposed for all non-attainment pollutants and their precursors.

All air pollutant offsets provided for the project are estimated on a quarterly basis. The Applicant is proposing several sources of offsets to mitigate the project's potential emissions. Calculations of the required ERCs are based on the distance of the project from different sources of offsets. The District requires a 1.2:1 offsetting ratio for offsite ERCs within 15 miles. For areas outside of the 15 miles, ERCs must be provided at a ratio of 1.5:1. The District determines appropriate interpollutant offset ratios on a case-by-case basis. As shown in **AIR QUALITY Table 16** through **AIR QUALITY Table 19**, the Applicant has demonstrated that they have purchased, or have the rights to purchase, ERCs in quantities that are sufficient to offset the project.

NO_X Emission Offsets

AIR QUALITY Table 16 provides a summary of the total project NO_X emissions and identifies the project offset sources. ERCs C-410-2, C-411-2, C-412-2 were generated by the shutdown of major stationary sources and may only be used in accordance with the New and Modified Stationary Source Review Rule in effect at the time of use. ERC S-1615-2 was generated from the retrofit of thirty one (31) engines with precombustion chambers.

AIR QUALITY: Table 16
NO_X Offsets Available for the Henrietta Peaker Project

Offset Source Location	Type of Credit	Credit Number	Total Q1 (lb)	Total Q2 (lb)	Total Q3 (lb)	Total Q4 (lb)
525 W. Third St. in Hanford	ERCs	C-410-2	22,510	0	0	5,708
Value @ 1.5:1			**15,006.7**	**0**	**0**	**3,805.3**
525 W. Third St. in Hanford	ERCs	C-411-2	5,205	4,562	4,562	7,991
Value @ 1.5:1			**3,470**	**3,041.3**	**3,041.3**	**5,327.3**
525 W. Third St. in Hanford	ERCs	C-412-2	0	0	0	1,915
Value @ 1.5:1			**0**	**0**	**0**	**1,276.7**
Elk Hills, Section: 35 Township: 30S Range: 23E	ERCs	S-1615-2	20,012	39,890	40,329	40,329
Value @ 1.5:1			**13,341.3**	**26,593.3**	**26,886**	**26,886**
Total Adjusted Offsets Available	---	---	**31,818**	**29,634.6**	**29,927.3**	**37,295.3**
Total Required [a]	---	---	19,370	20,140	20,140	19,370
Difference	---	---	12,448	9,494.7	9,787.3	17,925.3
Balance Remaining on S-1615-2 (adjusted for 1.5:1 ratio)	---	---	**18,672**	**14,242**	**14,681**	**26,888**

From Data Response #8 and #9 (GWF 2001b), Revised Attachment 2.1-11.
Note(s):
a. Total Required per Quarter = (Annual Emissions – Offset) / 4 Quarters = (99,020 - 20,000) / 4 = 19,755, which is adjusted for seasonal fluctuation to the values shown above.

The Applicant has fully offset the proposed project NO_X emissions and is in compliance with the offset provisions of District Rule 2201. In addition, even thought the Applicant is applying the District offset threshold to reduce their District required offset burden for NO_X emissions (by 5,000 lbs/quarter), the total amount of ERCs provided for use as offsets is 118,530 lbs, which is well above a minimum ratio of 1:1 for this project (99,911 lbs/year NO_X emission limit).

PM_{10} Emission Offsets

AIR QUALITY Table 17 provides a summary of the total project PM_{10} emissions and identifies the project offset sources. The Applicant is proposing a mixture of direct PM_{10} ERCs and SO_2 ERCs to offset the project's PM_{10} emissions. The Applicant provided, and the District accepted, a study indicating that in the area of the project site an interpollutant offset ratio of 1.4:1 SO_2 to PM_{10} was appropriate. The final offset ratio is determined by the addition of the distance offset ratio to determine the final offset ratio. ERCs C-445-5, C-442-5 and C-413-5 are SO_2 emission credits generated by the shutdown of major stationary sources and may only be used in accordance with the New and Modified Stationary Source Review Rule in effect at the time of use. The final offset ratio for these SO_2 ERC is 1.4:1 plus their appropriate distance ratio of 1.5:1, or a total of 1.9:1. ERC C-0366-4 are PM_{10} credits generated from the shutdown of an entire stationary source.

AIR QUALITY: Table 17
PM_{10} Offsets Available for the Henrietta Peaker Project

Offset Source Location	Type of Credit	Credit Number	Total Q1 (lb)	Total Q2 (lb)	Total Q3 (lb)	Total Q4 (lb)
710 Bainum Ave. in Corcoran	ERCs	C-0366-4	5,699	5,087	7,081	6,732
Value @ 1.5:1			**3,799.3**	**3,391.3**	**4,720.7**	**4,488**
525 W. Third St. in Hanford[a]	ERCs	C-445-5	21,101	10,814	6,298	14,572
Value @ 1.9:1			**11,105.8**	**5,691.6**	**3,314.7**	**7,669.5**
525 W. Third St. in Hanford[a]	ERCs	C-442-5	6,832.6	0	0	6,466.6
Value @ 1.9:1			**3,596.1**	**0**	**0**	**3,403.5**
525 W. Third St. in Hanford[a]	ERCs	C-413-5	10,000	10,000	10,000	10,000
Value @ 1.9:1			**5,263.2**	**5,263.2**	**5,263.2**	**5,263.2**
Total Adjusted Offsets Available	---	---	**23,764.4**	**14,346.1**	**13,298.6**	**20,824.1**
Total Required [b]	---	---	13,200	13,200	13,200	13,200
Difference	---	---	10,564.4	1,146.1	98.6	7,624.1
Balance Remaining on C-445-5 (adjusted for 1.9:1 ratio)	---	---	**3,239.7**	**0**	**0**	**6,424.5**
Balance Remaining on C-442-5 (adjusted for 1.9:1 ratio)	---	---	**6,832.6**	**0**	**0**	**4,485.9**
Balance Remaining on C-413-5 (adjusted for 1.9:1 ratio)	---	---	**10,000**	**2,177.5**	**187.3**	**10,000**

From Data Response #8 and #9 (GWF 2001b) Revised Attachment 2.1-11.
Note(s):
a. Since this ERC certificate is for SO_x emissions, an interpollutant offset ratio of 1.4 pounds of SO_x per 1.0 pounds of PM_{10} is required. Since the location of these reductions occurred greater than 15 miles from the proposed location, an additional distance ratio of 1.5:1 will be applied pursuant to District Rule 2201, section 4.2.4. Therefore, the total adjustment ratio is (1.4:1)+(1.5:1) = 1.9:1.
b. Total Required per Quarter = (Annual Emissions) / 4 Quarters = (52,800) / 4 = 13,200.

The Applicant has fully offset the proposed project PM_{10} emissions and is in compliance with the offset provisions of District Rule 2201.

VOC Emission Offsets

AIR QUALITY Table 18 provides a summary of the total project VOC emissions and identifies the project offset sources. ERC S-1673-1 was generated from the shutdown an entire stationary source.

AIR QUALITY: Table 18
VOC Offsets Available for the Henrietta Peaker Project

Offset Source Location	Type of Credit	Credit Number	Total Q1 (lb)	Total Q2 (lb)	Total Q3 (lb)	Total Q4 (lb)
20807 Stockdale Hwy, Bakersfield	ERCs	S-1673-1	2,728	2,626	2,626	2,728
Value @ 1.5:1			**1,818.7**	**1,750.7**	**1,750.7**	**1,818.7**
Total Provided	---	---	**1,818.7**	**1,750.7**	**1,750.7**	**1,818.7**
Total Required [a]	---	---	1,388	1,456	1,456	1,388
Difference	---	---	430.7	294.7	294.7	430.7
Balance Remaining on S-1538-1 (adjusted for 1.5:1 ratio)	---	---	**646**	**442**	**442**	**646**

From Supplemental Data Response #8 and #9 (GWF 2001c), Revised Attachment 2.1-11.
Note(s):
a. Total Required per Quarter = (Annual Emissions) / 4 Quarters = (5,688) / 4 = 1,422, which is adjusted for seasonal fluctuation to the values shown above.

VOC emission offsets are not required by District Rule 2201 for this project. However, VOC emissions are a precursor to ozone, which is a nonattainment pollutant at the project site area. For CEQA compliance, the Energy Commission requires that all non-attainment pollutants and their precursors that do not require offsets by District regulation be mitigated at a minimum 1:1 ratio. The Applicant intends to provide offsets for the HPP VOC emissions using the District's distance offset ratio formula as an additional air quality benefit of the project.

SO_2 Emission Offsets

AIR QUALITY Table 19 provides a summary of the total project SO_2 emissions and identifies the project offset sources. ERC C-392-5 was generated from the shutdown of a major stationary source

AIR QUALITY: Table 19
SO_2 Offsets Available for the Henrietta Peaker Project

Offset Source Location	Type of Credit	Credit Number	Total Q1 (lb)	Total Q2 (lb)	Total Q3 (lb)	Total Q4 (lb)
525 W. Third St. in Hanford	ERCs	C-392-5	2,500	2,500	2,500	2,500
Value @ 1.5:1			**1,666.7**	**1,666.7**	**1,666.7**	**1,666.7**
Total Provided	---	---	**1,666.7**	**1,666.7**	**1,666.7**	**1,666.7**
Total Required [a]	---	---	1,320	1,320	1,320	1,320
Difference	---	---	346.7	346.7	346.7	346.7
Balance Remaining on C-392-5 (adjusted for 1.5:1 ratio)	---	---	**520**	**520**	**520**	**520**

From Data Response #8 and #9 (GWF 2001b), Revised Attachment 2.1-11.
Note(s):
a. Total Required per Quarter = (Annual Emissions / 4 Quarters) = (5,280) / 4 = 1,320.
* A zero balance means full mitigation, a negative balance indicates an offsets deficit, and a positive balance indicates offsets are available in excess of required offset levels. Please note that the offset balance is not the same as the ERC balance.

SO_2 emission offsets are not required by District Rule 2201 for this project. However, SO_2 emissions are a precursor to PM_{10}, which is a nonattainment pollutant at the project site area. For CEQA compliance, the Energy Commission requires that all non-attainment pollutants and their precursors that do not require offsets by District regulation be mitigated at a minimum 1:1 ratio. The Applicant intends to provide offsets for the HPP SO_2 emissions using the District's distance offset ratio formula as an additional air quality benefit of the project.

Staff Proposed Mitigation

Staff concurs with the Applicant's and the District's determination that the project's proposed emission controls meet BACT requirements. The Applicant has fully offset the project. While NO_x offset thresholds have been subtracted from the offset liability, thereby lowering the offset requirements, the total NO_x offsets provided are in compliance with District rules and meet a minimum offset ratio of 1:1. Therefore, staff considers the Applicant's proposed mitigation sufficient to mitigate the project's operation impacts to less than significant.

The limits and requirements of these mitigation measures are provided in staff's recommended Conditions of Certification AQ-C3 and AQ-1 through AQ-56.

Adequacy of Mitigation

The Applicant's proposed mitigation measures, plus staff's additional proposed mitigation measures, as recommended in Conditions of Certification AQ-C1 through AQ-C3 and AQ-1 through AQ-56 are considered to be adequate to mitigate all significant project impacts to less than significant.

CUMULATIVE IMPACTS

A review of District records indicates that there are no new permitted projects or proposed projects being permitted with any non-VOC emissions potential of greater than five tons per year within six miles of the project site (URS 2001a, Attachment 2.1-8). These are the types of projects that would have the potential to contribute to cumulative impacts. While there are two other known large power plant projects

proposed within 30 miles of the HPP, no significant overlap of the emission plumes from these widely spaced projects would be expected. Therefore, no cumulative modeling analysis was required and no significant cumulative impacts are expected as a result of this project in combination with other known projects.

ENVIRONMENTAL JUSTICE

Staff has reviewed Census 2000 information that shows the minority population is greater than fifty percent within a six-mile radius of the proposed Henrietta Peaker Project (please refer to Socioeconomics Figure 1 in this Staff Analysis), and Census 1990 information that shows the low-income population is less than fifty percent within the same radius. The census tract information indicates that there is no population located within one mile of the project site, while there is one census block located within two miles of the site with a minority population. This single minority census block is located approximately 1.5 miles north northeast of the project site on the Lemoore NAS.

The Applicant's modeling results indicate that during construction and operation ambient air quality standards for CO, SO_2, and NO_2 will not be violated in any area including areas with predominately minority populations. Currently, the site area is in nonattainment of the state PM_{10} standard. Therefore, the unmitigated PM_{10} impacts from the project are significant. However, the Applicant will fully mitigate these impacts through the use of emission controls and emission offsets to less than significant. Therefore, no significant impacts to minority populations are expected to occur.

COMPLIANCE WITH LORS

The San Joaquin Valley Air Pollution Control District submitted a Final Determination of Compliance (FDOC) for the HPP project on October 26, 2001 (SJVAPCD 2001a). Compliance with all District Rules and Regulations was demonstrated in the FDOC. An error in the short-term emission limits was made in the FDOC and as requested by the Applicant, it is currently being corrected by the District. This error does not affect the findings of compliance. The language of the District conditions are presented in the "conditions of certification." If additional changes are made to the District's conditions they will be provided in an addendum to the Staff Assessment.

FEDERAL

Compliance with the applicable federal Clean Air Act regulations for the HPP project was demonstrated in the FDOC presented in the District's FDOC (SJVAPCD 2001a).

STATE

Compliance with Section 41700 of the California State Health and Safety Code is demonstrated by the compliance demonstration in the FDOC presented in the District's FDOC (SJVAPCD 2001a) and staff's affirmative finding for this project.

LOCAL

Rule 1080 – Stack Monitoring

The compliance with this rule is provided for in the conditions of certification.

Rule 1081 – Source Sampling

The compliance with this rule is provided for in the conditions of certification.

Rule 2010 – Permits Required

By the submission of an AFC and an ATC application, GWF Energy LLC is complying with the requirements of the rule. The FDOC has been completed and the final permit will be issued upon Energy Commission certification of this project.

Rule 2201 – New and Modified Stationary Source Review Rule

Section 4.1 – Best Available Control Technology

As shown in the FDOC and as shown above the Applicant's control technology proposal meets the Best Available Control Technology requirements of this rule.

Section 4.2 – Offsets

As shown in the FDOC and as shown above the Applicant's offset mitigation proposal meets the requirements of this rule.

Rule 2520 – Federally Mandated Operating Permits

HPP will be required to file for a Title V operating permit within 12 months of commencing operation. This requirement is also provided as Condition of Certification **AQ-39**.

Rule 2540 – Acid Rain Program

HPP will be required to file for a Title IV Acid Rain operating permit to comply with this regulation. This requirement is also provided as Condition of Certification **AQ-40** and staff is recommending in the verification for this condition that the Title IV permit and necessary pollutant allotments be obtained prior to first fire of the turbines.

Rule 4001 – New Source Performance Standards

The project's emission limits, which are listed in the conditions of certification are significantly lower the limits required by the applicable New Source Performance Standard (Title 40, Code of Federal Regulations, Part 60, Chapter 1, Subpart GG).

Rule 4101 – Visible Emissions

The use of pipeline quality natural gas, proper combustion techniques and the PM_{10} BACT limits for the turbines and emergency engine will guarantee that the visible emissions from the stacks are well less No. 1 on the Ringelmann chart (20 percent opacity) for more than three minutes in any one hour.

Rule 4102 – Nuisance

The use of pipeline quality natural gas, proper combustion techniques, and the ammonia slip limit of 10 ppm @ 15 percentO_2 will ensure the project's emission will not in any way cause a public nuisance.

Rule 4201 – Particulate Matter Concentration

The BACT PM_{10} emission limits for the turbines and emergency engine will ensure that their respective particulate matter emissions are well below this rules emission limit of 0.1 grain per dry standard cubic foot of exhaust gas.

Rule 4202 – Particulate Matter Emission Rate

Gas and liquid fuels are excluded from the definition of process weight. Therefore, Rule 4202 does not apply to the proposed units.

Rule 4301 – Fuel Burning Equipment

The proposed combustion turbines are exempt from this rule because they produce power primarily through the mechanical turning of the turbine blades.

Rule 4701 – Stationary Internal Combustion Engines

Since the emergency diesel generator proposed for this project will be limited to less than 200 hours per year of non-emergency operation, it is exempt from this rule.

Rule 4703 – Stationary Gas Turbines

The conditions of certification taken from the FDOC include the required monitoring and record keeping requirements of this rule. The project's emission concentrations for NO_x and CO are guaranteed to be below the rule limit requirements of 9 ppm and 200 ppm, respectively.

Rule 4801 – SO_2 Concentration

The use of pipeline quality natural gas will guarantee that the emissions of sulfur compounds are no greater than 0.2 percent by volume calculated as SO_2 on a dry basis.

Regulation VIII - Fugitive PM-10 Prohibitions

Rule 8010 – Fugitive Dust Administrative Requirements for Control of Fine Particulate Matter (PM-10); Rule 8011 – General Requirements; Rule 8020 – Fugitive Dust Requirements for Control of Fine Particulate Matter (PM-10) from Construction, Demolition, Excavation, and Extraction Activities; Rule 8021 – Construction, Demolition, Excavation, Extraction and Other Earthmoving Activities; Rule 8030 – Control of PM-10 from Handling and Storage of Bulk Materials; Rule 8031 – Bulk Materials; Rule 8041 – Carryout and Trackout; Rule 8051 – Open Areas; Rule 8060 – Control of PM-10 from Paved and Unpaved Roads; Rule 8061 – Paved and Unpaved Roads; Rule 8070 – Fugitive Dust Requirements for Control of Fine Particulate Matter (PM-10) from Vehicle and/or Equipment Parking, Shipping, Receiving, Transfer, Fueling and Service Areas; Rule 8071 – Unpaved Vehicle/Equipment Traffic Areas; Rule 8081 – Agricultural Sources

Staff proposed Condition of Certification **AQ-C1** and Conditions of Certification **AQ-42** through **AQ-46**, taken from the FDOC, require that the project owner provide a Construction Fugitive Dust Mitigation Plan to be approved prior to construction and require compliance with all appropriate Regulation VIII rules. It should be noted that Rules 8011, 8021, 8031, 8041, 8051, 8061, 8071 and 8081 do not take effect until May 15, 2002. Since the construction schedule of the HPP will overlap the starting date of these new fugitive dust regulations, the HPP Construction Fugitive Dust Mitigation Plan,

as required under condition of certification **AQ-C1**, must address these newly adopted rules.

FACILITY CLOSURE

The HPP has a planned life of 30 years or more. Eventually the HPP 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, then all sources of air emissions would cease and thus all impacts associated with those emissions would no longer occur.

During the operating life of the facility, temporary facility closure may be required and permanent facility closure will eventually be required. Temporary closure constitutes an unexpected shutdown for a period exceeding the time required for normal maintenance (e.g., for overhaul or replacement of combustion turbines). Cause for temporary closure might include a disruption in the supply of natural gas or damage to the plant from an earthquake, fire, storm, or other event. Permanent closure constitutes a complete cessation in operations with no intent to restart operations, owing to plant age, damage to the plant that is beyond repair, economic conditions, or other reasons.

The Permit to Operate, issued by the District, is required for operation of the facility and the applicant must pay permit fees annually while it maintains the Permit to Operate. 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 pays the fees to renew the Permit to Operate.

When permanent closure occurs and if it were decided to dismantle the project's equipment and structures, there would likely be fugitive dust emissions associated with this dismantling effort. The Facility Closure Plan to be submitted to the Energy Commission Compliance Project Manager should include the specific details regarding how the Applicant plans to demonstrate compliance with the District Rules (i.e. Regulation VIII requirements) regarding fugitive dust emission mitigation.

RESPONSE TO PUBLIC AND AGENCY COMMENTS

No written comments concerning air quality have been received from either the public or from any public agency. The response to any comments received upon publication of this Staff Assessment will be incorporated in an addendum to the Staff Assessment.

CONCLUSIONS AND RECOMMENDATIONS

The HPP, with the implementation of the measures contained in the conditions of certification specified below, will not, either alone or in combination with other identified projects in the area, cause or contribute to any new or existing violations of applicable ambient air quality standards. The HPP emissions of NO_x, SO_2 and CO will not cause a violation from any NO_2, SO_2 or CO ambient air quality standard, and, therefore, their impacts are not significant. The project's air quality impacts from directly emitted PM_{10} and of the ozone precursor emissions of NO_x and VOC and PM_{10} precursors of NO_x and

SO_2 could be significant if left unmitigated. The applicant will reduce emissions to the extent feasible by using Best Available Control Technology, and provide emission offsets, obtained from stationary sources in the San Joaquin Valley Air Basin, for their NO_x, PM_{10}, VOC and SO_2 emissions. This combination of mitigation measures will reduce the potential for directly emitted PM_{10}, as well as ozone and secondary PM_{10} formation to a level of insignificance.

Additionally, with the implementation of the conditions of certification, the HPP will be constructed and operated in compliance with all applicable laws, ordinances, regulations, and standards identified previously in this Assessment. We therefore conclude that the HPP will not create any significant direct or indirect adverse air quality impacts.

The District completed their FDOC on October 26, 2001 (SJVAPCD 2001a). The Energy Commission staff has incorporated the FDOC conditions into the SA. The District is currently revising the FDOC to correct errors in the short-term emissions limits presented in the engineering evaluation and in the FDOC conditions. Staff has incorporated the District's draft revised conditions in this staff assessment and, if necessary, will provide any further revisions when the FDOC is finalized. However, staff does not expect any additional changes to the FDOC or the Staff Assessment. The District recommended conditions are presented here as conditions **AQ-1** through **AQ-56**. Staff also recommends the inclusion of three conditions of certification **AQ-C1** and **AQ-C2** to address the construction-related impacts.

If the Energy Commission certifies this project based upon these findings, staff recommends the adoption of the following proposed conditions of certification.

CONDITIONS OF CERTIFICATION

STAFF CONDITIONS

AQ-C1 Prior to breaking ground at the project site, the project owner shall prepare a Construction Fugitive Dust Mitigation Plan that will specifically identify fugitive dust mitigation measures that will be employed for construction activities at the Henrietta Peaker Project site and related facilities.

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

- the identification of the employee parking area(s) and surface of the parking area(s);
- the frequency of watering of unpaved roads and disturbed areas;
- the application of chemical dust suppressants;
- the use of gravel in high traffic areas;
- the use of paved access aprons;
- the use of sandbags to prevent run off;
- the use of posted speed limit signs limiting speed to 10 MPH;
- the use of wheel washing areas prior to large trucks leaving the project site;
- the methods that will be used to clean tracked-out mud and dirt from the project site onto public roads;
- the use of windbreaks at appropriate locations;
- the suspension of all earth moving activities under windy conditions; and
- the use of on-site monitoring devices.

Verification: At least sixty (60) days prior to breaking ground at the project site, the project owner shall provide the California Energy Commission Compliance Project Manager (CPM) with a copy of the Construction Fugitive Dust Mitigation Plan for approval.

AQ-C2 The project owner shall mitigate, to the extent practical, construction related emission impacts from off-road, diesel-fired construction equipment. Available measures that may be used to mitigate construction impacts include the following:

1. catalyzed diesel particulate filters (CDPF);

2. ultra-low-sulfur diesel fuel, with a sulfur content of 15 ppm or less(ULSD); or

3. diesel engines certified to EPA and CARB 1996 or newer off-road equipment emission standards.

Additionally, the project owner shall restrict idle time, to the extent practical, to no more than 10 minutes.

The use of each mitigation measure is to be determined in advance by a Construction Mitigation Manager (CMM), who will be available at the project site(s). The CMM must be approved by the CPM prior to the submission of any reports.

The CMM shall submit the following reports to the CPM for approval:

1. Construction Mitigation Plan

2. Reports of Change and Mitigation Implementation

3. Reports of Emergency Termination of Mitigation, as necessary

Diesel Construction Equipment Mitigation Plan

The Construction Mitigation Plan shall be submitted to the CPM for approval prior to rough grading on the project site, and must include the following:

1. A list of all diesel fueled, off-road, stationary or portable construction-related equipment to be used either on the project construction site or the construction sites of the related linear facilities. Equipment used less than a total of 10 consecutive days need not be included in this list.

2. Each piece of construction equipment listed under item (1) must demonstrate compliance with the following mitigation requirements:

Engine Size (BHP)	**1996 CARB or EPA Certified Engine**	**Required Mitigation**
< or =100	Yes or No	ULSD
>100	Yes	ULSD
>100	No	ULSD and CDPF, if suitable as determined by the CMM

3. If compliance can not be demonstrated as specified under item (2), then the project owner may appeal for relief to the CPM. However, the owner must demonstrate that they have made a good faith effort to comply as specified under item (2).

Report of Change and Mitigation Implementation

Following the initiation of construction activities, and if changes to mitigation measures are necessary, the CMM shall submit a Report of Change and Mitigation Implementation to the CPM for approval. This report must contain at a minimum the cause of any deviation from the Construction Mitigation Plan, and verification of any Construction Mitigation Plan measures that were implemented.

The following is acceptable proof of compliance; other methods of proof of compliance must be approved by the CPM.

1. EPA or CARB 1996 off-road equipment emission standards

    a. A copy of the certificate from EPA or CARB.

    b. Purchase and use of ultra-low-sulfur fuel (15 ppm or less).

    c. Receipt or other documentation indicating type and amount of fuel purchased, from whom, where delivered and on what date; and

    d. A copy of the text included in the contract agreement with all contractors and sub-contractors for use of the ultra-low-sulfur fuel in diesel burning construction equipment as identified in the Construction Mitigation Plan.

2. Installation of CDPF

    a. The suitability of the use of CDPFs is to be determined by a qualified mechanic or engineer who must submit a report to the CPM for approval.

    b. Installation is to be verified by a qualified mechanic or engineer.

3. Construction equipment engine idle time

    a. A copy of the text included in the contract agreement with all contractors and sub-contractors to keep engine idle time to 10 minutes or less to the extent practical.

Report of Emergency Termination of Mitigation

If a specific mitigation measure is determined to be detrimental to a piece of construction equipment or is determined to be causing significant delays in the construction schedule of the project or the associated linear facilities, the mitigation measure may be terminated immediately. However, notification containing an explanation for the cause of the termination must be sent to the CPM for approval. All such causes are restricted to one of the following justifications and must be identified in any Report of Emergency Termination of Mitigation.

1. The measure is excessively reducing normal availability of the construction equipment due to increased downtime for maintenance, and/or power output due to an excessive increase in back pressure.

2. The measure is causing or is reasonably expected to cause significant engine damage.

3. The measure is causing or is reasonably expected to cause a significant risk to nearby workers or the public.

4. Any other seriously detrimental cause which has approval by the CPM prior to the change being implemented.

Verification: The project owner shall submit to the CPM for approval the qualifications of the CMM at least 45 days prior to the due date for the Diesel Construction Equipment Mitigation Plan. The project owner shall submit the Diesel Construction Equipment Mitigation Plan to the CPM for approval 30 calendar days prior to rough grading on the project site or start of construction on any associated linear facilities. The project owner shall submit the Report of Change and Mitigation Implementation to the CPM for approval no later than 10 working days following the use of the specific construction equipment on either the project site or the associated linear facilities. The project owner shall submit a Report of Emergency Termination of Mitigation to the CPM for approval, as required, no later than 10 working days following the termination of the identified mitigation measure. The CPM will monitor the approval of all reports submitted by the project owner in consultation with CARB, limiting the review time for any one report to no more than 20 working days.

AQ-C3 The project owner shall surrender to the District emission reduction credits in the following amounts to mitigate project emissions:

	Required ERCs after application of offset ratios (lbs/quarter)			
Pollutant	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
NO_x	19,370	20,140	20,140	19,370
PM_{10}	13,200	13,200	13,200	13,200
VOC	1,388	1,456	1,456	1,388
SO_2	1,320	1,320	1,320	1,320

This condition serves to replace the ERC requirements listed in District condition AQ-2, by adding the additional CEQA mitigation proposed by the Applicant for PM_{10}, VOC and SO_2. The values listed above are discounted for distance offset ratios required by Rule 2201, assume Rule 2201 allowed inter-quarter transfers, and assume a combined distance and interppollutant SO_2 for PM_{10} offset ratio of 1.9:1.

Verification: At least 5 days prior to commencing construction, the project owner shall provide to the CPM a copy of the documentation from the District proving that the required emission reduction credits have been surrendered.

DISTRICT PRELIMINARY DETERMINATION OF COMPLIANCE CONDITIONS

<u>The following Conditions of Certification apply per turbine unit unless otherwise identified.</u>

1. SJVAPCD Permit No. Unit C-3929-1-0 – 46.9 MW nominally rated General Electric Model LM6000 PC Sprint natural gas fired simple-cycle peak-demand combustion turbine generator with water spray premixed combustion system, served by a selective catalytic reduction (SCR) system and an oxidation catalyst.

2. SJVAPCD Permit No. Unit C-3929-1-0– 46.9 MW nominally rated General Electric Model LM6000 PC Sprint natural gas fired simple-cycle peak-demand combustion turbine generator with water spray premixed combustion system, served by a selective catalytic reduction (SCR) system and an oxidation catalyst.

3. SJVAPCD Permit No. Unit c-3929-2-0– 46.9 MW nominally rated General Electric Model LM6000 PC Sprint natural gas fired simple-cycle peak-demand combustion turbine generator with water spray premixed combustion system, served by a selective catalytic reduction (SCR) system and an oxidation catalyst.

AQ-1 The permittee shall not begin actual on-site construction of the equipment authorized by this Authority to Construct until the lead agency satisfies the requirements of the California Environmental Quality Act (CEQA). [California Environmental Quality Act]

Verification: The project owner/operator shall keep proof of the project's District air permit and Energy Commission certification including copies of all permit conditions and conditions of Certification on-site starting at the commencement of construction through the final decommissioning of the project. The project owner shall make the District's permit conditions and conditions of certification available at the project site to representatives of the District, ARB, EPA and the Energy Commission for inspection.

AQ-2 Upon implementation of C-3929-1-0 and C-3929-2-0, emission offsets shall be provided to offset emissions increases in the following amounts:

PM_{10} - Q1: 8,850 Ib, Q2: 8,850 Ib, Q3: 8,850 Ib, and Q4: 8,850 Ib and NO_x (as NO_2) - Q1: 29,055 Ib, Q2: 30,210 Ib, Q3: 30, 210 Ib, and Q4: 29,055 Ib. Offsets shall be provided at the appropriate offset ratio specified in Rule 2201 Section 4.2.4. SO_x offsets provided to offset PM_{10} increases shall be at a ratio of 1.4:1 at the appropriate distance ratio. [District Rule 2201]

Verification: The project owner/operator shall submit copies of ERCs surrendered to the SJVAPCD in the amounts shown above to the CPM prior to initiation of project construction.

AQ-3 The permittee shall notify the District of the date of initiation of construction no later than 30 days after such date, the date of anticipated startup not more than 60 days nor less than 30 days prior to such date, and the date of actual startup within 15 days after such date. [District Rule 4001]

Verification: The project owner/operator shall notify the CPM and the District of the date of initiation of construction no later than 30 days after such date, the date of anticipated startup not more than 60 days or less than 30 days prior to such date, and the date of actual startup within 15 days after such date.

AQ-4 Selective catalytic reduction (SCR) system and oxidation catalyst shall serve the gas turbine engine. Exhaust ducting shall be equipped with a fresh air inlet and blower to be used to lower the exhaust temperature prior to inlet of the SCR system catalyst. Permittee shall submit SCR and oxidation catalyst design details to the District at least 30 days prior to commencement of construction. [District Rule 2201]

Verification: The project owner/operator shall provide copies of drawings of the catalyst systems chosen and design details to the CPM and the District at least 30 days prior to the construction of permanent foundations.

AQ-5 Permittee shall submit continuous emission monitor design, installation, and operational details to the District at least 30 days prior to commencement of construction. [District Rule 2201]

Verification: The project owner/operator shall provide copies of drawings of the continuous emission monitor and design, installation, and operations details to the CPM and the District at least 30 days prior to the construction of permanent foundations.

AQ-6 The permittee shall submit to the District information correlating the NO_x control system operating parameters to the associated measured NO_x output. The information must be sufficient to allow the District to determine compliance with the NO_x emission limits of this permit during times that the CEMS is not functioning properly. [District Rule 4703]

Verification: The project owner/operator shall provide the District with documentation correlating NO_x control system operating parameters to the associated measured NO_x output. Information must be sufficient to allow NO_x emissions to be calculated during times when the CEMS is not functioning properly.

AQ-7 All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District NSR Rule]

Verification: Upon request, the project owner/operator shall make all maintenance records and reports available at the project site to representatives of the District, ARB, EPA and the Energy Commission for inspection.

AQ-8 No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

Verification: The project owner/operator shall make the site available for inspection by representatives of the District, California Air Resources Board (CARB) and the Commission.

AQ-9 Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

Verification: The project owner/operator shall provide records of compliance as part of the quarterly reports of Condition **AQ-31**.

AQ-10 No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20 percent opacity. [District Rule 4101]

Verification: The project owner/operator shall make the site available for inspection by representatives of the District, CARB and the Energy Commission.

AQ-11 Combustion turbine generator (CTG) and generator lube oil vents shall be equipped with mist eliminators. Visible emissions from lube oil vents shall not exhibit opacity of 5 percent or greater, except for up to three minutes in any hour. [District Rule 2201]

Verification: The project owner/operator shall make the site available for inspection by representatives of the District, CARB and the Energy Commission.

AQ-12 The CTG shall be equipped with a continuous monitoring system to measure and record hours of operation and fuel consumption. [District Rules 2201, 4001, and 4703]

Verification: The project owner/operator shall make the site available for inspection by representatives of the District, CARB and the Energy Commission.

AQ-13 Operation of the turbine shall not exceed 8,000 hours per calendar year. [District Rule 2201]

Verification: The project owner/operator shall provide records of compliance as part of the quarterly reports of Condition AQ-31.

AQ-14 The CTG shall be equipped with a continuous emission monitor (CEM) for NOx (before and after SCR system), CO, and O2. Continuous emissions monitor(s) shall meet the requirements of 40 CFR part 60, Appendices B and F, and 40 CFR part 75, and District-approved protocol, and shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided the CEM(s) pass the relative accuracy requirement for startups and shutdowns specified herein. If relative accuracy of CEM(s) cannot

be demonstrated during startup conditions, CEM results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits contained in this document. [District Rules 2201, 4001, and 4703]

Verification: The project owner/operator shall make the site available for inspection by representatives of the District, CARB and the Energy Commission.

AQ-15 The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO_x, CO, and O_2 analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081]

Verification: The project owner/operator shall make the site available for inspection by representatives of the District, CARB and the Commission.

AQ-16 The CTG shall be fired exclusively on natural gas with a sulfur content of no greater than 0.25 grain of sulfur compounds (as S) per 100 dry scf of natural gas. [District Rule 2201]

Verification: The project owner/operator shall provide records of compliance as part of the quarterly reports of Condition AQ-31.

AQ-17 During startup or shutdown of any gas turbine engine, combined emissions from the two gas turbine engines (C-3929-1 and C-3929-2) shall not exceed the following: NO_x (as NO_2) - 15.4 Ib, CO - 15.4 Ib, and VOC - 1.4 Ib in any one hour. [California Environmental Quality Act]

Verification: The project owner/operator shall provide records of compliance as part of the quarterly reports of Condition AQ-31.

AQ-18 Startup is defined as the period beginning with turbine initial firing until the unit meets the Ib/hr and ppmvd emission limits in Condition AQ-21. Shutdown is defined as the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Startup and shutdown of gas turbine engine shall not exceed a time period of one hour each per occurrence. Startup and shutdown events shall not exceed 300 occurrences per calendar year. [District Rule 2201]

Verification: The project owner/operator shall provide records of compliance as part of the quarterly reports of Condition AQ-31.

AQ-19 Emission rates from this unit, except during startup and shutdown events, shall not exceed any of the following: NO_x (as NO_2) – 6.21 Ib/hr and 3.6 ppmvd @ 15 percent O_2; VOC (as methane) – 1.17 Ib/hr and 2.0 ppmvd @ 15 percent O_2;

CO – 6.25 lb/hr and 6.0 ppmvd @ 15 percent O_2; PM10 - 3.3 lb/hr; or SO_x (as SO_2) - 0.33 lb/hr. All emission concentration limits are three-hour rolling averages. [District Rules 2201, 4001, and 4703]

Verification: The project owner/operator shall provide records of compliance as part of the quarterly reports of Condition AQ-31.

AQ-20 Maximum daily emissions from this unit shall not exceed any of the following: NO_x (as NO_2) –150.5 lb/day; VOC – 28.1 lb/day; CO – 151.5 lb/day; PM_{10} - 79.2 lb/day; and SO_x (as SO_2) - 7.9 lb/day. [District Rule 2201]

Verification: The project owner/operator shall provide records of compliance as part of the quarterly reports of Condition AQ-31.

AQ-21 Maximum annual emissions from this unit shall not exceed any of the following: NO_x (as NO_2) – 49,510 lb/year; VOC – 2,844 lb/year; CO – 21,830 lb/year; PM_{10} – 26,400 lb/year; and SO_x (as SO2) – 2,640 lb/year. [District Rule 2201]

Verification: The project owner/operator shall provide records of compliance as part of the quarterly reports of Condition AQ-31.

AQ-22 The ammonia (NH_3) emissions shall not exceed 10 ppmvd @ 15 percent O_2 over a 24 hour rolling average. [District Rule 2201]

Verification: The project owner/operator shall provide records of compliance as part of the quarterly reports of Condition AQ-31.

AQ-23 Compliance with ammonia slip limit shall be demonstrated utilizing the following calculation procedure: ammonia slip ppmvd @ 15 percent O_2 = ((a - (bxc/1,000,000)) x (1,000,000 / b) x d, where a = ammonia injection rate (lb/hr) / (17 lb/lb mol), b = dry exhaust flow rate (lb/hr) / (29 lb/lb mol), c = change in measured NO_x concentration ppmvd @ 15 percent O_2 across the catalyst and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip. Alternatively, the permittee may utilize a continuous in-stack ammonia monitor, acceptable to the District to monitor compliance. At least 60 days prior to using a NH_3 CEM, the permittee shall submit a monitoring plan for District review and approval. [District Rule 4102]

Verification: The project owner/operator shall provide records of compliance as part of the quarterly reports of Condition AQ-31.

AQ-24 Source testing to measure the NO_x, CO, and VOC emission limits (lb/hr and ppmvd @ 15 percent O_2) shall be conducted within 60 days of initial operation of the CTG and at least once every twelve months thereafter. [District Rule 1081]

Verification: The results and field data collected during source tests shall be submitted to the CPM and the District within 60 days of testing. Testing shall be

conducted within 60 days of initial operation of each CTG and at least once every twelve months.

AQ-25 Source testing to measure the PM10 emission limit (lb/hr), the natural gas sulfur content limit, and the ammonia emission limit shall be conducted within 60 days of initial operation and at least once every twelve months thereafter. [District Rule 1081]

Verification: The results and field data collected during source tests shall be submitted to the CPM and the District within 60 days of testing. Testing shall be conducted within 60 days of initial operation of each CTG and at least once every twelve months.

AQ-26 Source testing of startup NO_x, CO, VOC, and PM_{10} mass emission rates shall be conducted for one of the gas turbine engines (C-3929-1 or C-3929-2) upon initial operation and at least once every seven years thereafter. CEM relative accuracy shall be determined during startup source testing in accordance with 40 CFR 60, Appendix B. [District Rule 1081]

Verification: Verification: The results and field data collected during source tests shall be submitted to the CPM and the District within 60 days of testing. Testing shall be conducted within 60 days of initial operation of one CTG and at least once every seven years.

AQ-27 Source testing to determine the percent efficiency of the turbine shall be within 60 days of initial operation and at least once every twelve months thereafter. [District Rule 4703]

Verification: The results and field data collected during source tests shall be submitted to the CPM and the District within 60 days of testing. Testing shall be conducted within 60 days of initial operation of each CTG and at least once every twelve months.

AQ-28 Compliance demonstration (source testing) shall be District witnessed, or authorized and samples shall be collected by a California Air Resources Board certified testing laboratory. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

Verification: The project owner/operator shall notify the CPM and the District 30 days prior to any compliance source test. The project owner/operator shall provide a source test plan to the CPM and District for the CPM and District approval 15 days prior to testing. The results and field data collected by the source tests shall be submitted to the CPM and District within 60 days of testing.

AQ-29 The following test methods shall be used PM_{10}: EPA Method 5 (front half and back half), NOx: EPA Method 7E or 20, CO: EPA Method 10 or 10B, O2: EPA

Method 3, 3A, or 20, VOC: EPA Method 18 or 25, ammonia: BAAQMD ST-1B, and fuel gas sulfur content: ASTM D3246. Alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081, 4001, and 4703]

Verification: The project owner/operator shall provide records of compliance as part of Condition AQ-28.

AQ-30 Source testing to determine the percent efficiency of the turbine shall be conducted utilizing the procedures in District Rule 4703 (Stationary Gas Turbines). [District Rule 4703]

Verification: The project owner/operator shall provide records of compliance as part of Condition AQ-28.

AQ-31 The permittee shall maintain the following records for each CTG: date and time, duration, and type of any startup, shutdown, or malfunction; performance testing, evaluations, calibrations, checks, adjustments, any period during which a continuous monitoring system or monitoring device was inoperative, and maintenance of any continuous emission monitor. [District Rules 2201 and 4703]

Verification: The project owner/operator shall compile required data and submit the information to the CPM in quarterly reports submitted no later than 60 days after the end of each calendar quarter.

AQ-32 The permittee shall maintain the following records: hours of operation, fuel consumption (scf/hr and set/rolling twelve month period), continuous emission monitor measurements, calculated ammonia slip, and calculated NO_x mass emission rates (Ib/hr and Ib/twelve month rolling period). [District Rules 2201 and 4703]

Verification: The project owner/operator shall provide records of compliance as part of the quarterly reports of Condition AQ-31.

AQ-33 Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080]

Verification: The project owner/operator shall compile the required data in the formats discussed above and submit the results to the CPM quarterly.

AQ-34 Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]

Verification: The project owner/operator shall submit the continuous emission monitor audit results with the quarterly reports required of Condition AQ-31.

AQ-35 The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080]

Verification: The project owner/operator shall submit the continuous emission monitor results with the quarterly reports required of Condition AQ-31.

AQ-36 Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100]

Verification: The project owner/operator shall comply with the notification requirements of the District and submit written copies of these notification reports to the CPM as part of the quarterly reports of Condition AQ-38.

AQ-37 The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100]

Verification: The project owner/operator shall comply with the notification requirements of the District and submit written copies of these notification reports to the CPM as part of the quarterly reports of Condition AQ-38.

AQ-38 The permittee shall submit a written report to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective emission standard; applicable time and date of each period during which the CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred. [District Rule 1080]

Verification: The project owner/operator shall compile the required data and submit the quarterly reports to the CPM and the APCO within 30 days of the end of the quarter.

AQ-39 All records required to be maintained by this permit shall be maintained for a period of two years and shall be made readily available for District inspection upon request. [District Rule 2201]

Verification: The project owner/operator shall make records available for inspection by representatives of the District, CARB and the Commission upon request.

AQ-40 Permittee shall submit an application to comply with Rule 2520 - Federally Mandated Operating Permits within twelve months of commencing operation. [District Rule 2520]

Verification: The project owner/operator shall file their application with the District within twelve months of commencing operation.

AQ-41 Permittee shall submit an application to comply with Rule 2540 - Acid Rain Program. [District Rule 2540]

Verification: The project owner/operator shall submit to the CPM copies of the Title IV permit and proof that necessary emission allotments have been acquired at least 15 days prior to the initial firing of the turbine(s).

AQ-42 Disturbances of soil related to any construction, demolition, excavation, extraction, or water mining activities shall comply with the requirements for fugitive dust control in SJVAPCD District Rule 8020 (4/25/96) unless specifically exempted under section 4.0 of Rule 8020. [District Rule 8020]

Verification: The project owner/operator shall make the site available for inspection by representatives of the District, CARB and the Commission to determine if adequate measures to control fugitive dust emissions are in place.

AQ-43 Outdoor handling and storage of any bulk material which emits dust shall comply with the requirements of SJVAPCD Rule 8030 (4/25/96), unless specifically exempted under section 4.0 of Rule 8030. [District Rule 8030]

Verification: The project owner/operator shall make the site available for inspection by representatives of the District, CARB and the Commission to determine if adequate measures to control bulk materials fugitive dust emissions are in place.

AQ-44 Any paved road over three miles in length, and any unpaved roads over 0.5 miles in length, constructed after December 10, 1993 shall use the design criteria and dust control measures of, and comply with the administrative requirements of SJVAPCD Rule 8060 (4/25/96) unless specifically exempted under section 4.0 of Rule 8060. [District Rule 8030]

Verification: The project owner/operator shall make the site available for inspection by representatives of the District, CARB and the Commission to determine if the width of paved shoulders on paved roads (three miles or greater) is sufficient and if chemical suppressants on unpaved roads (0.5 miles or greater), shoulders and medians is being used as required by Rule 8060.

AQ-45 The owner/operator shall insure that all areas of one (1) acre or greater, which are used for vehicle and/or equipment parking, fueling and service, shipping, receiving and transfer, comply with the requirements of District Rule 8070 (4/25/96), unless specifically exempted under section 3.0 of this rule. All areas used for storage of construction vehicles, equipment, and material shall comply with the provision of District Rule 8070. [District Rules 8020 and 8070]

Verification: The project owner/operator shall make the site available for inspection by representatives of the District, CARB and the Commission to determine if adequate measures to control fugitive dust emissions from all unpaved areas one acre or greater, which are used for parking, fueling, service, shipping, receiving and transfer, are in place as required by Rule 8070.

AQ-46 The facility shall be subject to any revised Regulation VIII rule requirements if the modifications are contrary to the conditions in the FDOC (SJVAPCD 2001a). The facility shall be subject to the revised rule as of the date that each rule is adopted. [District Rule 2201]

Verification: The project owner/operator shall maintain records of modifications to Regulation VIII rules as necessary.

SJVAPCD Permit No. UNIT C-3929-3-0 – 382 HP CATAPILLER MODEL 3306 DIESEL-FIRED EMERGENCY IC ENGINE POWERING A 250 KW GENERATOR.

AQ-47 All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District NSR Rule]

Verification: The project owner/operator shall make the site and maintenance records available for inspection by representatives of the District, CARB and the Energy Commission.

AQ-48 No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

Verification: The project owner/operator shall make the site available for inspection by representatives of the District, CARB and the Energy Commission.

AQ-49 Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

Verification: The project owner/operator shall compile required data and submit the information to the CPM in quarterly reports submitted no later than 60 days after the end of each calendar quarter.

AQ-50 No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20 percent opacity. [District Rule 4101]

Verification: The project owner/operator shall make the site available for inspection by representatives of the District, CARB and the Energy Commission.

AQ-51 The engine shall be equipped with a positive crankcase ventilation (PCV) system or a crankcase emissions control device of at least 90 percent control efficiency. [District NSR Rule]

Verification: The project owner/operator shall make the site available for inspection by representatives of the District, CARB and the Energy Commission.

AQ-52 The exhaust stack shall not be fitted with a rain cap, or any other similar device, that impedes vertical exhaust flow. [District Rule 4102]

Verification: The project owner/operator shall make the site available for inspection by representatives of the District, CARB and the Energy Commission.

AQ-53 NOx emissions shall not exceed 5.09 g/hp-hr. [District Rule 2201]

Verification: The project owner/operator shall provide records of compliance for the above condition as part of the quarterly reports of Condition AQ-49.

AQ-54 PM10 emissions shall not exceed 0.13 g/hp-hr. [District Rule 41O2]

Verification: The project owner/operator shall provide records of compliance for the above condition as part of the quarterly reports of Condition AQ-49.

AQ-55 The engine shall be operated only for maintenance, testing, and required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 200 hours per year. [District NSR Rule and District Rule 4701]

Verification: The project owner/operator shall provide records of compliance for the above condition as part of the quarterly reports of Condition AQ-49.

AQ-56 The sulfur content of the diesel fuel used shall not exceed 0.05 percent by weight. [District NSR Rule]

Verification: The project owner/operator shall make records available for inspection by representatives of the District, CARB and the Energy Commission upon request.

AQ-57 The permittee shall maintain records of hours of emergency and non-emergency operation. Records shall include the date, the number of hours of operation, the purpose of the operation (e.g., load testing, weekly testing, rolling blackout, general area power outage, etc.), and the sulfur content of the diesel fuel used. Such records shall be retained on-site for a period of two years and made available for District inspection upon request. [District Rule 1070]

Verification: The project owner/operator shall make records available for inspection by representatives of the District, CARB and the Energy Commission upon request. Records shall be retained for a period of two years.

REFERENCES

CARB (California Air Resources Board). 2000. California Ambient Air Quality Data CD ROM.

CARB (California Air Resources Board). 2001. California Ambient Air Quality Data available on CARB Website. http://www.arb.ca.gov/adam/.

GWF (GWF Energy, LLC) 2001a. Application for Certification for the Henrietta Peaker Power Plant. Submitted to the California Energy Commission on August 27, 2001.

URS (URS Corporation) 2001a. Supplement to Application for Certification for the Henrietta Peaker Power Plant. Submitted to the California Energy Commission on October 9, 2001.

Energy Commission (California Energy Commission) 2001a. Henrietta Peaker Power Plant Data Requests. Submitted to the California Energy Commission on October 22, 2001.

GWF (GWF Energy LLC) 2001b. Henrietta Peaker Power Plant Data Responses. Submitted to the California Energy Commission on November 13, 2001.

GWF (GWF Energy LLC) 2001c. Henrietta Peaker Power Plant Supplement to the First Set of Data Responses and subsequent revisions. Submitted to the California Energy Commission initially on November 30, 2001.

SCAQMD (South Coast Air Quality Management District). 1993. CEQA Air Quality Handbook. November, 1993 Update.

SJVAPCD (San Joaquin Valley Air Pollution Control District) 2001a. Final Determination of Compliance for GWF Energy LLC – Henrietta Peaker Power Plant. Submitted to the California Energy Commission on October 26, 2001.

BIOLOGICAL RESOURCES

Testimony of Tom Scofield

INTRODUCTION

This section provides the California Energy Commission (Energy Commission) staff's analysis of potential impacts to biological resources from the GWF Energy, LLC's (applicant's) proposal for the construction and operation of the Henrietta Peaker Project (HPP). The primary directive of the analysis is to evaluate impacts to state and federally listed species, state and federal species of special concern, and other areas of critical biological concern. This section presents information regarding the affected biotic community, the potential environmental impacts associated with the construction and operation of the proposed project and, where necessary, specifies mitigation planning and compensation measures to reduce potential impacts to non-significant levels. Additionally, this analysis determines compliance with applicable laws, ordinances, regulations and standards (LORS), and specifies conditions of certification.

Staff's analysis is based, in part, on information provided as of August 27, 2001 from GWF's Application For Certification (GWF 2001a), GWF's AFC Supplement provided October 9, 2001 (URS 2001a), staff's October 10, 2001 site visit, and discussions with the United States Fish and Wildlife Service (USFWS 2001) and the California Department of Fish and Game (CDFG 2001).

LAWS, ORDINANCES, REGULATION AND STANDARDS

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

FEDERAL

- **Clean Water Act of 1977**

  Title 33, United States Code, sections 1251-1376 and section 330.5(a)(26), prohibits the discharge of dredged or fill material into the waters of the United States without a permit.

- **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 of 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 Possession**

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

- **Fully Protected Species**

  Fish and Game Code sections 3511, 4700, 5050, 5515 prohibit 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.

LOCAL

No local biological-related LORS have been identified for the HPP.

SETTING

REGIONAL

The proposed HPP site (site) and linear facilities (transmission and natural gas line) are located in the northwestern corner of Kings County, California, in the central portion of

the San Joaquin Valley (Valley). Historically, the Valley contained many natural habitats that supported a variety of plant and animal species. These natural environments, however, have been largely converted to agricultural and urbanized land uses, and very few natural areas remain. The loss and fragmentation of habitat in the Valley has resulted in the elimination of many species of wildlife and the reduction of populations of many other species of wildlife.

In the vicinity of the project, the Valley contains predominantly agricultural production lands, with other mixed uses including pastureland, dairies, residential areas, a military base, and commercial and industrial facilities. Although these areas have been highly modified from their natural state, several special status plant and animal species may occur in the project vicinity. A list of these species and their status is presented in **Table 1**.

BIOLOGICAL RESOURCES - Table 1
Sensitive Species Known to Occur in the Project Vicinity
(GWF 2001a, and Lemoore Naval Air Station (NAS), 2001)

Sensitive Plants	Status*
Brittlescale (*Atriplex depressa*)	CNPS 1B
Panoche peppergrass (*Lepidium jaredii ssp. album*)	CNPS 1B

Sensitive Wildlife	Status*
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT
Western spadefoot (*Scaphiopus hammondii*)	CSC
Western pond turtle (Clemmy's marmorata)	CSC
Giant garter snake (Thamnophis gigas)	FT, ST
Blunt-nosed leopard lizard (Gambelia sila)	FE, SE
Swainson's hawk (Buteo swainsoni)	ST
Long-billed curlew (Numenius americanus)	CSC
Western snowy plover (Charadrius alexandrinus nivosus)-coastal pop.	FT, CSC
California gull (Larus californicus) –nesting	CSC
Black tern (Chlidonias niger)-nesting	FSC,CSC
California least tern (Sterna antillarum browni)-nestin	FE,SE
Fresno kangaroo rat (Dipodomys nitratoides exilis)	FE, SE
Tipton kangaroo rat (Dipodomys nitratoides nitratoides)	FE, SE
San Joaquin kit fox (Vulpes macrotis mutica)	FE, ST

*STATUS LEGEND – FE = Federally listed Endangered; FT = Federally listed Threatened; FPT = Federal proposed Threatened; California Native Plant Society (CNPS) List 1B = Rare and endangered plants of California and elsewhere; CE = State listed Endangered, CT = State listed Threatened; and CSC = State Species of Special Concern.

LOCAL

Several plant and animal species listed under state and/or federal Endangered Species Acts potentially occur in the project region (Table 1). Of these species, however, only two, the federally endangered and state threatened San Joaquin kit fox (*Vulpes macrotis mutica*), and the state threatened Swainson's hawk (*Buteo swainsonii*) are expected to potentially occur within the HPP study area. San Joaquin kit fox (SJKF) may utilize the project area and surrounding agricultural areas as a migration corridor and perhaps as an occasional foraging location. Swainson's hawk may use the project area to forage, but no potential nesting habitat for this species (small to large

shrubs/trees) was observed on or near the project. Potentially suitable nesting trees were observed at the Lemoore NAS sewage treatment ponds (approximately one-half mile east of the HPP). No nests, however, were observed. Other listed species that are known to occur in the vicinity of the proposed HPP site and related linear facilities (Table 1) are not expected to occur on site due to the highly modified agricultural environment that exists.

Wildlife species that are not listed, but are considered to have recreational and/or commercial value, may occur in the project area. Bird species that provide hunting opportunities for sportsmen such as mourning dove (*Zenaida macroura*), ring-necked pheasant (*Phasianus colchicus*), and common mallard (*Anas platyrhynchos*) are known to occur in the vicinity of the project and may occasionally occur on the HPP site.

Invasive plant species such as bull thistle (*Cirsium vulgare*) are known to occur in the project vicinity. Widespread use of herbicides associated with agricultural practices, however, likely limit the spread of local invasive species populations in the vicinity of the HPP.

A detailed description of the existing conditions at the power plant site and related linear facilities is presented below.

Power Plant Site

The proposed HPP site lies approximately one mile south of the Lemoore Naval Air Station and is currently a combination of active and fallow agricultural land. The 20-acre site is bordered by the PG&E Henrietta Substation to the north, a roadway to the west (Avenue 25), and row crop agricultural lands (cotton fields) to the south and west. Cotton has been the sole production crop on the HPP site, and has been grown at this location for at least the past 30 years.

The Power Plant will be permanently placed on seven acres of the 20-acre site. An additional five acres of the site will be used as a laydown area for temporary activities such as parking and staging of equipment.

Linear Facilities

Transmission Lines

The transmission line is a 550-foot connection from the adjacent PG&E Henrietta Substation to the proposed power plant. Thus, the transmission line will occur within an existing developed substation location and within the acreage already described for the power plant site (above).

Natural Gas Line

Starting from the southwest corner of the HPP site, the 2.2 mile-long by 25 foot-wide natural gas pipeline corridor will extend 1.2 miles along the eastern edge of Avenue 25 to its intersection with Venal Cutoff. The pipeline corridor will then continue one-mile southward under Avenal Cutoff and along an existing gravel farm road to its interconnection with the existing Southern California Natural Gas Pipeline. The pipeline

will be placed within existing easements and on previously disturbed areas either under or adjacent to the existing roadways. Approximately one mile of the 2.2-mile pipeline corridor will traverse active agricultural lands, and the remaining 1.2 miles will run parallel to Avenue 25 on the edge of active farmland. Pipeline construction will not result in the removal of native vegetation, but will temporarily disturb 6.7 acres of agricultural land.

Power Plant Access Road

The primary access road connects the HPP directly to Avenue 25 (immediately west of and directly adjacent to the site). Thus, the access road will occur on acreage already described for the power plant site (above).

Water Supply Pipeline

The site will receive State Water Project and Central Valley Project surface water from Westlands Water District and Kings County via an existing pipeline and standpipe located directly adjacent to the site (within the Avenue 25 easement). Thus, the waterline will occur on acreage already described for the power plant site (above).

ANALYSIS AND IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
BIOLOGICAL RESOURCES -- Would the project or related facilities:				
a) Have an adverse effect, either directly, indirectly, or cumulatively, on any species identified as a candidate, sensitive, or special status species in federal, state, local or regional plans, policies, or regulations (including those by the California Department of Fish and Game, National Marine Fisheries Service, U.S. Bureau of Land Management, U.S. Forest Service, or U.S. Fish and Wildlife Service) or habitat used by the above.		X		
b) Have an indirect or direct adverse effect on any riparian habitat or other sensitive natural community identified in federal, state, local or regional plans, policies, and regulations (including those by the California Department of Fish and Game or U. S. Fish and Wildlife Service)?				X

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
BIOLOGICAL RESOURCES -- Would the project or related facilities:				
c) Have an adverse effect on surface or ocean waters (including those considered by National Marine Fisheries Service as essential fish habitat), or on local aquatic resources, or on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, tidal and freshwater marshes, vernal pools, etc.) either through direct removal, filling, hydrological interruption, pollution (thermal, particulate, or chemical) or other means?				X
d) Interfere with the movement of any native fish or wildlife species (resident or migratory) or with established native (resident or migratory) wildlife corridors, or limit or impede the use of native wildlife nursery sites?		X		
e) Conflict with any local policies or ordinances protecting biological resources, such as 1) a tree preservation policy or ordinance, or 2) a native landscape requirement?				X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan?				X
g) Create an adverse change in commercial or recreational species' distribution or population size, or harvesting opportunities for these species?				X
h) Facilitate the introduction, population growth, or spread of weedy plant species that are difficult to control (such as those classified by the California Department of Agriculture as List A, List B, or Red Alert species) or other invasive or non-native aquatic or terrestrial wildlife species (such as nest parasites)?		X		

ANALYSIS AND DISCUSSION OF IMPACTS

The environmental checklist items that address potential impacts to biological resources are discussed below.

a. Effect on Sensitive Species

Power Plant and Laydown Areas

The proposed power plant site and laydown areas will be located on existing active and fallow farmland. These areas do not contain any native or sensitive plant species, and no sensitive animal species or sensitive habitats are known to occur at these locations. In the vicinity of the project area; however, agricultural lands are considered potential habitat for SJKF, and loss of this habitat requires consultation with USFWS and CDFG for incidental take.
GWF has proposed that incidental take of SJKF habitat be permitted under the Kern Water Bank Habitat Conservation Plan (KWBHCP). The KWBHCP provides mitigation credits for impacts to local sensitive species and/or their habitat. In particular, the KWBHCP offers mitigation for impacts to SJKF. As a condition of being covered under the KWBHCP, the project must be evaluated and approved by USFWS and CDFG. Staff has reviewed the October 4, 2001 USFWS response letter that states the HPP is eligible for coverage under the KWBHCP, and will offset biological impacts through the purchase of 10 compensation credits. CDFG has stated that they concur with the USFWS determination (CDFG October 2001) and the compensation ratio derived to offset impacts to SJKF. he Kern Water Bank Authority (manages the KWBHCP) has indicated that GWF shall be granted 10 compensation credits in the KWBHCP following GWF's submittal of a letter of intent and the appropriate fees (KWBHCP December 2001). Therefore, the Federal and State Endangered Species Acts incidental take requirements have been satisfied through HPP's coverage under the KWBHCP (BIO-5).

The compensation credits mandated by the KWBHCP are:

- 1:1 coverage for permanent impacts to 7 acres (power plant site);
- 0.2:1 coverage for 5 acres of temporarily disturbed agricultural land at the laydown area, and;
- 0.2:1 coverage for 6.7 acres of temporarily disturbed agricultural land along the natural gas pipeline (see below).

These compensation ratios add to 9.3 acres, and the total is subsequently rounded-up to 10 acres because the KWBHCP does not allow partial acreage increments. To further protect sensitive resources potentially impacted by the HPP, staff will require the development and implementation of a Biological Resources Mitigation and Monitoring Plan (BRMIMP). The BRMIMP will present the mitigation measures recommended by the applicant, discuss the permits the applicant expects to obtain, discuss the responsibilities of the parties involved, and discuss the lines of communication (BIO-6). Mitigation will include measures such as pre-construction surveys for sensitive resources by a qualified biologist (BIO-1, 2, and 3), exclusion barriers for potential kit

fox dens (e.g., capping pipe ends, BIO-7), and establishment of a CPM approved Worker Environmental Awareness Program (BIO- 4).

With the purchase of compensatory credits and the implementation of measures developed to protect sensitive resources in the BRMIMP, staff concludes that the project will not have a significant impact on special status species or their habitat.

Power Plant Exhaust Stacks

The proposed power plant project includes two 85-foot exhaust stacks. Tall structures such as radio and television antennas, power plant and refinery exhaust stacks, large buildings, and power lines can pose a threat to birds that might collide with them. These structures pose more of a collision threat during periods of inclement weather and when they are located within or adjacent to areas that support habitats which attract birds (e.g., wetlands, open water areas, grain crops).

The site and the adjacent areas do not support attractive habitat for birds. The nearby Lemoore NAS Sewer Treatment Ponds, however, are known to support a wide variety of local and migratory bird species.

The relatively long distance between the two stacks and the sewage ponds (approximately one-half mile) and the lack of attractive adjacent habitats likely limit the probability of collisions with the HPP exhaust stacks. Therefore, staff concludes that the proposed facilities will not pose a significant bird collision threat to local and/or migratory bird populations.

Linear Facilities

Power Plant Access Road

The applicant has indicated that the power plant access road will directly connect the power plant to adjacent Avenue 25. No additional impacts will be associated with the access road. Staff, therefore, concludes that there will be no new permanent loss or temporary disturbance to any sensitive species or their habitat.

Natural Gas Pipeline

Natural vegetation will not be affected by the pipeline installation and operation, however, 6.7 acres of farmland will be temporarily disturbed, and will therefore be mitigated for at the established ratio of 0.2:1 for temporary impacts to agricultural land within the range of SJKF (see discussion of power plant site above). Therefore, staff concludes that, with the purchase of 1.3 compensatory credits (BIO-5) and the implementation of measures developed to protect sensitive resources in the BRMIMP (BIO-6), the natural gas pipeline will not have a significant impact on special status species or their habitat.

Transmission Lines

The proposed transmission line installation and operation will not require the removal of native plants or habitat for sensitive animal species. The transmission line footprint will occur within the power plant site location and is, therefore, mitigated through the

KWBHCP (see discussion of power plant site above). Additional impacts resulting from the transmission lines include the potential for birds to be electrocuted, harmed, or killed by a collision with the lines.

To reduce the potential for bird electrocutions at the HPP transmission lines, the applicant will be required to incorporate measures developed by the Avian Powerline Interaction Committee in Suggested Practices for Raptor Protection on Powerlines (APLIC 1996). These measures will include implementing the prescribed spacing of phases to avoid phase-to-phase contact electrocutions, and will be presented in the BRMIMP (BIO-6). With incorporation of these measures, staff concludes that the transmission line does not pose a significant electrocution threat to bird species.

Staff does not anticipate any significant collision-related impacts to birds due to the short distance of the transmission line, the proximity to existing PG&E lines associated with the adjacent PG&E Henrietta Substation, and the placement of the transmission line within a heavily industrialized setting (within the existing substation and power plant itself).

Water Supply Pipeline

The water supply line will directly tie-in to a pipeline located within the roadway of Avenue 25 (directly adjacent to the site), and no biological impacts will be associated with its installation and operation. Staff therefore concludes that no significant impacts will result from the proposed water supply line construction.

b. Effect on Sensitive Habitat

The proposed HPP will not be immediately adjacent to any riparian habitat or sensitive natural communities. A discussion of “less than significant” air quality and wastewater impacts to biological resources is presented below.

Air Quality Impacts to Biological Resources

Some terrestrial ecosystems that are nitrogen limited (e.g. serpentine grasslands) respond strongly to incremental additions of nitrogen, and exhibit changes in productivity, species composition, and nutrient retention (Weiss 1998).

No sensitive habitats that are sensitive to high levels of nitrogen emissions have been identified in the project region. Therefore, staff concludes that power plant-related emissions should not result in any terrestrial ecosystem impacts to sensitive species and their habitat at or near the proposed HPP site.

Wastewater Impacts to Biological Resources

The HPP is designed to generate minimal amounts of wastewater. Any wastewater generated by the facility processes and all contact stormwater will be collected on site in storage tanks and routinely hauled off site to the McKittrick Waste Treatment Site, an approved and licensed Class II landfill (URS 2001a, page 2.12-3). Thus, staff has determined that potential impacts to biological resources resulting from wastewater generation are not expected.

c. Effect on Aquatic Habitats

No surface waters will be impacted and there are no federally protected wetlands, including vernal pools and/or marsh habitat, within or immediately adjacent to the proposed HPP site or related linear facilities that may be affected by construction and operation activities.

d. Effects on Fish and Wildlife

Wildlife Movement

The proposed HPP will result in the permanent loss of 7 acres and the temporary loss of 11.7 acres of agricultural land. This loss does not pose a significant impact to wildlife movement in the vicinity of the HPP since the surrounding agricultural lands provide alternate movement routes around the site. In addition, the permanent and temporary loss of agricultural lands will be mitigated for by purchasing compensatory land credits through the KWBHCP. The KWBHCP uses fees to secure land in perpetuity that will provide movement corridors and other wildlife habitat values. Therefore, staff concludes that, with mitigation, impacts to wildlife movement are less than significant (BIO-5).

Noise

The proposed facility will generate additional noise, especially during construction. The potential impact from this additional noise is considered to be insignificant because the proposed project: is located adjacent to roadways, is within the flight path of the Lemoore NAS, is adjacent to actively managed agricultural fields and the Henrietta Substation facility, and because there are no sensitive species known to occur in the immediate vicinity of the project. Thus, the noise associated with the construction and operation of the HPP will likely be similar to the noise already generated by surrounding sources.

e. Conflicts With Local LORS

No biological-related ordinances or policies have been identified.

f. Conflicts With Adopted Plans

The proposed HPP will not conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan. The HPP has been approved for coverage under an existing HCP (KWBHCP) (see Analysis and Discussion of Impacts-Item a, above).

g. Effects on Commercial or Recreational Species

The proposed HPP will not create an adverse change in commercial or recreational species distribution or population size, or harvesting opportunities for these species. Therefore, no impact is expected.

h. Effects From Invasive Plant or Wildlife Species

Construction of the HPP could facilitate the introduction, population growth, or spread of weedy plant species. Weedy plant species growth could suppress native vegetation

growth and infest adjacent agricultural lands. Best Management Practices designed to eliminate or minimize the spread of noxious weeds shall be developed by the applicant and presented as mitigation in the BRMIMP (BIO-6).

CUMULATIVE IMPACTS

Cumulative impacts are those that result from the incremental impacts of an action added to other past, present, and reasonably foreseeable future actions, regardless of who is responsible for such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

As previously mentioned, the proposed HPP power plant exhaust stacks and transmission lines are not expected to be a prominent obstacle for bird species and, therefore, should not cause an increase in bird collisions or represent an impediment to bird movements. As a result, the stacks and transmission lines do not contribute to any potential cumulative impact. The anticipated project noise increase, when considered in combination with other current noise levels, will be insignificant and will not contribute to any cumulative noise/wildlife noise concern.

There are no natural habitats remaining on or near the proposed site. All project-related disturbances will be limited to already-disturbed areas. The HPP, however, will result in the permanent and temporary loss of agricultural land. The permanent removal of agricultural land at the HPP, and at other projects in the vicinity, creates a cumulative effect on habitat and movement for the SJKF. However, due to the small size of the agricultural land that will be converted to the HPP, and the purchase of compensatory credits from the KWBHCP, staff concludes that the loss of both agricultural lands and movement habitat for SJKF does not result in a significant cumulative impact to this species.

COMPLIANCE WITH LORS

Staff concludes that the proposed HPP complies with all known and applicable LORS.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff discussed the proposed HPP with the United States Fish and Wildlife Service (USFWS) on September 30 and on October 2, 2001. Peter Cross and Brian Petterson (personal communication with Tom Scofield) indicated that the HPP would require mitigation for impacts to SJKF habitat, and that the project would be evaluated for its coverage under the KWBHCP. The October 12, 2001 USFWS letter indicated that the HPP did qualify for coverage under the KWBHCP and tallied the number of compensatory credits required (based on the projected impact acreages to SJKF habitat).

Staff discussed the proposed HPP with the California Department of Fish and Game (CDFG) October 9, 2001. Donna Daniels (personal communication with Tom Scofield) indicated that she did not have any concerns related to biological resources for the

proposed HPP, and that she concurs with USFWS's decision to allow the project to be covered under the KWBHCP, and agrees with the compensation ratios established.

CONCLUSIONS AND RECOMMENDATIONS

Staff has concluded that it is unlikely that the proposed project will impact biological resources through bird electrocutions and collisions since the applicant will be required to implement protective measures that have been developed by the Avian Powerline Interaction Committee (APLIC 1996). Staff also concludes that the project would not likely be affected by incremental increases in noise or the removal of wildlife corridors.

Staff recognizes that the construction of the HPP will cause permanent, temporary, and possible cumulative impacts to SJKF habitat. Impacts to SJKF, however, will be mitigated to less than significant levels by the purchase of 10 compensatory credits in the KWBHCP, and through the implementation of mitigation measures presented in the BRMIMP.

PROPOSED CONDITIONS OF CERTIFICATION

BIO-1 Site mobilization and/or ancillary facilities preparation (described as any ground disturbing activity other than allowed geotechnical work) shall not begin until an Energy Commission Compliance Project Manager (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. 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.

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 habitat disturbance will be allowed in any designated sensitive areas until the CPM approves a new Designated Biologist and the new Designated Biologist is on-site.

Verification: At least thirty (30) days prior to the start of site mobilization activities, or an alternative timeframe agreed upon with the CPM, 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-2 The CPM approved Designated Biologist shall perform the following during project site mobilization construction and operation:

1. Advise the project owner's Construction Manager, supervising construction and operations engineer on the implementation of the biological resources 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 any non-compliance with any biological resources Condition of Certification.

Verification: During project site mobilization and 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-3 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 necessary, all construction activities in areas specifically identified by the Designated Biologist as sensitive to assure that potential significant biological resource impacts are avoided.

The Designated Biologist shall:

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

2. Advise the Energy Commission CPM if any corrective actions are needed or have to be instituted.

Verification: Within 24 hours of a Designated Biologist notification of non-compliance with a Biological Resources Condition of Certification or a halt of construction, the project owner shall notify the CPM by telephone of the circumstances and actions being taken to resolve the problem or the non-compliance with a condition. For any necessary corrective action taken by the project owner, a determination of success or failure will be made by the CPM within 5 working days after receipt of notice that corrective action is completed, or the project owner will be notified by the CPM that coordination with other agencies will require additional time before a determination can be made.

BIO-4 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 (including the access road, laydown area, transmission lines, water and gas lines) during project mobilization construction and operation, are informed about sensitive biological resources associated with the project.

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 meaning 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 a competent individual(s) acceptable to 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 environmental awareness training prior to their first day of work.

Verification: At least thirty (30) days prior to the start of site mobilization, or an alternative timeframe agreed upon with the CPM, the project owner shall provide two (2) 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 six (6) months, following the termination of an individual's employment.

BIO-5 Prior to the start of any site mobilization activities, the project owner shall acquire 10 credits from the KWBHCP to satisfy the requirements for Federal and State Incidental Take Permits (issued by the USFWS and CDFG, respectively).

Verification: At least twenty (20) days prior to the start of site mobilization activities the project owner shall submit to the CPM documentation (letter, receipt, and a copy of the check) that the HPP has secured 10 acres of mitigation credits through the

KWBHCP. Verification of the purchase of 10 compensatory credits from the KWBHCP will satisfy the need for acquiring a Federal or California-State Incidental Take Permit. A summary of the KWBHCP's terms and conditions will be incorporated into the BRMIMP.

BIO-6 The project owner shall submit to the CPM for review and approval a copy of the final Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and shall implement the measures identified in the plan. Any changes to the adopted BRMIMP must be made in consultation with Energy Commission staff, CDFG and the USFWS.

The final BRMIMP shall identify:

1. All biological resources mitigation, monitoring, and compliance measures recommended by the Applicant referred to, as well as those contained in, Condition of Certification BIO-7 (and other mitigation requirements)**;**

2. All permits the applicant expects to obtain;

3. The responsibilities of the parties involved;

4. The proposed lines of communication;

5. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation and closure;

6. All required mitigation measures for each sensitive biological resource;

7. The required habitat compensation strategy, including provisions for acquisition, enhancement, and management for any temporary and permanent loss of sensitive biological resources;

8. All measures that will be taken to avoid or mitigate temporary disturbances from construction activities;

9. All locations, on a map of suitable scale, of laydown areas and areas requiring temporary protection and avoidance during construction;

10. Aerial photographs of all areas to be disturbed during project construction activities - one set prior to site disturbance and one set subsequent to completion of mitigation measures. Include planned timing of aerial photography and a description of why times were chosen;

11. The duration for each type of monitoring and a description of monitoring methodologies and frequency;

12. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;

13. All performance standards and remedial measures to be implemented if performance standards are not met;

14. Biological resources related facility closure measures; and

15. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval.

Verification: At least thirty (30) days prior to start of any project site mobilization activities, or an alternative timeframe agreed upon by the CPM, the project owner shall provide the CPM with two (2) copies of the draft final version of the BRMIMP for this project, and the CPM will determine the plan's acceptability within forty-five (45) days of receipt. The project owner shall notify the CPM no less than five (5) working days before implementing any modifications to the BRMIMP to obtain CPM approval.

Within thirty (30) days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which mitigation and monitoring plan items are still outstanding.

BIO-7 The project owner shall implement the mitigation measures identified below and incorporate them into the final BRMIMP (BIO-6).

Protocol: The project owner shall:

1. site transmission line poles, access roads, pulling sites, and storage and parking areas to avoid sensitive resources whenever possible;

2. design and construct transmission lines and poles to reduce the likelihood of electrocutions of large birds;

3. implement a Worker Environmental Awareness Program;

4. clearly mark construction area boundaries with stakes, flagging, and/or rope or cord to minimize inadvertent degradation or loss of adjacent habitat during facility construction/modernization. All equipment storage will be restricted to designated construction zones or areas that are currently not considered sensitive species habitat;

5. provide a Designated Biologist to monitor all activities that may result in incidental take of listed species or their habitat. Specifically, the designated monitor shall be present during all activities that occur outside the fenced HPP site;

6. fence and provide wildlife escape ramps for construction areas that contain steep-walled holes or trenches. Fence shall be constructed of hardware cloth or similar materials that are approved by USFWS and CDFG;

7. fence the HPP site and keep all gates closed at night to avoid SJKF movement into the site;

8. inspect the natural gas line trenches each morning for entrapped animals prior to the beginning of pipeline construction. Construction will be allowed to begin only after trapped animals are able to escape voluntarily;

9. during the natural gas pipeline construction period, inspect all pipes, culverts, or similar structures with a diameter of 4-inches or greater for sensitive species (such as SJKF) prior to pipe burial. Pipes to be left in trenches overnight shall be capped;

10. provide a post-construction compliance report, within forty-five (45) calendar days of completion of the project, to the Energy Commission CPM;

11. make certain that all food-related trash is disposed of in closed containers and removed at least once a week. Feeding of wildlife shall be prohibited;

12. report all inadvertent deaths of sensitive species to the appropriate project representative. Injured animals shall be reported to the USFWS and CDFG, and the project owner shall follow instructions that are provided by USFWS and CDFG; and

13. in the event that sensitive species are observed within the active construction area, the designated biologist shall immediately cease all construction near the sighting location and inform the CPM and the appropriate resource agencies (USFWS and CDFG).

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP (**BIO-6**). Two (2) copies of the CPM approved BRMIMP must be provided to the CPM five (5) days prior to site mobilization.

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CULTURAL RESOURCES

Testimony of Paul Shattuck and Dorothy Torres

INTRODUCTION

The cultural resources section discusses potential impacts of the proposed Henrietta Peaker Project (HPP), near Lemoore, California, regarding cultural resources, which are defined under state law in the Laws Ordinances Regulations and Standards (LORS) section of this staff assessment. A brief cultural overview of the project is provided, as is an analysis regarding selected California Environmental Quality Act (CEQA) checklist items used to assess potential project related impacts. If cultural resources are identified, staff determines whether there may be a project-related impact to identified cultural resources. If the cultural resource is eligible for the California Register of Historic Resources (CRHR), staff then recommends mitigation that will reduce the impact to the historical resource to a less than significant level. The section concludes with staff's proposed mitigation measures included in the conditions of certification **CUL-1** through **CUL-6**.

There is also a potential that a project may impact a previously unidentified resource or impact an historical resource in an unanticipated manner. Staff also recommends procedures in the conditions of certification that mitigate these potential impacts.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

FEDERAL

Code of Federal Regulations, 36 CFR, Part 61. Federal Guidelines for Historic Preservation Projects: The U.S. Secretary of the Interior has published a set of Standards and Guidelines for Archaeology and Historic Preservation. These are considered to be the appropriate professional methods and techniques for the preservation of archaeological and historic properties. The Secretary's standards and guidelines are used by federal agencies, such as the Forest Service, the Bureau of Land Management, and the National Park Service. The State Historic Preservation Office refers to these standards in its requirements for mitigation of impacts to cultural resources on public lands in California.

- National Historic Preservation Act, 16 U.S.C. § 470, commonly referred to as Section 106, 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. Regulation revised in 1997 (36 CFR Part 800 et. seq.) set forth procedures to be followed for determining eligibility of cultural resources, determining the effect of the undertaking on the historic properties, and how the effect will be taken into account. The eligibility criteria and the process are used by federal agencies. Very similar criteria and procedures are used by the state in identifying cultural resources eligible for listing in the California Register of Historical Resources.

STATE

- California Code of Regulations, Title 14, section 4852 defines the term "cultural resource" to include buildings, sites, structures, objects, and historic districts.
- Public Resources Code, Section 5000 establishes a California Register of Historic Places; determines significance of and defines eligible properties. It identifies any unauthorized removal or destruction of historic resources on sites located on public land as a misdemeanor. It also prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn and establishes the penalty for possession of such artifacts with intent to sell or vandalize them as a felony. This section defines procedures for the notification of discovery of Native American artifacts or remains, and; states that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated.
- The California Environmental Quality Act (CEQA) (Public Resources Code, section 21000 et seq.; Title 14, California Code of Regulations, section 15000 et seq.) requires 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 “historic resource” and describes what constitutes a “significant” historic resource.
- CEQA Guidelines, Title 14, California Code of Regulations, section 15126.4(b) prescribes the manner of maintenance, repair, stabilization, restoration, conservation, or reconstruction as mitigation of a project’s impact on a historical resource; discusses documentation as a mitigation measure; and 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, section 15064.5, defines the term “historical resources,” explains when a project may have a significant effect on historic resources, describes CEQA’s applicability to archaeological sites, and specifies the relationship between “historical resources” and “unique archaeological resources.”
- Penal Code, section 622 1/2 states that anyone who willfully damages an object or thing of archaeological or historic interest is guilty of a misdemeanor.

- California Health and Safety Code, section 7050.5 states that if human remains are discovered during construction, the project owner is required to contact the county coroner.

LOCAL

- The Open Space Element of the Kings County General Plan, in Goal 26, requires the preservation of significant historical and archaeological sites and structures in Kings County. Kings County also follows all provisions of CEQA regarding cultural resources.

SETTING

As provided in the AFC, the HPP project will consist of a 91.4-megawatt, natural gas fired, simple-cycle power plant located approximately ten miles southwest of the city of Lemoore, in the southern San Joaquin Valley. The HPP will be situated on a seven-acre portion of a 20-acre parcel owned by GWF Energy, LLC. The HPP will connect to the existing Pacific Gas and Electric Company (PG&E) Henrietta Substation via a new 550-foot, 70-kilovolt transmission line. Other linear features associated with the HPP consist of a 16.5-foot water interconnection pipeline and a 2.2 mile Southern California Gas Company natural gas interconnection pipeline. Approximately five additional acres will be used for temporary construction laydown and parking. The temporary staging/parking areas will be located within the 20-acre parcel (GWF 2001a, p.8.3-1).

The HPP area lies to the north of Tulare Lake bed and south of the Kings River. Prior to the development of agriculture, it was an area comprised of numerous sloughs and creeks. The plant site is at an elevation of approximately 225 feet above mean sea level and is relatively flat with little topographic relief. The now-desiccated wetlands of Tulare Lake and Buena Vista Lake to the south, have been the focus of most archaeological research in the southern San Joaquin Valley (GWF 2001a).

The project area is located within the ethnographic boundaries of the Southern Valley Yokuts. The“Yokuts” originally inhabited the San Joaquin Valley and Sierra Nevada Foothills of central California. The Southern Valley Yokuts tribes inhabited the southern end of the San Joaquin Valley. The Southern Valley Yokuts were adapted to and utilized the lake-slough-marsh environment. Ethnographic Yokuts tribes who inhabited the area north of Tulare Lake near Lemoore included the Wimilchi, the Telamni, and the Nutunutu. Prior to historic times, it is estimated that the Southern Yokut population numbered about 2000 people (GWF 2001a).

The Southern Valley Yokuts encountered the Spaniards in approximately 1772. Contact between the Yokuts and the Spaniards was infrequent until 1806. Later Mexican contact produced a severe epidemic of a disease that may have been malaria in 1833. As a result of the epidemic, the mortality rate of the Southern Yokuts was estimated at 75 percent. Although not affected by the Gold Rush in 1848, further decimation of the population occurred during that time period as non-native populations migrated into the San Joaquin Valley in search of agricultural land. In 1970, approximately 325 Yokuts lived on the 54,110 acres of the Tule River Reservation.

Kings County was organized in 1893 from parts of Tulare and Fresno Counties. "The dominant feature of the county in historic times was Tulare Lake, which in 1865 was 40 by 65 miles, with another large area covered by marsh. The lake and its surrounding marshes were gradually drained for irrigation" (GWF 2001a, p.8.3-8). The site is currently used for cotton production and has been in cotton production for the past 30 years. There is no evidence that the site was utilized prior to cotton cultivation (GWF 2001a).

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?		X		
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?		X		
c) Disturb any human remains, including those interred outside of formal cemeteries?				X

DISCUSSION OF IMPACTS

a. Impacts to historic resources

To cause a substantial adverse change in the significance of an historical resource is to destroy, demolish, relocate or alter the resource so that the physical characteristics that convey its significance are materially impaired or that characteristics that allow its inclusion on either a local register or the CRHR are materially impaired.

A records search was performed at the South San Joaquin Valley Information Center (SSJVIC) on May 10, 2001. As a result of the addition of another project component, a second records search was conducted on May 22, 2001. The combined records searches included the plant site, the associated linear elements and a 0.75-mile radius study area around them. Information on historic built environment resources was requested and various sources provided by the SSJVIC showing that no known historically sensitive resources were identified within a 0.75-mile radius around the project site and linears.

Field survey of the HPP site and its associated linear features revealed only three built environment resources in the vicinity of the HPP site. The first is the New Star facility, a trucking transfer station located on 25th Avenue. This facility is less than 45 years old, located outside the project Area of Potential Effect (APE) and need not be considered for eligibility to the CRHR (GWF 2001a).

The second structure is the Henrietta Substation, constructed in 1911 and located inside the project's APE. Over the years the Henrietta Substation has experienced frequent upgrades and the Applicant has determined, and staff agrees, that the Henrietta Substation does not embody the significance or integrity to qualify as a historical resource. Therefore, there is no need to consider potential impacts to the substation.

A third element of the built environment that may potentially be affected by the HPP is Avenal Cutoff Road, which is over 50 years of age. The proposed gas line will be located within the Right of Way (ROW) of 25th Ave. and will cross Avenal Cutoff Road. This road was originally graded between 1936 and 1940. The road surface has been periodically replaced and lacks integrity. Due to the possibility of encountering earlier phases of road construction, cultural resources monitoring will be required for all ground disturbing activities in the vicinity of Avenal Cutoff Road. Monitoring will serve to preserve and record any evidence of earlier phases of road construction or other historic features or deposits and will ensure mitigation should significant features be identified.

No significant historic cultural resources are known to be within the APE of the HPP site or its linear facilities. There is a possibility of encountering remnants of former roadways under the existing roadway at Avenal Cutoff Road. The implementation of cultural resource monitoring in the area of ground disturbance at the Avenal Cutoff Road will assure that any effects of ground disturbance will be mitigated to a less than significant level.

b. Impacts to archaeological resources

Under CEQA, an archaeological resource may be determined to be an historical resource. To cause a substantial adverse change in the significance of an historical resource is to destroy, demolish, relocate or alter the resource so that the physical characteristics that convey its significance are materially impaired or that characteristics that allow its inclusion on either a local register or the CRHR are materially impaired. A records search was performed at the South San Joaquin Valley Information Center (SSJVIC) on May 10, 2001. An additional project component was added resulting in a second records search on May 22, 2001. The combined records searches included the plant site, the associated linear elements and a 0.75-mile radius study area around them. Neither record search identified known archaeological resources in the project area. However, the record searches revealed that no previous archaeological surveys have been conducted in the project area.

The applicant conducted a field survey of the project area on May 17-18, 2001. The survey covered the 20-acre proposed HPP site plus a 200-foot buffer zone around it. For the linear features a 400-foot corridor (200 feet on either side of the centerline) was surveyed where the terrain permitted. The New Star facility (buildings) is paved and is outside the APE. With the exception of the paved area at the New Star facility, ground visibility was good. No archaeological resources were located during the survey.

The Applicant contacted the Native American Heritage Commission (NAHC) and was given a list of concerned Native American individuals and groups to contact regarding

the HPP. There was one response from this contact. The respondent informed the Applicant that his tribal members did not recall any Native American village sites within the vicinity of the HPP, but he knew of an historic Indian farm house/ranch settlement and a prehistoric site within one mile of the project area. This individual and other representatives of the Santa Rosa Rancheria are concerned that ground disturbance of the HPP could result in the discovery of previously unknown cultural resources. Tribal representatives, including tribal elders, visited the site and collected several potential artifacts. On November 29, 2001 archaeologists Dr. Bryon Bass and Rachel Egherman visited the site in the company of tribal representatives from Santa Rosa Rancheria. Ms. Egherman resurveyed the site and Dr. Bass evaluated the materials previously collected by the Native Americans. Dr. Bass found one of the items is a possible basalt bowl mortar fragment and the other is a possible basalt pestle fragment. Dr. Bass concluded that "these fragments are isolates occurring in a highly disturbed plow zone" (URS 2001b),

The proposed project will not impact any known archaeological resource. However, buried archaeological resources could be encountered during project construction. Due to its proximity to ancient shores of Tulare Lake, the project area has been determined by the Applicant to have a moderate level of archaeological sensitivity (GWF 2001a). Native Americans in the area have expressed their concerns regarding the discovery of previously unknown archaeological resources. In addition, there are references in anthropological literature to the existence of several ethnographically identified village sites in the vicinity of the proposed HPP (Heizer 1978). To mitigate potential impacts to undiscovered cultural resources, staff recommends cultural resource monitoring and Native American monitoring to ensure that any potential impacts to cultural resources will be mitigated below a level of significance. Due to the prior intensive agricultural use of this site, staff recommends monitoring in areas of the project site where ground disturbance will exceed the depth of previously disturbed soils. This mitigation measure will ensure that any impacts to archaeological resources are mitigated below a level of significance.

In the event of an unanticipated discovery, the proposed Conditions of Certification CUL-1 through CUL-6 shall apply. Implementation of the proposed Conditions of Certification CUL-1 through CUL-6 will reduce impacts to any archaeological resource identified during construction to a level of insignificance. Development of a research design prior to the start of construction that could be applied to discoveries may reduce construction delays.

c. Impacts to human remains

A significant impact occurs if human remains are disinterred, disturbed or removed from their present location. There are no known human remains that would be disturbed by the proposed project. In the event that human remains are encountered during project construction; the proposed Conditions of Certification CUL-1 through CUL-6 and state law shall apply.

CUMULATIVE IMPACTS

Staff concludes that there are no known cumulative impacts because the project will not affect any known historical resources. Should any cultural resources be identified during

construction, implementation of the proposed Conditions of Certification CUL-1 through CUL-6 will reduce cumulative impacts to a level of less than significant.

AGENCY AND PUBLIC COMMENTS

The NAHC has provided the Energy Commission with comments regarding the construction of the HPP. The NAHC endorses the recommendation that a Native American monitor be present during ground disturbing activities at the HPP because of the possibility of unearthing previously unknown cultural remains. The NAHC also requests that a Native American, culturally affiliated with the site, be present during construction worker education and should also participate in decisions regarding the selection of the appropriate curatorial facility for any recovered Native American artifacts. The NAHC also suggest that Native Americans should participate in decisions regarding any display and interpretation of recovered Native American artifacts, so that they are treated in a culturally sensitive manner. Energy Commission staff concurs with these recommendations although it may not be within the authority of the Energy Commission to implement them. To address these concerns, staff has recommended the adoption of CUL-6 which requires Native American monitoring where discovery of Native American artifacts might be anticipated, and CUL-3 which provides Native Americans an opportunity to comment on discoveries and proposed curation facilities.

No public comments regarding cultural resources were received.

CONCLUSIONS AND RECOMMENDATIONS

Based on the discussion above, the project will not cause significant impacts to cultural resources provided the following conditions of certification are implemented. Should the Energy Commission approve the Henrietta Peaker Project, implementation of the following conditions will reduce potential impacts to cultural resources to below a level of significance.

PROPOSED CONDITIONS OF CERTIFICATION

CUL-1 Prior to the start of ground disturbance, the project owner shall provide the California Energy Commission Compliance Project Manager (CPM) with the name and resume of its Cultural Resources Specialist (CRS), and one alternate CRS, if an alternate is proposed, who will be responsible for implementing all cultural resources conditions of certification.

(1) The resume for the CRS and alternate, if an alternate is proposed, shall include information that demonstrates that the CRS meets the minimum qualifications specified in the U.S. Secretary of Interior Guidelines, as published in the Code of Federal Regulations, 36 CFR Part 61.

The technical specialty of the CRS shall be appropriate to the needs of this project and shall include a background in anthropology, archaeology, history, architectural history or a related field

The background of the CRS shall include at least three years of archaeological or historic, as appropriate, resource mitigation and field experience in California;

The resume shall include the names and phone numbers of contacts familiar with the CRS's work on referenced projects. (2) The resume shall also demonstrate to the satisfaction of the CPM, the appropriate education and experience to accomplish the cultural resource tasks that must be addressed during project ground disturbance, construction and operation.

(2) The CRS may obtain qualified cultural resource monitors to monitor as necessary on the project. Cultural resource monitors shall meet the following qualifications.

A BS or BA degree in anthropology, archaeology, historic archaeology or a related field and one year experience monitoring in California; or
An AS or AA in anthropology, archaeology, historic archaeology or a related field and four years experience monitoring in California; or
Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historic archaeology or a related field and two years of monitoring experience in California.

(3) The project owner shall ensure that the CRS completes any monitoring, mitigation and curation activities necessary to this project and fulfills all the requirements of these conditions of certification. The project owner shall also ensure that the CRS obtains additional technical specialists, or additional monitors, if needed, for this project. The project owner shall also ensure that the CRS evaluates any cultural resources that are newly discovered or that may be affected in an unanticipated manner for eligibility to the California Register of Historic Resources (CRHR). Moreover, the project owner shall

ensure that all archaeological technical reports are submitted in Archaeological Resource Management Report (ARMR) format as recommended by the California Office of Historic Preservation (OHP).

Verification: (1) At least forty-five days prior to the start of ground disturbance, the project owner shall submit the name and statement of qualifications of its CRS and alternate CRS, if an alternate is proposed, to the CPM for review and approval.

At least ten days prior to the termination or release of the CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval.

(2) At least twenty days prior to ground disturbance, the CRS shall provide a letter naming anticipated monitors for the project and stating that the identified monitors meet the minimum qualifications for cultural resource monitoring required by this condition. If additional monitors are obtained during the project, the CRS shall provide additional letters to the CPM, identifying the monitor and attesting to the monitor's qualifications. The letter shall be provided one week prior to the monitor beginning on-site duties.

At least ten days, prior to the start of ground disturbance, the project owner shall confirm in writing to the CPM that the approved CRS will be available for onsite work and is prepared to implement the cultural resources conditions of certification.

CUL-2 (1) Prior to the start of ground disturbance, the project owner shall provide the CRS and the CPM with maps and drawings showing the footprint of the power plant and all linear facilities. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting individual artifacts. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide them with copies to the CPM. If the footprint of the power plant or linear facilities changes, the project owner shall provide maps and drawings reflecting these changes, to the CRS and the CPM. Maps shall identify all areas of the project where ground disturbance is anticipated.

(2) If construction of this project will proceed in phases, maps and drawings may be submitted in phases. A letter identifying the proposed schedule of each project phase shall be provided to the CPM. Prior to implementation of additional phases of the project, current maps and drawings shall be submitted to the CPM.

(3) At a minimum, the CRS shall consult weekly with the project superintendent or construction field manager, until ground disturbance is completed, to confirm area(s) to be worked during the next week. A current schedule of anticipated project activity shall be provided to the CRS on a weekly basis during ground disturbance and provided to the CPM in each Monthly Compliance Report (MCR).

Verification: (1) At least forty days prior to the start of ground disturbance, the project owner shall provide the designated cultural resources specialist and the CPM with the maps and drawings.

(2) If this is to be a phased project, a letter identifying the proposed schedule of the ground disturbance or construction phases of the project shall also be submitted.

(3) At least 30 days prior to the start of ground disturbance on each phase of the project, following initial ground disturbance, copies of maps and drawings reflecting additional phases of the project, shall be provided to the CPM for review and approval.

(4) If there are changes to the scheduling of the construction phases of the project, a letter shall be submitted to the CPM within five days of identifying the changes.
A copy of the current schedule of anticipated project activity and a copy of current maps shall be submitted in each MCR.

CUL- 3 Prior to the start of ground disturbance the designated cultural resources specialist shall prepare, and the project owner shall submit to the CPM for review and approval, a Cultural Resources Monitoring and Mitigation Plan (CRMMP), identifying specific measures to minimize potential impacts to sensitive cultural resources. Approval of the CRMMP, by the CPM, shall occur prior to any ground disturbance.

Protocol: The Cultural Resources Monitoring and Mitigation Plan shall include, but not be limited to, the following elements and measures.

a. A discussion of the inclusion of Native American observers or monitors, the procedures to be used to select them, and their role and responsibilities. Native American monitors/consultants shall be provided an opportunity to provide comments regarding the choice of the curation facility.

b. A discussion of the location(s) where monitoring of project construction activities is deemed necessary. Monitoring shall be conducted full time, during ground disturbance that exceeds the level of previous disturbance at the project site and in the vicinity of the Avanal Road Cutoff.

c. A discussion of the requirement that, if there is an unanticipated discovery, all cultural resources encountered will be recorded on a DPR form 523 and mapped (may include photos).

d. A discussion that all archaeological materials collected as a result of the archaeological investigations shall be curated in accordance with The State Historical Resources Commission's "Guidelines for the Curation of Archaeological Collections," into a retrievable storage collection in a public repository or museum. The public repository or museum must meet the standards and requirements for the curation of cultural resources set forth at Title 36 of the Code of Federal of Regulations, Section 79.

If there is an unanticipated discovery and materials are collected, an addendum to the CRMMP shall be provided that discusses any requirements, specifications, or funding needed for curation of the materials to be delivered for curation and how requirements, specifications and funding will be met. The name and phone number of the contact person at the institution shall also be

included. In addition, information shall be included indicating that the project owner will pay all curation fees and that any agreements concerning curation will be retained and available for audit for the life of the project.

e. A discussion of the proposed Cultural Resource Report which shall be prepared according to ARMR Guidelines. The CRR shall include **all** cultural resource information obtained as a result of this project. All survey reports, monitoring records and additional research reports not previously submitted to the CHRIS shall be included as an appendix to the CRR. Comments provided by Native American monitors/consultants regarding newly discovered Native American artifacts shall be included in this report. This report shall be submitted to the CPM after the conclusion of ground disturbance (including landscaping). This report shall be considered final upon approval by the CPM.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall provide the Cultural Resources Monitoring and Mitigation Plan, prepared by the designated cultural resource specialist, to the CPM for review and written approval.

At least 30 days prior to ground disturbance the project owner shall submit a letter to the CPM indicating that they will pay any curation fees for curation of any collected archaeological artifacts.

The CRR shall be submitted to the CPM within 90 days after completion of ground disturbance (including landscaping) for review and approval. Within 10 days after CPM approval, the project owner shall provide documentation to the CPM that copies of the CRR have been provided to the curating institution (if archaeological materials were collected), the SHPO and the CHRIS.

CUL-4 Worker Environmental Awareness Training for all new employees shall be conducted on a weekly basis, prior to and during periods of ground disturbance. Concerns of representative of the Santa Rosa Rancheria regarding treatment of Native American artifacts and burials shall be incorporated into the training program. The training may be presented in the form of a video. The training shall include a discussion of applicable laws and penalties under the law. Training shall also include samples or visuals of artifacts that might be found in the project vicinity and the information that the CRS, alternate CRS or monitor has the authority to halt construction in the event of a discovery or unanticipated impact to a cultural resource. The training shall also instruct employees to halt or redirect work in the vicinity of a find and to contact their supervisor and the CRS or monitor. An informational brochure shall be provided that identifies reporting procedures in the event of a discovery. Workers shall sign an acknowledgement form that they have received training and a sticker shall be placed on hard hats indicating that environmental training has been completed.

Verification: Copies of signed acknowledgement forms shall be provided in the MCR.

CUL-5 The CRS, alternate CRS and the Cultural Resources Monitor(s) shall have the authority to halt or redirect construction if previously unknown cultural resource sites or materials are encountered or if known resources may be impacted in a previously unanticipated manner.

If such resources are found, the halting or redirection of construction shall remain in effect until all of the following have occurred:

a. the CRS has notified the CPM and the project owner of the find and the work stoppage;

b. the CRS, the project owner, and the CPM have conferred and determined what, if any, data recovery or other mitigation is needed; and

c. any necessary data recovery and mitigation has been completed.

If data recovery or other mitigation measures are required, the CRS and/or the alternate CRS and cultural resource monitor(s), including Native American monitor(s), shall monitor these data recovery and mitigation measures, as needed.

For any cultural resource encountered, the project owner shall notify the CPM within 24 hours after the find.

All required data recovery and mitigation shall be completed expeditiously unless all parties agree to additional time.

Verification: At least thirty days prior to the start of ground disturbance, the project owner shall provide the CPM with a letter confirming that the CRS, alternate CRS and cultural resources monitor(s) have the authority to halt construction activities in the vicinity of a cultural resource find and stating that the CRS will notify the CPM and project owner within 24 hours after a find.

CUL-6 (1) The CRS, alternate CRS, or monitors shall monitor ground disturbance full time in the vicinity of the project site where project ground disturbance exceeds previously disturbed soil. Cultural resources monitoring shall also occur full time on the gas pipeline in the vicinity of the Avenal Cutoff Road. Additional monitoring shall occur at the discretion of the CRS. In the event that the CRS determines that full-time monitoring is not necessary in certain locations, a letter providing a detailed justification for that decision to reduce the level of monitoring shall be provided to the CPM for review and approval.

(2) Monitors shall keep a daily log of any monitoring or cultural resource activities and the CRS shall prepare a weekly summary report on the progress or status of cultural resources-related activities. The CRS may informally discuss cultural resources monitoring and mitigation activities with Energy Commission technical staff.

(3) The CRS shall notify the project owner and the CPM, by telephone, of any incidents of non-compliance with any cultural resources conditions of certification within 24 hours of becoming aware of the situation. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the conditions of certification.

(4) A Native American monitor shall be obtained to monitor ground disturbance in areas where Native American artifacts may be discovered. Informational lists of concerned Native Americans and Guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that will be monitored. Native American monitors shall also be given an opportunity to comment on any discovered Native American artifacts. These comments shall be included in the CRR required in **CUL-3**.

Verification: (1) During the ground disturbance phases of the project, if the CRS wishes to reduce the level of monitoring occurring at the project, a letter identifying the area(s) where the CRS recommends the reduction and justifying the reductions in monitoring shall be submitted to the CPM for review and approval.

(2) During the ground disturbance phases of the project, the project owner shall include in the MCR to the CPM copies of the weekly summary reports prepared by the CRS regarding project-related cultural resources monitoring. Copies of daily logs shall be retained and made available for audit by the CPM as needed.

(3) Within 24 hours of recognition of a non-compliance issue, the CRS shall notify the CPM by telephone of the problem and of steps being taken to resolve the problem. The telephone call shall be followed by an e-mail or fax detailing the non-compliance issue and the measures necessary to achieve resolution of the issue. Daily logs shall include forms detailing any instances of non-compliance with conditions of certification. In the event of a non-compliance issue, a report written no sooner than two weeks after resolution of the issue that describes the issue, resolution of the issue and the effectiveness or the resolution measures, shall be provided in the next MCR.

(4) One week prior to ground disturbance in areas where there is a potential to discover Native American artifacts, the project owner shall send notification to the CPM identifying the person(s) retained to conduct Native American monitoring. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM who will initiate a resolution process.

REFERENCES

GWF (GWF Energy LLC). 2001a. Application for Certification for the Henrietta Peaker Power Plant. Submitted to the California Energy Commission on August 27, 2001.

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Heizer, Robert F., 1978, Handbook of North American Indians, Vol. 8, Smithsonian Institution.

URS (URS Corporation). 2001a. Supplement to Application for Certification for the Henrietta Peaker Power Plant. Submitted to the California Energy Commission on October 9, 2001.

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HAZARDOUS MATERIALS
AND
WORKER SAFETY/FIRE PROTECTION

Testimony of Ramesh Sundareswaran

INTRODUCTION

The purpose of this analysis is to determine if the proposed Henrietta Peaker Project (HPP) has the potential to cause a significant impact on the public as a result of the use, transport, handling or storage of hazardous materials and also the potential for significant impacts related to worker safety and fire protection issues. If significant adverse impacts are identified, Energy Commission staff must also evaluate the potential for facility design alternatives and additional mitigation to reduce impacts to the extent feasible. The section is organized to include a summary of the HPP along with comments regarding selected checklist items with respect to the topical areas of concern. It concludes with staff's recommended conditions of certification to monitor and mitigate the project, as needed.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

A framework, based on environmental laws, ordinances, regulations and standards (LORS), exists to reduce risks of accidents, reduce routine environmental and workplace hazards and improve upon responses to accidents. The transport, storage and use of hazardous materials, fire prevention and protection, and the shielding of workers from workplace hazards, are regulated by certain federal, state, and local laws and regulations that are outlined below. Staff has evaluated the consistency and compatibility of the HPP against the backdrop of the various legal and institutional conditions of these laws and regulations in order to establish the acceptability of the project.

FEDERAL

Hazardous Materials Management

The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III section 301 and the Clean Air Act (CAA), section 112 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 requirements of the Federal law are reflected in the California Health and Safety Code, section 25531 et seq. The rules include requirements for businesses to develop and implement risk management programs that incorporate three elements: a hazard assessment, a prevention program and an emergency response program which are commonly referred to as the U.S. Environmental Protection Agency Risk Management Program (USEPA RMP).

Worker Safety and Fire Protection

In December, 1970, Congress enacted Public Law 91-596, the Federal Occupational Safety and Health Act of 1970(OSH Act). This Act mandates safety requirements in the workplace and is found in Title 29 of the United States Code, section 651 (29 U.S.C. §§ 651 through 678). Implementing regulations are codified at Title 29 of the Code of Federal Regulations, under General Industry Standards §§ 1910.1 - 1910.1500 and define 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 this Act represent a compilation of materials 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 Occupational Safety and Health 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 U.S.C. § 651). The Federal Department of Labor promulgates and enforces the safety and health standards applicable to all businesses engaged in interstate commerce. The Department of Labor established the Occupational Safety and Health Administration (OSHA) in 1971 to discharge the responsibilities assigned by the OSH Act.

Applicable Federal requirements include:

- 29 U.S.C. § 651 et seq. (Occupational Safety and Health Act of 1970);
- 29 C.F.R. § §1910.1 - 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations);
- 29 C.F.R. § §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 C.F.R. § §1910.1 – 1910.1500).

STATE

Hazardous Materials Management

Title 19, California Code of Regulations, section 2735.1 et seq and California Health and Safety Code, commencing with section 25500, direct facility owners, storing or handling acutely hazardous materials in threshold quantities pursuant to Title 19, California Code of Regulations, section 2770.5, to develop a Risk Management Plan (RMP) and submit it to appropriate local authorities, the U.S. 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 preexisting evaluations or studies of the material, the likelihood of the substance being handled in the manner indicated, and the accident history of the material. This new, recently developed program supersedes the California Risk Management and Prevention Plan (RMPP) and is called the California Accidental Release Prevention

Program (CalARP). The Kings County Environmental Health Department (KCEHD) is designated as the local implementing agency under this program.

Section 25503.5 of the Health and Safety Code requires facilities which store or use hazardous materials to prepare and file a Business Plan with the local Certified Unified Program Authority (CUPA), in this case the KCEHD. This Business Plan is required to contain information on the business activity, the owner, a hazardous materials inventory, facility maps, an Emergency Response Contingency Plan, an Employee Training Plan, and other recordkeeping forms.

Title 8, California Code of Regulations, section 5189, requires facility owners to develop and implement effective safety management plans to insure that large quantities of hazardous materials are handled safely. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process. The program is called the California Occupational Safety & Health Process Safety Management (California PSM).

Title 8, California Code of Regulations, section 458 and sections 500 – 515, set forth requirements for design, construction and operation of vessels and equipment used to store and transfer anhydrous ammonia. These sections generally codify the requirements of several industry codes, including the ASME Pressure Vessel Code, ANSI K61.1 and the National Boiler and Pressure Vessel Inspection Code. While these codes apply to anhydrous ammonia, they may also be used to design storage facilities for aqueous ammonia.

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.”

Worker Safety and Fire Protection

California passed the Occupational Safety and Health Act of 1973 (“Cal/OSHA”) as published in Labor Code section 6300. Regulations promulgated as a result of the Act are codified at Title 8 of the California Code of Regulations, beginning with section 337-560 and continuing with sections 1514 through 8568. The California Labor Code requires that the Division of Occupational Safety and Health of the Department of Industrial Relations (DIR) adopt standards at least as effective as the federal standards (Labor Code § 142.3(a)) and thus all DIR health and safety standards 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 in Title 29 Code of Federal Regulations sections 1910.1 - 1910.1500. The Federal Secretary of Labor, however, continually oversees California’s program and will enforce any federal standard for which the State has not adopted an equivalent counterpart.

Employers are responsible for informing their employees about workplace hazards, potential exposure and the work environment (Labor Code § 6408). Cal/OSHA’s

principal tool in ensuring that workers and the public are informed is the Hazard Communication standard first adopted in 1981 (California Code of Regulations, title 8, § 5194). This regulation was promulgated in response to California's Hazardous Substances Information and Training Act of 1980. It was later revised to mirror the Federal Hazard Communication Standard (29 C.F.R. §1910.1200) which established on the federal level an employee's "right to know" about chemical hazards in the workplace, but added the provision of applicability to public sector employers. A major component of this regulation is the required provision of Material Safety Data Sheets (MSDSs) to workers. MSDSs provide information on the identity, toxicity, and precautions to take when using or handling hazardous materials in the workplace.

Finally, California Code of Regulations, Title 8, § 3203 requires that employers establish and maintain a written Injury and Illness Prevention Program to identify workplace hazards and communicate them to its employees through a formal employee-training program.

Applicable State requirements include:

- California Code of Regulations, Title 8, § 339 - List of hazardous chemicals relating to the Hazardous Substance Information and Training Act;
- California Code of Regulations, Title 8 , § 337, et seq. Cal/OSHA regulations;
- California Code of Regulations, Title 24, § 3, et seq. - incorporates the current addition of the Uniform Building Code;
- Health and Safety Code § 25500, et seq. - Risk Management Plan requirements for threshold quantity of listed acutely hazardous materials at the facility; and
- Health and Safety Code § 25500 - 25541 - Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at the facility.

LOCAL AND REGIONAL

Hazardous Materials Management

The Uniform Fire Code (UFC) contains provisions regarding the storage and handling of hazardous materials in Articles 79 and 80. The latest revision to Article 80 was in 1997 (Uniform Fire Code, 1997) and includes minimum setback requirements for outdoor storage of ammonia.

The California Building Code 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.

Worker Safety and Fire Protection

The California Building Standards Code published at Title 24 of the California Code of Regulations § 3 et seq 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 reflects the body of regulations published at Part 9 of Title 24 (H&S Code §18901 et seq.) pertaining to the California Fire Code.

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 (or locally enforced) requirements include:

- 1998 Edition of California Fire Code and all applicable NFPA standards (California Code of Regulations, Title 24, Part 9);
- California Building Code (California Code of Regulations, Title 24, § 3, et seq.).
- Uniform Fire Code, 1997

The California Fire Code requires that industrial plants submit plans for review and approval by the Kings County Fire Department (KCFD).

SETTING

The HPP will be located on a 20-acre land parcel, southwest of the City of Lemoore and involves the construction and operation of a natural gas fired simple cycle power plant. The proposed location is within an unincorporated area of Kings County. Land use in the surrounding areas is predominantly agricultural with some exceptions. The exceptions include a seasonal agricultural packing facility, south of the HPP and the Lemoore Naval Air Station to the north. The nearest sensitive receptor is a school located approximately 4 miles east of the HPP. The closest residence is approximately 1.5 miles to the northeast of the HPP (2001a).

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HAZARDOUS MATERIALS and WORKER SAFETY/FIRE PROTECTION – Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport or use of hazardous materials?		X		
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		X		
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, within one-quarter mile of an existing or proposed school?				X
d) Expose workers to inappropriate occupational safety and health risks and/or structural or chemical fires of undue duration?		X		
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X

DISCUSSION OF IMPACTS

The proposed HPP would be considered to have significant impacts related to hazardous materials management, worker safety and fire protection if it would:

- create a significant hazard to the public or the environment through the routine transport or use of hazardous materials.
- create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials
- result in the emission or handling of materials within one-quarter mile of an existing or proposed school.
- expose facility workers to inappropriate occupational hazards and/or structural or chemical fires of undue duration.
- be inconsistent with any applicable Airport Land Use Plan or otherwise result in an airport-related safety hazard for people residing or working in the project area.
- result in a private airstrip-related safety hazard for people residing or working in the project area.
- interfere with or impair an adopted emergency response plan or emergency evacuation plan
- expose people or structures to wildland fire hazards.

The basis for the outcomes provided in the checklist are discussed below.

a. Significant public hazard due to hazardous materials transport or use-Less than significant impact with mitigation incorporated

A variety of hazardous materials are proposed for storage and use during the construction of the project and for routine plant operation and maintenance (O&M). (GWF 2001a) Tables 8.12-1 and 8.12-2 in the AFC list those materials that will be utilized during plant construction and operation. Gasoline, diesel, petroleum-based lubricants, solvents, paints, paint thinners, resins and concrete enhancers are listed for use during construction. The O & M materials include hydraulic oil, diesel fuel, transformer oil, nitrogen, nitric oxide, carbon monoxide, aqueous ammonia, carbon dioxide and piped-in natural gas.

The physico-chemical characteristics of ammonia and natural gas and their proposed use during the operation of the plant could pose some potential for off-site impacts. The potential threats from the other hazardous materials are not as significant as they are to be stored, handled or used for routine purposes in relatively smaller quantities at the facility and typically exhibit characteristics which are less hazardous than ammonia or natural gas.

Aqueous Ammonia

The HPP will utilize Selective Catalytic Reduction (SCR) to reduce combustion generated nitrogen oxide (NOx) emissions to comply with the air quality permit

requirements. Aqueous ammonia (29.5 percent ammonia and 70.5 percent water) will be used as a reactant within a catalyst to knock down the NOx to inert water vapor and nitrogen in the SCR process. Though both forms of ammonia are dangerous, the use of the aqueous form of ammonia offers an inherently safer design instead of the anhydrous form of ammonia, which is extremely dangerous. The aqueous form eliminates the high internal energy associated with the more lethal anhydrous form, which is stored as a liquefied gas at elevated pressure. The high internal energy associated with the anhydrous form of ammonia can act as a driving force in an accidental release that can rapidly introduce large quantities of the material into the ambient air where it can be transported in the atmosphere and result in high down-wind concentrations. Spills associated with the aqueous form are also much easier to contain than those associated with the anhydrous form. In addition, relatively slow mass transfer from the free surface of the spilled aqueous solution limits emissions from a spill of aqueous ammonia.

A significant number of modern power plants routinely use aqueous ammonia and the California Energy Commission has licensed many such plants. Much of the risks associated with ammonia use are already reduced through HPP's proposed use of the aqueous form of ammonia.

The transportation of hazardous materials, such as aqueous ammonia, in California is routinely regulated and controlled by various federal and state laws, ordinances, regulations, and standards as discussed in **Traffic and Transportation**. A study by the U.S. Department of Transportation shows that since 1993, no fatalities have occurred either in California or the United States due to aqueous ammonia transportation accidents (DOT 1998). As indicated in sections 8.10.2 and 8.12.5.1 of the Application for Certification (AFC), the deliveries of all hazardous materials including aqueous ammonia to the HPP site will comply with all applicable LOR. Staff has proposed Condition of Certification **HAZ-1** to address the transportation of aqueous ammonia.

Staff concludes that any potential impacts from the transport of aqueous ammonia would be insignificant through Applicant's conformance to LORS and Staff's proposed condition, **HAZ-1.**

Natural Gas

The primary fuel source for the HPP is natural gas, which poses a fire and/or explosion risk as a result of its flammability. The gas will not be stored on-site but piped-in from an existing main line, located south of the 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 (NFPA 1987). 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.

Natural gas pipelines create no hazards for persons near the pipelines as long as the natural gas is contained in the pipeline. Accidental releases could create major fire and/or explosion hazards. The chance of an event involving the loss of natural gas containment resulting in a major hazard is however low if the pipeline is designed and built in accordance with current engineering standards and regulatory requirements. Section 8.12.4.2 of the AFC summarizes the results of a pipeline safety study conducted by the Sacramento Municipal Utility District and Woodward-Clyde. That study indicated that the risk associated with the construction of eight hundred miles of new natural gas pipeline was much lower than that for fires, earthquakes, electrocution, and lightning strikes in California.

Staff therefore concludes that the Applicant's conformance to applicable standards and laws, supplemented by staff's proposed condition, **HAZ-2**, would ensure that potential impacts would be less than significant.

b. Significant hazard to the public through accidental releases of hazardous materials-Less than significant impact with mitigation incorporated

Aqueous ammonia (29.5 percent ammonia and 70.5 percent water) will be used to control NOx emissions generated at the HPP facility. The ammonia will be stored in a 9,000 gallon capacity double-walled above-ground storage tank which is to be equipped with level detectors, flow relief valves, emergency shut-off valves and gauges for temperature. Deliveries of aqueous ammonia will be facilitated through trucks. The truck unloading area will be sloped to drain into a small diameter collection opening connected to an underground 8000-gallon tank so as to intercept and contain any ammonia releases that may accidentally occur during product transfer.

Large accidental and continuous releases of ammonia, culminating in potentially catastrophic outcomes to the public, are possible through two main potential accident initiators for the HPP. One of the initiating events is the failure of the storage tank. The other is the failure of the tanker truck during delivery. 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. 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 proposed ammonia storage tank is double-walled with relief valves. High operating pressures would not be used to store the aqueous ammonia in the tank. In the event of a release from the inner wall of the tank, the outer wall would serve as a backup to contain the release. Further, the likelihood of a catastrophic failure of a double-walled

tank is extremely unlikely. Hence, risks to the public from such an accident would, therefore, be low.

An ammonia delivery accident scenario was modeled and evaluated by the Applicant. The modeling was done in accordance with USEPA RMP and CalARP requirements and assumes that the ammonia release stems from the failure of a hose due to operator error during the unloading/delivery. The modeling reflects a unique combination of wind direction, speed and atmospheric stability conditions and characterizes a worst case scenario. In this analysis, the greatest possible amount of the chemical is assumed to be released from a vessel in a fast, rapid motion at the ground level. Active mitigation devices that need mechanical, human or other energy to manage releases must be assumed to have failed. Further, the weather conditions are assumed to be unique and mild. The ammonia modeling for the HPP is therefore not only conservative but also pessimistic thereby culminating in outcomes that are overstated. Based upon this scenario, the 75 ppm impact area stays well confined within the HPP fenceline.

The USEPA RMP, CalARP and California PSM programs each individually list threshold-planning quantities for specific hazardous materials. Only materials that met certain toxicological, physical and accident criteria were identified and listed. If the quantity of a material on-site exceeds the threshold amount, the facility is required to implement chemical accident prevention and preparedness measures that may include a Risk Management Plan (RMP), pursuant to each regulation. The RMP is a detailed engineering analysis of the potential accident factors at a business and the mitigation measures that can be implemented to reduce accident potentials. Of the listed materials for the HPP, aqueous ammonia will need to be managed in accordance with the requirements of only the CalARP Program, as the maximum amount of that chemical will be above that program's threshold.

The Applicant has indicated that they will institute safety systems that add several layers of protection and defense between hazardous materials and the public as part of accident prevention at the HPP facility. These include, but are not limited to, use of written plans and procedures for hazardous materials management, fire extinguishing and spill response equipment for emergencies and training programs for plant personnel in hazardous materials handling.

Additional safeguards and measures (**HAZ-3 through HAZ-5**), as discussed in the conditions of certification, should supplement those that have been proposed by the Applicant to adequately and greatly reduce the opportunity for, or extent of, public exposure to ammonia. The potential impact of the project would, therefore, be less than significant.

c. Emit hazardous materials within one-quarter mile of a school - No impact

There are no known existing or proposed future schools within a one quarter mile radius of proposed project.

d. Expose workers to inappropriate occupational hazards or fires of undue duration - Less than significant impact with mitigation incorporated

The Applicant will develop and present a comprehensive Occupational Health and Safety Program to minimize hazards to workers during both construction and operation of the HPP. The program will involve the development of various plans and contingencies including but not limited, to an Injury and Illness Prevention Plan, Emergency Action Plan, Fire Protection and Prevention Plan and a Personal Protective Equipment Plan.

The HPP will utilize both on-site fire prevention and protection systems and off-site local fire and emergency services. The proposed on-site fire prevention and protection system closely follows accepted industry standards and codes. The Kings County Fire Department (KCFD), as the lead fire authority, will need to confirm the adequacy of the proposed fire prevention and protection measures at the HPP. Any fire or emergency beyond the capability of the onsite HPP system will require the response of the KCFD. Stations 7 and 10 of the KCFD will serve as first responders to the HPP for fire fighting and emergency needs. Response times for the stations are eight to nine minutes. The KCFD, however, has a mutual-aid partnership with the Lemoore Naval Air Station fire department whose response time would be in the order of three to four minutes. The KCFD currently relies on the City of Visalia Fire Department through a mutual-aid agreement for hazardous materials incident emergency response. Response times to hazardous materials incidents in Kings County by the Visalia Fire Department are typically thirty minutes or more. The KCFD has reviewed and evaluated the HPP and is of the opinion that the project does not pose a significant threat to its capabilities or the public (Virden 2001).

Conditions of certification, **Worker Safety-1 through 3**, are proposed to ensure compliance with all occupational safety and health LORS and that the KCFD will be provided with fire protection plans prior to construction and operation. This would make effective and reliable fire protection measures available so that any potential impacts to worker safety and fire protection at the HPP would be at levels less than significant.

e. Be inconsistent with an airport land use plan or result in an airport-related safety hazard - No impact

The HPP is not located within two miles of a public airport or public use airport or an airport land use plan. The nearest airport is the military airport at the Lemoore Air station and the southern most edge of the runway is approximately six miles north of the HPP. All HPP structures are to be built to heights below that of the tallest transmission structure in the immediate vicinity. The HPP will not pose a safety hazard to people residing or working in the project vicinity.

f. Result in an airstrip-related safety hazard - No impact

There are no private airstrips in the immediate vicinity of the project. The closest airstrip is located approximately four miles to the southeast of the HPP. There are, therefore no anticipated impacts from a private airstrip.

g. Impair or interfere with an emergency response plan or evacuation plan - No impact

The construction and operation of the project would improve upon the reliability of the local power system and therefore benefit the local emergency response capabilities.

The KCFD has a Disaster Response Plan and would need to consider the HPP site in its response planning. According to the KCFD, the HPP would not impair or interfere with its capabilities and therefore enable the fire department to continue to meet its goals in case of an emergency.

h. Expose people or structures to wildland fires - No impact

The area surrounding the proposed HPP is primarily agricultural. No wildlands are present at or adjacent to the HPP site, and no new wildlands are proposed to be created in the project. No wildland fires hazards would result from the implementation of the HPP.

CUMULATIVE IMPACTS

The proposed HPP is to be located in a rural part of Kings County. Activities related to hazardous materials, worker safety and fire protection at the HPP, are regulated by existing laws and regulations to prevent unacceptable off-site risks to the public. Additional mitigation measures have been proposed to reduce any potential impacts due to the HPP to less-than-significant levels. Other projects causing related impacts are not anticipated in the HPP vicinity. No cumulative impacts are therefore expected in combination with the HPP.

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, Kings County Fire 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).

The project owner/operator is also 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.

A facility closure plan will be developed prior to closure to incorporate the above requirements.

ENVIRONMENTAL JUSTICE

Staff has reviewed Census 2000 information that identifies a minority population greater than 50 percent within a six-mile radius of the proposed HPP (see **Socioeconomics, Figure 1**). All potential impacts that were identified in the analysis do not present any unacceptable off-site public health risks.

Based on the aforementioned analysis, staff has not identified unmitigated significant direct or cumulative impacts resulting from the construction or operation of the project and, therefore, there are no hazardous materials management, worker safety and fire protection environmental justice issues related to the HPP.

CONCLUSIONS

The proposed HPP would cause potential hazards to the public should ammonia be improperly transported, and ammonia and natural gas be stored or contained without proper safety measures or monitoring. The project would also cause potential hazards to facility workers should the project have ineffective and unreliable fire protection measures. Adherence by the project to existing regulations and incorporation of appropriate measures would, however, reduce those impacts to less-than-significant levels. As a result, there would be no significant risks of off-site adverse impacts.

Should the Energy Commission approve this project staff recommends that the following conditions of certification be adopted to ensure that the project is designed, constructed and operated to comply with applicable LORS, and to protect the public and workers from any potential significant adverse impacts.

PROPOSED CONDITIONS OF CERTIFICATION

HAZ-1 All aqueous ammonia deliveries to the facility shall be in tanker trucks that meet or exceed the U.S. Department of Transportation requirements for hazardous materials as established in the Code of Federal Regulations No. 49 Parts 171-180.

Verification: The project owner shall include in its Monthly Compliance Reports, copies of all regulatory permits/licenses acquired by the project owner and/or subcontractors concerning the transport of aqueous ammonia and other hazardous materials.

HAZ-2 The natural gas pipeline shall be designed to meet California Public Utilities Commission General Order 112-D & E and 58A standards, or any successor standards. The pipeline will be designed to withstand seismic stresses. The project owner shall incorporate the following safety features into the design and operation of the pipeline: (1) butt welds shall be x-rayed; (2) the pipeline shall be pressure tested prior to the introduction of natural gas; (3) the pipeline shall be surveyed for leakage annually; (4) the pipeline route shall be marked to prevent rupture by heavy equipment excavating in the area; (5) valves shall be installed to locate leaks; and (6) appropriate corrosion measures shall be used.

Verification: Prior to the introduction of natural gas into the pipeline, the project owner shall submit the design and operational specifications of the pipeline to the CPM for review and approval.

HAZ-3 The project owner shall obtain the advance approval of the CPM if the facility intends to store, handle or use a material in quantities that exceed those specified in Title 19 of the California Code of Regulations, section 2770.5.

Verification: The project owner shall provide to the CPM, in the Annual Compliance Report, a list of those materials designated as regulated substances as set forth in Title 19 of the California Code of Regulations. The list shall also include the maximum quantities of these substances at the facility. Copies of the list, from the Annual Report, should also be provided to the Kings County Environmental Health Department (KCEHD) and the Kings County Fire Department (KCFD).

HAZ-4 The project owner shall develop and provide a Hazardous Materials Business Plan.

Verification: At least 45 days prior to the initial startup of the HPP facility, the owner shall undertake a hazardous materials floor plan exercise with the KCEHD and KCFD and provide a copy of the Plan, commented on by the KCEHD, to the CPM and KCFD.

HAZ-5 The project owner shall develop and provide a CalARP Risk Management Plan (RMP). The RMP shall include discussions on the potential for double-walling all ammonia related piping, potential for underground placement of the ammonia storage tank, adequate secondary containment for the ammonia unloading area,

and procedures for the safe delivery of ammonia, as a minimum. The secondary containment shall be designed to hold 110 percent of the tanker truck plus freeboard precipitation from a 24-hour, 25 year storm event.

Verification: At least 45 days prior to the initial startup of the HPP facility, the project owner shall furnish a final copy of the RMP to the CPM. An initial draft shall be provided to the CPM and KCEHD for review and comments. The final RMP shall be approved by the CPM.

WORKER SAFETY-1 The project owner shall submit to the CPM a copy of the Project Construction Injury and Illness Prevention Program, containing the following:

- a Construction Safety Program;
- a Construction Personal Protective Equipment Program;
- a Construction Exposure Monitoring Program;
- a Construction Emergency Action Plan; and
- a Construction Fire Protection and Prevention Plan.

The Safety Program, the Personal Protective Equipment Program, and the Exposure Monitoring Program shall be submitted to the CPM for review and comment concerning compliance of the program with all applicable Safety Orders. The Construction Fire Protection and Prevention Plan and Emergency Action Plan shall be submitted to the KCFD for review and comment prior to submittal to the CPM.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction Injury and Illness Prevention Program. The Construction Fire Protection and Prevention Plan and Emergency Action Plan components of the Program shall reflect the comments of the KCFD.

WORKER SAFETY-2 The project owner shall submit to the CPM a copy of the Project Operations and Maintenance Safety and Health Program containing the following:

- an Operation Injury and Illness Prevention Plan;
- an Emergency Action Plan;
- Hazardous Materials Management Program;
- Operations and Maintenance Safety Program;
- Fire Protection and Prevention Program (California Code of Regulations,Title 8, § 3221); and
- Personal Protective Equipment Program (California Code of Regulations,Title 8 §§ 3401-3411).

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the Cal/OSHA Consultation Service, for review and comment concerning compliance with all applicable Safety Orders. The Operation Fire Protection Plan and the Emergency Action Plan shall be submitted to the KCFD for review and comment.

Verification: At least 30 days prior to the initial startup of the HPP, the project owner shall submit to the CPM a copy of the final version of the Project Operations and Maintenance Safety & Health Program. The Program shall incorporate comments from Cal/OSHA Consultation Service and the KCFD based on their reviews of the respective Program components.

WORKER SAFETY-3 The project owner shall prepare and submit to the CPM an Operations Fire Prevention Plan describing the onsite fire protection systems that will be provided in this project. Specifically, information must be included on employee alarm/communication system, portable fire extinguisher placement and operation, fixed fire fighting equipment placement and operation, fire control methods and techniques, hazardous materials and flammable and combustible liquid storage methods, methods for servicing and refueling vehicles and fire prevention training programs and requirements. Additionally, information should be provided regarding the source of the onsite firewater, including storage if applicable and fire department hook-ups.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the CPM a copy of the final version of the Operations Fire Prevention Plan for review and approval. The KCFD shall also be provided a copy of the Plan for review and comment.

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LAND USE

Testimony of Mark Hamblin

INTRODUCTION

This land use analysis of the Henrietta Peaker Project (HPP) focuses on two main issues, the project's consistency with local land use plans, ordinances and policies and the project's compatibility with existing and planned land uses. In general, an electric generation project and its related facilities may be incompatible with existing and planned land uses if it creates unmitigated noise, dust, public health hazard or nuisance, traffic, or visual impacts, or when it unduly restricts existing or planned future uses.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

This section describes federal, state, regional, and local land use LORS applicable to the proposed project.

STATE

Subdivision Map Act (Pub. Resources Code Section 66410-66499.58)

The Subdivision Map Act provides procedures and requirements regulating land divisions (subdivisions) and the determination of parcel legality. Regulation and control of the design and improvement of subdivisions, by this Act, has been vested in the legislative bodies of local agencies. Each local agency, by ordinance, regulates and controls the initial design and improvement of common interest developments and subdivisions for which the Map Act requires a tentative and final map.

California Land Conservation Act Of 1965

The California Land Conservation Act of 1965--commonly referred to as the Williamson Act--enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. The Williamson Act is implemented by creating a voluntary contract with property owners that restricts land use for 10 years, with automatic annual renewal. In return for the contract to restrict the use of land for agriculture and open space, the landowner receives preferential property tax rates based on the current use of the land rather than its market value. A power generation facility is not a permitted use on lands under an executed Land Conservation Contract.

LOCAL

County Of Kings

Kings County General Plan

Under California State planning law, each incorporated City and County must adopt a comprehensive, long-term General Plan that governs the physical development of all

lands under its jurisdiction. The general plan is a broadly scoped planning document and defines large-scale planned development patterns over a relatively long timeframe.

The General Plan consists of a statement of development policies and must include a diagram and text setting forth the objectives, principles, standards and proposals of the document. At a minimum, a General Plan has seven mandatory elements including Land Use, Circulation, Housing, Conservation, Open Space, Noise, and Safety.

The Kings County Board of Supervisors adopted the Kings County General Plan (KCGP) on December 28, 1993. Subsequently, portions of the General Plan have been amended. Most recently, Amendment No.10 was adopted on June 5, 2001.

The proposed project site is located within northern Kings County. The project site is not located within a city limit, Sphere of Influence or Urban Growth Boundary.

The project site is designated "Exclusive Agriculture" as shown on the KCGP Land Use Map, adopted July 29, 1997 (**LAND USE FIGURE 1** – KCGP Land Use Map). The County has designated the area around Lemoore Naval Air Station (NAS) "Exclusive Agriculture" with a public safety overlay to ensure the preservation of large and sparsely developed parcels in the area for public safety purposes. This designation has proven effective in preventing land use and safety conflicts between the air base and the general public (County of Kings, pg. S-15, 1993).

A specific KCGP policy applicable to the HPP is listed below.

"F. Other Non-Agricultural Open Space Uses

The agricultural area of the county may provide appropriate areas for certain predominantly open uses of land which are not injurious to agricultural uses but which may not be harmonious with the more densely populated urban areas and rural communities of county. Such uses may include waste management facilities; wastewater treatment facilities; and communication towers, antennas, and satellite dishes. Such activities shall be regulated as conditional uses. Additional uses may include power generation facilities. Thermal, wind and solar photovoltaic electrical generating facilities, that commercially produce power for sale, shall be regulated as conditional uses" (KCGP, pg. LU-14, 1993).

Kings County Airport Land Use Compatibility Plan, 1994

The General Plan goals, objectives, and policies of the Kings County Airport Land Use Compatibility Plan are found in the Safety Element of the County General Plan. The Plan only affects public use airports within the County. The public use airports in the County are located near the Cities of Hanford and Corcoran, which are approximately 15 and 20 miles from the site.

Kings County Zoning Ordinance

The Kings County Zoning Ordinance establishes land use (zone) districts in the unincorporated area. In each specific land use district, land uses, dimensions for buildings, and open spaces are regulated for the purpose of implementing the general

plan of the county, protecting existing development, encouraging beneficial new development, and preventing overcrowding and congestion.

The proposed project site is within an “AX” (Exclusive Agricultural District) Zone. (**LAND USE FIGURE 2** – Zone Map). The AX designation is applied generally in a three-mile-wide band around Lemoore Naval Air Station (NAS). A purpose of this designation is to specifically preserve the agricultural land around the NAS from the encroachment of incompatible uses and to provide a safety and noise buffer for the air station’s operations.

Section 403. AX Zone District of the Kings County Zoning Ordinance

“This district is intended primarily for application to those rural areas of the county where it is necessary and desirable to reserve for exclusive agricultural use appropriately located areas suitable for the raising of crops or small concentrations of livestock because of high quality of soils, scenic characteristics, existing or potential irrigation works or exclusive agricultural character of the area.

It is to be applied around the Naval Air Station to reduce potential conflicts, concerning noise and safety due to the operation of military jet aircraft, by reducing the potential number of parcels where residences can built, and to preserve lands best suited for agricultural uses from encroachment by incompatible uses” (County of Kings, pg.11, 2001d).

Section 403. D. Conditional uses; planning commission approval

The following conditional use may be permitted in accordance with the provisions of Article 19:

“11. Thermal power generating facilities, that commercially produce power for sale, which comply with all SJVUAPCD *(San Joaquin Valley Unified Air Pollution Control District*), State, and Federal air quality laws” (*Italics added*) (County of Kings, pg. 14, 2001d).

Section 403. F. Site Area

“1. The minimum site area shall be nominally forty (40) acres and its minimum width shall be six hundred sixty (660) or equivalent fractional part of a section.

4. Sites smaller than forty (40) acres, but not less than one acre, may be allowed for uses listed in Section 403.D. provided that the site is specifically approved as a condition of granting a conditional use permit pursuant to the provisions of Section 1904. Each such site shall have a minimum width of one hundred twenty-five (125) feet” (County of Kings, pg. 14, 2001d).

Section 406. E. Height of Structures

“No limitation” (County of Kings, pg. 22, 2001d).

Section 1710. Review of Utility Towers

"Proposed overhead transmission line routes are submitted to the County zoning administrator for review and recommendation. The zone administrator confines his review to the route, placement and height of such towers and the effect on land use" (County of Kings, pg. 86, 2001d).

SETTING

SITE AND VICINITY DESCRIPTION

The proposed Henrietta Peaker Project (HPP) is to be built on a 20 acre parcel in the unincorporated area of Kings County. The site is located on the east side of 25th Avenue approximately one mile south of the intersection of the 25th Avenue and State Highway 198. The actual footprint of the project will involve a seven acre portion of the twenty acre parcel. The project owner recorded a grant deed on August 6, 2001, demonstrating their ownership of the 20 acre property.

The parcel is currently being used for agricultural operations, specifically the growing of row crops (cotton). The site has been used for the growing and harvesting of cotton for at least thirty years. There are no buildings or structures on the property.

The site is surrounded by cultivated cropland, which is primarily planted in cotton, except for the area immediately north of the subject property. The property to the north contains a power substation owned by Pacific Gas & Electric Company (PG&E) (Henrietta Substation). Lemoore Naval Air Station is located approximately one mile to the north and the Naval Air Station's sewage treatment ponds are a .5 miles to the east of the project site. No other public airports or private airstrips are located within the vicinity of subject property. Also, there are no public parks or other recreational facilities near the project site.

The natural gas pipeline to serve the facility will involve a 12 inch line that will span approximately 2.2 miles traveling along the east public right of way of 25th Avenue and bordering agricultural land. The natural gas pipeline will connect to an existing Southern California Gas Company line (Line 800) approximately one mile south of the intersection of 25th Avenue and the Avenal Cutoff (Henrietta Peaker Project. pg. 8.4-9, 2001a).

Kings County and the Westlands Water District are to provide water to the HPP from an existing Westlands Water District pipeline that is located immediately adjacent to the project site fronting 25th Avenue. The project owner is to install approximately 16.5 feet of pipe from the project site boundary to the pipe.

The project owner will be installing two new transmission poles and 550 feet of overhead transmission line within an existing utility corridor serving the PG&E substation. The proposed transmission route is approximately 400 feet north and 150 feet east of project site. The existing transmission routes serving the substation cross agricultural land.

Lemoore Naval Air Station

The proposed project site is to be located approximately one mile south of the main gate entrance to Lemoore Naval Air Station (NAS). The Air Station consists of 14,000 acres, largely farmland, and is the home of the Pacific Strike Fighter Wing and it's supporting facilities. The Navy's newest and largest master jet air station is also located on the air base.

In November, 2001, Mr. Riley Jones, GWF Business Manager, spoke to Commander Kirk Wilson, U.S. Navy, regarding NAS Lemoore security/buffer zones. Commander Wilson indicated that the only new base security buffer measure implemented since the September 11, 2001, terrorist attacks is the closing of the left turn lane into NAS Lemoore from eastbound State Route 198. The only entrance now available to NAS Lemoore visitors from State Route 198 is via a right turn from westbound State Route 198 (Henrietta Peaker Project. pg. 2.6-3-4, 2001b).

IMPACTS

THRESHOLDS OF SIGNIFICANCE

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 a proposed project would:

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
LAND USE AND PLANNING – Would the project:				
A) Physically divide an established community?				**X**
B) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				**X**
C) Conflict with any applicable habitat conservation plan or natural community conservation plan?				**X**
AGRICULTURAL RESOURCES – Would the project:				

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
LAND USE AND PLANNING – Would the project:				
A) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?		**X**		
B) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				**X**
C) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				**X**

A project may also have a significant impact on land use if it would 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.

LAND USE AND PLANNING

A. Physically Divide an Existing Community

The proposed HPP would not physically divide an existing community. The proposed site is located in an agricultural/open space area, approximately one mile south of the main gate of Lemoore Naval Air Station (NAS) and eight miles southwest of the City of Lemoore. The NAS contains the nearest community to the project site. The NAS community will not be physically divided by the project. Therefore, there will not be an affect on the NAS.

B. Applicable Land Use LORS (Laws, Ordinance, Regulations, Standards)

FEDERAL

Lemoore Naval Air Station

Don Roberts, the environmental manager for Lemoore Naval Air Station called Bob Eller, Energy Commission project manager for the Henrietta project on October 30, 2001. Mr. Roberts informed Mr. Eller that based on his reading it appeared we (*Energy Commission*) were addressing the NAS's concerns regarding the project (Eller, 2001). Staff originally had concerns regarding the project not being consistent with the Air Station's LORS pertaining to aviation safety and base security.

"LNAS policies meet and exceed federal regulations governing safe flight altitudes. Further information can be found in the document entitled Air Installation Compatibility

Use Zone Studies (AICUZ), a set of land use compatibility guidelines published by the Navy and incorporated herein by reference" (County of Kings, pg. S-15, 1993).

STATE

California Land Conservation Act of 1965 (Williamson Act)

The 20 acre subject parcel represents a portion of a 265.54-acre property that is currently under Land Conservation Contract (Williamson Act contract) No. 1853. A Williamson Act contract restricts the land to agricultural and open space uses. The contract annually renewals automatically unless the property owner files for either a nonrenewal or cancellation. The nonrenewal or cancellation is subject to County approval. Applicants are subject to a fee for early cancellation.

On July 31, 2001, the Kings County Board of Supervisors passed Resolution No. 01-081 – "In The Matter Of Tentative Cancellation Of Land Conservation Contract No. 1853." The resolution presents the Board's approval of the tentative cancellation of a portion of Land Conservation Contract No. 1853 on the 20 acre project site. The resolution states that a final Board action on the contract's cancellation (Certificate of Cancellation) and its recording will not occur pending completion or fulfillment of the following requirements:

- payment of the land conservation contract cancellation fee to the Kings County Treasurer;
- payment of a cancellation processing fee to Kings County; and
- review and certification by the Kings County Board of Supervisors as a responsible agency of the final California Environmental Quality Act document (CEQA) prepared by the California Energy Commission (CEC).

On July 31, 2001, in accordance with Government Code Section 51203 the County Board of Supervisors certified the County Auditor's determination that the cancellation value of the 20 acre subject parcel was $250,000 and the cancellation fee is $31,250.

According to the Kings County Tax Collector, tax revenue from the subject property identified as assessors parcel number (APN) 024-190-065 was $3,455.74 in 2001. This figure represents a per-acre annual tax revenue of $13.01, translating into $260.28 in real property tax revenue per year for the subject property.

On January 29, 2002, the Kings County Board of Supervisors is tentatively scheduled to consider the final Certificate Of Cancellation for Land Conservation Contract No. 1853 an its environmental assessment document. The County of Kings is preparing the environmental document in accordance with the California Environmental Quality Act (CEQA) for the agricultural cancellation action. The County had originally requested in their Board Resolution that the Energy Commission prepare the environmental document.

The cancellation of the agricultural contract would not have a detrimental effect on the fiscal capability of local governmental agencies. The property taxes currently paid by

John and Sally Oliveira under the Land Conservation Contract, would be replaced by higher property taxes to be paid by the HPP project owners, per the Proposition 13 formula. The HPP's tax revenue stream is discussed in the **SOCIOECONOMICS** section of this Staff Assessment.

Pending receipt of the final Certificate of Cancellation and its approved environmental document from the County for the partial agricultural contract cancellation, staff cannot conclude that this land-use issue has been resolved.

California Public Utilities Code (Airport Land Use Commission)

On October 23, 2001, Chuck Kinney, Planner for Kings County disclosed that the County has dissolved its Airport Land Use Commission. The County will not be making an airport land use compatibility determination (Henrietta Peaker Project, pg. 2.6-4, 2001a).

Subdivision Map Act, 1972

On August 6, 2001, the Kings County Planning Director, approved Tentative Parcel Map No. 01-10 for John and Sally Oliveira. The action waived the requirement for the recording of a parcel map (final map) under the provisions of Article VI, Section 21-92 of the Kings County Land Division Ordinance (Chapter 21 of the Kings County Code of Ordinances) (County of Kings, 2001a).

In general the minimum parcel size of the AX Zone is 40 acres. However, since the proposed project involves a power generation facility Section 403. F. 4 of the County zoning regulations is applicable. This section states "Sites smaller than forty (40) acres, but not less than one acre, may be allowed for uses listed in Section 403. D.," subject to conditional use permit approval. As previously noted, Section 403. D. lists thermal power generating facilities among the AX Zones uses.

A grant deed (Doc. #0115420) for the 20 acre property was recorded in the Office of Kings County Clerk-Recorder on August 6, 2001. Title (ownership) of the 20 property was transferred to the project owner on August 6, 2001.

The project is in conformance with local and State land division LORS.

LOCAL

Kings County General Plan

The project site is designated "Exclusive Agriculture" as shown on the Kings County General Plan Land Use Diagram, adopted July 29, 1997.

Under "Section IV. Policies For Other Land Uses" of the General Plan, subsection "F. Other Non-Agricultural Open Space Uses" states:

"The agricultural area of the county may provide appropriate areas for certain predominantly open uses of land which are not injurious to agricultural uses but which may not be harmonious with the more densely populated urban areas and rural communities of county. Such uses may include waste management facilities;

wastewater treatment facilities; and communication towers, antennas, and satellite dishes. Such activities shall be regulated as conditional uses. Additional uses may include power generation facilities. Thermal, wind and solar photovoltaic electrical generating facilities, that commercially produce power for sale, shall be regulated as conditional uses" (County of Kings, pg. LU-14, 1993).

The Kings County Planning Agency has also provided a letter dated November 6, 2001, that states that the proposed HPP is consistent with the County's General Plan (County of Kings, 2001c).

The project is consistent with this County land use LORS.

Kings County Airport Land Use Compatibility Plan

This Plan only affects public use airports. It does not affect the Lemoore NAS.

Kings County Zoning Ordinance

The proposed project site is within an "AX" (Exclusive Agricultural) District. Within the AX Zone, the proposed project would have required conditional use permit approval by the County Planning Commission had the County been the permitting authority (County of Kings, pg. 14, 2001d).

Staff reviewed the County's "findings" (criteria) for the issuance of a conditional use permit found in Section1908 of the Kings County Zoning Ordinance. The finding's have been printed in bold below. Energy Commission staff has prepared supporting information (evidence) addressing the applicable "finding," which has been italicized and presented below each of the County's required "findings."

a. The proposed location of the conditional use is in accordance with the objectives of the zoning ordinance and purposes of the district in which the site is located.

The proposed Henrietta Peaker Project (HPP) is to be built on a seven acre portion of a twenty acre parcel located in unincorporated Kings County one mile south of the main gate to Lemoore Naval Air Station and adjoining PG&E's Henrietta power substation.

The County general plan designation for the area around Lemoore Naval Air Station is "Exclusive Agriculture" with a public safety overlay. This designation is to ensure the preservation of large and sparsely developed parcels in the area for public safety purposes. This designation has proven effective in preventing land use and safety conflicts between the air base and the general public (County of Kings, pg. S-15, 1993).

A purpose of the agricultural zone districts (Section 401of the Kings County Zoning Ordinance) is ". . to provide appropriate areas for certain predominantly open space uses of land which are not injurious to agricultural uses but which may not be harmonious with urban uses. . ." (County of Kings, pg. 7, 2001d).

The County has defined certain predominantly open space uses of land in "Section F. Other Non-Agricultural Open Space Uses" in the Kings County General Plan. The uses identified ". . . include power generation facilities. Thermal, wind, and solar photovoltaic

electrical generating facilities, that commercially produce power for sale. . .” (County of Kings, pg. LU-14, 1993).

Specifically, the AX Zone District, which surrounds the NAS and also includes the project, allows as a conditional use of the zone thermal power generating facilities that commercially produce power for sale.

b. The proposed location of the conditional use and the conditions under which it would be operated or maintained will not be detrimental to public health, safety, or welfare, or materially injurious to properties or improvements in the vicinity.

The Energy Commission must review the applicant’s Application For Certification (AFC) for the project to assess potential environmental impacts, including potential impacts to public health and safety, potential measures to mitigate those impacts (Pub. Resources Code (PRC) section 25519), and compliance with applicable governmental laws or standards (PRC 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., Title 20, section 1742 and 1742.5(a).

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

In addition, the County has provided in a letter dated November 6, 2001, (County of Kings, 2001c) suggested conditions of approval for the project that they considered necessary to protect the public health, safety, and general welfare, and the environment.

c. The proposed conditional use will comply with each of the applicable provisions of this ordinance (Zoning Ordinance).

Section 25525 of the Warren-Alquist requires Energy Commission staff to review federal, state and local, LORS in the more than twenty technical areas involved with the permitting of a power generation facility. The Kings County Zoning Ordinance is a local LORS that would be included in this process. Energy Commission staff have determined in this Staff Assessment that the use will comply.

d. When an application is being considered for a surface mining operation, the planning commission shall ensure that the application for the conditional use permit for the surface mine complies with all of the requirements found in Chapter 17 of the Kings County Code of Ordinances, and that all findings included in said Chapter 17 are made by the planning commission before granting the conditional use permit.

- The application does not involve a surface mining operation.

e. When an application is being considered for a hazardous waste management facility, the following findings shall be made before granting a conditional use permit.

- The application does not involve a hazardous waste management facility.

f. When an application is submitted for a bovine dairy, the following findings shall be made before granting a conditional use permit.

- The application does not involve a bovine dairy.

Section 1710. Review of Utility Towers

A proposed 70-kV overhead transmission line will originate on the proposed project site and travel north approximately 400 feet into the adjoining Henrieitta substation property. The transmission line poles are to be located on the substation property. The tranmission lines are to be located within an existing transmission line corridor. The proposed new transmission line will not exceed the height of neighboring transmission towers.

The Kings County Planning Agency stated in a letter dated November 6, 2001, that the proposed HPP is consistent with the County's Zoning Ordinance (County of Kings, 2001c).

C. Habitat Conservation or Natural Community Plan

The project does not conflict with an applicable (adopted) state habitat management plan, federal habitat conservation plan or natural community conservation plan.

It is noted, that the Resource Conservation Element (Section 5. Natural Plant and Animal Communities) of the Kings County General Plan provides goals and policies for the preservation and protection of natural plant and animal habitats. The Resource Conservation Element references and incorporates as Appendix 3 to the General Plan, the use of the "Biological Resources Survey" (a.k.a. "A Biological Framework For Natural Land And Endangered Species In The Southern San Joaquin Valley, May 1993 (draft)) for guidance as to specific steps to be followed relating to the mitigation of impacts on wildlife habitat. Under these procedures development projects are required to work with the California Department of Fish and Game and the United States Fish and Wildlife Service to mitigate potential impacts to wildlife habitat.

For a discussion of the potential effects of the proposed project on biological resources refer to the **BIOLOGICAL RESOURCES** section of the Staff Assessment.

AGRICULTURAL RESOURCES

A. Conversion of Farmland of Statewide Importance

The footprint of the project involves the conversion (loss) of seven acres of productive farmland to provide for the construction of the project. The project site and the construction laydown area are located on potential "Farmland of Statewide Importance,"

as defined by the Soil Conservation Service (Henrietta Peaker Project, pg. 8-9-2, 2001a) and correspondence received from the American Farmland Trust, dated October 13, 2001 (American Farmland Trust, 2001). Also, the incremental conversion of agricultural land to nonagricultural uses threatens the long-term health of the state's agricultural industry and represents a potential impact under the California Environmental Quality Act (CEQA) if the loss of agricultural land is not mitigated.

The project owner has contacted the American Farmland Trust and proposes to mitigate this conversion by funding the procurement by the American Farmland Trust (AFT) of approximately seven acres of compensation agricultural land (American Farmland Trust, 2001) in the form of a perpetual agricultural conservation easement.

The proposed 2.2 mile underground natural gas pipeline will be within the County public right-of-way on 25th Avenue and will not involve the permanent conversion of agricultural land.

The proposed 16.5 foot water supply pipeline to service the project site originates at the northwest corner of the project site and connects to a standpipe that taps into an existing Westlands Water District water pipeline that runs along the east side of 25th Avenue. The proposed water pipeline does not require the permanent conversion of agricultural land.

A proposed 70-kV transmission line will originate on the proposed project site and travel north approximately 400 feet into the adjoining Henrietta substation property. The transmission line poles are to be located within the substation property. The proposed overhead transmission line does not require the permanent conversion of agricultural land.

As of the writing of this land use analysis, staff has not received a copy of the recorded agricultural conservation easement in order to conclude that the land use issue of conversion of agricultural land has been resolved. As a result this issue presents a potentially significant affect.

B. Zoning for Agricultural Use or a Williamson Act Contract

Zoning

The project site is zoned AX. The AX Zone District allows as a conditional use of the zone, thermal power generating facilities that commercially produce power for sale. Therefore, the proposed project does not present a conflict with the existing zoning.

Williamson Act Contract

As previously noted, on January 29, 2002 the Kings County Board of Supervisors is tentatively scheduled to consider if the conditions and contingencies set forth in the Certification of Tentative Cancellation have been met in order to grant the final Certificate of Cancellation on the subject property. Kings County is preparing the environmental document in accordance to CEQA for the partial agricultural contract cancellation.

Pending receipt of the final Certificate of Cancellation and its approved environmental document from the County for the agricultural cancellation, staff cannot conclude that this land use issue has been resolved.

C. Other Changes Leading to Conversion of Farmland

The County has designated the area around Lemoore NAS as Agriculture for public safety purposes.

Specifically, lands surrounding the Naval Air Station, including the subject property, have been zoned AX by the County. The AX zoning has been applied to reduce potential conflicts, concerning noise and safety, due to the operation of military jet aircraft, by reducing the potential number of parcels where residences can be built. The AX Zone is also used to preserve lands best suited for agricultural uses from encroachment by incompatible uses.

Many of the properties within the AX Zone are also within an agricultural preserve and may be restricted by a Williamson Act Contract. The 20 acre subject property is located within Agricultural Preserve No. 712/83 and is subject to Land Conservation Contract No. 1853.

The combination of the air base and the public nuisances associated with its normal operations (i.e. noise), the County's General Plan, zoning, the designated agricultural preserve area and lands under a Williamson Act Contract, and the air station's sewage treatment ponds will limit future conversion of farmland to non-agricultural use within the immediate vicinity of the project.

The project will not involve other changes that will lead to additional farmland conversion. Therefore there is no impact.

COMPATIBILITY WITH EXISTING AND PLANNED LAND USES

The project would be constructed on a seven acre portion of a 20 acre agriculturally designated parcel. The applicant has purchased the property.

Existing land uses in the vicinity of the property consist of large acreage agricultural lands and agricultural related operations, PG&E's Henrietta substation; transmission lines and Lemoore NAS and its sewage treatment ponds. The project will be compatible with these uses.

There have been no applications for planned land uses within the vicinity of the project that have been filed with the Kings County Planning Agency during the18 months prior to the filing of the Application for Certification for the project in August, 2001 (Henrietta Peaker Project, pg. 8.4-11, 2001a). In November, 2001 the County Planning Agency said that there are no county projects within a six mile radius of the site.

The City of Lemoore, approximately eight miles away, has three planned development projects within its jurisdiction (a food processing facility, a cheese factory, and a college campus serving 2,500 students approx.). Given the project's distance from the HPP project site, they will not affect the HPP project from the land use perspective.

Lemoore NAS is conducting a multi-year housing replacement project that involves construction of new housing to replace existing air station housing. Construction is expected to continue until 2003. The air station replaced approximately 200 units in 2001 and will be replacing another approximately 150 units over the next few years. This project will not affect the HPP project from the land use perspective or vice versa.

The project is consistent with the County's general plan land use designation and zoning for the site and the current development pattern for the area.

The project's construction would result in the permanent conversion of seven acres from an agricultural use to a non-agricultural use. It would also involve the loss of land considered "Farmland of Statewide Importance" by the Califorinia Department of Conservation. Staff considers the loss and conversion of agricultural land potentially a significant impact under CEQA. In order to help offset the project-related impacts from the loss of agricultural land, the project owner, in coordination with American Farmland Trust, has proposed a mitigation measure, that includes contributing funds to the American Farmland Trust for agricultural conservation easement purchases.

The water supply line and natural gas pipeline alternative alignments would involve use of County public right-of-ways along land currently being used in agricultural production. The affected areas would be temporarily converted to non-agricultural use by this project. Soil surface would be returned to the original grades upon completion of construction activities. Therefore, existing farmlands would not be converted to non-agricultural use for the utility corridors. The impacts would be less than significant.

CUMULATIVE IMPACTS

As discussed in this analysis, the proposed project may result in impacts to agriculture without mitigation. After implementation of the agricultural mitigation measures and conditions of certification, this issue will result in a less than significant effect under CEQA.

The proposed project is not expected to make a significant contribution to regional impacts related to new development and growth, such as population immigration, the resultant increased demand for public services, and expansion of public infrastructure.

ENVIRONMENTAL JUSTICE

Staff has reviewed Census 2000 information that shows the minority population is greater than fifty percent within a six-mile radius of the proposed Henrietta Peaker Project (please refer to **SOCIOECONOMICS Figure 1** in this Staff Assessment), and Census 1990 information that shows the low-income population is less than fifty percent within the same radius. Based on the land use analysis, staff has not identified significant direct or cumulative impacts resulting from the construction or operation of the project, and, therefore, there are no land use environmental justice issues related to this project.

CONCLUSIONS

The land use analysis for the project focused on two main issues: (1) the project's consistency with land use plans, ordinances and policies; and (2) the project's compatibility with existing and planned land uses.

1. The project will be consistent with the California Land Conservation Act upon the approval of the final Certificate of Cancellation and its CEQA document by the County of Kings.

2. The project is consistent with the County of Kings General Plan, Zoning and Land Division Ordinances.

3. The project presents a "less than significant impact with mitigation incorporated" under CEQA for the conversion of agricultural land to a non-agricultural use, pending mitigation for the conversion of seven acres of agricultural land.

4. The HPP is compatible with the agricultural character of the site and surrounding area and is compatible with operations at Lemoore Naval Air Station.

5. The project would not disrupt or divide the physical arrangement of an established community. The nearest community to the project site is located at Lemoore Naval Air Station, which is located approximately one mile from the site.

6. The project would not preclude or unduly restrict agricultural land uses on neighboring properties.

7. With mitigation, operation of the project would not cause any significant noise, dust, public health, traffic, or visual impacts to nearby land uses, nor would the operation of the HPP contribute substantially to any cumulative land use impacts.

If the Energy Commission certifies the HPP, Staff recommends that the Commission adopt the following proposed Conditions of Certification.

PROPOSED CONDITIONS OF CERTIFICATION

LAND-1 The project owner shall comply with State law (Government Code 51280-51287) and the County of Kings requirements involving the partial cancellation of Land Conservation Contract No. 1853 (Williamson Act Contract) on the 20 acre subject property.

Verification: Prior to site mobilization, the project owner shall provide to the California Energy Commission's Compliance Project Manager (CPM) a copy of the adopted and recorded Kings County Board of Supervisors final Certificate of Cancellation and its approved environmental assessment document as per CEQA for the partial cancellation of Land Conservation Contract No.1853.

LAND-2 Prior to the start of construction, the project owner shall submit an agricultural mitigation plan subject to the approval of the CPM. The agricultural mitigation plan shall explain how the project owner is mitigating for the permanent conversion of seven acres of agricultural land to a nonagricultural use for the construction of the power generation facility.

The plan shall explain any on-site mitigation and the project owner's off-site mitigation involving one or both of the following:

1. the purchase of comparable lands or agricultural conservation easements near agricultural lands at a one-to-one ratio of agricultural land converted by the project owner. The agricultural mitigation plan shall describe the long-term management including funding, endowment, maintenance, and monitoring; or

2. the project owner's payment of monies to the American Farmland Trust for the purpose of purchasing agricultural mitigation land or easements.

Verification: Sixty (60) days prior to site mobilization, the project owner shall provide the CPM with the finalized agricultural mitigation plan with a copy of any final agreement signed between the project owner and the American Farmland Trust or other agency or non-profit organization that is publicly recognized and authorized to hold agricultural conservation easements for approval by the CPM.

The project owner shall provide to the CPM, a copy of the executed agricultural conservation easements and/or receipt for the payment of monies to an agricultural land mitigation trust account to demonstrate the applicant's fulfillment of their mitigation requirement for approval, if applicable.

LAND–3 Prior to the start of commercial operation, the project owner shall provide to the CPM, a copy of their signed, notarized and recorded Notice, Disclosure and Acknowledgement of Agricultural Land Use Protection and Right to Farm Policies of the County of Kings, pursuant to Section 2 of Ordinance No. 546 (Right To Farm Ordinance) of the County of Kings.

Verification: Thirty (30) days prior to the start of commercial operation, the project owner shall provide to the CPM, a copy of their signed, notarized and recorded Notice, Disclosure and Acknowledgement of Agricultural Land Use Protection and Right to Farm Policies for the County of Kings.

LAND-4 Prior to the start of construction, the project owner shall provide to the CPM a site plan with dimensions showing the locations of the proposed buildings and structures in compliance with the minimum yard area requirements (setbacks) from the property line as stipulated in Section 406.D. *Yard requirements* of the Kings County Zoning Ordinance.

Verification: Thirty (30) days prior to the start of construction, the project owner shall provide to the CPM for approval, a site plan showing the HPP project in yard area compliance with Section 406.D. of the Kings County Zoning Ordinance.

REFERENCES

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County of Kings. 1993. Kings County General Plan. December 28, 1993, as amended (Amendment No.10) June 5, 2001.

County of Kings. 2001a. Certificate of Parcel Map Waiver For Tentative Parcel Map No. 01-10, 2001.

County of Kings. 2001b. Kings County Board of Supervisors, Resolution No. 01-081 – In The Matter Of Tentative Cancellation Of Land Conservation Contract No. 1853. July 31, 2001.

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Eller, Bob. 2001. California Energy Commission Project Manager. Email communication to Mark Hamblin, California Energy Commission. October 30, 2001.

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NOISE AND VIBRATION

Testimony of Fred Greve

INTRODUCTION

This section evaluates the potential noise and vibration effects associated with the construction and operation of the Henrietta Peaker Project (HPP), which would be located approximately 10 miles southwest of Lemoore, California in Kings County. As described in the AFC, the proposed project would be to construct a natural gas-fired simple-cycle power plant on a portion of a 20-acre parcel owned by GWF Energy LLC. The proposed project would interconnect to the existing adjacent Pacific Gas and Electric Company (PG&E) Henrietta Substation through a new 70 kV transmission line approximately 550 feet long. The project would include approximately 2.2-mile of new natural gas supply line.

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. Table 1 lists permissible noise level exposure as a function of the amount of time during which the worker is exposed. 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. It should be noted that there are no federal laws governing offsite (community) noise.

NOISE: Table 1 - 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

The Federal Transit Administration (FTA) has published guidelines for assessing the impacts of ground-borne vibration associated with construction of rail projects, which have been applied by other jurisdictions to other types of projects. The FTA-recommended vibration standards are expressed in terms of the "vibration level," which is calculated from the peak particle velocity measured from ground-borne vibration. The FTA measure of the

threshold of perception is 65 VdB, which correlates to a peak particle velocity of about 0.002 inches per second (in/sec). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec.

STATE

California Government Code section 65302(f) encourages each local government entity to perform noise studies and implement a noise element as part of its General Plan. In addition, the California Office of Planning and Research has published guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure.

The State of California, Office of Noise Control, prepared a Model Community Noise Control Ordinance, which provides guidance for acceptable noise levels in the absence of local noise standards. The Model also contains a definition of a "pure tone" which can be used to determine whether a noise source contains significant annoying tonal components. The Model Community Noise Control Ordinance further recommends that, when a pure tone is present, the applicable noise standard should be lowered (made more stringent) by 5 dBA. (Definitions of technical terms are provided at the end of the testimony in Table A1.)

Other State LORS include the California Environmental Quality Act (CEQA) and the 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. Section XI of Appendix G of CEQA Guidelines (Cal. Code Regs., tit. 14, App. G) sets forth some characteristics that may signify a potentially significant impact. Specifically, 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 ground borne vibration or ground borne noise levels;

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The Energy Commission staff, in applying item c) above to the analysis of this and other projects, has concluded that a potential for a significant noise impact exists where the

noise of the project plus the background exceeds the background by 5 dBA L_{90} or more at the nearest location where the sound is likely to be perceived.

Noise due to construction activities is usually considered to be insignificant in terms of CEQA compliance if:

1. the construction activity is temporary;

2. use of heavy equipment and noisy activities is limited to daytime hours; and
3. all feasible noise abatement measures are implemented for noise-producing equipment.

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

The Kings County General Plan establishes environmental noise limits based on the land use of the property receiving the noise. Therefore, the noise level would be measured at the property line of the property receiving the noise. All land uses categories are addressed in the Kings County General Plan including various types of residential, industrial, commercial, and agriculturaly uses. The environmental noise levels are classified as acceptable, conditionally acceptable, and unacceptable. Noise levels that fall in the conditionally acceptable range require specific approval from Kings County in order to be permissible. Noise: Table 1 lists the noise performance standards that apply to the proposed project.

Noise: Table 2 – Kings County General Plan Noise Standards
Exterior Noise Exposure Allowance, Ldn

Land Use Receptor	Acceptable	Conditionally Acceptable	Unacceptable
Agricultural (Agricultural and Intensive Agricultural Uses)	<70	70 to 75	>75
Commercial (Retail Sales, Office Buildings, Professional Services, Commercial Business)	<70	70 to 75	>75
Industrial (Industrial, Manufacturing, Utility, and Waste Disposal Facilities)	<70	70 to 75	>75
Residential (Multiple Family)	<65	65 to 70	>70
Residential (Single Family)	<60	60 to 70	>70
Residential (Rural Residential)	<65	65 to 70	>70

The properties adjacent to the project site consist of agricultural and industrial uses. Accordingly, the acceptable environmental noise level at the boundary of these adjacent

properties is less than 70 Ldn. The nearest residential land use to the project site is the NAS Lemoore housing, located approximately 1.5 miles northeast of the site. The closest housing is single-family homes and, therefore, t acceptable environmental noise level at the boundary of the residential land uses is less than 60 Ldn.

SETTING

The HPP site would be located just south of the existing PG&E Henrietta Substation, near 25th Avenue. The uses directly adjacent to the site are agricultural uses and the PG&E Substation. The nearest residential receivers are located northwest of the project site approximately 1.5 miles at the NAS Lemoore.

SENSITIVE RECEPTORS

The closest sensitive receptors are residences located approximately 1.5 miles to the northwest of the facility at the NAS Lemoore. No other sensitive receptors are in the project vicinity.

AMBIENT NOISE LEVELS

The applicant monitored ambient noise levels on June 6 and 7, 2001 at three locations. Site 1 was adjacent to the military housing that is closest to the proposed site. Site 2 is along 25th Avenue near the project site. Site 3 is approximately 3,300 feet south of the site along 25th Avenue. The noise measurements were performed using acceptable sound measurement equipment, and weather included clear skies, light breezes, and temperatures ranging from 68 to 88 degrees Fahrenheit. Noise levels recorded at these locations are listed in **Noise: Table 3**.

Noise: Table 3 - Long-Term Noise Measurement Summary

Monitoring Location	Ldn, dBA	L90 Lowest Hour, dBA
1. (Residential)	67	41
2. (Near Project Site)	64	34
3. (Agricultural)	57	28

Source: URS 2001.

ANALYSIS AND IMPACTS

Noise impacts associated with the project can be created by construction activities, and by normal long-term operation of the power plant. Following is the environmental checklist that identifies potential impacts in this issue area. Below the checklist is a discussion of each impact, and an explanation of the impact conclusion.

PROJECT SPECIFIC IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
NOISE – Would the project:				
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?		X		
b) Exposure of persons to or generation of excessive ground borne vibration noise levels?				X
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?		X		
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		X		
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels?				X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the area to excessive noise levels?				X

A. Noise in Excess of Standards or Ordinances: Less Than Significant with Mitigation Incorporated

Construction

Community Noise Impacts

Construction noise is a temporary phenomenon; the construction period for the HPP facility is scheduled to last approximately 5 months (URS, 2001). 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. Kings County does not have any noise limits for construction. The nearest residence is located approximately 1.5 miles from the project site. However, consistent with good community noise control practices, staff is recommending construction noise standards of 60 dBA Leq during daytime hours, and 45 dBA Leq during nighttime hours as measured at a sensitive receptor. The predicted worst-case hourly construction noise level at the nearest sensitive receptor is 47 dBA. Staff recommends the measure described in the proposed Conditions of Certification **NOISE-1** to mitigate any potential construction noise impacts to the community.

Worker Noise Impacts

Normal construction-generated noise levels would range between 70 and 80 dBA at a distance of 100 feet from the construction activity. Therefore, construction workers will be subjected to occasional noise levels above 85 dBA. The State LORS require all noise levels to be limited to 85 dBA at three feet from equipment. If 85 dBA would be exceeded, then warning signs need to be posted and a Hearing Conservation Program implemented. With proper execution of the Hearing Conservation Program, as well as with the implementation of the measures described in proposed Condition of Certification **NOISE-2**, no occupational safety impacts are anticipated from construction noise.

Operation

Community Noise Impacts

The applicant has prepared a detailed analysis of noise emissions expected from the proposed facility. Based upon that analysis, the projected noise levels from the HPP power plant at the closest residential receptor (i.e., NAS Lemoore housing) is 32 dBA (URS 2001). Based on the results of the noise survey on June 6 and 7, 2001, these noise levels would be below the existing ambient noise level conditions, and would cause an increase in ambient noise levels of less than 1 dBA. The predicted noise levels are in compliance with the standards of Kings County. As a result, noise levels associated with power plant operations would be considered less than significant.

The noise analysis assumed the following noise controls:

Combustion Turbine Generator Package

1. Air inlet silencer

2. Outdoor/weather enclosure

3. Compartment ventilation silencers

Exhaust Stack Package

4. Stack silencer

Transformer Package

5. Low-noise unit or barrier wall

Fuel Gas Cooler Package

6. Low-noise fans

7. Barrier wall

Fuel Gas Compressor Package

8. Enclosure

9. Acoustically treated building ventilation

Staff recommends the implementation of the measures described in proposed Condition of Certification **NOISE-3** to ensure mitigation of any potential impacts to the local community associated with plant operations.

Worker Noise Impacts

The Applicant recognizes the need to protect plant operating and maintenance personnel from noise hazards, and commits to compliance with applicable LORS. Condition of Certification **NOISE-4** is proposed to address worker noise impacts. With proper implementation of the measure described in proposed Condition of Certification **NOISE-4**, no occupational safety impacts are anticipated from operational noise.

B. Excessive Vibration: No Impact

The primary source of vibration noise associated with a power plant is the operation of the turbines. It is normal operating procedure to maintain the plant's turbines in optimal balance to minimize excessive vibration that can cause damage or long term wear. Consequently, no excessive vibration would be experienced by adjacent land uses.

Another potential source of significant vibration is pile driving during construction. Given the relatively great distances to the nearest sensitive receptors, no vibration effects will occur if pile driving were to be required.

C. Permanent Increase in Ambient Noise Level: Less Than Significant with Mitigation Incorporated

Construction

As described above, construction of the power plant is a temporary phenomenon; the construction period for the HPP facility is scheduled to last approximately 5 months. As a result, noise generated from construction would not cause a substantial permanent increase in ambient noise levels.

Operation

During its operating life, the HPP facility will represent essentially a steady, continuous noise source when operating. This plant is intended to run as a peaker plant, and therefore, typical operation would be up to 8 to 12 hours per day during the summer months. The primary noise sources anticipated from the proposed facility include the fuel gas compressor, combustion turbine generator package exhaust stack package, transformer, and fuel gas cooler. Secondary noise sources are anticipated to include auxiliary pumps, ventilation fans, motors, and valves. The noise emitted by power plants during normal operations is generally broadband, steady state in nature.

The noise level from the proposed power plant was modeled to evaluate whether the new plant would contribute an incremental increase in noise levels at the nearest residential receptor. All major pieces of equipment were assumed to operate continuously for the purpose of the modeling analysis. The projected HPP noise level at the closest residential receptor is 32.0 dBA Leq (URS, 2001). Based on the results of the noise survey on June 6 and 7, 2001, this noise level would be below the existing ambient noise level of 41.0 dBA (L90). The cumulative noise levels would increase by less than 1 dBA.

As a result, noise levels associated with power plant operations would be considered less than significant. Staff recommends the implementation of the measures described in Condition of Certification **NOISE-3** to ensure mitigation of any potential noise impacts to the local community associated with operations.

Linear Facilities

The natural gas pipeline would be buried below ground and would not produce any audible noise. No aboveground linear facilities (transmission lines) will be located near noise sensitive receptors. The 70 kV transmission line is very short, only traveling from the site to the adjacent PG&E substation, and will not produce significant corona noise levels. Thus, there will be no noise impacts associated with linear facilities.

D. Substantial Temporary Increase in Noise Level: Less Than Significant with Mitigation Incorporated

Construction Noise

Community Effects

Construction impacts are generally short-term in nature and usually result from the operation of heavy-duty diesel- and gasoline-powered construction equipment (e.g., backhoes, boom trucks, delivery trucks, compressors). Noise levels were predicted for the construction of the HPP facility using information from a standard reference (Bolt, Beranek, and Newman, Inc., 1977). Staff is recommending construction noise standards of 60 dBA Leq during daytime hours, and 45 dBA Leq during nighttime hours, as measured at a sensitive receptor. The predicted worst-case hourly construction noise level at the nearest sensitive receptor is 47 dBA. These noise levels would be within the range of existing ambient noise levels at the receptors. As a result, construction noise would be considered less than significant. Staff recommends the implementation of the measures described in proposed Conditions of Certification **NOISE-1** to ensure mitigation of any potential for noise impacts to the local community associated with construction activities.

Steam Blows

The highest noise levels that are often associated with construction of power plants are steam blows. Since this plant is a simple-cycle power plant, steam related equipment will not be employed and steam blows will not be necessary. There can be some venting following pipe testing, however, the noise levels and duration associated with venting are substantially less than steam blows and is not considered to be extraordinary construction activity.

Linear Facilities

Construction of the linear facilities natural gas line will not produce noise at locations near residential receptors. The nearest residential receptors will be roughly 1.5 miles from the closest point of construction for the linear facilities. As a result, noise levels associated with construction of the linear facilities would be considered less than significant.

Operational Noise

As described above, the HPP facility will represent essentially a steady, continuous noise source when operating. The plant may operate up to 8,000 hours per year. However, the most potential that it will have in the operational mode to cause short term impacts is when it is running for a few hours each day. Since it is a peaker plant, it will typically operate no more than 8 to 12 hours per day, and then most likely during warm weather. When the plant is shut down for lack of dispatch or from maintenance, noise levels will decrease. It is not anticipated that the short-term changes in noise levels would cause any significant impacts.

E. Airport Noise Impacts: No Impact

The HPP area is not influenced by aircraft noise associated with public local airports. Therefore, this criterion is not applicable to the proposed project. However, it should be

noted that the project will be located within 2 miles of the Lemoore Naval Air Station (NAS) and is subject to aircraft overflights. The ambient noise survey showed that noise levels at the site rarely exceed 70 dBA and therefore, would not expose workers to excessive noise levels.

F. Private Airstrip Impacts: No Impact

In general, the HPP area is not influenced by aircraft noise associated with local airports. Therefore, this criterion is not applicable to the proposed project. However, it should be noted that the project will be located within 2 miles of the Lemoore Naval Air Station (NAS) and is subject to aircraft overflights. The ambient noise survey showed that noise levels at the site rarely exceed 70 dBA and therefore, would not exposure workers to excessive noise levels.

CUMULATIVE IMPACTS

No other major new or proposed industrial sources of noise were identified that might cause cumulative effects which could exceed the noise standards or criteria for this project. Staff concludes there are no cumulative impacts.

ENVIRONMENTAL JUSTICE

Because the project will not result in noise impacts, staff concludes that there will be no significant direct or cumulative impacts related to noise on the minority or low income population.

CONCLUSIONS AND RECOMMENDATIONS

Staff concludes the proposed project will not cause significant noise impacts to the public or environment if the proposed Conditions of Certification are implemented.

PROPOSED CONDITIONS OF CERTIFICATION

The Applicant has developed an overall mitigation strategy to reduce noise impacts to less than significant levels. Mitigation for construction would include making sure that all equipment is fitted with original mufflers, silencers and enclosures, and that the equipment is maintained in proper operating conditions. Other measures include the adoption of noise control programs and the implementation of noise reducing facilities to cope with construction and operational noise. In addition to the Applicant's overall mitigation strategy, staff proposes the following Conditions of Certification.

NOISE-1 Construction noise levels as measured at any affected residence shall be limited to 60 dBA Leq during daytime hours (7 a.m. to 10 p.m.) and 45 dBA Leq during nighttime hours (10 p.m. to 7 a.m.).

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.

NOISE-2 Prior to the start of ground disturbance, the project owner shall submit a noise control program to the CPM for review and approval. 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 ground disturbance, 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-3 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that operation of the project will not cause resultant noise levels to exceed the ambient background noise level (L90) at residential receivers by more than 5 dBA, and that the noise due to plant operations will comply with the noise standards of the Kings County General Plan.

No new pure tone components may be produced by operation of the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints. Pressure relief valves shall be adequately treated or located to preclude noise that draws legitimate complaints.

Protocol: 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 at the same Site 1 used for the ambient noise survey (i.e., housing at NAS Lemoore). The survey shall also include the one-third octave band pressure levels to ensure that no new pure-tone noise

components have been introduced. If the results from the survey indicate that the project noise level at the residential location exceeds the standards and requirements cited above, additional mitigation measures shall be implemented to reduce noise to a level of compliance with these limits.

Verification: Within 15 days after completing the post-construction survey, the project owner shall submit a summary report of the survey to the local jurisdiction, and to the CPM. Included in the post-construction survey report will 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. Within 15 days of implementation of the mitigation 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-4 Within 30 days of the project first achieving an output of 80 percent or greater of rated capacity, the project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility. The survey 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-5: Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent shall:

- use the Noise Complaint Resolution Form (below), 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 5 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 local jurisdiction, 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 3-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is finally implemented.

EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM

Henrietta Peaker Project
(01-AFC-18)

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).

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, dBA	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.
L_{10}, L_{50}, & L_{90}	The A-weighted noise levels that are exceeded 10%, 50%, and 90% of the time, respectively, during the measurement period. L_{90} 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 4.8 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} or DNL	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.
Pure Tone	A pure tone is defined by the Model Community Noise Control Ordinance as existing if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the two contiguous bands by 5 decibels (dB) for center frequencies of 500 Hz and above, or by 8 dB for center frequencies between 160 Hz and 400 Hz, or by 15 dB for center frequencies less than or equal to 125 Hz.

Source: California Department of Health Services 1976, 1977.

REFERENCES

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Federal Transit Administration (FTA). Transit Noise and Vibration Impact Assessment, PB96-172135, April 1995.

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PUBLIC HEALTH

Testimony of Alvin Greenberg, Ph.D.

INTRODUCTION

The purpose of staff's public health analysis is to determine if toxic emissions from the proposed Henrietta Peaker Project (HPP) project 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. A brief overview of the project is provided, as are discussions regarding selected California Environmental Quality Act (CEQA) checklist items with respect to public health. A discussion of additional items listed in the Air Quality portion of the checklist may be found in the **AIR QUALITY** section of this staff analysis.

The following sections describe staff's method of analyzing potential health impacts and the criteria used to determine their significance.

METHOD OF ANALYSIS

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 may 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.

1. Identify the types and amounts of hazardous substances that the HPP project could emit to the environment.

2. Estimate worst-case concentrations of project emissions in the environment using dispersion modeling.

3. Estimate amounts of pollutants to which people could be exposed through inhalation, ingestion, and dermal contact.

4. 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 simplified assumptions that are intentionally biased toward protection of public health. That is, an analysis is designed that overestimates 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 screening level 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 maximum ambient concentration of pollutants;
- using the type of air quality computer model which predicts the greatest plausible 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 non-inhalation pathways of exposure (see California Air Pollution Control Officers Association (CAPCOA) 1993, 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 1993, 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 reduced lung function and heart disease.

The analysis for noncancer health effects compares the maximum project contaminant levels to safe levels called "reference exposure levels" or RELs. These are amounts of toxic substances to which even sensitive people can be exposed and suffer no adverse health effects (CAPCOA 1993, p. III-36). 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. The 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.

Exposure to multiple toxic substances may result in health effects that are equal to, less than, or greater than effects resulting from exposure to the individual chemicals. Only a small fraction of the thousands of potential combinations of chemicals have been tested for the health effects of combined exposures. In conformance with CAPCOA guidelines, the health risk assessment assumes that the effects of each substance are additive for a given organ system (CAPCOA 1993, p. III-37). In those cases where the actions may be synergistic (where the effects are greater than the sum), this approach may underestimate the health impact (Id).

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 whatever location is 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”, and established by the California Office of Environmental Health Hazard Assessment), 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.

The screening analysis is performed to assess worst-case risks to public health associated with the proposed project. If the screening analysis predicts no significant risks, then no further analysis is required. However, if risks are above the significance level, then further analysis, using more realistic site-specific assumptions would be performed to obtain a more accurate assessment of 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, noncriteria 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 noncancer 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 noncancer project-related public health impacts.

Cancer Risk

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 cancer 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 10×10^{-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 SJVUAPCD (San Joaquin Valley Unified Air Pollution Control District) pursuant to Health and Safety Code § 44362(b), which requires notification of nearby residents when an air district determines that there is a significant health risk from a facility. The recommended threshold of significant impact for emitted hazardous air pollutants is 10 in ten million. In general, SJVUAPCD would not approve a project with a cancer risk exceeding ten in one million.

As noted earlier, the initial risk analysis for a project is typically performed at a screening level, which 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 facility risk, based on refined assumptions, exceeds the significance level of ten in one million, staff would require appropriate measures to reduce risk to less than significant. 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)

FEDERAL

Clean Air Act section 112 (42 U.S. 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 (MACT).

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 HPP 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, affects 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 on seven acres of a 20-acre parcel in an unincorporated portion of Kings County, approximately 10 miles southwest of Lemoore, California. It is located on the east side of 25th Avenue, approximately one mile south of the intersection of State route 198 and 25th Avenue. The project site lies directly south of the PG&E Henrietta Substation. The site topography is relatively flat, with an average

elevation of 225 feet above mean sea level. The proposed site is located in the south-central portion of the Great Valley Physiographic Provinces of California which is bordered by the Sierra Nevada range to the east, the Coast Ranges to the west, the Tehachapi Mountains to the south, and the Klamath and Cascade Ranges to the north.

Currently, land at the proposed site is classified as agricultural farmland. The surrounding land is also generally agricultural, primarily used for the cultivation of cotton. The New Star facility lies approximately 0.7 miles south of the site. The Naval Air Station (NAS) Lemoore is located approximately one mile north of the proposed project site.

As mentioned above, the location of sensitive receptors near the proposed site is an important factor in considering potential public health impacts. The nearest residences are approximately 1.5 miles northeast of the proposed site. There are no public health sensitive receptors within one mile of the site. The closest sensitive receptor is Empire School which is located about 3.9 miles east of the proposed project site. AFC Figure 8.6-2 shows sensitive receptors within a 10 mile radius of the project 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 climate at the project site is dominated by the influence of the Pacific Ocean and the Pacific high-pressure system, which is a semi-permanent, subtropical high-pressure system located off the coast. The size and strength of the Pacific high is at a maximum during the summer, when it is at its northernmost position, and results in strong northwesterly air flow and negligible precipitation. During this period, inversions become strong, winds are light, and the pollution potential is high. The Pacific high's influence weakens during the fall and winter when it moves southwestward, which allows storms from the Gulf of Alaska to reach northern California. About 80 percent of the region's annual rainfall occurs between November and March. During the winter, inversions are weak, winds often moderate, and the potential for air pollution is low.

Atmospheric stability is a measure related to turbulence, or the ability of the atmosphere to disperse pollutants due to convective air movement. Mixing heights (the height above ground level through which the air is well mixed and in which pollutants can be dispersed) are lower during mornings due to temperature inversions and increase during the warmer afternoons. Staff's **Air Quality** section presents more detailed meteorological data.

EXISTING AIR QUALITY

The proposed site is within the jurisdiction of the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD), which includes all or portions of San Joaquin,

Stanislaus, Merced, Madera, Fresno, Kings, Tulare and Kern counties. The California Air Resources Board conducts toxic air contaminant monitoring in San Joaquin Valley.

By combining average toxic concentration levels with cancer risk factors specific to each contaminant, lifetime cancer risk can be calculated to provide a background risk level for inhalation of ambient air.

The toxic air monitoring station closest to the HPP project is on First Street in Fresno. Based on levels of toxic air contaminants measured at this monitoring station in 2000, the background cancer risk calculated for this location is 225 in one million (CARB 2001). The pollutants 1,3-butadiene and benzene, emitted primarily from mobile sources, were the two highest contributors to risk and together accounted for over half of the total. The risk from 1,3-butadiene was about 73 in one million, while the risk from benzene was about 68 in one million. Formaldehyde accounts for about 12 percent of the ambient cancer risk determined for Fresno, with a risk of about 26 in one million. Formaldehyde is emitted directly from vehicles and other combustion sources, such as the proposed HPP project.

The use of reformulated gasoline, beginning in the second quarter of 1996, as well as other toxics reduction measures, have led to a decrease of ambient levels of toxics and associated cancer risk during the past few years. For example, at the Fresno monitoring station, cancer risk was 497 in one million based on 1991 data and 314 in one million based on 1995 data.

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.

On behalf of GWF Energy, a Phase I Environmental Site Assessment (ESA) was conducted by Harding ESE in accordance with American Society for Testing and Materials Standard E 1527-00, Standard Practice for Environmental Site Assessments (Harding 2001). The purpose of an ESA is 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 results of the Phase I ESA indicate that adverse environmental conditions do not exist at the proposed project site.

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AIR QUALITY – Would the project expose sensitive receptors to substantial pollutant concentrations during:				
Construction			X	
Operation			X	

ANALYSIS AND DISCUSSION OF IMPACTS

Construction

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 in the Waste Management section, a Phase I Environmental Site Assessment (ESA) has been performed. The ESA has shown no evidence of site contamination.

The operation of construction equipment will result in air emissions from diesel-fueled engines. Although diesel exhaust contains criteria pollutants such as nitrogen oxides, carbon monoxide, and sulfur oxides, it also includes a complex mixture of thousands of gases and fine particles. These particles are primarily composed of aggregates of spherical carbon particles coated with organic and inorganic substances. Diesel exhaust contains over 40 substances that are listed by the U.S. EPA as hazardous air pollutants and by the Air Resources Board (ARB) as toxic air contaminants.

Exposure to diesel exhaust causes both short- and long-term adverse health effects. Short-term effects can include increased cough, labored breathing, chest tightness, wheezing, and eye and nasal irritation. Long-term effects can include increased coughing, chronic bronchitis, reductions in lung function, and inflammation of the lung. Epidemiological studies also strongly suggest a causal relationship between occupational diesel exhaust exposure and lung cancer.

Based on a number of health effects studies, the Scientific Review Panel on Toxic Air Contaminants (SRP) recommended a chronic REL (see REL discussion in Method of Analysis section above) for diesel exhaust particulate matter of 5 $\mu g/m^3$ and a cancer unit risk factor of 3x10-4 $(\mu g/m^3)^{-1}$ (SRP 1998, p. 6). The SRP did not recommend a value for an acute REL, since available data in support of a value was deemed insufficient. On August 27, 1998, the ARB listed particulate emissions from diesel-

fueled engines as a toxic air contaminant and approved SRP's recommendations regarding health effect levels.

Construction of HPP is anticipated to take place over a period of five months. As noted earlier, assessment of chronic (long-term) health effects assumes continuous exposure to toxic substances over a significantly longer time period, typically from seven to seventy years.

AFC Table 8.1-12 and Appendix B present exhaust emissions from construction activities. Diesel emissions are generated from sources such as trucks, graders, cranes, welding machines, electric generators, air compressors, and water pumps. Maximum hourly emissions of 1.9 lb/hour PM10 are determined. Fugitive dust emissions will result in an estimated 0.14 tons of fugitive PM10 per month. Modeling construction activities, which are assumed to occur for twenty hours per day, gives a 24-hour maximum concentration of 26.1 $\mu g/m^3$ (GWF 2001, Attachment 2.1-3 of October AFC Supplement). The maximum construction equipment PM impact is 1.88 $\mu g/m^3$ at the south fenceline and 0.011 $\mu g/m^3$ at the nearest residence (GWR 2001, Data Adequacy Response 20).

In order to mitigate potential impacts from particulate emissions during the operation of diesel-powered construction equipment, **Air Quality** staff recommends the use of ultra low sulfur diesel fuel or the installation of soot filters on diesel equipment. The catalyzed diesel particulate filters are passive, self-regenerating filters that reduce particulate matter, carbon monoxide, and hydrocarbon emissions through catalytic oxidation and filtration. The degree of particulate matter reduction is comparable for both mitigation measures in the range of approximately 85-92 percent. Such filters will reduce diesel emissions during construction. As mentioned earlier, the nearest residences are approximately 1.5 miles northeast of the proposed site. There are no sensitive receptors within one mile of the site, and the closest sensitive receptor is Empire School, which is located about 3.9 miles east of the proposed project site. The impacts from diesel construction equipment typically occur within a very short distance of its operation, often within the fenceline of a project. Staff therefore find that the distance to the nearest residences and sensitive receptors combined with the mitigation proposed by Air Quality staff will result in potential public health impacts from diesel exhaust that will be less than significant.

Operation

Emissions Sources

The emissions sources at the proposed HPP project include an emergency diesel generator and two simple cycle gas turbines. During operation, potential public health risks are related to diesel exhaust emissions from testing the diesel engine-driven emergency generator and natural gas combustion emissions from the gas turbines.

As noted earlier, the first step in a health risk assessment is to identify potentially toxic compounds that may be emitted from the facility.

Diesel exhaust emissions contain a number of toxic compounds. However, a chronic REL and cancer risk factor have been established for diesel particulate matter which may be used to characterize emissions from diesel engines (please see the above discussion under Construction Impacts). The diesel engine used for the emergency generator must be tested on a weekly basis in accordance with safety requirements, resulting in diesel particulate emissions that must be analyzed for health effects. California Air Resources Board (CARB) guidance lists criteria for permitting stationary diesel engines, and states that if the annual emissions would result in an incremental cancer risk equal to or less than one in one million (measured at the point of maximum residential or off-site worker exposure) over an exposure period of 70 years, the project is acceptable without further risk management considerations.

Table 8.6-2 of the AFC lists noncriteria pollutants that may be emitted from HPP project turbines as combustion byproducts, along with their anticipated amounts (emission factors). Emission factors are from the California Air Toxics Emission Factors (CATEF) database, Version 1.2. Table 8.6-3 of the AFC (GWF 2001) lists toxicity values used to characterize cancer and noncancer health impacts from project pollutants. The toxicity values include reference exposure levels, which are used to calculate short-term and long-term noncancer health effects, and cancer unit risks, which are used to calculate the lifetime risk of developing cancer, as published in the CAPCOA Guidelines (CAPCOA 1993). **Public Health Table 1** lists combustion-related toxic emissions and shows how each contributes to the health risk analysis. For example, the first row shows that oral exposure to acetaldehyde is not of concern, but if inhaled, may have cancer and chronic (long-term) noncancer health effects, but not acute (short-term) effects.

Emissions Levels

Once potential emissions are identified, the next step is to quantify them by conducting a “worst case” analysis. Maximum hourly emissions are required to calculate acute (one hour) noncancer health effects, while estimates of maximum emissions on an annual basis are required to calculate cancer and chronic (long-term) noncancer health effects.

The emergency diesel engine will be powered by a 397 horsepower engine. Annual emissions from the emergency generator are included in the modeling conducted for operations emissions and are based on 15 minute weekly tests of the emergency generator for reliability confirmation, or 13 hours of operation per year (GWF 2001, p.8.1-25).

Maximum fuel use is combined with the emission factor for each toxic air contaminant to estimate maximum hourly emissions. The annual average natural gas consumption rate is used to estimate annual emissions (GWF 2001, p. 8.6-3). Emission factors are estimates of the amounts of toxic substances released per unit of fuel burned and are from the California Air Toxic Emission Factors (CATEF) database maintained by the California Air Resources Board (GWF 2001, Table 8.6-2).

PUBLIC HEALTH Table 1
Types of Health Impacts and Exposure Routes Attributed to Combustion-Related Toxic Emissions

Substance	Oral Cancer	Oral Noncancer	Inhalation Cancer	Noncancer (Chronic)	Noncancer (Acute)
Acetaldehyde			✓	✓	
Acrolein				✓	✓
Ammonia				✓	✓
Benzene			✓	✓	
1,3-Butadiene			✓		
Ethylbenzene				✓	
Hexane				✓	
Formaldehyde			✓	✓	✓
Napthalene		✓		✓	
PAHs	✓		✓		
Propylene				✓	
Propylene oxide			✓	✓	✓
Toluene				✓	
Xylene				✓	✓
Diesel Particulate			✓	✓	

Source: AFC Table 8.6-3 using reference exposure levels and cancer unit risks from CAPCOA Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines, October 1993

The next step in the health risk assessment process is to estimate the ambient concentrations of toxic substances. This is accomplished by using a screening air dispersion model and assuming conditions that result in maximum impacts. The screening analysis was performed using the 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 were used in conjunction 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, consumption of locally grown plant foods, and mother's milk.

The above method of assessing health effects is consistent with the California Air Pollution Control Officers Association (CAPCOA) Air Toxics "Hot Spot" Program Revised 1992 Risk Assessment Guidelines (October 1993) referred to earlier, and results in the following health risk estimates.

Impacts

The screening health risk assessment for the project, including combustion and noncombustion emissions, resulted in a maximum acute hazard index of 0.0035 at a location approximately 0.1 miles southeast of the proposed site. The chronic hazard index at the point of maximum impact is 0.000785. The location of the maximum

chronic hazard is about 2.2 miles southeast of the proposed site (GWF 2001, p.8.6-7). As **Public Health Table 2** shows, both acute and chronic hazard indices are under the REL of 1.0, indicating that no short- or long-term adverse health effects are expected.

Total worst-case individual cancer risk as shown in **Public Health Table 2** is estimated to be 0.0296 in one million. As discussed earlier, this is the risk at the location where long-term pollutant concentrations are calculated to be the highest, and it occurs at a location approximately 2.2 miles to the southeast of the project site (GWF 2001, p. 8.6-7).

PUBLIC HEALTH Table 2
Operation Hazard/Risk

Type of Hazard/Risk	Hazard Index/Risk	Significance Level	Significant?
Acute Noncancer	0.0035	1.0	No
Chronic Noncancer	0.000785	1.0	No
Individual Cancer	0.0296×10^{-6}	1.0×10^{-5}	No

Source: GWF 2001, Table 8.6-4.

CUMULATIVE IMPACTS

The maximum cancer risk for the HPP facility is 0.0296 in one million at 2.2 miles southeast of the project site. In comparison, the average lifetime cancer risk for inhalation of ambient air in Fresno is 225 in one million based on 2000 ambient average toxic concentration data at CARB's First Street monitoring station (CARB 2001).

The maximum impact location occurs where pollutant concentrations from HPP would theoretically be the highest. Even at this location, staff does not expect any significant change in lifetime risk to any person. Modeled facility-related risks are lower at all other locations, and actual risks are expected to be much lower, since worst-case estimates are based on conservative assumptions, and overstate the true magnitude of the risk expected. Therefore, staff does not consider the incremental impact of the additional risk posed by the HPP project to be either significant or cumulatively considerable.

The worst-case long-term health impact from HPP (0.000785 hazard index) is well below the significance level of 1.0 at the location of maximum impact. At this level, staff does not expect any cumulative health impacts to be significant. As with cancer risk, long-term hazard would be lower at all other locations, and cumulative impacts at other locations would also be less than significant.

Even in the unlikely event that worst-case emissions from an existing facility were to coincide both geographically and temporally with HPP emissions at the location of maximum impact, the overall long-term health outlook would not change for anyone. Thus, the HPP project will not result in any significant cumulative cancer or chronic noncancer health impacts.

ENVIRONMENTAL JUSTICE

In the **Socioeconomics** section of this staff assessment, staff presents census tract information that shows significant minority populations within six miles of the proposed project. Based on the 2000 census, 44 percent of Kings County was non-white. Since staff has concluded that there will be no significant direct or cumulative public health-related impacts, there will also be no significant impact to any minority populations that are identified. Therefore, there are no environmental justice issues.

COMPLIANCE WITH LORS

Staff concludes that construction and operation of the HPP project will be in compliance with all applicable LORS regarding long-term and short-term project impacts.

FACILITY CLOSURE

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 non-routine 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.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No comments were received.

CONCLUSIONS

Staff has analyzed potential public health risks associated with construction and operation of the HPP project. Staff does not expect there to be any significant adverse cancer, or short- or long-term noncancer health effects from project emissions.

Pursuant to the SJVUAPCD and CARB risk management policies, the increased carcinogenic risk attributed to this project is considered to be not significant since it is less than 1.0 in one million. The chronic hazard index attributed to the emission of non-carcinogenic air contaminants is considered to be not significant since it is less than 1.0.

PROPOSED CONDITIONS OF CERTIFICATION

None proposed.

REFERENCES

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SOCIOECONOMICS

Testimony of Tamblyn Borton

INTRODUCTION

This staff assessment analyzes the socioeconomic impacts of the Henrietta Peaker Project (HPP). The technical area of Socioeconomics includes several related areas of interest and concern. A typical socioeconomic impact analysis evaluates the effects of short-term and long-term project-related population changes on local schools, medical and protective services, as well as the fiscal and physical capability of local governmental agencies to meet the needs of project-related changes in population. The socioeconomic analysis also provides demographic information that is used by staff for consideration of environmental justice impacts.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

FEDERAL

Executive Order 12898

"Federal Actions to address Environmental Justice (EJ) in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on federal agencies to achieve environmental justice as part of this mission. The order requires the U.S. Environmental Protection Agency (USEPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

Civil Rights Act of 1964, Public Law 88-352, 78 Stat.241

(Codified as amended in scattered sections of 42 U.S.C.) Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color, or national origin in all programs or activities receiving federal financial assistance.

STATE

Title 14 California Code of Regulations, Section 15131

Economic or social factors of a project may be used to determine the significance of physical changes caused by the project. Economic, social and particularly housing factors, shall be considered by public agencies together with technological and environmental factors in deciding whether changes in a project which reduce and or avoid the significant effects on the environment are feasible.

Title 22 California Government Code, section 65770-65998

Senate Bill (SB) 50 and other statutory amendments enacted in 1998 provide that, notwithstanding any other provisions of local or state law (including the California Environmental Quality Act, or CEQA), state and local agencies may not require mitigation for the development of real property for effects on school enrollment except as provided by Government Code Section 65996(a). The relevant provisions restrict fees for the development of commercial and industrial space to a maximum of $0.31 per square foot of "chargeable covered and enclosed space." Although a one-time fee, SB50 also allows for a jurisdiction to apply an inflation rate to the per-square foot fee every two years. (Govt. Code, § 5995(b)(2))

These codes also include provisions for levies against development projects near school districts. The levies are often called "school impact fees" because they go toward education. For commercial or industrial construction, Kings County school districts levy a school impact fee of $0.33 per square foot of chargeable covered and enclosed space. This fee includes the inflation factor allowed by SB 50 (GWF, 2001a)

SETTING

POPULATION CHARACTERISTICS

Kings County includes the four incorporated cities of Avenal, Corcoran, Hanford, and Lemoore and comprises 1,396 square miles of land. The County and region is characterised by active agricultural fields. Production on and adjacent to the site includes cotton and lettuce. As of January 2000, the Kings County population, as calculated by the California Department of Finance (DOF), totalled 131,200 with approximately 28 percent (36,750) of the population residing in the unincorporated area.

The Kings County population increased by three percent (from 75,100) during the period 1981 to 2000, with the majority of the growth occurring in the incorporated cities. DOF estimates that the Kings County population will increase by approximately 1.7 percent (to 154,617) by 2010. While the more populous counties of Kern (658,900) and Fresno (805,000) grew less rapidly during the earlier 20-year period, that trend is anticipated to reverse as Kern is anticipated to grow by 2.7 percent from 2001 to 2010. Fresno County growth is expected to parallel that of Kings County in terms of growth rate.

The project site is located approximately 10 miles west of the City of Lemoore and 1.5 miles south of the Lemoore Naval Air Station (NAS). Although Lemoore NAS is an entirely self-contained community, complete with homes, shops, schools, and parks, its population is included in DOF population estimates and projections

The City of Lemoore represents the second-largest incorporated city in the county with a 2000 population of 18,800. DOF anticipates that Lemoore will grow by as much as four percent during the next decade, making this the most rapidly growing city in the County. The nearby City of Hanford, located just east of Lemoore along State Route (SR) 198, has the county's largest population at 41,000 in 2000. Hanford showed the

slowest growth of the four cities since 1981 (3.4 percent). At a projected growth rate of 3.8 percent, however, Hanford's population is anticipated to increase more rapidly during the next decade than either Avenal or Corcoran. County and city population trends are detailed in **Socioeconomics Table 1.**

Socioeconomics Table 1
Historical and Projected Population Trends

Area	1981	1990	1999	2000	2010
City of Avenal	4,160	9,770	12,250	13,100	17,700
City of Corcoran	6,550	13,360	20,700	21,250	24,600
City of Hanford	21,550	30,463	39,350	41,000	59,400
City of Lemoore	9,275	13,622	17,900	18,800	27,900
Kings County	75,100	101,469	125,800	131,200	154,617
Kern County	412,800	544,981	645,900	658,900	859,818
Fresno County	523,200	667,490	789,700	805,000	953,457
Tulare County	250,800	311,921	363,433	367,961	469,509

Source: California Department of Finance, 2001

Demographics

Socioeconomics Figure 1 shows 2000 Census information on non-white population within a six-mile radius of the HPP site. As shown in **Socioeconomics Figure 1**, approximately 52 percent of the 7,295 people in the six-mile buffer are minority. There are a number of small areas that support a non-white population of 50 percent or more; these are primarily located to the east of the project site within four to six miles of the site. In fact, most of these small areas show a non-white population of 75 percent or more. The only population center that falls into this area is the Town of Stratford in Kings County, which is approximately 5.5 miles southeast of the site. Stratford is approximately 67 percent nonwhite according to the 2000 Census.

Census data provided in the AFC indicates that the incorporated cities in Kings County have a higher percentage of minority residents than Kings County in its entirety, suggesting that the unincorporated portions of Kings County are less racially diverse.

Data on persons living below the poverty level were not available as of November 2001 (www.cendsus.gov, 2001). According to the 1990 Census, less that 20 percent of the population within the six-mile radius lived in poverty. However, between 25 and 49.9

percent of residents lived in poverty in the northwestern to southwestern six-mile radii from the site. Although this portion of the buffer corresponds to the Fresno/Kings County line, poverty levels near the HPP site are not indicative of the region. In 1990, 16 percent of Kings County residents, 21 percent of Fresno County residents, 16 percent of Kern County residents, and 22 percent of Tulare County residents lived below the poverty level.

EMPLOYMENT CHARACTERISTICS

Agriculture and related industries predominate in the Kings County economy, and are important in neighboring Kern and Fresno Counties as well. As shown in **Socioeconomics Table 2**, the 2000 total civilian labor force in Kings County was 45,900 persons, and the unemployment rate was 14 percent. Of the incorporated cities in Kings County, Avenal had the highest unemployment rate in 2000 (21.2 percent), followed by Corcoran (16.1 percent), Lemoore (14.3 percent), and Hanford (12.3 percent).

Fresno County had an unemployment rate comparable to that of Kings County (14.3 percent), but Kern County's rate was slightly lower (11.3 percent). The unemployment rates in the three counties were more than double the rate of the State of California as a whole in 2000 (4.9 percent). Overall unemployment rates in the vicinity of the project may be inflated because the agricultural nature of the economy in these counties results in seasonal employment fluctuations, and unemployment rates likely fluctuate throughout the year.

The highest percentages of employment in Kings County are in government, farm, trade, and services, respectiviely. In 1998, the government sector represented one-third of total employment in Kings County, due primarily to the presence of Lemoore NAS (1,400 civilian employees), Avenal State Prison (1,300 employees), and two correctional facilities in Corcoran (2,900 employees). As the Kings County population grows, government employment will increase in the form of public school educators and general government support employees.

Farm production and services in Kings County represented over one-fifth of total employment, and wholesale and retail trade represented slightly less than one-fifth of total employment. The services sector (hotels, lodging, and health) employed approximately 15 percent of the total employees in Kings County. Construction and mining employment was approximately 1,000 in 1999. This represented 23 percent of

Insert Socioeconomics Figure 1, 8.5 X 11 color

the total Goods Providing Non-farm Employment, while manufacturing comprised the remaining 77 percent.

The California Employment Development Department (EDD) expects an average annual growth rate in non-farm employment of 2.8 percent between 1997 and 2004.

Recent years reflect conservative growth (e.g., Kings County experienced a 3.4 percent average annual increase in non-farm employment between 1993 and 2000). From 1998 to 1999, farm production and services decreased by an average annual rate of 0.2 percent.

Socioeconomics Table 2
2000 Employment

Area	Labor Force	Employment	Unemployment	%Unemployment
City of Avenal	2,450	1,930	520	21.2
City of Corcoran	3,920	3,290	630	16.1
City of Hanford	16,900	14,820	2,080	12.3
City of Lemoore	6,970	5,970	1,000	14.3
Kings County	45,900	39,480	6,420	14.0
Kern County	287,200	254,700	32,500	11.3
Fresno County	393,000	336,800	56,200	14.3
Tulare County	170,000	143,900	26,200	15.4
State Total	17,090,800	16,245,600	845,200	4.9

Source: EDD

HOUSING

In January 2000, the housing stock for Kings County was an estimated 37,018 dwelling units, consisting of 74 percent single-family homes, 20 percent multiple-family dwellings, and six percent mobile homes or trailers. The residential vacancy rate for Kings County was 6.2 percent at that time, which was lower than California's vacancy rate of 7.4 percent, indicating a slightly tighter housing market in Kings County than in the State as a whole.

During the same period, Kern County had 234,487 housing units in January 2000 and a vacancy rate of 8.5 percent, while Fresno County's housing supply was 273,159 housing units and the vacancy rate was 6.1 percent. Tulare County had 121,707 housing units in January 2000 and a vacancy rate of 6.6 percent.

The supply of temporary housing is greater in Kern and Fresno Counties than in Kings County. However, the City of Lemoore in Kings County has two motels with a combined total of 127 rooms. Lemoore is approximately 10 miles east and within a 15-minute driving distance of the site. The City of Hanford in Kings County, located approximately 20 miles northwest and within a half-hour driving distance of the site, has nine hotels, including two large chain hotels with a combined total of 227 rooms. The Cities of Avenal and Corcoran in Kings County have one hotel each.

The larger Cities of Fresno and Bakersfield are approximately 40 miles north and 80 miles south of the project site, respectively. The City of Fresno has 75 hotels or motels with approximately 7,000 rooms. Bakersfield, the largest city in Kern County, has 33 hotels or motels with approximately 4,300 rooms.

A variety of small businesses are located in the Cities of Lemoore and Hanford. Other businesses operate within Lemoore NAS, but are not open to the public. There are no businesses located in the immediate vicinity of the project site or linear facilities.

SCHOOLS

The project site is within the boundaries of two school districts: the Central Union Elementary School District (Central Union) and the Lemoore Union High School District (Lemoore Union). Central Union educates students in grades K through 8, and Lemoore Union educates students in grades 9 through 12. As shown in **Socioeconomics Table 3**, the enrollment in these districts is not expected to grow substantially within the next few years, and the schools are not currently over capacity (although high school attendance is reaching capacity).

Socioeconomics Table 3
Schools and Capacity in the Vicinity of the Project Site

School District	School	2000-01 Enrollment	Enrollment Capacity	Over Capacity	Projected Enrollment 2001-2002
Central Union Elementary	Akers	690	1,020	No	690
	Central	317	540	No	317
	Neutra	480	870	No	480
	Stratford	325	510	No	325
	Total	**1,812**	**2,940**	**No**	**1,812**
Lemoore Union High School	Jamison	110	110	No	110
	Lemoore	1,924	1,924	No	1,924
	Yokuts	17	25	No	17
	Total	**2,051**	**2,059**	**No**	**2,051**

Source: DOE, 2001; GWF, 2001a.

The closest schools to the project site are Akers Elementary School and Neutra Elementary School, both of which are approximately two miles north of the site.

In Kings County, 25,364 students attended schools during the 2000–2001 school year. In Hanford, seven school districts serve grades K–12. The projected K–12 enrollment for the 2002–2003 school year is 11,319 students, an increase of 720 students (3 percent) over current levels (GWF, 2000). Community colleges and adult education programs are also provided throughout Kings County.

UTILITIES, EMERGENCY AND OTHER SERVICES

The site is not currently served with potable water or sewer services, as existing uses involve agricultural production. Pacific Gas and Electric supplies electricity to the site and natural gas to the City of Avenal. Southern Gas Company supplies natural gas to the Cities of Corcoran, Hanford and Lemoore. Natural gas is not currently available at the site.

The Kings County Sheriff's Department (KCSD) provides law enforcement services to the County. More than 200 employees and 73 sworn officers operate four beats throughout the County, as well as the jail in Hanford. The KCSD is available at all times to serve the project site.

The Kings County Fire Department (KCFD) provides county-wide fire protection and emergency response. The KCFD headquarters are located in Hanford, which is approximately 20 miles from the site. The closest station is Number 7, located 7.5 miles from the site, which will provide first response to the project. Number 10 Station, located nine miles from the site, would provide backup response. The KCFD, however, has a mutual-aid agreement with Lemoore NAS. Lemoore NAS could therefore respond to an emergency at the site within four minutes.

Ambulatory care is available through American Ambulance, with vehicles stationed in Lemoore and Hanford. Response time would be eight minutes. Seven medical facilities (clinics or hospitals) are located in Hanford. The closest is the Hanford Community Medical Center, which has 65 beds and is located approximately 15 minutes from the site. The nearest trauma center is located in Fresno, approximately 25 minutes from the site. The Kings County Cities of Avenal and Corcoran each have one hospital.

FISCAL

For fiscal year (FY) 2000/2001, Kings County adopted a revenue budget of approximately $136 million. Intergovernmental revenue accounts for approximately $86 million, taxes generate about $15 million, and charges for services generate approximately $8 million. Welfare received the largest percentage of FY 2000/2001 budget appropriations (31 percent), followed by public safety (27 percent), and capital outlay (18 percent). Other funds that received appropriations included health (11 percent), general government (7 percent), and public transportation (4 percent). Internal service funds, education, and recreation each received 1 percent of appropriations.

For construction that occurs in Kings County, the County receives the sales tax revenue on the non-labor cost (e.g., equipment and materials purchased within the County), at one percent of total sales. The revenue goes to the County's general fund and is used for general government uses.

The total assessed value of all secured property in Kings County was $4.4 billion in FY 2000/2001, and the total property tax revenue collected was approximately $46 million. In Kings County, 47 percent of the property tax revenue is distributed to the general fund, the library, and the fire district; 34 percent to education; eight percent to the cities; four percent to utilities, hospitals, and other services; four percent to other

funds; and three percent to redevelopment agencies or fund. Kings County levies property tax at one percent of the assessed value of the property. Depending on the tax code area, an additional tax for school capital facility needs could apply.

As noted elsewhere in this report, the 20-acre subject parcel represents a portion of a 265.54-acre parcel that is currently under Williamson Act contract. The Williamson Act is implemented by creating a voluntary contract with property owners that restricts land use for 10 years, with automatic annual renewal. In return for the agreement to restrict the use of land for agriculture, the landowner receives preferential property tax rates based on the current use of the land rather than its market value. The Williamson Act contract may be cancelled by the Kings County Board of Supervisors, upon finding that the cancellation is in the public interest. However, applicants are subject to a fee for early cancellation.

According to the Kings County Tax Collector, tax revenue from assessors parcel number (APN) 024-190-065 was $3,455.74 in 2001. This represents a per-acre annual tax revenue of $13.01, translating into $260.28 in real property tax revenue per year for the subject parcel.

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
SOCIOECONOMICS: POPULATION, HOUSING, AND ECONOMIC (FISCAL AND NON-FISCAL)-- Would the project:				
a) Have substantial non-fiscal effects on local employment and economy (income)?			X	
b) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
c) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
d) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
e) Have substantial fiscal effects on local government expenditures, property and sales taxes?			X	
f) Have a significant minority or low-income population within a six-mile radius that may be subject to disproportionate adverse effects of the project?				X
Public Services – Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered facilities, the construction of which could cause significant environmental impacts, or result in an inability to maintain acceptable service ratios, response times, or other performance objectives for the following:				

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
SOCIOECONOMICS: POPULATION, HOUSING, AND ECONOMIC (FISCAL AND NON-FISCAL)-- Would the project:				
g) Police protection?				X
h) Schools?				X
i) Medical and other public services and facilities?				X

DISCUSSION OF IMPACTS

A. Employment and Economy: Less Than Significant

Construction. Construction of the HPP is expected to require an average of 75 workers per day, with a peak workforce of 93 workers, for a period of five months. The Applicant has indicated that a local workforce will be utilized to the extent practicable, which would have a slight but beneficial impact on the local economy. The AFC estimates that Kings County had a total of approximately 1,000 construction workers and miners in 1999. Because this includes the total number of workers instead of just unemployed workers, this may not meet the construction demands of the AFC. In fact, the Applicant anticipates that as much as 85 percent of the workforce will come from outside Kings County. This would reduce the positive impact of local employment. However, workers may frequent hotel, shop restaurants or bars in the area, which would also be positive for the local economy.

Operation. Upon completion of the HPP, staff currently operating the existing power plant in Hanford will control the operations of the proposed HPP. The proposed project would not result in any permanent long-term employment generation. While additional employment and related spending are not expected as long-term effects of the HPP, the increase in power generated and distribution throughout the region is considered beneficial to overall employment and business development.

B. Induced Population Growth: No Impact

Construction. Construction of the HPP is expected to require an average of 75 workers per day, with a peak workforce of 93 workers, for a period of five months. The Applicant estimates that as much as 50 percent of the workforce will travel from Bakersfield /Kern County, 35 percent will travel from Fresno/Fresno County, and approximately 15 percent will travel from within Kings County. This will not cause substantial population increases or changes in the concentration of population because of the temporary nature and relatively short time period for construction. Construction workers will be a temporary addition to the Kings County population during the daytime.

Operation. HPP operation and maintenance will not cause any change in population or in the concentration of population, because no new employees will be required to operate the HPP.

C. Displacement of Housing: No Impact

Construction Impacts. Given the proximity of the counties, from which labor for the project will be derived, most workers will be daily commuters and will, therefore, not need overnight lodging. However, if workers were to require temporary lodging, such lodging is available in Hanford, Avenal, and Corcoran, as well as in Fresno and Bakersfield. The temporary influx of construction workers will not place demands on the local lodging industry that could not be met. The secondary (indirect and induced) employment impacts associated with construction are not expected to result in a substantial impact on housing in the area. The number of secondary employees will be small, and the jobs will be temporary. Housing availability and vacancy rates in the area indicate that any new residents associated with secondary employment attributable to construction will be able to find adequate housing. Therefore, there would be no impact.

Operation and Maintenance. As noted above, existing GWF employees (specifically, those employed at the nearby GWF Hanford power facility) would be used as needed for operation of the HPP. These employees are likely to live in the area. Therefore, no demand for permanent housing or temporary lodging will result. Operation and maintenance workers could spend income in the local area surrounding the HPP on items such as food and gasoline. However, this increase in spending will not be significant relative to overall spending in Kings County. Secondary (indirect and induced) employment associated with the operation and maintenance of the HPP is not expected to occur since there will be no new employees associated with the HPP. Therefore, there would be no impact associated with operation and maintenance of the HPP.

D. Displacement of People: No impact

Construction Impacts. Some construction workers may be required to seek temporary housing, such as a hotel or motel, for the duration of construction. Most workers, however, will come from areas that are within daily commute distance to the site. Because few construction workers are expected to seek local lodging, sufficient lodging is available in the immediate area, and the term of construction is relatively short, no displacement of people is expected. Therefore, there would be no impact.

Operation and Maintenance. Operation and maintenance employees from GWF's Hanford power plant would service the HPP as necessary. This would require a one-way trip of approximately 20 to 30 minutes, and would not displace existing residents. There would be no impact.

E. Fiscal Effects: Less Than Significant

There would be positive fiscal impacts associated with the HPP. According to the AFC, the total assessed value of secured property in Kings County in FY 2000/2001 was approximately $4.4 billion. The current assessment on the 265.54-acre parcel is $250,000. The applicant and owner have agreed to split the larger parcel into two, transferring the ownership of the smaller parcel to the Applicant. At that time, the 20-acre project site would be re-assessed based on the sale price. Since the sale price

has not been established, it is impossible to compute the annual real property tax revenue from the site.

The HPP is expected to generate additional tax revenue. The following information was offered in the AFC:

> "Assuming the assessed value of the project site parcel will increase by the value of construction ($84 million), the increase in property tax revenue that will accrue to Kings County is approximately $900,000 annually, of which $50,000 will go toward paying the two school bonds. …" 4
>
> " …The valuation of the HPP is based on components related to its anticipated revenue-generating capability, including production capacity, amount and term of income stream, expenses, discount rate, and present value at the end of the term. Therefore, property tax revenue could vary annually depending on facility revenue."

While it is not clear how the $900,000 increase in tax revenue was derived, staff can conclude that the increase in property tax revenue from improvement of the site would be economically beneficial to Kings County. The HPP will make local purchases of about $32,000 annually in equipment and supplies, generating approximately $2,400 annually in sales tax revenue in Kings County.

F. Minority and Low-Income Populations (Environmental Justice Screening Analysis): No Impact

The purpose of the screening analysis is to determine whether there exists a minority and/or low-income population within the potential affected area of the proposed project."

Minority and/or low-income populations, as defined by the U.S. Environmental Protection Agency's April 1998 Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses, are identified where either:

- the minority population of the affected area is greater than fifty percent of the affected area's general population; or
- the minority population percentage of the area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

Energy Commission staff has determined the potential affected area as a six-mile radius of the proposed HEP site. The six-mile radius is consistent with the radius used for staff's cumulative air quality analysis. When a minority and/or low-income population is identified, per the above, staff in the technical areas of air quality, public health, hazardous materials, noise, soils and water resources, waste management, traffic and transportation, visual resources, land use, socioeconomics and transmission line safety and nuisance consider possible impacts on the minority/low-income population as part of their analysis. This "environmental justice" (EJ) analysis consists of identification of significant impacts (if any), identification of mitigation, and determination of whether there is a disproportionate impact if an unmitigated significant impact has been

identified. Staff's environmental justice approach includes providing notice (in appropriate languages) of the proposed project and opportunities for participation in public workshops to minority and/or low-income communities, and providing information on staff's EJ approach to minority and/or low-income persons who attend staff's public workshops. As shown in **Socioeconomics Figure 1** there are a number of small areas that support a non-white population of greater than 50 percent. In fact, most of these small areas show a non-white population of 75 percent or more. The only population center in the area, the town of Stratford in Kings County (approximately 5.5 miles southeast of the site) had a non-white population of approximately 67 percent, according to the 2000 Census. According to the 1990 Census, just under 20 percent of the population within a six-mile radius was living in poverty.

Census 2000 data indicate that the non-white population in Kings County and Fresno County was 46 percent in both counties. The five census blocks surrounding the project site ranged from 25 to 70 percent non-white. In 1990, 16 and 21 percent of residents of Kings and Fresno Counties, respectively, lived below the poverty level.

G. Police Protection: No Impact

The construction of the proposed HPP will result in slight increases in demand for public services, as the construction workforce will average 75 workers, and construction will last approximately five months. The KCSD will serve the project site during construction, operation, and maintenance. The increased demand for service will not be substantial in relation to the service areas for each department. As noted above, the KCSD has adequate resources to accommodate the additional demand placed on the department as a result of HPP construction, operation, and maintenance. Therefore, there would be no impact.

H. Schools: No Impact

The school impact fees resulting from construction of the HPP will support education in Kings County. The current school impact fee rate is $0.33 per square foot of covered and enclosed structure space for commercial or industrial development. The covered and closed structures to be built at the HPP site are approximately 14,000 square feet, which results in a school impact fee of $4,620 to be paid by the owners of the HPP.

Construction and operation workers will commute to the site on a daily basis and are not expected to temporarily or permanently relocate with their families, due to the adequate nearby labor force and the short construction period. It is not expected that any additional students will attend Kings County schools as a result of the HPP. Therefore, the construction, operation, and maintenance of the HPP will not result in an increase in the local student population or have an adverse impact on the ability of the school district to provide educational services.

I. Other Public Services: No Impact

The construction of the proposed HPP will result in slight increases in demand for public services, as the construction workforce will average 75 workers, and construction will last approximately five months. The KCSD and the KCFD will serve the project site during construction, operation, and maintenance. The increased demand for service will not be substantial in relation to the service areas for each department. The KCFD

has adequate resources to accommodate the additional demand placed on the department as a result of HPP construction, operation, and maintenance (GWF 2001a).

The impact of the HPP on hospitals and ambulances in the area will not be substantial. Medical facilities will be able to accommodate the potential demand for additional services. (GWF 2001a.) See **Worker Health and Safety** for more information about the safety procedures to be used during construction.

The construction, operation, and maintenance of the HPP will not have a substantial impact on electricity and gas, sewer, water, or telephone service in the area. The HPP project includes construction of an approximately two-mile natural gas pipeline that will connect to the Southern California Gas Company Line 800 south of the site. The pipeline will be installed within an existing roadway right-of-way and will not interrupt any agricultural production. In addition, a new 70-kV transmission line will connect the HPP to the Pacific Gas & Electric (PG&E) Henrietta Substation. The transmission line will be approximately 550 feet in length and will not transect any agricultural land. The HPP will obtain its process water and fire water from Westlands Water District and Kings County through an existing water supply line owned and operated by Westlands Water District. No improvements in the water line are necessary to supply the project, and no existing water customers will be curtailed. Bottled water will be delivered to the site for drinking and other domestic purposes. A septic system and retention/evaporation pond will be installed at the site, and there will be no wastewater discharged to a publicly owned treatment system.

Refuse pickup and both public and private waste haulers will provide disposal services for the project site. Where appropriate, wastes will be recycled; any remaining wastes will be temporarily stored for periodic disposal at the Class III Hanford Sanitary Landfill. PG&E will provide electricity service to the HPP site during construction, and Southern California Gas Company will provide natural gas service during operation. There is adequate capacity with these service providers. Therefore, there would be no impact to public services because of the HPP.

CUMULATIVE IMPACT

Cumulative adverse socioeconomic impacts could potentially result from a project if construction or operational demands, when combined with similar demands from one or more other projects in the region, exceed or undermine available resources. Other future or proposed projects in the area include a cellular communication tower and a cheese processing facility in Lemoore. The cellular communication tower would not result in a large increase in nearby population or employment. The cheese processing facility would result in an increase in employment by approximately 350 personnel at capacity. These two projects would not likely have a substantial impact on population near the HPP, due to the types of projects and their locations in Lemoore. Therefore, cumulative impacts on population are expected to be less than significant, and subsequent impacts on the ability to provide public services are also expected to be less than significant.

The HPP project is not expected to result in substantial growth-inducing impacts, as no direct or indirect relocations will result from the HPP. Positive economic impacts and increased power generation capability will support potential future growth opportunities in the county and the region. This is not considered growth-inducing, however, because the State has been, and continues to be, faced with a potential shortage of electrical energy, and the electricity produced by the HPP will not necessarily be used in the vicinity.

MITIGATION

Staff is proposing a condition of certification that will ensure that the project owner pays the one-time statutory school development fee of $4,620.

CONCLUSIONS AND RECOMMENDATIONS

Staff has determined that there will be no significant adverse construction or operation-related socioeconomic impacts to housing, schools, and public services. Staff has identified economic and fiscal benefits to the project area such as employment, project expenditures, and sales and property tax revenues. To ensure compliance with LORS, staff proposes a condition of certification requiring the project owner to pay a one-time school impact fee based on a fee schedule of $.33 per square foot for industrial development.

If the Energy Commission certifies the proposed project, staff recommends that it adopt the following condition of certification.

PROPOSED CONDITIONS OF CERTIFICATION

SOCIO-1 The project owner shall pay the one-time statutory school facility development fee as required at the time of filing for the in-lieu building permit with the Kings County.

Verification: The project owner shall provide proof of payment of the statutory development fee in the Monthly Compliance Report following the payment.

REFERENCES

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SOIL AND WATER RESOURCES

Testimony of Antonio Mediati and Jon Schulman

INTRODUCTION

This analysis examines the potential impacts to soil and water resources of the Henrietta Peaker Project (HPP), proposed by GWF Energy LLC. Specifically, this report focuses on the following areas of concern:

- whether the project's demand for water could affect surface or groundwater supplies;
- whether construction or operation could lead to accelerated wind or water erosion and sedimentation;
- whether project construction or operation could lead to degradation of surface or groundwater quality; and
- whether the project will comply with all applicable laws, ordinances, regulations and standards.

Where the potential for impacts is identified, mitigation and conditions of certification have been proposed.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

FEDERAL

Clean Water Act

The Clean Water Act (33 U.S.C. Section1251), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States.

The Clean Water Act requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. These discharges are regulated by the **National Pollutant Discharge Elimination System (NPDES)**. In California, NPDES permitting authority is delegated to, and administered by, the nine Regional Water Quality Control Boards (RWQCB). Under provisions of the Clean Water Act, the State Water Resources Control Board (SWRCB) adopted two general NPDES Permits for the control of stormwater runoff during construction and operation of industrial facilities, such as a power plant and associated facilities.

Ground disturbance activities affecting greater than five acres are required under the General Construction Activity NPDES Permit, to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP). This plan identifies best management practices (BMPs) to reduce sediment, oil and other contaminants in stormwater discharges from

leaving the construction site. The general NPDES permit for Industrial Activities requires industrial facilities, such as power plants, to prepare and implement protective measures for operations related to wastewater discharges and also a SWPPP that identifies best management practices to reduce the discharge of contaminants from the facility site during power plant operation.

Section 401 of the Act requires that the RWQCB must certify any activity that may result in a discharge into a waterbody. This certification ensures that the proposed activity will not violate state and federal water quality standards.

Numeric Criteria for Priority Toxic Pollutants for the State of California (May 18, 2000)

This rule was recently promulgated by the U.S. Environmental Protection Agency (USEPA) to fill a gap in the California water quality standards created in 1994 when a State court overturned the State's water quality control plans which contained water quality criteria for priority toxic pollutants. This new rule provides criteria applicable in the State of California for inland waters, enclosed bays and estuaries for all purposes and programs under the Clean Water Act.

STATE

California Constitution, Article X, Section 2

California Constitution, Article X, Section 2. The water resources of the state should be put to beneficial use to the fullest extent possible. The waste or unreasonable use or unreasonable method of use of water is prohibited and water conservation is encouraged. The right to water or to the use of the flow of water and riparian rights are to be maintained by reasonable methods of diversion and use.

California Environmental Quality Act

California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq.; CEQA Guidelines, 14 California Code of Regulations Section 15000 et seq., Appendix G: CEQA establishes guidelines that define water resources impacts. Appendix G contains definitions of projects that may be considered to cause significant impacts to water resources. The CEQA lead agency for power plants 50 megawatts (MW) or more in size is the California Energy Commission.

California Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1967, Water Code Section 13000 et seq., requires the SWRCB and the nine 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 RWQCBs are also required to ensure the protection of water quality through the regulation of waste discharges to land. Such discharges are regulated under Title 23, California Code of Regulations, section 2200 et seq. These regulations require that the RWQCB issue a **Waste Discharge Requirement** regarding the discharge of waste (soil) into surface waters resulting from land disturbance.

California Water Code

California Water Code Section 13550 requires the use of reclaimed water, where available. The use of potable domestic water for nonpotable uses, including, industrial uses, is a waste or an unreasonable use of the water within the meaning of Section 2 of Article X of the California Constitution if recycled water is available.

California Water Code Section 13260 requires that, as part of the NPDES permit, any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the state, other than into a community sewer system must submit a report of waste discharge to the RWQCB.

State Water Resources Control Board Policy

The SWRCB has also adopted a number of policies that provide guidelines for water quality protection. The Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling (adopted by the Board on June 19, 1976 by **Resolution 75-58**) states that use of fresh inland waters should only be used for power plant cooling if "the other sources or other methods of cooling would be environmentally undesirable or economically unsound." This SWRCB policy requires that power plant cooling water should come from, in order of priority: wastewater being discharged to the ocean, ocean water, brackish water from natural sources or irrigation return flow, inland wastewaters of low total dissolved solids, and other inland waters. This policy also defines cooling water discharge prohibitions.

LOCAL

County of Kings

Specific permits and regulations related to soil and water resources required for the project by Kings County include a Grading and Excavation Permit, county zoning ordinances and compliance with county Sewage Disposal System Standards.

Resource Conservation District

Soil resource policies, which are intended to maintain agricultural productivity, are administered largely by the Resource Conservation District rather than by Kings County.

SETTING

The HPP will produce a nominal 91.4 megawatts of electricity. The HPP facility will be constructed on previously disturbed agricultural property. The area immediately surrounding the site is predominantly used for agricultural purposes. A closed trucking transfer station is located approximately one mile south of the site. The nearest residences are condominiums on the Naval Air Station (NAS) Lemoore property, bordering State Route (SR) 198, approximately 0.5 miles east of the intersection of SR 198 and 25th Avenue (the base entrance), and approximately 1.5 miles northeast of the project site. The 160 acre-feet per year water supply for the HPP will be provided by Westlands Water District and Kings County through the State Water Project (SWP).

The HPP site is relatively flat with a minimal slope of 0.14 percent toward the southeast. The elevation of the site ranges from approximately 222 feet to 225 feet above mean

sea level. The site will be graded such that ground surfaces will slope away from structures and roads into swales, catch basins, and/or a retention pond.

Approximately 18 acres will be either permanently or temporarily disturbed. The total permanently disturbed area will be approximately 7 acres. Of these 7 acres, approximately 1.6 acres will be impervious, approximately 4.4 acres will be aggregate surfacing or revegetated, and the remaining one acre of disturbed area will be covered with gravel. Eleven acres will be temporarily disturbed during construction. Five acres will be used for construction/laydown and parking. Another five acres (off site) will be temporarily disturbed for the 2.2 mile buried gas pipeline along an existing county right-of-way. One acre will be disturbed for the construction of the 550-foot, 70 kv transmission interconnection. A 16-foot long water supply pipeline will also be constructed as part of the project.

GROUNDWATER

The HPP site is located within the Tulare Lake groundwater basin (TLGB), which underlies parts of Kings and Tulare counties and is located within the San Joaquin Valley groundwater basin, the largest in California. The TLGB has a surface area of approximately 525,000 acres (820 square miles) contained within the larger San Joaquin basin, which is 13,500 square miles. The TLGB aquifer system contains three water tables. A shallow perched water table (water at 5.5 to 6 feet beneath existing grade on the HPP site) as well as an upper and lower aquifer system separated by the 100-foot thick aquitard known as the “Corcoran Clay,” a member of the Tulare Formation. The shallow perched table may seasonally rise to as close to 3.5 feet of the ground surface (Kleinfelder, 2001a). The Corcoran Clay aquitard is located approximately 450 feet below ground surface (bgs) and is a silty diatomaceous clay and is considered generally impermeable. This historically confining aquitard disappears north and east of the HPP site, allowing communication between the two lower aquifers. While at one time the lower aquifer appears to have been a confined system, the static head of both systems is approximately the same, indicating that the lower aquifer is acting as an unconfined system. This communication between the two aquifers is potentially significant in that degradation of the surface system may be communicated to the lower aquifer.

Reports by the geotechnical consultants to GWF (Kleinfelder, 2001a and 2001b) discuss the implications of the shallow aquifer relative to construction of the HPP. The reports discuss methods and precautions for working in the silt and clay soils and groundwater conditions on-site. The report suggests methods of limiting dewatering activities

SURFACE WATER HYDROLOGY

The HPP site is located within the Tulare Lake hydrogeologic (TLH) basin, which consists of the drainage area of the Southern San Joaquin Valley. Historically, the Kings River flowed into its delta, which consisted of a number of parallel channels on the northeast side of the historic Tulare Lake. Historically the Lake and associated channels were temporarily filled in late winter and spring, often drying up by midsummer. Many of these channels have been drained for agricultural operations.

This large basin has no normal outlet to the Pacific Ocean except in those extreme precipitation years when floodwater may be transported from the Kings River north, into the San Joaquin River basin via the Fresno Slough. The south fork of the Kings River is approximately six miles east of the HPP site.

Surface water in the TLH basin is primarily used for municipal, agricultural and industrial purposes. Supplemental to the rivers, the State Water Project (SWP) and federal Central Valley Project (CVP) transport surface water via the California Aqueduct.

There are no natural surface water drainage features on this site. The surface water feature closest to the HPP site is the Crescent Ditch, 0.7 mile to the southeast, which runs parallel to the Avenal Cutoff road. Another nearby surface water feature is a series of sewage treatment and stormwater detention basins. These basins occupy approximately 275 acres, approximately 0.5 miles east of the HPP site. These effluent and evaporation basins are owned and operated by the Lemoore Naval Air Station (NAS). There is a wetland approximately one acre in size several hundred yards north of the HPP site across 25th Avenue.

The HPP site is not in any federally delineated 100- or 500-year flood plain.

SOILS

The HPP plant project site (including the site construction laydown area) will be located within 12 acres, seven of which will be permanently disturbed for the HPP plant and five of which will be used for temporary construction laydown and parking. Five additional acres will be disturbed in construction of the proposed natural gas pipeline route and one acre will be disturbed for a transmission interconnection, for a total of 18 acres.

Lethent clay loam covers the entire project area (Arroues and Anderson, 1986). This soil type occurs on alluvial fans and basin rims and is typically used for irrigated crops. Lethent clay loam has a good combination of physical and chemical features for the production of agricultural crops, but is limited in its agricultural potential to crops that are productive in saline-sodic soils. Lethent clay loam tends to be very deep, moderately to well drained, and formed on alluvium derived dominantly from sedimentary rock. Lethent clay loam has only slight water erosion susceptibility, low wind erosion susceptibility, low permeability, and moderate to high potential for shrinking and swelling.

SOIL AND WATER CONTAMINATION

A Phase I Environmental Site Assessment (ESA) prepared for the HPP site by Harding ESE, Inc. (2001) identifies site conditions of potential concern, including potential impacts to both soil and groundwater from previous industrial activities. Harding ESE found no previous environmental studies related to the site. The following summary points are from Harding ESE, Inc. (2001).

- Since the site has been used for cotton cultivation for at least the last 30 years, pesticides have most likely been utilized. There is a high likelihood that there are low levels of persistent pesticides present in the soil.

- No spills have occurred at the Henrietta Substation located north of and adjacent to the site. No transformer or other electrical equipment with potentially polychlorinated biphenyls (PCBs) containing oils were observed on the site.
- The site was not listed under any category in the environmental regulatory agency database report.
- No structures were observed on the site. Therefore, asbestos containing material and lead based paint are not an environmental concern at the site.
- Review of the environmental regulatory agency database report indicates that no off-site properties pose a significant environmental threat to the site.

During the Harding ESE ESA (2001) a crystalline residue was located approximately two to three inches below the soil surface and just north of the site at an agriculture-staging site. The cause of the residue is not known but was believed to be associated with fertilizer usage/storage. During a subsequent visit on November 9, 2001 staff observed surface salts on the HPP site where the soil was not disked. Buildup of salinity in soils has been identified by the SWRCB and the Central Valley RWQCB as an issue in the Central Valley (DWR, 2001). The Central Valley RWQCB is currently amending its Basin Plan to address the salinity problem (Central Valley RWQCB, 2000).

HPP WATER SUPPLY

The HPP will use approximately 160 acre-feet of water per year assuming an operating schedule of 8000 hours per year. The sources of water for the HPP are the Westlands Water District (WWD) and Kings County. The property on which the HPP is to be built has an existing entitlement of 51.8 acre-feet of Central Valley Project (CVP) water, administered by the WWD, that will be adjusted to 33.7 acre-feet upon conversion of seven acres to non-agricultural use (WWD, 2001). The 33.7 acre feet will all be used on the 13 acres of the site which will be returned to agricultural use. GWF suggests in Data Response 29 and Supplemental Data Response 29 that some of the 18.1 acre feet lost through conversion of seven acres from agricultural to non-agricultural use will be made available to HPP as Manufacturing and Industrial Use CVP water, but no Will Serve letter from WWD supports that at this time. Consequently, this Staff Assessment assumes that only State Water Project (SWP) water from the Kings County entitlement will be used by the HPP. Staff has received a Will Serve letter from Kings County for the SWP water and a letter from WWD agreeing to negotiate with the applicant a long term agreement for the purpose of wheeling SWP water to the project.

The source of water for the HPP is Kings County, as an entitlement holder and contractor for water from the SWP. SWP water is extracted from the Sacramento-San Joaquin River Delta at the Clifton Court Forebay, where it enters the California Aqueduct. SWP water is combined with CVP water in the San Luis Canal, the joint Federal/State portion of the California Aqueduct. This section of the Aqueduct passes the HPP site, approximately five miles to the west. Kings County is one of 29 SWP contractors, with access to 4,000 acre-feet of water annually under exchange with Tulare Lake Basin Water District. However, during the current dry year of 2001, SWP contractors were only allocated 39 percent of their entitlement, giving Kings County only 1,560 acre-feet of SWP water. Soil and Water Table 1 shows the percentage of SWP

entitlement Tulare Lake Basin Water District (of which Kings County has 4000 Acre-feet under contract) received for the years 1987 through 2001.

The HPP has contracted with Kings County for 200 acre feet of water per year. Through a series of exchange and banking agreements with Kings County, Westlands Water District, and Tulare Lake Water Storage District, the HPP will bank excess approved entitlements in years when it does not use its entire approved entitlement, then draw on its banked balance in years when the approved entitlement is inadequate to meet the HPP's requirements. Based on the years shown in Soil and Water Table 1, the average percentage of scheduled entitlement which has been approved over the last 15 years is 78.3 percent. For the HPP entitlement of 200 acre-feet/year this yields an average of 156.6 acre-feet/year.

Soil and Water Table 1
Tulare Lake Basin Water Storage District
Summary of SWP Deliveries for Angiola Water District 1987 through 2001[1]

Calendar Year	Scheduled Entitlement	Approved (%)	Approved Entitlement	Requested Table A	Table A Carryover	Available Unused Table A
1987	13,863	100%	13,863	11,953	0	1,910
1988	13,863	100%	13,863	10,750	0	1,109
1989	13,863	100%	13,863	12,724	2,004	1,004
1990	13,863	50%	6,932	6,744	135	183
1991	13,863	0%	0	0	5	0
1992	13,863	45%	6,250	5,699	0	0
1993	13,863	100%	13,863	2,137	551	11,726
1994	13,863	50%	6,932	4,579	0	1
1995	13,863	100%	13,863	11,825	2,352	0
1996	13,863	100%	13,863	12,398	2,038	1,465
1997	13,889	100%	13,889	9,243	0	4,646
1998	13,889	100%	13,889	5,168	0	8,721
1999	13,770	100%	13,770	13,770	0	0
2000	Unavailable	90%				
2001	Unavailable	39%				
	Average	**78.3%**				

[1] All quantities in acre-feet
Sources: Table 2.12-2, GWF, October 2001
GWF, October 2001

The HPP facility water balance is shown in Soil and Water Table 2. The table is based on an annual maximum production rate of 8,000 hours per year. The HPP has a contract with the State Department of Water Resources to purchase 4,000 hours of electrical production per year. At the maximum production rate of 8,000 hours per year, the HPP estimates a total annual water supply requirement of 160 acre-feet (ac-ft) per year (GWF, 2001d).

Soil and Water Table 2
HPP Facility Water Balance

Component Stream	Average (63 °F)	Peak (98 °F)
	Average Daily (gpm)	Peak Daily (gpm)
Water Supply		
Water Injection (NO_x Control)	84	66[1]
Water Injection (Power Augmentation)	11	22
Evaporative Cooling	6	16
Balance of Plant	1.7	1.7
Bottled Drinking Water	0	0
Total Water Consumption (Net)	**102.7**	**105.7**
Wastewater		
Sanitary Wastewater	0.24	0.24
Production Wastewater	0.7	0.7
Total Wastewater (Net)	**0.94**	**0.94**
Construction Wastewater	**2,000 gallons/day**	**12,000 gallons/day**

[1] Water injection for NOx Control decreases as water for cooling and power augmentation increases
Source: Table 2-1 & 2-2, GWF, August 2001

The HPP will not use groundwater, and no back-up groundwater supply system is planned.

COOLING PROCESS

The HPP's simple-cycle process does not include a cooling tower and will use approximately 160 ac-ft of water per year. Evaporative inlet cooling is estimated to have a peak daily water requirement of 16 gpm at 98 degrees Fahrenheit ambient temperature and 6 gpm at 63 degrees Fahrenheit.

WASTEWATER DISCHARGE

Non-contact stormwater from the project site will be sent to an evaporation/percolation basin. The nearest active groundwater well is on agricultural land located to the north of the HPP site on the Henrietta Substation property. The well is located within approximately 1,000 feet of the HPP northern boundary.

The primary wastewater discharge for the plant is from the reverse osmosis (RO) water treatment and demineralization systems. This wastewater stream will be collected in a storage tank and then processed through the use of a mechanical vapor recompression unit to concentrate dissolved solids in the wastewater stream and to recycle recovered water for use in the facility, resulting in a reduction in water supply requirements for the HPP. The recycled clean water will be returned to the raw water holding tank and the small amount of concentrated slurry discharge will be stored in a wastewater tank and periodically transported off-site for disposal at an appropriately licensed facility. Waste streams from the oil-water separator and turbine wash water will be collected in separate holding tanks and will also be periodically transported off-site for disposal. EnVectra, a waste management company, will conduct hauling and off-site disposal services.

Discharge rates from the HPP are expected to be 0.7 gallons per minute (gpm) for wastewater and 0.95 gpm for water from the oil/water separator. Based upon 8,000 hours of operation, 792,000 gallons of process wastewater per year will be generated by the HPP. In addition, approximately 500 gallons of turbine wash water drainage will be generated per event. Assuming one event per month, this totals 6000 gallons of turbine wash water per year, for a total of 798,000 gallons of process wastewater. Chemical and physical characteristics of the HPP wastewater are shown in Soil and Water Table 3 below, based on average conditions.

Soil and Water Table 3
Chemical Characteristics of HPP Wastewater Discharges

Constituent	Concentration (mg/L unless otherwise indicated)
Calcium	2,934.0
Antimony	0.73
Hardness	13,936.5
Alkalinity	10,415.7
Total Dissolved Solids	37,115.0
Specific Conductance	60,147 micromhos/cm
Sulfate	4,841.1
Chloride	8,215.2
Arsenic	0.29
Beryllium	0.147
Boron	29.34
Fluoride	1.47
Chromium	0.88
Copper	0.29
Iron	6.89
Lead	0.147
Selenium	not reported
Magnesium	1,613.7
Manganese	0.734
Turbidity	1,496 (NTU)
Phosphorus-Total	17.60
Phosphorus-Ortho	11.74
Sodium	6,308.1
Zinc	0.73
Bromide	23.47
Nitrite+Nitrate	98.82 (as N)

Source: Table 8.14-4, GWF, October 2001

The non-contact area inside the fence line will be bermed and graded to direct storm water runoff to a drainage system that discharges to the on-site evaporation/percolation pond. The drainage system for the HPP site has been designed to contain the storm water runoff resulting from a maximum 100-year, 10-day rainfall event in order to prevent flooding of permanent facilities and roads, on and off-site. Non-contact storm water will not be discharged to any off-site surface water bodies.

Contact storm water runoff (from equipment and parking areas on the site) associated with the operation and maintenance phase will be controlled and contained within the HPP site. This runoff will be collected in a 2,500 gallon sump, and then routed to an oil-water separator. After separation the water from the oil-water separator will be used for makeup water or stored and hauled off-site as waste. The recovered oil will be stored in a separate tank and disposed of off-site periodically. The oil will be transported to an appropriately licensed facility. Storm water from Parking areas which are paved for vehicular use needs to be collected and treated to remove contaminants using the oil-water separator and reverse osmosis filter treatment; the water will then be either discharged to the evaporation/percolation basin or recycled for use as process water.

ANALYSIS AND IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
SOIL AND WATER RESOURCES -- Would the project:				
a) Violate any water quality standards or waste discharge requirements?		X		
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X
c) Substantially deplete or degrade local or regional surface water supplies, particularly fresh water, or fail to implement reasonable alternatives for water conservation?		X		
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?		X		
e) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?			X	

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
SOIL AND WATER RESOURCES -- Would the project:				
f) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			X	
g) Otherwise substantially degrade water quality?		X		
h) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
i) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
j) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
k) Inundation by seiche, tsunami, or mudflow?				X

DISCUSSION OF IMPACTS

a) Violation of Water Quality or Wastewater Standards – Less than Significant Impact With Mitigation Incorporated

As proposed, the HPP will dispose of process wastes and contact storm water wastes by storing the wastes on-site, then having them hauled to a licensed waste disposal facility by a licensed waste hauler. Consequently, these wastes will require no additional permitting on the part of the HPP and will not have a significant impact.

Because of the project's distance from either a municipal sanitary wastewater treatment system or the Lemoore Naval Air Station system, it will be necessary for the HPP to build and maintain an on-site sewage disposal system consisting of a septic tank and leach field. The shallow groundwater underlying the site puts additional restrictions on the sewage disposal system in order to prevent adverse impacts to groundwater. The applicant will design, build, and maintain its sewage disposal system in compliance with Kings County regulations and guidelines, including those regulations and guidelines pertinent to areas with shallow groundwater. Therefore, the sewage disposal system will be required to meet applicable standards and have minimal impact on groundwater quality (see Condition of Certification **Soil & Water 4**).

The applicant has proposed discharge of all non-contact storm water to an on-site evaporation/percolation basin of approximately one-acre. This design may eliminate the requirement for the project owner to develop and abide by a Storm Water Pollution Prevention Plan for Industrial Activities (SWPPP) under the NPDES. However, the applicant will be required as Condition of Certification **Soil & Water 2** to provide a letter to this effect from the RWQCB, and to collect and treat stormwater from parking areas, roadways and other areas of vehicle usage on-site.

Incorporation of Conditions of Certification **Soil & Water 1, 2, 4, 6 & 8** will reduce the potential for adverse impacts to water quality to less than significant. No wastewater or stormwater is expected to leave the HPP site.

b) Depletion of Groundwater – No Impact

The HPP does not propose to use groundwater as a water source. Therefore, no impacts are expected to groundwater supply from the HPP.

c) Depletion or Degradation of Surface Supplies or Implement Reasonable Alternatives For Water Conservation – Less Than Significant Impact with Mitigation Incorporated.

The HPP will be using high quality water from the SWP to meet its water supply needs, due to the cost advantage and availability of that supply source. Because of the relatively small water requirements of the HPP simple cycle design, this usage of high quality waters is not considered a significant impact. However, should the HPP be modified or expanded in a manner which requires the use of additional water, such as conversion to a combined cycle design, that potential increased water requirement will be re-evaluated in regard to using recycled water or some source other than fresh inland water, as defined in State Water Resource Control Board Resolution No. 75-58.

The SWP water for HPP will come out of the Kings County entitlement, which will be unchanged by the HPP allotment. Therefore, no significant impacts on SWP users are expected.

Central Valley Project (CVP) irrigation water attached to the 20 acre HPP site has been reduced by 35 percent (18.1 acre-feet) to compensate for conversion of seven acres from agricultural to non-agricultural use (Westlands, 2001). GWF's Supplemental Data Responses indicate the possibility that some of the CVP entitlement will be restored as Manufacturing and Industrial (M&I) water. With no Will Serve letter to support this, staff assumes the CVP entitlement will be reduced, making the 18.1 acre-feet available to other users of the CVP. If the 18.1 acre-feet are restored to the HPP, there will be no net effect on CVP users, since the entitlement has been used on the same property for over 30 years.

d) Alteration of Existing Drainage or Cause Erosion – Less Than Significant With Mitigation Incorporated

Twelve acres of land will be disturbed during construction of the facility, with surface grading and compaction of new fill to raise the elevation of the site. There will also be an additional six acres disturbed for associated facilities. These areas will be subject to

erosion until surface cover comprised of pavement, gravel or vegetation can be placed as part of construction activities. The applicant has provided a Draft Sediment and Erosion Control Plan as part of its Draft SWPPP for Construction Activity as required in a NPDES permit for construction activity.

Following construction, five of the 12 acres disturbed on-site during construction will be returned to agricultural production. The additional six acres disturbed for associated facilities will be returned to its current condition and use. The HPP development will alter drainage patterns on-site through creation of an evaporation/percolation basin of approximately one acre in surface area which will receive storm water from non-contact, unpaved areas of the HPP site. Storm water from paved areas may be discharged to the basin following treatment for removal of contaminants. The five acres which will be returned to agricultural production following construction will essentially return to pre-construction drainage and run-off patterns.

Best Management Practices (BMPs) will be employed to minimize erosion during and after construction. The BMPs are to include mulching, silt fencing, straw bale barriers, and re-vegetation.

The areas that will be disturbed for the construction of the linear facilities will have their drainage patterns re-established following construction. Existing roadways and utility right-of-ways will be used to the maximum extent possible. BMPs and drainage control are to be implemented to minimize impacts from construction activities (GWF, 2001d).

The project owner must obtain a General NPDES Storm Water Permit for Construction Activity.

The implementation of proposed BMPs as required in Condition of Certifications **Soil & Water 2** will mitigate potential significant impacts. No significant impacts are expected.

e) Alteration of Watercourse or Increase Surface Water Runoff – Less Than Significant Impact

Drainage of the HPP site has been designed to keep runoff on-site directed to an evaporation/percolation basin or on-site treatment facilities. As designed, the basin has adequate storage capacity to prevent any surface run-off from leaving the HPP site from a hundred year storm event. The five acres which will be used for construction lay down and parking will be returned to agricultural use and to their pre-construction drainage patterns.

There are no surface water features that will be affected through surface drainage or run-off from the HPP site, and therefore, no significant impacts are expected.

f) Create Runoff that Exceeds Storm Water Drainage Capacity – Less Than Significant Impact

The storm water facilities have been sized to accept the 100-year, ten-day design storm runoff, exceeding the criteria specified by Kings County Public Works Improvement Standards for Private Retention Basins, which is for a ten-year, ten-day event.

Preventive measures to avoid pollution of stormwater include separation of stormwater into two classes. Stormwater from facility contact areas and paved areas will be collected and routed for treatment using an oil-water separator and a reverse osmosis filtration system before being use as process water, stored for off-site disposal or discharged to the evaporation/percolation basin. Stormwater from other non-contact areas will be discharged directly to the evaporation/percolation basin. At their option, Protection measures are planned to prevent storm water runoff from being released in a contaminated state (GWF, 2001) (see Condition of Certification **Soil & Water 2)**. No significant impacts are expected.

g) Degradation of Water Quality – Less Than Significant With Mitigation Incorporated

The project's wastewater will be disposed of in accordance with applicable laws (see sections a) and d) above). In addition, hazardous materials stored at the HPP site will be contained within storage sheds and isolated using secondary containment structures as spill protection. During construction storm water will be managed consistent with requirements of the General NPDES Permit for Discharge of Storm Water Associated with Construction Activity. During operations the precautions outlined in a) through d) above and included in Condition of Certifications **Soil and Water 1, 2, 4 & 6** will be employed. The site will be graded and otherwise constructed to keep all storm water and other runoff on-site.

Please refer to the **Waste Management** and **Hazardous Materials Management** sections for more detail about storage, handling, use and spill prevention practices which will be employed at the HPP.

Conditions of Certification **Soil & Water 2 and 8** have been included to ensure that potentially significant impacts to water quality do not occur. No significant impacts are expected.

h) Place Housing Within a 100-Year Flood Hazard Area – No Impact

The HPP development will not increase the risk to housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood delineation map. The HPP is not within any 100 year or 500 FEMA flood hazard area (GWF, 2001b). No significant impacts are expected.

I) PLACE STRUCTURES THAT WOULD IMPEDE OR REDIRECT FLOOD FLOWS WITHIN A 100-YEAR FLOOD HAZARD AREA – NO IMPACT

See h) above. No significant impacts are expected.

j) Expose Persons or Property to Flood Hazards – No Impact

The HPP will not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of failure of a levee or dam. All storage facilities included in the project development are of minimal size, and will be designed according to applicable building codes. No significant impacts are expected.

k) Inundation by Seiche, Tsunami, or Mudflow – No Impact

There are no known faults near or through the HPP site and seismic activity in the area is characterized as low to moderate. The flat terrain in the area precludes landslides, and since the site is protected from the Pacific coast by the Coast Range, there is no potential for the site to be affected by a tsunami. There are no lakes or reservoirs near enough to the site which might affect the site with a seiche (Kleinfelder, 2001b). No significant impacts are expected.

CUMULATIVE IMPACTS

The area surrounding the HPP site is primarily in agricultural production, and there are no other known industrial projects planned for the immediate vicinity (GWF, 2001a).

Construction and operational activities related to the HPP project may cause a short-term increase in cumulative wind and water erosion. However, implementation of the conditions of certification will ensure that HPP will not contribute significantly to cumulative erosion and sedimentation impacts during construction and operation. Staff concludes there will be no significant cumulative impacts to soil and water resources.

COMPLIANCE WITH LORS

The project as proposed, will comply with LORS provided the applicant's proposed mitigation and staff's recommended Conditions of Certification are implemented.

FACILITY CLOSURE

The HPP has an expected life 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.

A decommissioning plan is required to be submitted to the Energy commission for approval prior to decommissioning. Compliance with all applicable LORS will be required.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No agency or public comments were received in the area of soil and water resources.

MITIGATION

APPLICANT PROPOSED MITIGATION

Project design and construction practices will minimize soil erosion during construction and operation of all HPP facilities. Soil erosion will be minimized by implementing recommendations of the U.S. Natural Resources Conservation Service in Hanford and from the *California Stormwater Best Management Practice Handbook.* BMPs will be

implemented during construction according to specifications contained in a SWPPP prepared for the project prior to the start of construction.

Contact stormwater from the HPP will be collected within confined areas and routed to the oil-water separator. Water from the oil-water separator will be reused on-site. Oil from the oil-water separator will be disposed of off-site in accordance with applicable LORS. The project owner/operator will keep records detailing pick-up for off-site disposal of oil produced from the oil-water separator.

Equipment refueling and maintenance during construction will be preformed within designated areas in a way that is consistent with BMPs. Spill contingency plans will be prepared and must be followed. Prior to initiation of construction, the project owner/operator will make available copies of the spill contingency plan to the Energy Commission that must be approved prior to operation.

After grading and compacting, the soil excavated from the HPP site will be re-vegetated or covered with a synthetic mat, as necessary, to reduce the potential for wind and water erosion.

Prior to construction, a SWPPP will be prepared that describes BMPs to minimize soil erosion. BMPs will be implemented during and after construction. Surface soil protection may include the use of mulches, synthetic netting material, riprap, and the compacting of native soil.

All construction activities will be conducted in accordance with California's General Industrial Storm Water Permit for Construction Sites NPDES permit, including the erosion control measures in the SWPPP and BMPs to reduce erosion and the transport of increased suspended sediments from construction areas.

In the construction area, soil will be graded and compacted and not left in irregular piles that are more susceptible to water and wind erosion. The areas will be reseeded where natural vegetation has been distressed or removed by construction activity.

Process wastewater from the HPP site will be collected in the on-site holding tanks and transported via truck to the McKittrick waste disposal site in Kern County. GWF shall notify the Commission annually concerning the status of or changes to HPP's wastewater disposal plan.

GWF will select a contractor to haul project wastewater to the off-site disposal location. The contractor must have the appropriate permits from the U.S. Department of Transportation, the necessary equipment, and authorized admittance to the designated disposal facility. Any company not in possession of these items will be ineligible for use at the HPP. The project owner will provide the Commission with a copy of the contract conditions for the agreement between the HPP and selected wastewater hauling company (see Condition of Certification **Soil & Water 5**).

A biannual stormwater monitoring program will be implemented at the HPP site to assess the quality of stormwater discharges to the evaporation/percolation basin during two storm events, as required by the Regional Board. The project owner will provide

copies of the monitoring report as a requirement of Condition of Certification **Soil & Water 6**.

CONCLUSIONS

Staff has determined the proposed project will result in less than significant impacts to soil and water resources. If the Energy Commission certifies this project, Staff recommends the adoption of the following conditions.

PROPOSED CONDITIONS OF CERTIFICATION

SOIL & WATER 1: Prior to beginning any site mobilization activities, the project owner shall obtain staff approval for an Erosion Control Plan that addresses all project elements. The plan submitted for staff's approval shall also contain provisions as needed, for containing and treating any contaminated soil or groundwater, and include any changes made to address the final design of the project. The plan shall apply to both the construction period and the post-construction (operation) period. It shall include final construction drainage design and all applicable BMP's for on and off-site HPP project facilities, including final site drainage plans and locations of BMP's.

Verification: The Erosion Control Plan shall be submitted to the Compliance Project Manager (CPM) at least 60 days prior to start of any site mobilization activities. Approval of the final plan by the CPM must be received prior to the initiation of any site mobilization activities.

SOIL & WATER 2: The project owner shall obtain a General NPDES permit for discharge of stormwater associated with construction activity from the CVRWQCB, and obtain CPM approval of the related Stormwater Pollution Prevention Plan (SWPPP) for construction activity. The SWPPP shall include final construction drainage design, and specify BMP's for all on and off-site HPP project facilities and shall comply with and incorporate Kings County Public Works Agency regulations, including those regulations and guidelines pertinent to areas with shallow groundwater. This includes final site drainage plans and locations of BMPs. The project owner shall submit site drainage plans detailing collection of storm water from roadways, parking areas and all other areas subject to vehicular use. The project owner shall treat collected storm water from these areas to remove contaminants prior to use or discharge. Storm water from these areas must be treated for petroleum by-products and both suspended and dissolved solids. The project owner shall provide a SWPPP for operation of the HPP and a copy of the operational NPDES permit issued by the CVRWQCB or a letter stating the operational NPDES permit is not required.

Verification: At least 60 days prior to the start of any site mobilization activities, the SWPPP for Construction Activity shall be submitted to the CPM for approval. Prior to the start of site mobilization, the project owner shall receive and provide proof to the CPM of having received an NPDES permit for construction activities. The SWPPP must comply with and incorporate Kings County Public Works Agency Grading Permit requirements. A letter from the Kings County Building Department addressing

compliance with their grading permit requirements must be submitted with the SWPPP. A narrative and construction drawings detailing collection and process stream for storm water from contact areas of the site which are subject to vehicular use shall be submitted to the CPM. Approval of the final SWPPP by the CPM must be received prior to initiation of any site mobilization activities. At least 60 days prior to the start of operations, the SWPPP for operations shall be submitted for CPM approval. The project owner shall provide a copy of the operational NPDES permit or a letter stating a NPDES permit is not required. Approval of the operational SWPPP by the CPM must occur prior to initiation of operations.

SOIL & WATER 3: The project owner shall install metering devices and record on a monthly basis the amount of water used by the project. The annual summary shall include the monthly range and monthly average of daily usage in gallons per day, and total water used by the project on a monthly and annual basis in acre-feet. The annual summary shall also include the yearly range and yearly average water use by the project. This information shall be supplied to the CPM.

Verification: The project owner shall submit, as part of its annual compliance report, a water use summary to the CPM on an annual basis for the life of the project.

SOIL & WATER 4: Due to the shallow groundwater underlying the site, the project owner shall submit construction drawings demonstrating compliance with county regulations for the on-site sewage disposal system, including a vertical cross-section showing proximity to groundwater as delineated in the geotechnical report performed by Kleinfelder, Inc., and dated November 1, 2001. A letter from the Kings County Building Department addressing compliance, with county requirements must be submitted with the drawings.

Verification: Thirty days prior to site mobilization, the project owner shall provide evidence of compliance with Kings County Sewage Disposal Regulations to the CPM for approval.

SOIL & WATER 5: The project owner shall not discharge any waste water off-site, except as delivered to licensed waste disposal contractors as described in Section 2.2.9.1 of the Application for Certification. The project owner shall supply the CPM with copies of the contract between the project owner and the waste disposal contractor, as well as copies of the contractor's permits and certifications relative to the hauling and disposal of the process wastes and contact storm water wastes. Notification of any changes in waste disposal contractor or subcontractors shall be made to the CPM within 30 days of the change.

Verification: The project owner shall maintain records of waste water hauled off-site, including hauler's Chain of Custody or other signed and dated receipts. Copies of these records shall be submitted to the CPM as part of the project owner's annual compliance report. Before operation of the power plant, the CPM will be supplied with copies of the

waste disposal contract and the contractor's certifications and permits. The CPM shall be notified of any change in the contract, contractors or sub-contractors within 30 days of the change.

SOIL & WATER 6: The project owner shall implement a biannual stormwater monitoring program to assess the quality of storm water discharges to the evaporation/percolation basin during two storm events as required by the Central Valley Regional Water Quality Control Board. The monitoring program shall include sampling methodology and analytes. Analytes shall include pH, total organic compounds, total suspended solids and specific conductance. The CPM may require additional analytes if additional concerns arise.

Verification: The project owner shall submit a storm water monitoring program to the CPM for approval 60 days prior to initiation of site mobilization activities. The project owner shall submit results of the monitoring program, including laboratory reports, to the CPM as part of the annual compliance report.

Soil & Water 7: Water used for the HPP shall be CVP water allocated to the 7 acres of the HPP parcel converted to Manufacturing and Industrial Use and SWP entitlement water as described in the county of Kings will-serve letter dated August 23, 2001 and the memorandum from Michael Nordstrom dated September 20, 2001. The project owner shall submit a water use summary annually. The water use summary shall state the source and quantity of the water used at HPP on a monthly basis, whether the water used was obtained from the current year allocation or the banked surplus allocations from previous years. The water use summary shall include the percentage of the entitlements delivered for the current year from the SWP and CVP, as well as, the amount of the current years water banked for future use and cumulative total banked water available for future use.

Verification: The project owner shall submit as part of its annual compliance report a Water Use Summary to the CPM on an annual basis for the life of the project.

Soil & Water 8: To provide background perched groundwater quality information, GWF shall submit a plan for approval that identifies how the project owner will install and sample perched water from a groundwater monitoring well.

Verification: The project owner shall submit ground water data including depth to groundwater information prior to the submission of the SWPPP to the CPM approval. The monitoring program shall include sampling methodology and analytes. The project owner shall submit results of the monitoring program, including laboratory reports, to the CPM. The groundwater monitoring well shall be screened at a depth of 6–9 feet located on the HPP parcel (in the NW corner of the property if the current ground conditions allow access). The well annulus shall be sealed with a mixture of benonite clay and cement. The well shall be equipped with a locking cover and protected with a concrete-filled pipe bollard set in concrete. Analytes shall include pH, total organic compounds,

total suspended solids and specific conductance. Additional wells and monitoring may be required based on the initial well test results, if the results indicate the perched water is of high quality and has beneficial uses. If the CPM determines additional monitoring and/or wells are required based upon the initial results, the project owner shall submit for CPM approval a groundwater monitoring plan. If a groundwater monitoring plan is required, approval of the final plan by the CPM must be received prior to initiation of any site mobilization activities.

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TRAFFIC & TRANSPORTATION

Testimony of Tamblyn Borton

INTRODUCTION

The staff assessment of the traffic and transportation section provides an independent analysis of the potential traffic and transportation impacts of the Henrietta Peaker Project (HPP). Potential impacts related to traffic operations and safety hazards resulting from the construction and operation of the project are discussed.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Federal, state, and local regulations applicable to the area roadways, and for the transportation of hazardous materials, are listed below. These regulations are designed to control and mitigate for potential impacts resulting from the transportation of such materials.

FEDERAL

49 Code of Federal Regulations (CFR), Chapter II, Subchapter C and Chapter III, Subchapter B Standards for the transportation of hazardous materials are covered in Chapter II, Subchapter C. National safety standards for the transport of goods, materials, and substances over public highways are addressed in Chapter III, Subchapter B, Parts 171–173, 177–178. Caltrans is the administering agency for these requirements.

STATE

California Vehicle Code Section 35780; California Streets and Highways Code Sections 117 and 660–711; 21 CCR Sections 1411.1–1411.6 These codes cover the permit requirements for “overload” approvals (transportation permits) for oversize and/or overweight loads that travel over state highways.

California Streets and Highways Code Sections 117 and 660–711

This code requires permits for any construction, maintenance, or repair involving encroachment on state highway rights-of-way.

California Vehicle Code Sections 31300 et seq.

This code includes provisions for the transportation of hazardous materials on state highways.

LOCAL

Kings County General Plan Circulation Element

The Circulation Element of the Kings County General Plan establishes goals and policies and identifies implementation measures for the traffic and transportation systems in the unincorporated areas of the county.

Kings County Hazardous Waste Management Plan (HWMP)

The goal of the Kings County HWMP is to ensure safe and effective management and transport of hazardous waste within the county. Various policies concerning the transport of hazardous materials in and through Kings County are detailed in the HWMP.

Kings County Regional Transportation Plan (RTP) and Transportation Improvement Plan (TIP)

The Kings County RTP, administered by Kings County Association of Governments (KCAG), establishes regional transportation goals, policies, objectives, and actions for various modes of transportation, including intermodal and multimodal transportation activities. Funding to implement the transportation activities proposed in the RTP is programmed through the Kings County TIP.

Kings County Regional Bicycle Plan

The Kings County Regional Bicycle Plan, administered by KCAG, describes existing bicycle facilities and details proposed locations for new bicycle routes and amenities in the county. The plan advocates bicycling as an alternative to vehicular transportation to achieve potential improvements in traffic congestion and air quality.

Kings County Transit Development Plan

The Kings County Transit Development Plan, administered by KCAG, analyzes future transit needs and itemizes the necessary future service requirements needed to make public transit more efficient and accessible.

SETTING

The Henrietta Peaker Project (HPP) consists of a 91.4-megawatt (MW) (net), natural gas-fired, simple-cycle power plant located approximately 10 miles southwest of Lemoore, California, on a seven-acre portion of a 20-acre parcel proposed for purchase by GWF Energy LLC. The HPP will interconnect to the existing adjacent Pacific Gas and Electric Company (PG&E) Henrietta Substation through a new 550-foot 70-kilovolt (kV) transmission line supported on two new transmission poles. Other linear facilities include an approximately 16.5-foot water interconnection pipeline (from the site property boundary) and a 2.2-mile Southern California Gas Company natural gas interconnection pipeline. Additionally, approximately five acres will be used for temporary construction laydown and parking.

The HPP site is located in an unincorporated area in northwestern Kings County. This section describes existing regional (state routes) and local roadways. **Transportation and Traffic Figure 1** illustrates the regional highways and potential access routes in the HPP study region.

Insert Traffic and Transportation Figure 1

Kings County has a transportation network of approximately 1,352 miles of surfaced public roads that serves an estimated 1,396 square-mile region. In the western portion of Kings County, State Route (SR) 41 and Interstate (I) 5 are the primary north-south state highways providing regional access to the HPP site. West of the HPP site in Fresno County, SR 269 is a primary north-south regional highway that intersects with SR 198, the main east-west travel corridor in the county, to serve the HPP site. In eastern Kings County, SR 43 is the primary north-south highway. This highway provides regional access to the HPP site via SR 198.

Traffic in the vicinity of the proposed HPP site is served primarily by SR 41, SR 198, and I-5. More distant regional traffic coming to the HPP vicinity would travel along SR 43 and SR 269 (in Fresno County) and connect to SR 198. SR 198 runs east-west across northern Kings County. It is a four-lane divided highway along a 17-mile stretch between the Naval Air Station (NAS) Lemoore main gate and SR 43; otherwise SR 198 is a conventional two-lane road. SR 41 transects western Kings County, running north-south along 48-plus miles between Kern and Fresno Counties. It is a two-lane road for 42 miles between the Kern County line and just south of Hanford-Armona Road.

At Hanford-Armona Road, SR 41 becomes a four-lane expressway for about six miles to the Fresno County line, where it narrows again to a two-lane road. I-5 is a four-lane freeway cutting nearly 27 miles across the southwestern portion of Kings County. SR 43 is a two-lane north/south expressway that runs along the northwestern quadrant of Kings County. All of these state routes are under the jurisdiction of the California Department of Transportation (Caltrans).

The rail network in Kings County consists of approximately 67 miles of mainline and branchline railroad over which two railroad companies operate. The Burlington Northern Santa Fe (BNSF) Mainline runs north-south through the county and the San Joaquin Valley Railroad runs east-west on the leased Union Pacific (UP) Coalinga Branchline. Neither of these two active railroads provides direct access to the HPP site, and the leg of the UP Coalinga Branchline closest to the HPP site is currently proposed for abandonment.

Roadways, rail and existing transmission routes in proximity to the site are shown in **Transportation and Traffic Figure 2**.

Transportation and Traffic Table 1 contains the annual average daily traffic (AADT), annual average daily truck traffic, percent of truck traffic, peak hour highway capacity, peak-hour traffic, and level of service (LOS) for the state highways in the HPP vicinity. **Transportation and Traffic Table 2** contains the annual average daily traffic (AADT), annual average daily truck traffic, percent of truck traffic, peak hour highway capacity, peak-hour traffic, and level of service (LOS) for the local roadways.

Insert Traffic and Transportation Figure 2

Traffic & Transportation Table 1
Current Characteristics of the Interstate Highways and State Routes in the Project Area

Highway/ Milepost	Location	Average Daily Traffic	Average Daily Truck Traffic	Percent Truck Traffic	Peak-Hour Capacity	Peak-Hour Traffic	LOS
I-5							
0.0-16.6	Kern Co.-SR 41	24,600	7,870	32%	3,720	3,550	B
16.6-25.4	SR 41-Avenal Cutoff Rd.	25,000	8,000	32%	3,720	3,650	B
25.4-26.7	Avenal Cutoff Rd.	24,300	7,780	32%	3,720	3,500	B
SR-41							
8.1-16.3	SR33- Interstate 5	5,200	730	14%	1,620	570	A
16.3-28.4	Interstate 5-Nevada Ave	7,600	1,060	14%	3,720	840	C
28.4-37.8	Nevada Av-Jackson Ave	6,000	840	14%	1,900	800	A
37.8-40.1	Jackson Av- SR 198	11,700	1,170	10%	1,900	990	B
40.1-42.1	SR 198-Hanford-Armona Rd.	12,100	970	8%	1,920	1,050	B
42.1-48.3	Hanford-Armona Rd-Fresno Rd.	12,400	990-1860	8%-15%	3,840	1,000	A
SR-43							
16.4-18.2	Houston Ave.-SR 198	7,600	1,750	23%	1,860	660	B
18.2-48.3	SR 198-10th Ave.	8,200	1,310	16%	1,840	790	B
SR-198							
0.0-3.0	Fresno Co.-NAS	6,900	550	8%	1,900	610	B
3.0-5.0	NAS-Avenal Cutoff Rd.	11,800	940	8%	3,800	1,100	C[1]
5.0-8.9	Avenal Cutoff Rd.-SR 41	14,500	1,160	8%	3,880	1,350	A
8.9-15.8	SR 41-16th Ave.	12,500	1,130	9%	3,880	1,200	A
15.8-17.1	16th Ave.-12th Ave.	21,000	2,310	11%	3,880	1,800	B
17.1-21.0	12th Ave.-SR 43	17,000	2,720	16%	3,880	1,450	A

Source: 1999 Kings County RTP
[1] This section of SR 198 has a lower LOS (i.e., C) than the SR 198 section around the intersection of Avenal Cutoff Road and SR 41 (i.e., A), despite the same capacity, because of recent improvements made to SR 41.

LOS criteria and standards for state highways are established by Caltrans. These criteria take into account numerous variables, such as AADT, capacity, grade, and environment (urban or rural). According to Caltrans policy, LOS D is acceptable for planning purposes, whereas LOS E and LOS F are unacceptable.Currently, all of the state highways potentially affected by the proposed HPP are operating at or above LOS C.

The highest peak hour traffic volume along SR 198 in the immediate HPP vicinity (i.e., between the Fresno County line and SR 41) is 1,350 vehicles, and the LOS for this stretch of SR 198 ranges from A to C. The percentage of daily truck traffic on SR 198 is 8 percent in the immediate HPP vicinity, and peaks at 16 percent along the segment of

SR 198 through the city of Hanford (12th Avenue to SR 43). Along SR 41, the highest peak hour traffic volumes range from 1,000 to 1,050 vehicles between SR 198 and Fresno County. Along this stretch, SR 41 operates at LOS A and LOS B, and trucks constitute up to 15 percent of total traffic. The highest peak hour traffic volume along I-5 is 3,650 vehicles between SR 41 and Avenal Cutoff Road. This segment of I-5 operates at LOS B, and 32 percent of the traffic consists of trucks.

As shown in **Transportation and Traffic Table 2**, local roads -- Avenal Cutoff Road, Jackson Avenue and 25th Avenue – all operate at LOS B or better.

Traffic & Transportation Table 2
Existing Characteristics of Local Roadways in the Immediate Vicinity of the Henrietta Peaker Project

Roadway	Location	Roadway Classification	Ave Traffic Vol./day	Ave.Peak-Hour Vol./day	Peak Hr. Capacity	LOS
Avenue Cuttoff Rd.	SR 269- Nevada Ave.	2-lane Arterial	3,500	290	1,796	B
	Nevada Ave.- SR 198	2-lane Arterial	4,000	510	1,718	B
Jackson Ave.	SR 198- SR 41	2-lane Arterial	500	90	1,484	A
	SR 41- 18th Ave.	2-lane Arterial	700	90	1,404	A
25th Ave.	Avenue Cutoff- SR 198	2-lane Arterial	3,000	N/A	N/A	A

Source: KCAG, 1999

LOS was verified during a site visit and inspection of the area in November 2001. It was observed that area roadways and state highways had minimal traffic during a.m. and p.m. peak hours.

According to Caltrans, roadways in the HPP area have accident rates that typically range from 0.15 to 1.72 accidents per million vehicle-miles traveled on freeways and multilane facilities, respectively. The range of accident rates for the roadways in the project vicinity is less than the range of statewide averages for similar roadways (the statewide averages are 0.71 for freeways and 2.27 for multilane facilities).

PLANNED TRANSPORTATION PROJECTS

Within 15 miles of the HPP site, planned long- and short-range improvements to the regional transportation system (state highways and regional roadways) include the following:

- SR 198 at 19th Ave. Construction of an interchange, estimated to be completed by 2006 (approximately six miles from the HPP site).
- SR 41 at Grangeville Blvd. Construction of an interchange, estimated to be completed by 2015 (approximately 10 miles from the HPP site).
- 18th Avenue from Kansas Ave. to Jackson Ave. Pavement overlay (rehabilitation) to be completed by 2001 (approximately eight miles from the HPP site).

- Grangeville Boulevard from SR 41 to 18th Ave. Pavement overlay (rehabilitation) to be completed by 2002 (approximately 11 miles from the HPP site).
- Jackson Avenue from 11th Ave. to 17th Ave. Pavement overlay (rehabilitation) to be completed by 2002 (approximately nine miles from the HPP site).
- Laurel Avenue from 18th Ave. to 20th Ave. Pavement overlay (rehabilitation) to be completed by 2001(approximately eight miles from the HPP site).
- Laurel Avenue from Avenal Cutoff Rd. to SR 41. Pavement overlay (rehabilitation) to be completed by 2002 (approximately three miles from the HPP site).

Most of these state highway improvement projects are long-range in scope. The proposed construction schedules for these projects are not expected to overlap with the construction of the proposed HPP. Some of the pavement rehabilitation projects on regional roadways in the HPP vicinity may occur simultaneously with the construction of the HPP. However, none of these county-maintained local roadways are critical access routes to the HPP site. Currently, no major road construction projects are occurring within the immediate vicinity of the proposed HPP and no new county roads are planned.

Planned development (e.g. residential and commercial) projects are discussed in the Cumulative Impacts section of this analysis.

ANALYSIS AND IMPACTS

ENVIRONMENTAL CHECKLIST

ISSUE(S)	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?			X	
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?				X
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?			X	
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?		X		
e) Result in inadequate emergency access?			X	
f) Result in inadequate parking capacity?				X
g) Create a significant hazard to the public or the environment through the routine transportation of hazardous material?		X		

INCREASE IN TRAFFIC

Construction Phase

The construction of the HPP will occur over an estimated five months. The project will require a total construction workforce of 75 workers on average, assuming a Monday through Saturday (six-day) workweek. Workers are most likely to be non-local (refer to Section 4.8 Socioeconomics). During the peak construction period, an estimated 93 construction workers will be required for the HPP. Under the worst-case scenario, daily trips would total 186 (93 trips, morning and evening), but on the average would total 150

(75 one-way trips, morning and evening). Based on the assumed availability of the workforce, the AFC concludes that approximately 50 percent of the workers would be traveling from Bakersfield/Kern County, and 35 percent would travel from Fresno County. Only 15 percent would travel from within Kings County. See **Traffic & Transportation Table 3** for the distribution of worker trips.

Traffic & Transportation Table 3
Total Daily Construction Workforce Vehicle Trip Generation

Origin/ Destination of Worker Trips	Trip Distribution	Ave. Daily 1-way trips	Ave. Total Daily Trips (2-way)	Peak-hour 1-way	Peak-hour Total (2-way)
Bakersfield/ Kern County	50%	38	75	47	94
Fresno/ Fresno County	35%	26	52	33	66
Kings/ Tulare County	15%	11	22	13	26

Source: GWF, 2001

The applicant proposes to transport all construction and operation equipment by truck. An estimated 620 total truck deliveries will be made to the HPP construction site over the five-month construction period. Months two and three of construction will likely have the greatest number of material deliveries (approximately 180 deliveries during each month), while the remaining three months of the construction period will average approximately 87 deliveries per month. Assuming an average of 24 workdays per month, and two trips (one round-trip) for each truck delivery, the HPP construction activity would generate approximately seven truck trips per day under average conditions and approximately 15 truck trips per day during the two peak delivery months.

The AFC assumes that an estimated 50 percent of the daily truck deliveries will originate in Kern County (Bakersfield). Truck drivers from Bakersfield will use SR 43 north and continue west on SR 198. From SR 198, drivers will exit south onto 25th Avenue or Avenal Cutoff (and then turn onto 25th Avenue) to access the project site. Alternatively, truck drivers commuting from the south can travel north along I-5, exit north onto Avenal Cutoff, and then turn north onto 25th Avenue to access the project site. Thirty-five percent of truck deliveries are assumed to originate in Fresno County (Fresno), which is north of the project site. Drivers from Fresno will travel south along either SR 41 or SR 43 to SR 198, proceed west, then exit south onto 25th Avenue or Avenal Cutoff (and then turn onto 25th Avenue) to access the project site. Fifteen percent of truck deliveries are assumed to originate in Kings County or Tulare County. Drivers from Tulare County and Kings County will travel west along SR 198 and exit south onto 25th Avenue or Avenal Cutoff (and then turn onto 25th Avenue) to access the project site.

Because of the existing free-flowing traffic conditions and the small number of trips generated, construction-related traffic impacts would be less than significant.

Operational Phase

The operation of the HPP will be conducted by personnel from the GWF Hanford facility on an as-needed, intermittent basis. The HPP will operate up to a maximum of 8,000 hours per year. Because of the limited number of vehicle trips generated by HPP operations personnel, the long-term traffic impacts are considered less than significant.

Level of Service (LOS)

The local roads that provide access from the state routes to the HPP site will be more affected than the state routes by construction workforce traffic commuting to and from the construction site. The projected peak vehicle trips from the construction workforce is presented in Traffic and Transportation Table 3, and area LOS is shown in Traffic and Transportation Table 2. During the peak construction period, total daily traffic is estimated to increase by up to four percent on 25th Avenue but less along other local roadways serving the HPP site. Traffic increases on local roadways will generally occur between 5:00 a.m. and 6:00 a.m. and again between 6:00 p.m. and 7:00 p.m. With these traffic increases the projected peak LOS will remain at LOS A or LOS B on all local roadways serving the HPP site. These minor increases will be short term, occurring mostly during the peak construction period. As noted in above, operational impacts would be minimal.

Although the project will result in a minor increase in traffic, there would be no change in LOS associated with the project traffic. Therefore, there is no impact.

Change In Air Traffic Patterns

The Lemoore Naval Air Station (NAS) is located approximately one mile from the project site. Air operations are located on the northern portion of the NAS, approximately two miles from the site. The HPP would be required to comply with any regulations associated with security at the NAS. Significant air activity was observed during the November 2001 site visit. However, all aircraft were much higher than the existing electrical transmission towers on and adjacent to the site. In September 2001, staff had a telephone conversation with aviation consultant Buddy Hussey, who serves as air traffic controller at NAS. He said that the proposed 85-foot flue stack would not affect air activity at NAS. Therefore, the impact to air traffic patterns would be less than significant.

Agricultural production in the vicinity of the HPP site includes aeronautic crop dusting. The closest company is Machado Dusters, located approximately five miles east of the site in Stratford. Although the pilots strive to get as close to the crops as possible, they are experienced with dusting near the existing high tension towers at the Henrietta substation. If necessary, Machado utilizes ground equipment to service the crops. Since the existing towers are taller than the proposed 85-foot flue stack, this would not be an additional impact to crop dusting from construction and operation of the HPP (Machado, 2001).

Increased Hazards Due To An Existing Road's Design

A significant road hazard could occur if existing roadways are damaged during construction and operation of the HPP. According to the AFC, there are no existing

road hazards in the area. This was verified during site visits on November 8, 2001 and November 9, 2001, and through conversations with the Kings County Planning Department. Construction of the HPP will require the use and installation of heavy equipment and associated systems. Due to the size and weight of the trucks used for the construction of the HPP, the increase in truck traffic will contribute to wear on the roads and will increase the need for regular roadway maintenance. Although the increase in roadway wear and tear resulting from construction truck traffic is not considered significant, Conditions of Certification **Trans-1, Trans-5** and **Trans-6** would ensure that damage to roadways is repaired by the applicant.

According to the AFC's construction schedule, heavy equipment will most likely be delivered during months two and three of the construction period. However, construction materials (such as concrete, wire, pipe, cables, fuel, and reinforcing steel) will be delivered continually to the site via trucks. An estimated 620 total truck deliveries will be made to the HPP site over the course of the construction period. Deliveries will typically occur between 6:00 a.m. and 6:00 p.m. on weekdays. Most of these materials will be transported from either Bakersfield or Los Angeles.

The vehicles used to transport heavy equipment and construction materials will require transportation permits when they exceed the size, weight, width, or length thresholds set forth in Section 35780 of the California Vehicle Code, Sections 117 and 660–711 of the California Streets and Highways Code, and Sections 1411.1 to 1411.6 of the CCR. Affected vehicles will be required to obtain transportation permits from Kings County and Caltrans. Kings County considers the weight/load specifications outlined for Caltrans transportation permits (for state highways) sufficient for travel on county-maintained roadways. This is reinforced by Condition of Certification **Trans-1**.

Emergency Access

Medical emergency response would be provided by American Ambulance, located approximately 10 miles east of the HPP site, within the City of Lemoore. The nearest fire station is County Number 7, located on South Lemoore Avenue. The nearest hospital is in the City of Hanford.

From the site on 25th Avenue, SR 198 would provide the most likely access route for fire and medical emergency access to the north, and Avenal Cutoff Road would provide emergency access to the south. Trucks and worker vehicle trips would not be of a magnitude to noticeably affect emergency access on other area roadways during transport, because of the existing roadway capacity. This would be reinforced by Condition of Certification **TRANS-7**. Therefore, impacts would be less than significant.

Parking Capacity

On-site construction worker parking is proposed within the laydown area. Given that this laydown area includes several acres, the area would be adequate for 93 vehicles (i.e., peak construction workforce). It would also be adequate to provide parking for the maximum 15 truck deliveries per day, which are expected during peak construction. Therefore, there would be no impact to the area's existing parking capacity.

Transportation Of Hazardous Material

Construction debris and small quantities of hazardous wastes will be generated during construction (see Sections 4.12 Hazardous Materials Handling and 4.14 Waste Management of this staff assessment). During construction, a minimal number of truck trips per month will be required to haul waste for disposal. Transportation of hazardous materials to and from the HPP site will be conducted in accordance with California Vehicle Code Sections 31300 et seq. and the Kings County HWMP.

Because the transport of hazardous wastes will be conducted in accordance with the relevant transportation regulations, a less than significant impact is expected. During the operation of the HPP a limited number of hazardous materials deliveries will be made to the HPP site. The hazardous materials to be delivered to the HPP site include one to three truck deliveries per month of aqueous ammonia; one truck delivery per month of Nalco water treatment chemicals; one truck delivery every three months of process gases (nitrogen, nitric oxide, and carbon monoxide); and one truck delivery per year of each of the following: liquid carbon dioxide, diesel fuel, and combustion turbine generator waterwash soap. The anticipated travel routes for hazardous materials deliveries from the Bakersfield, Fresno, Hanford-Lemoore, and Visalia areas will be along SR 99, SR 198 and 25th Avenue.

Of the estimated 620 total truck deliveries needed for equipment and materials during construction of the HPP, 112 to 125 of these deliveries will include some amount of hazardous materials (solvents, lube oils, paint, paint thinners, adhesives, batteries, construction gases, etc.) in their original manufacturer containers. Of the estimated 112 to 125 truck deliveries with hazardous materials, total quantities of hazardous materials and subsequent public risk should be relatively low. The only deliveries with large amounts of hazardous materials will be lube oils for the combustion turbines, transformer oil, structural paints, weekly or biweekly deliveries of fuels for construction equipment, initial stocking of construction gases, and weekly or biweekly deliveries of construction gases. Hazardous wastes will be sent from the site to treatment or disposal facilities on a biweekly or monthly basis. Proper containers and transportation procedures that conform to applicable Caltrans requirements (i.e., 49 CFR Chapters II, III; California Vehicle Code Section 31300, et seq.) will be used for all material and waste shipments.

Some of the hazardous materials generated at the HPP site during plant operations will be transported to a Class I landfill for disposal or transported offsite for recycling. It is estimated that hazardous wastes generated at the site will be transported offsite for disposal about once every 90 days or less by licensed hazardous waste transporters. Overall, the number of transport trips will be minimal and the traffic impacts will not be significant. The traffic associated with the operation of the transmission line will be minimal and will be limited to preventive maintenance vehicles or repair vehicles required in the event of damage to the lines. The overall impacts of the traffic generated by the operation and maintenance of the HPP transmission line will be less than significant. This would be reinforced by Condition of Certification **Trans-3**.

CUMULATIVE IMPACTS

The cumulative traffic and transportation impacts analysis examines other planned projects within a six mile radius of the project site. This analysis addresses how the traffic features of the HPP project's construction and operational activities will affect the planned projects and how these projects will affect the HPP project.

Current and Planned Development Projects

Residential development is underway within the Lemoore NAS, but this is largely replacement housing (Roberts 2001). Approximately 260 units were scheduled for replacement in fiscal Year 2001, with construction occurring over the next two years. It is estimated that construction requires 20 workers (40 trips per day) and five equipment trips per week. This construction workforce currently travels on Highway 198 to the NAS entrance, approximately one mile north of the HPP site. Construction of the HPP project when combined with the NAS housing project would average 190 trips per day. Given the existing, acceptable LOS of C in the NAS area an additional 190 trips would have a less than significant impact. To ensure that there is no impact on LOS in the region, the applicant will need to coordinate its workforce arrival/departure times with the NAS project manager, as reflected in Condition of Certification **TRANS-8**.

According to the Applicant, the only planned development in the unincorporated area surrounding the HPP site is a cellular tower project. Staff is still seeking information on the location, timing, and traffic implications, if any, of this project. Given the short time involved for cellular tower construction, it is unlikely that there will be any impact on the HPP.

The Lemoore City Planning Department identified two small commercial projects under development within City limits. The commercial projects include a cheese factory expansion, located west of Highway 41 in Lemoore, and a small (i.e.,20 employees maximum) food processing plant. Both are under construction, and scheduled for completion in early 2001. Both projects involve a minimal number of vehicle trips, which will likely be finished before the HPP peak period.

The Lemoore Planning staff also identified a college campus development project which would support a student body of 2,500. Energy Commission staff is still seeking information on the timing of construction for this project. However, given its distance of approximately eight miles from the HPP site, it is unlikely that the college and HPP projects would affect each other during the construction phase. During the College's operational phase, staff and student trips would be dispersed through the day and evening. (Hoggart 2001).

Staff from the Kings County Planning Departments said that they were not aware of any current, proposed or planned development within the six-mile radius of the HPP site (Williams, 2001).

The available capacity of the regional and state routes serving the Kings County areashows that the regional transportation system has ample capacity to accommodate the traffic resulting from the construction and operation of the HPP. Therefore, no

significant cumulative traffic impacts will result from the construction and operation of the HPP.

GROWTH-INDUCING IMPACTS

Growth-inducing impacts would include the indirect affect of new growth or construction in the HPP project area that could result in impacts to transportation resources. The HPP is being built primarily to address an energy shortage, rather than to serve new development. New development could be served by the HPP. However, given the HPP's economic life of 30 years, and the relatively slow rate of growth in the region, and the fact that the electricity can be used outside the region, it is not likely the HPP would serve development that has not already been planned for by existing city and county general plans. Therefore, growth-inducing impact on local and regional transportation resources would be less than significant.

ENVIRONMENTAL JUSTICE

Staff has reviewed Census 1990 and 2000 information that shows there are minority populations greater than 50 percent within six miles of the HPP (please refer to Socioeconomics Figure 1 in this Staff Assessment). Based on the traffic and transportation analysis, staff has not identified significant direct or cumulative or growth-inducing impacts resulting from the construction or operation of the project. Therefore there are no environmental justice issues related to this project.

CONCLUSIONS AND RECOMMENDATIONS

1. The project would have limited impact on the area roadways and intersections. Adoption of the proposed conditions of certification would ensure that impacts remain less than significant.

2. There would not be significant cumulative or growth-inducing impacts.

3. Although there is a minority population greater than 50 percent within six miles radius of the project site, staff concludes that given the less than significant traffic impacts, there would not be significant unmitigable direct or cumulative impacts on the minority population. Therefore, there are no environmental justice issues from the traffic and transportation perspective.

Staff recommends that the project be certified, with the adoption of the proposed Conditions of Certification.

PROPOSED CONDITIONS OF CERTIFICATION

TRANS-1 The project owner shall comply with the California Department of Transportation (Caltrans) and Kings County on limitations on vehicle sizes and weights. In addition, the project owner or their 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 submit copies of any oversize and overweight transportation permits received 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 During construction of the power plant and all related facilities, the project owner shall arrange for on-site construction-period parking.

Verification: At least 60 days prior or prior to any ground disturbance activity, the project owner shall submit a parking and staging plan for all phases of project construction to Kings County for review and comment and to the CPM for review and approval.

TRANS-3 The project owner shall ensure that all federal and state regulations for the transportation of hazardous materials are observed during both construction and operation of the facility and that all permits and/or licenses are secured from the California Highway Patrol and Caltrans for the transportation of hazardous material.

Verification: The project owner shall include in its Monthly Compliance Reports to the CPM copies of all permits and licenses acquired by the project owner and/or subcontractors concerning the transportation of hazardous substances.

TRANS-4 The project owner or their contractor shall comply with Kings County and Caltrans limitations for encroachment into public rights-of-way and shall obtain necessary encroachment permits from Caltrans and all relevant jurisdictions.

Verification: In the Monthly Compliance Reports, the project owner shall submit copies of any encroachment permits received 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-5 The project owner shall designate travel routes for construction workers and truck deliveries in consultation with Kings County and Caltrans.

Verification: The project owner shall provide a copy of the designated route in its contracts for truck deliveries and maintain copies onsite for inspection by the CPM.

TRANS-6 Following completion of construction of the power plant and all related facilities, the project owner shall return all roadways to original or as near original condition as possible.

Protocol: Prior to start of construction, the project owner shall photograph sections of public roadways that will be affected by project construction traffic. The project owner shall provide the CPM and the affective jurisdiction: Kings County and /or Caltrans with copies of these photographs.

Verification: Within 30 days of the completion of project construction, the project owner will meet with the CPM and Kings County and Caltrans to determine and receive approval for the action necessary and schedule to complete the repair of identified sections of public roadways to original or as near original condition as possible.

TRANS-7 Prior to the start of construction, the project owner shall consult with Kings County and Caltrans to prepare and submit a construction traffic control plan and implementation program which addresses the following issues to the extent practical:

- timing of heavy equipment and building material deliveries:
- signing, lighting, and traffic control device placement;
- provision of a person to direct traffic if necessary for workers leaving the site during the peak period of construction;
- on-site parking for construction workers;
- establishing construction work hours outside of peak traffic periods;
- maintain emergency access;
- temporary travel lane closures;
- maintaining access to adjacent property, and
- requirements for construction worker ridesharing.

The project owner shall submit the traffic control plan to Kings County and Caltrans for review and comments, and to the CPM for review and approval.

Verification: At least 30 days prior to start of construction the project owner shall provide to the CPM for review and approval, a copy of its traffic control and implementation program that has been reviewed and commented on by the jurisdictions.

TRANS-8 The applicant shall confer with area jurisdictions (i.e., Lemoore NAS, Kings County, Fresno County and the City of Lemoore) to determine that the HPP construction schedule and equipment transportation routes do not interfere with existing or planned projects.

Verification: At least 30 days prior to start of construction the project owner shall provide to the CPM for review and approval, a copy of its contruction schedule and equipment transportation routes that has been reviewed and commented on by the above-listed jurisdictions.

REFERENCES

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TRANSMISSION LINE SAFETY AND NUISANCE

Testimony of Obed Odoemelam, Ph.D.

INTRODUCTION

Electricity from the proposed Henrietta Peaker Project (HPP) will be delivered to the Pacific Gas and Electric (PG&E) power grid though a new 550-foot overhead 70 kilovolt (kV) transmission line extending from the project's on-site 70 kV switchyard to PG&E's Henrietta Substation to the north and contiguous to the project site. Thus, the line will be located entirely within PG&E and project property lines. The line will be owned, operated and maintained by PG&E and will, therefore, be designed according to PG&E design guidelines reflecting compliance with existing health and safety laws, ordinances, regulations, and standards (LORS).

The purpose of this staff analysis is to assess the proposed line construction and operational plan for incorporation of measures necessary for compliance with the health and safety laws of concern for lines of this type. 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)

The following federal and state laws and industry practices are intended to ensure implementation of the measures necessary to prevent occurrence of each of the impacts noted.

AVIATION SAFETY

The concern over aviation safety derives from the obstruction hazard to area aircraft from the proposed line's intrusion into the area's air space. The potential for such a hazard is addressed through the following LORS and related requirements.

- Title 14, Code of Federal Regulations, Section 77, "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 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 Advisory Circular 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 the Code of Federal Regulations, Title 14, Section 77.

AUDIBLE NOISE AND RADIO INTERFERENCE

Radio-frequency interference and audible noise are produced from the physical interactions of the line electric fields and the air around the conductor. These impacts are produced through well understood physical mechanisms and are prevented or mitigated through compliance with the following regulations and industry practices:

- Federal Communications Commission (FCC) regulations, Title 47, Code of Federal Regulations, Section 15.25. These regulations prohibit operation of devices or facilities with fields capable of interference with radio-frequency communication in the fields’ impact area. They also require all such interference to be mitigated by the operator. The potential for such interference would depend on the distance from the source in question.
- General Order 52 (GO-52), California Public Utilities Commission (CPUC). This Order specifies the measures necessary to prevent communication interference as related to power and communication line construction, operation and maintenance.
- Regular maintenance eliminates the protrusions that enhance the noise-producing impacts of electric field interactions at the conductor surface.

FIRE HAZARDS

Fire hazards from overhead transmission line operation are mostly related to sparks from conductors of overhead lines or direct contact between the line and nearby trees and other combustible objects. Such fires are prevented through compliance with the following regulations:

- General Order 95 (GO-95), CPUC, “Rules for Overhead Electric Line Construction.” These rules specify tree-trimming criteria to minimize the potential for power line-related fires.
- Title 14 of the California Code of Regulations, Section 1250, “Fire Prevention Standards for Electric Utilities.” This section specifies utility-related measures for fire prevention.

SHOCK HAZARDS

All transmission and subtransmission line operations pose a risk of hazardous or nuisance shocks to humans. These hazardous shocks are those 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. The nuisance shocks, by contrast, are caused by current flow at levels generally incapable of physiological harm. They result most commonly from contact with a charged metallic object in the transmission line environment. The following regulations are intended to prevent such shocks:

- 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 workers working on or around the line.
- Title 8, California Code of Regulations, Section 2700 et seq., "High Voltage Electric Safety Orders." These establish essential requirements and minimum standards for safely installing, operating, and maintaining electrical installations and equipment.
- National Electrical Safety Code, Part 2: Safety Rules for Overhead Lines. Provisions of these rules are intended to minimize the potential for direct or indirect contact with the energized line.
- 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). These provide for effective grounding and other safety-related practices.

SETTING

As more fully discussed by the applicant GWF Energy LLC (GWF 2001a, pages 2-1, 8.4-1, 8.4-4 and 8.4-5), the proposed HPP will be located approximately 10 miles southwest of Lemoore, Kings County, California, on a seven-acre portion of a 20-acre land parcel. The project site is in an area with many high-voltage PG&E lines of 70 kV, 115 kV, and 230 kV for which the Henrietta Substation serves as a common energy distribution point. The applicant has provided a listing of these lines together with their respective routes, and types of support structure (GWF 2001a, page 6-1). The proposed line is a single-circuit line whose conductors will be supported on two 55-foot wooden poles and arranged according to standard PG&E practices bearing on safety, efficiency, reliability maintainability, and field reduction efficiency. The line will exit the project site from the north and travel approximately 400 feet before turning east to extend another 150 feet for connection within the Henrietta Substation.

The proposed project site is in a sparsely populated area with no residences within one-quarter mile of the project site. The nearest residence to the proposed line route is about 1.5 miles away, with no residential developments currently planned for the area (GWF 2001a, page 8.4-8 and 8.4-9). The absence of residences in the immediate project area means that the long-term, residential magnetic field exposure of current health concern would be insignificant for this project. The only exposure of potential significance would be the short-term on-site exposure to plant workers or permitted

project visitors. These types of exposures are not associated with the present health concern.

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
TRANSMISSION LINE SAFETY AND NUISANCE -- Would project operation:				
a) Pose an aviation hazard to area aircraft?			X	
b) Lead to interference with radio-frequency communication?		X		
c) Pose a hazardous or nuisance shock hazard?		X		
d) Pose a fire hazard?		X		
e) Expose humans to higher electric and magnetic field levels than justified by existing knowledge?		X		

DISCUSSION OF IMPACTS

a. Aviation Hazard: Less Than Significant Impact

As noted by the applicant (GWF 2001a, page 6-6), there are no major aviation centers in the immediate project area. The closest is the Lemoore Naval Air Station whose runways are approximately 4.7 miles to the northwest and thus too far (as assessed using the previously noted FAA) for the proposed lines to pose a significant collision hazard to any utilizing aircraft. The line height will also be much lower than the 200 feet or more necessary for a potential collision hazard as stipulated in Title 14, Code of Federal Regulations. The previously noted FAA Notice of Construction or Alteration would not be required.

b. Audible Noise and Radio Frequency Interference: Less than Significant Impact with Mitigation Incorporated

Since PG&E will own the proposed line, it will be designed, built and maintained according to PG&E practices that limit audible noise and radio-frequency interference. The potential for such electric field-related impacts (and related complaints) is further minimized by the general absence of residences in the line's field impact area. FCC regulations require mitigation of all interference-related complaints for which staff recommends a specific condition of certification, TLSN-2, in the unlikely event of occurrence.

c. Fire Hazard: Less Than Significant with Mitigation Incorporated

Since the line will be owned by PG&E, it will be designed to comply with the GO-95 requirements noted by the applicant as necessary to prevent the fire hazard of concern

(GWF 2001, page 6-14). The planned routing within the project's and Henrietta Substation's property boundaries would ensure the absence of trees and other combustible objects and materials associated with fires. Staff recommends two conditions of certification, TLSN-1 and TLSN-4, to ensure implementation of the necessary prevention measures.

d. Shock Hazards: Less Than Significant with Mitigation Incorporated

As a PG&E line, the proposed project line will be erected and grounded according to standard PG&E practices reflecting compliance with existing industry standards noted by the applicant as effective against line shock hazards (GWF 2001, page 6-13). Staff's recommended conditions of certification, TLSN-1 and TLSN-5, will ensure such compliance.

e. Electric and Magnetic Exposure: Less Than Significant Impact

Exposure to power-frequency electric and magnetic fields is considered capable of biological impacts at levels orders of magnitude higher than encountered in the power line environment. The issue of continuing concern is the potential for impacts of potential health significance at levels of normal occurrence around power lines and other sources. Although the potential for such health impacts has not been established, the CPUC has established specific design and operational requirements for managing such fields. The related measures are incorporated into PG&E's standard line designs as required by CPUC. The applicant has listed these measures as incorporated into the PG&E field reduction plan to be applied to this project. Staff finds this plan to be acceptable.

The applicant (GWF 2001a, pages 6-10 and 6-30) presented exposure estimates for the magnetic field exposures at the root of the present health concern, to reflect the effectiveness of the field strength reduction measures to be incorporated into the proposed line design. Staff has verified the accuracy of the applicant's calculations with respect to field exposure and intensity dissipation. Staff established from these calculations that the proposed line's magnetic field level at the centerline of maximum impact would be approximate 80 milligauss (mG), diminishing to 46 mG at the edge of the 40-ft right-of-way typical of such 70 kV PG&E lines. This field would further diminish to approximately 24 mG about 40 feet from the centerline. The maximum strength of the companion electric field would be 0.62 kV/m at the centerline of maximum intensity, diminishing to approximately 0.29 kV/m at the edge of the right-of-way. These field strength estimates are similar to those from PG&E lines of this voltage and current-carrying capacity. The fields are much lower, in the case of the magnetic field of specific health concern, than the 150 mG to 250 mG established for the right-of-way by the few states with specific regulatory limits. These relatively low field strengths reflect the effectiveness of the field reduction measures to be applied. Staff's recommended condition of certification, TLSN-3, is intended to verify achievement of the field strength reduction assumed by the applicant.

CONCLUSIONS

Staff has determined that the proposed line will be designed and operated in compliance with all applicable health and safety-based LORS. The following conditions of certification are recommended to ensure incorporation of the necessary design and operational measures.

PROPOSED CONDITIONS OF CERTIFICATION

TLSN-1 The project owner shall ensure that PG&E erects the proposed transmission line according to the requirements of CPUC's GO-95, GO-52, applicable requirements of Title 8, California Code of Regulations, Section 2700 et seq. and PG&E's EMF-reduction guidelines arising from CPUC Decision 93-11-013.

Verification: At least thirty (30) days before start of line-related ground disturbance, the applicant shall submit to the Commission's Compliance Project Manager (CPM) a letter from PG&E stating PG&E's intention to ensure compliance with this requirement.

TLSN-2 The project owner shall verify implementation of PG&E's plan for identifying and correcting any complaints of interference with radio or television reception. PG&E shall maintain any records of such complaints and remediation for 5 years.

Verification: The applicant shall ensure that all reports of line-related complaints are summarized by PG&E for the proposed line and provided to the applicant for submittal to the CPM in the Annual Compliance Report.

TLSN-3 The applicant shall ensure that PG&E establishes a specific plan to engage a qualified consultant to measure the strengths of the line's electric and magnetic fields before and after the line is energized. Measurements should be made at representative points along the edge of the right-of-way for which field strength estimates were provided.

Verification: The project owner shall obtain copies of the pre-and post-energization measurements and file them with the CPM within 60 days after completion of the measurements.

TLSN-4 The applicant shall ensure that PG&E implement a specific plan to ensure that the line's proposed route is kept free of combustible material, as required under the provisions of Section 4292 of the Public Resources Code and Title 14, California Code of Regulations, Section 1250.

Verification: During the first five years of plant operation, the project owner shall ensure that PG&E summarizes all inspection results together with any fire prevention activities carried out along the line route. Such summaries shall be obtained by the applicant and submitted in the Annual Compliance Report.

TLSN-5 The applicant shall ensure that PG&E implements a plan under which all permanent metallic objects within the line route are grounded according to industry standards.

Verification: At least thirty (30) days before the line is energized, the applicant shall obtain a copy of this implementation plan from PG&E and submit it to the CPM.

REFERENCES

GWF (GWF Energy LLC). 2001a. Application for Certification for the Henrietta Peaker Power Plant. Submitted to the California Energy Commission on August 27, 2001.

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.

VISUAL RESOURCES

Testimony of David Tatsumi, ASLA

INTRODUCTION

Visual resources are the natural and cultural features of the environment that can be seen. This analysis focuses on whether the Henrietta Peaker Project (HPP) would cause impacts to visual resources and whether the project would be in compliance with applicable laws, ordinances, regulations and standards. The California Environmental Quality Act (CEQA) requires the determination of the potential for visual impacts resulting from the proposed project.

This analysis includes the following:

- description of applicable laws, ordinances, regulations and standards;
- assessment of the visual resources 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 the compliance of the project with applicable laws, ordinances, regulations and standards;
- conclusions; and
- proposed conditions of certification.

A summary of the visual resources analysis is presented in table form in **APPENDIX VISUAL RESOURCES-1**. A discussion of the visual resources analysis methodology is provided in **APPENDIX VISUAL RESOURCES-2**. A lighting complaint resolution form is provided in **APPENDIX VISUAL RESOURCES-3**. **APPENDIX VISUAL RESOURCES-4** presents the turbine exhaust visible plume analysis**. APPENDIX VISUAL RESOURCES-5** presents the visual resources figures.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

FEDERAL

The proposed project, including linear facilities, is not located on federally administered public lands and is not subject to federal regulations pertaining to visual resources.

STATE

None of the roadways in the project vicinity, including State Route (SR) 198, are eligible for designation or officially designated as a California State Scenic Highway (California Department of Transportation Web Site: www.dot.ca.gov/hq/LandArch/scenic/cahisys.htm). Therefore, the proposed project is not subject to state LORS pertaining to visual resources.

LOCAL

Kings County does not have specific policies or aesthetic resources that apply to the HPP. However, scenic resources are addressed in the Open Space and Land Space elements of the Kings County General Plan 1998 (General Plan), which is implemented by the Kings County Planning Department. These elements of the General Plan require public notification and review of any projects that could adversely impact visual resources. The Kings County Zoning Codes also contain visual resources provisions such as the following sections of the King's County Board of Supervisors amended Kings County Zoning Ordinance (July 5, 2001).

- Section 406.C – Fences, walls and hedges: Fences, walls and hedges exceeding six (6) feet in height shall be permitted except that no solid fence, wall or hedge shall exceed three (3) feet in height within an area of a corner lot, a lot backing onto a street, or a driveway described as follows:

That area on the street of a diagonal line connecting points, measured from the intersection corner, fifty (50) feet on a minor street side, or driveway, of the lot and seventy (70) feet on a major street side of a lot.

- Section 406.H – Signs: No sign, outdoor advertising structure or display of any character shall be permitted, except for the following:

    1. Name plates or signs, not directly illuminated, with an aggregate area of not more than forty (40) square feet pertaining to a permitted use, permitted use with site plan review or conditional use conducted on the site.

    2. One non illuminated on site sign not exceeding thirty-two (32) square feet in structural area with copy on both sides pertaining to the sale, lease, rental or display of a structure or land.

    3. Directional or information (other than advertising) signs not exceeding two hundred and forty (240) square feet in area located adjacent to a state highway or county road within an area limited by points not closer than one-fourth (.25) mile or further than three-fourths (.75) mile from a frontage road turnoff, listing commercial establishments accessible via the frontage road, and further provided that not more than four (4) such signs shall be permitted on each side of the highway or county road.

    4. Signs not exceeding two hundred forty (240) square feet in area located adjacent to a state highway or county road that is classified as an arterial or collector road (including such designations as urban or rural, major or minor) giving direction to or information about Kings County cities, communities, or rural service centers which are accessible by such state highways or county roads or direct routes consisting of combinations thereof, provided that such signs shall be limited to four (4) per city, community or rural service center regardless of the sign's location in this district, and further provided that such signs shall not contain information pertaining to a subdivision of land or private development, commercial establishments or quasi-public developments.

PROJECT DESCRIPTION

The following describes the aspects of the proposed project that may have the potential to cause adverse impacts to visual resources. Please refer to the **PROJECT DESCRIPTION** section of this Staff Assessment for a more complete discussion.

POWER PLANT

The HPP is designed as a "peaking" electrical power generation facility which will be a simple cycle power generation facility consisting of two natural gas fired combustion turbine generators (CTGs) and associated facilities.

The most visible components of the HPP are the two CTG stacks. These stacks will have a height of approximately 85 feet and a diameter of approximately 10.5 feet (GWF 2001a, Figure 2-4A, Elevations and Sections – see **VISUAL RESOURCES Figure 1**). Other power plant structures include an air pollution control system structure approximately 85 feet long, 25 feet wide and 55 feet tall and a control building approximately 85 feet long, 25 feet wide and 15 to 22 feet tall. Surrounding the HPP site would be an approximately six-foot high fence. The HPP does not include a cooling tower. The water treatment holding tanks will be approximately 35 feet tall and 40 feet in diameter.

LINEAR FACILITIES

Transmission Lines

The HPP would interconnect to the Pacific Gas & Electric (PG&E) Henrietta Substation through a 550-foot, 70 kilovolt transmission line. This proposed new transmission interconnection to the Henrietta Substation would be extremely short (going directly north and adjacent to the site). Considering the numerous existing transmission lines in the area, the transmission interconnection would likely not be visible to most viewers and its visual impact would be negligible.

Natural Gas Supply, Water Supply, Wastewater Pipelines

The proposed 2.2-mile natural gas supply pipeline would tie into the existing Southern California Gas Company (SoCalGas) line 800 that is approximately one-mile south of the Avenal Cutoff. The new 12-inch diameter pipeline would travel north along the eastern side of an unimproved farm access road within the HPP easement. The line would then pass beneath Avenal Cutoff, proceed north along the eastern side of 25th Avenue within an existing SoCalGas easement and then turn east to enter the HPP site. This pipeline is to be installed underground and would not be visible during operation.

The HPP would be supplied with water by the Westlands Water District and Kings County. As the water would be delivered to the HPP site through pipes that would be buried underground, the pipes would be unnoticeable.

Since surface conditions would be restored after the pipeline construction is completed, operation of the pipelines would not cause any significant visual impacts. However, during pipeline construction, activities, materials and personnel would be visible to nearby travelers and Lemoore Naval Air Station (NAS) residents.

CONSTRUCTION LAYDOWN AREAS

The AFC identifies an area in the northeast section of the site that could be used as the possible construction laydown and worker parking areas during the construction period.

Due to the flat topography and low-laying agriculture, material and equipment stored at the proposed construction laydown area would primarily be visible to residents of the NAS housing, people using the NAS entrance at 25th Avenue and State Route (SR) 198, and travelers along Avenal Cutoff and SR 198 during the five-month construction period.

The construction laydown area (and other areas disturbed during construction) will be reclaimed or eventually restored to agricultural production when construction work is completed (GWF 2001a). Therefore, after construction is completed, there would be no visual impact to the area.

SETTING

REGIONAL SETTING

The proposed HPP would be located in an unincorporated area of Kings County approximately one mile south of SR 198 and the NAS. The region is dominated with flat plains and panoramic views of agricultural fields of cotton, grains and occasional fruit orchards. The Kettleman Hills are to the distant southwest (approximately 30 miles).

PROJECT AREA SETTING

The site is bordered by a paved county road to the west (25th Avenue) and by an adjacent unpaved farm road to the north. Across the unpaved farm road is the Henrietta Substation.

The PG&E Henrietta Substation site is composed of single story utility buildings, transformers, tanks, wood utility poles, numerous transmission lines (30 feet to 40 feet tall) and support towers (75 feet to 85 feet tall) and a service road extending from 25th Avenue. Extending southwest of the substation are the Gates McColl and Gates Gregg Transmission Lines and extending northeast from the site are the Henrietta Lemoore Transmission Lines. These lines are supported by 140-foot tall steel towers.

In addition to the PG&E substation, the other non-agricultural uses within a one-mile area of the site include the presently closed New Star facility (a commercial warehouse 0.7 miles south on the eastern side of 25th Avenue), the NAS (east and west of 25th Avenue and north of SR 198), and a Pacific Bell facility (south side of SR 198 and east of 25th Avenue). The remainder of the surrounding one-mile area is currently used for agricultural purposes (approximately 95 percent cultivated for cotton and the other five percent for wheat). There are no residences within this area.

Section 8.11-3 of the AFC mentions a “silhouette of the low foothills east of the area.” However, existence of the foothills appearing within the project viewshed could not be confirmed. Foothills were not evident in any of the photo exhibits presented in the AFC

or Data Responses and during two separate site visits by staff (Fall and Winter 2001) the foothills could not be observed (a haze obstructed the horizon).

View Areas and Key Observation Points

The location and view direction of each Key Observation Point (KOP) is shown on **VISUAL RESOURCES Figure 2**.

VISUAL RESOURCES Figures 3, 5, 7, 9 and **11** generally show the areas from which the project would be visible, also called the project viewshed. Fields of low-growing (3.5 feet tall) cotton surround the HPP site. From the north, the site is most visible across these fields from SR 198, from Avenal Cut-Off Road to approximately 0.5 mile west of 25th Avenue where an orchard of mature fruit trees blocks ground level views of the site. The PG&E Henrietta Substation adjacent to the north of the proposed HPP site would obstruct some views from SR 198. Views of the HPP site are available to both eastbound and westbound motorists on SR 198 and to on-site NAS residential housing. Motorists south of the HPP site on 25th Avenue and Avenal Cut-Off Road would have unobstructed views of the site across cotton fields.

The NAS site includes multi-unit dwellings and landscaped common areas and is located about 0.5 mile east of the 25th Avenue NAS entry gate and 1.5 miles northeast of the HPP. The dwellings adjacent to SR 198 would have views of the HPP from ground floor living areas and landscaped common areas; however, the Henrietta Substation would partially obstruct these views.

The Applicant selected five KOPs to characterize the existing visual setting within which the proposed project would be evaluated. Staff conducted a site visit and determined that the KOPs selected by the Applicant were appropriate for this region. **VISUAL RESOURCES Figures 3, 5, 7, 9** and **11** show the location and view direction of the five KOPs selected for the proposed project in existing condition. At each KOP, a visual analysis was conducted and a summary presented (see **APPENDIX VISUAL RESOURCES-1)**. The following discussion provides an assessment of the overall visual sensitivity at each KOP. Overall visual sensitivity takes into account visual quality of the existing landscape, viewer concern, and overall viewer exposure, which considers visibility, distance zone, number of viewers, and duration of view.

KOP-1: SR 198 approximately 1.4 miles east of 25th Avenue

The existing view from KOP-1 is shown on **VISUAL RESOURCES Figure 3.** KOP-1 is a view looking southwest toward the HPP site from SR 198, between the Avenal Cutoff and 25th Avenue, at a location approximately 1.4 miles east of 25th Avenue. This is the view of the site seen by motorists traveling westbound on SR 198 from the cities of Lemoore, Hanford, or other population centers east of the HPP site. In addition, this is the view looking southwest toward the HPP site from NAS base housing consisting of multi-unit base dwellings and open common areas.

Visual Quality

The view is dominated by agricultural land in the foreground and, on clear days, the foothills (at a distance of approximately 30 miles) in the far background. Atmospheric haze usually dominates the background views to the south and the site and existing

facilities are silhouetted against it. The transmission lines and the Henrietta Substation are the dominant visual elements in the middle ground of the view. The view in the direction of the site is fairly open in character. Visual quality is rated low.

Viewer Concern

The surrounding land use is agricultural and most viewers would be motorists on SR 198 and with a lesser percentage of viewers being NAS base housing residents. Viewer concern is rated low to moderate for motorists and high for some of the NAS residents.

Viewer Exposure

At KOP-1 the visibility of the site is low due primarily to the long viewing distances and obstruction of those views by the Henrietta Substation. A large portion of the viewers would be the motorists along SR 198 traveling at posted highway speeds between Avenal Cutoff Road to the NAS main entrance (approximately 11,800 Average Daily Traffic) (GWF 2001a, Table 8.10-2). These viewers would have only momentary views of the site due to their attention being directed toward driving. The balance of the viewers would be the existing and future occupants of the NAS base housing adjacent to SR 198. These approximately 500 viewers would view the site from residential room windows and nearby greenbelt common areas. Viewer duration at this location will be low to moderate for residents and low for motorists. Since most viewers are motorists, the overall viewer exposure at this location is low.

Overall Visual Sensitivity

Visual quality is low, exposure is low, and viewer concern is low to moderate. Overall visual sensitivity for KOP-1 is low to moderate.

KOP-2: SR 198 approximately 1.0 mile east of 25th Avenue

The existing view from KOP-2 is shown on **VISUAL RESOURCES Figure 5**. KOP-2 represents the view looking southeast from SR 198 and from NAS base housing. This is the viewpoint where housing is the closest to the HPP site. This point is located along SR 198 about 1 mile east of the intersection of 25th Avenue. Views to the HPP site would be blocked by the Henrietta Substation. Even though the bottom floors of the dwellings are slightly below the SR 198 roadway, habitants would still have line-of-sight views of the facility.

Visual Quality

The view is dominated by agricultural land in the foreground and, on clear days, the foothills in the far background. Atmospheric haze usually dominates the background views to the south and the site and existing facilities are silhouetted against it. The transmission lines and the Henrietta Substation are the dominant visual elements in the middle ground of the view. The view in the direction of the site is fairly open in character. Visual quality is rated low.

Viewer Concern

The surrounding land use is agricultural, with the majority of viewers being motorists on SR 198 and some NAS base housing residents. Since most of the viewers are motorists, viewer concern is rated moderate.

Viewer Exposure

At KOP-2 the visibility of the site is low due primarily to the long viewing distances and obstruction of those views by the Henrietta Substation. A large portion of the viewers will be the motorists along SR 198 traveling at posted highway speeds between Avenal Cutoff Road to the NAS main entrance (approximately 11,800 Average Daily Traffic) (GWF 2001a, Table 8.10-2). These viewers would have only momentary views of the site due to their attention being directed toward driving. The balance of the viewers would be the approximately 500 existing occupants of NAS base housing adjacent to SR 198. These viewers would view the site from residential room windows and nearby greenbelt common areas. Viewer duration at this location will be low for motorists and low to moderate for the NAS residents. Since most of the viewers are motorists, view exposure at this location is low to moderate.

Overall Visual Sensitivity

Visual quality is low, exposure is low, and viewer concern is moderate. Overall visual sensitivity for KOP-2 is low to moderate.

KOP-3: SR 198 at Lemoore Naval Air Station entrance

The existing view from KOP-3 is shown on **VISUAL RESOURCES Figure 7.** KOP-3 is a view of the HPP site approximately 0.7 miles away looking south from the NAS entrance as seen by viewers leaving the NAS.

Visual Quality

The view encompasses the intersection of SR198 and 25th Avenue with the NAS entry in the foreground. The busy intersection and the middle ground industrial elements distract from the natural elements of the landscape. The middle ground agricultural fields, transmission lines and Henrietta Substation are subordinate. The background atmospheric haze accentuates the silhouettes of the existing vertical industrial elements in the view. The visual quality is low.

Viewer Concern

Viewers at this location would be primarily civilian workers, visitors and residents entering and exiting the NAS. Average daily traffic from the west is 6,900 and from the east is 11,800 (GWF 2001a, Table 8.10-2). Of this group of viewers, the visual concerns would be highest for the residents and lower for visitors and workers. Viewer concern is low.

Viewer Exposure

The site is aligned with 25th Avenue and is low to moderate in visibility.

Approximately 3,600 viewers would be entering or leaving the NAS daily. Upon leaving the NAS, viewers would have direct but momentary views of the site due to their attention being directed towards driving and completing their turn onto SR198. This view would be especially evident to drivers who are stopped at the traffic signal at the intersection of 25th Avenue and SR 198 as they leave the NAS. Therefore, viewer duration for KOP-3 is low to moderate. Overall viewer exposure is low to moderate.

Overall Visual Sensitivity

Visual quality, viewer concern, and exposure are low, therefore, overall visual sensitivity of KOP-3 is low.

KOP-4: SR 198 approximately 0.5 miles west of 25th Avenue

The existing view from KOP-4 is shown on **VISUAL RESOURCES Figure 9.** KOP-4 is a view of the HPP looking southeast from SR198 approximately 0.5 miles west of 25th Avenue. This view is representative of the view seen by motorists traveling eastbound on SR 198 from Interstate 5 toward the NAS, the cities of Lemoore and Hanford, or other destinations to the east.

Visual Quality

Agricultural fields in the foreground dominate the view with predominately hazy skies in the background and the Henrietta Substation situated in the middle ground. Transmission lines and site facilities are dominant industrial elements that compete with the otherwise natural quality of the landscape. The visual quality is low.

Viewer Concern

The surrounding land use is agricultural and most viewers would be motorists on SR 198. Viewer concern is moderate.

Viewer Exposure

At KOP-4, the visibility of the site is low due primarily to the long viewing distances. Most of the viewers would be motorists (Average Daily Traffic 6,900) traveling east on SR 198 and they would have only momentary views of the site due to their attention being directed toward driving (GWF 2001a, Table 8.10-2). Therefore, viewer duration for KOP-4 is low. Overall viewer exposure is low to moderate.

Overall Visual Sensitivity

Visual quality and viewer exposure is low and viewer concern is moderate, therefore, overall visual sensitivity of the setting viewed from KOP-4 is low to moderate.

KOP-5: 25th Avenue

The existing view of KOP-5 is shown in **VISUAL RESOURCES Figure 11**. KOP-5 is a view of the HPP from 25th Avenue looking northeast. This view is representative of the view seen by motorists traveling northbound on 25th Avenue toward the NAS. Traffic on this road is generally limited to agricultural product transport and access to Henrietta Substation; traffic to the NAS is negligible.

Visual Quality

The Henrietta Substation, transmission lines and parts of the NAS dominate the middle ground; agricultural fields dominate the foreground, and hazy blue skies make up the background. Power poles and transmission lines extend the industrial visual character to the horizon to the distant east and west. Transmission lines and site facilities are dominant industrial elements that compete with the otherwise natural quality of the landscape. The view from this KOP has low visual quality.

Viewer Concern

This view is dominated by industrial elements extending to the horizon in contrast to surrounding agrarian qualities. Most viewers would be power plant or agricultural workers, therefore, viewer concern is low to moderate.

Viewer Exposure

Motorists (Average Daily Traffic 3,000) traveling north on 25th Avenue would have unobstructed views of the HPP site beginning at a point approximately 0.7 miles south of the HPP (GWF 2001a, Table 8.10-3). The visibility of the site increases as the distance between it and the motorist decreases. Visibility is moderate to high. The duration of time a motorist has a view of the site is limited to less than a minute. Therefore, viewer duration is moderate. Most viewers would be power plant and agricultural workers, therefore, overall viewer exposure at KOP-5 is moderate to high.

Overall Visual Sensitivity

Visual quality is low, viewer concern is low to moderate, and viewer exposure is moderate to high. Therefore, overall visual sensitivity of the setting viewed from KOP-5 is moderate.

IMPACTS ANALYSIS

ENVIRONMENTAL CHECKLIST

VISUAL RESOURCES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:				
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character of quality of the site and its surroundings?			X	
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?		X		

DISCUSSION OF DIRECT IMPACTS

A summary of the impact analysis is presented in a table in **APPENDIX VISUAL RESOURCES-1**. The impact assessment methodology and significance criteria utilized in this study are described in detail in **APPENDIX VISUAL RESOURCES-2**. The following discussion explains the responses to the questions in the environmental checklist.

A. Scenic Vistas

The Kings County General Plan, Open Space Element identifies scenic areas east and northeast of the NAS that extend along the Kings River southward from north of the NAS through SR 198 and to south of Highway 41 (see **VISUAL RESOURCES Figure 13**). While an initial assumption would place the HPP as falling within the viewshed of eastbound travelers along SR 198 and the residents and visitors of the NAS, thereby blocking the recognized Kings County scenic areas, the actual topography of the HHP area creates a viewshed that terminates at Avenal Cutoff (approximately one mile before the Kings River scenic area). This “shortened” viewshed is created by the slightly inclining eastward topography from SR 198, the raised grade level of Avenal

Cutoff, and the distance between SR 198 and the Kings River scenic area. These factors combine to raise the horizon line to a point where the Kings River scenic areas can not be seen. Therefore, the project would have no impact on the recognized scenic vistas.

B. Scenic Resources

There are no state-designated scenic highways within the proposed project viewshed. Furthermore, the project would not substantially damage scenic resources such as trees, rock outcroppings, or historic buildings. Therefore, the project would have no impact on the scenic resources.

C. Visual Character or Quality

Project aspects that were evaluated in the assessment included project construction, power plant structures, the electric transmission line, water interconnection pipeline, and natural gas pipeline. Staff conducted an exhaust plume analysis of the two CTG stacks and has concluded that they would not generate any visible exhaust plumes. (Because of the similarity of project design, staff analyzed the potential for exhaust plumes from the proposed Spartan 1 Energy Center, and has determined that the conclusions of that analysis apply to the proposed Henrietta project as well. A copy of the plume analysis is incorporated in this Staff Assessment as an **Appendix Visual Resources-4**.)

Project Construction

Construction of the proposed power plant and linear facilities would cause temporary visual impacts due to the presence of equipment, materials, excavated piles of dirt and workforce. Construction activities would include site clearing and grading, trenching, construction of facilities, and cleanup and restoration of the site and right-of-ways. Project construction (including the transmission line) would occur over a five-month period.

Mitigation Measures

The Applicant has committed to the following mitigation measures to minimize the visual impacts of the HPP during construction.

- If agricultural lands are affected, they will be returned to agricultural use condition following construction (GWF 2001a, Section 8.9.5.1).
- After grading and compacting, the soil from the HPP site will be revegetated to match or blend with the surrounding environment (GWF 2001a, Section 8.9.5.1).

The proper implementation of staff's proposed condition of certification **VIS-1** would ensure that potential impacts associated with project construction remain less than significant.

POWER PLANT

KOP-1 (Visual Resources Figure 8): SR 198 approximately 1.4 miles east of 25th Avenue

Contrast with Landscape

The predominant landforms in the view from KOP-1 are the expansive agricultural fields in the foreground and the distant Kettleman Hills in the background. The vertical forms of the HPP (primarily the exhaust stacks) would be low in contrast with the horizontal form of the agricultural fields and the rolling form of the hills. The straight lines of the power plant would have a low contrast with the straight lines of agricultural fields and background foothills. The gray color of the power plant would contrast slightly with the seasonal green (November to August) and brown (August to November) shades of agricultural fields and background hills. The power plant would appear much smaller than the landforms so scale contrast would be very low. In summary, the power plant would cause low form, line, color, and scale contrast in comparison to landforms.

Contrast with Existing Structures

The major existing structures visible in the view from KOP-1 are the Henrietta Substation and transmission lines. These structures would generally obstruct views of the HPP. The vertical elements of the HPP would blend in with the vertical elements of the Henrietta Substation and the numerous transmission lines. The neutral colors proposed for the HPP would help the plant to blend in with adjacent facilities. In addition the distance from KOP-1 would obscure plant details further blending the site with the adjacent Henrietta Substation facility. In summary, the power plant would cause low levels of contrast with existing structures in regard to form, line, color, texture, and scale

Project Dominance

The view from KOP-1 is panoramic and open. Most of the HPP would be blocked from view by the Henrietta Substation and would appear very small in the viewshed, therefore, it would have subordinate scale and spatial dominance.

View Blockage

In the view from KOP-1, on a clear day, less than 10 percent of the Kettleman Hills, 30 miles south of the site, would be blocked by the HPP. Because existing visual quality is low, the severity of view blockage would be very low.

Overall Visual Change

The HPP would have low form, texture, scale contrast, and scale and spatial dominance. Therefore, the overall visual change due to the power plant would be low.

Visual Impact Significance

Considering the overall low visual sensitivity of the setting, the resulting impact would be insignificant.

Mitigation Measures

See **Mitigation Measures** section in KOP-5 discussion.

KOP-2 (Visual Resources Figure 9): SR 198 approximately 1.0 mile east of 25th Avenue

Contrast with Landscape

Like KOP-1, the predominant landforms in the view from KOP-2 are the expansive agricultural fields in the foreground and the distant foothills in the background. The vertical forms of the HPP would be low in contrast with the horizontal form of the agricultural fields and the rolling forms of the hills. The straight lines of the power plant would have a low contrast with the straight lines of agricultural fields and background foothills. The gray color of the power plant would contrast only slightly with the seasonal green (November to August) and brown (August to November) shades of agricultural fields and background foothills. The power plant would appear much smaller than the landforms so scale contrast would be very low. In summary, the power plant would cause low levels of contrast with existing structures in regard to form, line, color, texture, and scale.

Contrast with Existing Structures

Like KOP-1, the major existing structures visible in the view from KOP-2 are the Henrietta Substation and transmission lines. These structures generally obstruct views to the HPP. The vertical elements of HPP would blend in with the vertical elements of the Henrietta Substation and the numerous transmission lines. The neutral colors used on the HPP would help the plant to blend in with adjacent facilities. In addition, the distance from KOP-2 would obscure plant details, further blending the site with the adjacent Henrietta Substation facility. In summary, the power plant would cause low levels of contrast with existing structures in regard to form, line, color, texture, and scale.

Project Dominance

The view from KOP-2 is panoramic and open. Most of the HPP would be blocked from view by the Henrietta Substation and would appear very small in the viewshed. Therefore, the HPP would have subordinate scale and spatial dominance.

View Blockage

In the view from KOP-2, on a clear day, less than 10 percent of the hills, 30 miles south of the site would be slightly blocked by the HPP. Because existing visual quality is low, the severity of view blockage would be very low for HPP.

Overall Visual Change

The HPP would have low form, line, color, texture and scale contrast, and low scale and spatial dominance. Therefore, the overall visual change due to the power plant would be low.

Visual Impact Significance

Considering the low overall visual sensitivity of the setting, the resulting impact would be insignificant.

Mitigation Measures

See **Mitigation Measures** section in KOP-5 discussion.

KOP-3 (Visual Resources Figure 10): SR 198 at Lemoore Naval Air Station entrance

Contrast with Landscape

The predominant landforms in the view from KOP-3 are the intersections of SR 198 and 25th Avenue and the expansive agricultural fields in the foreground and the foothills in the distant background. The vertical forms of the HPP would contrast low to moderately with the horizontal form of the intersection, agricultural fields, and the background hills. The straight lines of the power plant would have low contrast with the straight lines of agricultural fields and background foothills. The gray color of the power plant would contrast moderately with the seasonal green (November to August) and brown (August to November) shades of agricultural fields and background foothills. The power plant would appear smaller than the landforms so scale contrast would be low. In summary, the power plant would cause low to moderate form contrast, low line contrast, moderate color contrast, and low scale contrast in comparison to landforms.

Contrast with Existing Structures

The major existing structures visible in the view from KOP-3 are the Henrietta Substation and transmission lines. At this location these structures generally don't obstruct views to HPP. The vertical elements of HPP would blend in with the vertical elements of the Henrietta Substation and the numerous transmission lines. The neutral colors used on the HPP will help the plant to blend in with adjacent facilities. In addition the distance from KOP-3 will obscure plant details, further blending the project with the adjacent Henrietta Substation facility. In summary, the power plant would cause low levels of contrast with existing structures in regard to form, line, color, texture, and scale.

Project Dominance

The view from KOP-3 encompasses the intersection of SR 198 and 25th Avenue. As viewers leave the NAS, they would have a direct view of the HPP, which would be located along the east-side of 25th Avenue. The visual characters of the HPP would share the view with a number of existing facilities that exhibit strong vertical visual elements. Due to these factors, the HPP would have subordinate scale and spatial dominance.

View Blockage

On a clear day, less than 15 percent of the Kettleman Hills (30 miles south of the site) would be blocked by the HPP from the view from KOP-3. Because existing visual quality is low, the severity of view blockage would be very low for the HPP.

Overall Visual Change

The HPP would have low to moderate form contrast and moderate color contrast; low texture and scale contrast; and subordinate scale and spatial dominance. Therefore, the overall visual change due to the power plant would be low to moderate.

Visual Impact Significance

Considering the low to moderate overall visual sensitivity of the setting, the resulting impact would be insignificant.

Mitigation Measures

See **Mitigation Measures** section in KOP-5 discussion.

KOP-4 (Visual Resources Figure 11): SR 198 approximately 0.5 miles west of 25th Avenue

Contrast with Landforms

The predominant landform in the view from KOP-4 is the expansive agricultural fields in the foreground. The plant would be generally unobstructed and in full view at a distance of .8 miles. The vertical forms of the HPP would be low to moderate in contrast with the horizontal form of the agricultural fields. The straight lines of the power plant would be low in contrast with the straight lines of agricultural fields. The gray color of the power plant would contrast low to moderately with the seasonal green (November to August) and brown (August to November) shades of agricultural fields and gray blue sky. The power plant would appear small compared to the agricultural fields, so scale contrast would be low. In summary, the power plant would cause low line and scale contrast, and low to moderate form and color contrast in comparison to landforms.

Contrast With Existing Structures

The major existing structures visible in the view from KOP-4 are the Henrietta Substation and transmission lines. The HPP would be in full view. The vertical elements of HPP would blend in with the vertical elements of the Henrietta Substation and the numerous transmission lines. The neutral colors proposed for the HPP would help the plant to blend in with adjacent facilities. In addition, the distance from KOP-4 will obscure plant details, further blending the site with the adjacent Henrietta Substation. In summary, the power plant would cause low levels of contrast with existing structures in regard to form, line, texture, scale and color.

Project Dominance

The view from KOP-4 is panoramic and open. Most of the view of the HPP would be unobstructed. The plant would appear small in comparison to other structures (transmission towers) and the landscape due to the long distance between the viewer and the site. Therefore, scale and spatial qualities would be low and overall project dominance would be subordinate.

View Blockage

Background views from this observation point are non-existent due to distance and atmospheric conditions. Therefore, the HPP does not create any view blockage and would be low.

Overall Visual Change

The HPP would have low line, texture, and scale contrast; low to moderate form and color contrast, and subordinate scale and spatial dominance. Therefore, the overall visual change due to the power plant would be low.

Visual Impact Significance

Considering the low to moderate overall visual sensitivity of the setting, the resulting impact would be insignificant.

Mitigation Measures

See **Mitigation Measures** section in KOP-5 discussion.

KOP-5 (Visual Resources Figure 12): 25th Avenue

Contrast With Landforms

From this observation point the HPP generally dominates the surrounding landforms. The plant is unobstructed and in full view. The vertical forms of the HPP have a high contrast with the horizontal form of the agricultural fields. The straight lines of the power plant are in low contrast with the horizontal straight lines of the agricultural fields. The gray color of the power plant would contrast moderately with the seasonal green (November to August) and brown (August to November) shades of agricultural fields and gray blue sky. The power plant would appear smaller in scale than the surrounding agricultural fields so scale contrast would be low to moderate.

The six-foot high wall surrounding the power plant would be in low contrast with the horizontal form and straight lines of the agricultural field. The gray color of the screen would contrast moderately with the seasonal green and brown shades of the agricultural fields. Scale contrast compared to the agricultural fields would be low.

Contrast With Existing Structures

The HPP would block views of the adjacent Henrietta Substation, some transmission lines and the northern portion of the NAS. The geometric form of the power plant would cause high contrast with the vertical form of the utility poles and substation structures. The vertical lines of the HPP would have a low contrast with the vertical lines of the transmission towers. The neutral colors proposed for the HPP would have a low contrast with adjacent transmission lines and towers. The power plant would generally appear greater in scale than the adjacent transmission towers. In summary, the power plant would cause low levels of contrast with existing structures in regard to line, texture and color, low to moderate contrast in scale, and high contrast in regard to form.

Project Dominance

The HPP, generally, would co-dominate the view with other landscape and structural features that fill the field of view. The HPP would be rated high and co-dominant in terms of its scale due to the visually unconfined setting of the project site. It would be high and co-dominant relative to spatial qualities due to the site placement within KOP-5 and the surrounding existing visual features.

View Blockage

The power plant would generally be in full view and block much of Henrietta Substation and the NAS. However, considering that no high quality elements or scenic views would be blocked, view blockage would be moderate.

Overall Visual Change

The HPP would have low line and texture contrast, low to moderate scale and color contrast, high form contrast, and co-dominant scale and spatial qualities. Therefore, the overall visual change due to the power plant would be very high.

Visual Impact Significance

Considering the moderate overall visual sensitivity of the setting, the resulting impact would be significant without mitigation measures.

Mitigation Measures

Staff recommends condition of certification **VIS-1**, requiring the owner to ensure that visual impacts of the project construction are adequately mitigated removing and remediating ground disturbance upon completion of construction and replacing the vegetation that was removed during construction.

Staff recommends condition of certification **VIS-2**, requiring the project owner to treat project structures, including stacks, tanks and buildings, in appropriate colors or hues that minimize visual intrusion and contrast with the surrounding landscape and to treat those elements in non-reflective, appropriately textured finishes. This mitigation measure also applies to KOP-1, KOP-2, KOP-3 and KOP-4.

Staff recommends condition of certification **VIS-3**, requiring that all fences and walls for the project be galvanized with a non-reflective finish, or treated in appropriate colors or hues to minimize visual intrusion and contract to the surrounding landscape.

Staff recommends condition of certification **VIS-4**, requiring the project owner to design and install all lighting in a manner that the light bulbs and reflectors are not visible from public viewing areas, and to assure that illumination of the vicinity and nighttime sky is minimized during both project construction and operation. This mitigation measure also applies to KOP-1, KOP-2, KOP-3 and KOP-4.

Staff recommends condition of certification **VIS-5**, requiring the project owner to design project signs using non-reflective materials and unobtrusive colors in compliance with Kings County zoning requirements.

Staff also recommends condition of certification **VIS-6,** requiring the project owner to design perimeter landscaping along the west and south sides of the HPP to screen and blend the plant into the surrounding environment and the landscape, and ensure that potential adverse visual impacts associated with the HPP would be mitigated to less than significant. The landscape buffer should be similar to an orchard. Included are photographic simulations of this orchard-style landscape buffer at five-years growth (see **VISUAL RESOURCES Figure 14**), 10-years growth (see **VISUAL RESOURCES Figure 15**) and 20-years growth (see **VISUAL RESOURCES Figure 16**).

D. Light or Glare

The HPP site would be illuminated to provide security and facility identification and task lighting. Emergency lighting may be employed during occasional training events.

In order to mitigate potential impacts, the applicant has proposed the following. Lights will be directed toward the interior of the plant to minimize offsite lighting, glare and sky lighting impacts. Lighting fixtures will include shields and hoods to restrict lighting to the HPP grounds. The facility will be painted neutral colors reducing site glare to less than significant. So, while the HPP would be visible, an attempt has been made to minimize the nighttime visual impact through the selection of lighting fixtures.

It is anticipated that, even with lighting, the proposed neutral coloration of the structures and fencing will soften their appearance and contrast with the surrounding visual elements.

Mitigation Measures

Lights will be directed toward the interior of the plant to minimize offsite light and glare impacts. Lighting fixtures will include shields and hoods to produce downcast light. The facility will be painted neutral colors reducing site glare to less than significant. Staff has proposed condition of certification **VIS-4** which requires the project owner to submit a Lighting Complaint Resolution Form similar to **APPENDIX VISUAL RESOURCES-3**, if they receive complaints regarding the facility lighting.

ENVIRONMENTAL JUSTICE

Staff has reviewed U.S. Census 2000 information that shows the minority population is greater than fifty percent within a six-mile radius of the proposed HPP (please refer to **SOCIOECONOMICS Figure 1** in this Staff Assessment), and U.S. Census 1990 information that shows the low-income population is less than fifty percent within the same radius.

Based on this Visual Resources analysis, staff has not identified any unmitigated significant direct or cumulative impacts resulting from the construction or operation of the HPP. Therefore, there are no Visual Resources environmental justice issues related to this project.

CUMULATIVE IMPACTS

No reasonably foreseeable planned projects or current projects that would contribute to cumulative visual impacts in the project area have been identified.
The HPP would be located next to the Henrietta Substation. Due to the viewing angles and distances from KOP-1. KOP-2, KOP-3, and KOP-4, they would not appear as two

separated images. Rather, they would appear as one combined image off in the distance. Therefore, based on the views from KOP-1. KOP-2, KOP-3, and KOP-4, the cumulative impact of both the Henrietta Substation and the HPP are negligible.

From KOP-5, the solid structures of the HPP would block the view of the Henrietta Substation. So while the combined cumulative visual impact of the HPP and the substation from this view changes from the more "see-through" structures of the substation to the more solid structures of the HPP, the cumulative visual impact is not increased. The proposed mitigation measures would lessen the cumulative visual impact to less than significant.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS AND STANDARDS

LOCAL

Pursuant to the Kings County Planning Agency's amended Section IV.F of the Land Use Element of the Kings County General Plan (June 5, 2001) and the King's County Board of Supervisors amended Kings County Zoning Ordinance (July 5, 2001) the following are the standard Conditional Use Permit conditions relevant to Visual Resources:

1. Any sign, or signs, pertaining to the use and location on the site shall not exceed the total area of 40 square feet. The location of any such sign must be submitted to the Zoning Administrator for approval.

Basis for consistency: Staff's proposed condition of certification for signage (**VIS-5**) would ensure compliance with this provision.

2. Exterior lighting shall be hooded so as to be directed only on the site.

Basis for consistency: Staff's proposed conditions of certification for lighting (**VIS-4**) would ensure compliance with this provision.

3. Hazard control fencing shall be provided according to Section 701.B. of the Kings County Improvement Standards.

Basis for consistency: In the event that hazard control fencing is required, staff's proposed conditions of certification for fencing (**VIS-3**) would ensure compliance with this provision.

4. All open and unlandscaped portions of the lot shall be maintained in good condition, free from weeds, dust, trash and debris.

Basis for consistency: Staff's proposed conditions of certification for ground disturbance mitigation (**VIS-1**) allow for review and comment by the Kings County Planning Department and the Energy Commission staff.

Staff has reviewed the proposed HPP plans submitted in the AFC and has provided proposed conditions of certification to ensure consistency with the Kings County LORS. This staff assessment shows that the HPP is consistent with the above-listed visual resources-associated planning requirements.

RESPONSES TO AGENCY AND PUBLIC COMMENTS

AGENCY COMMENTS

Staff has not received any agency comments for visual resources issues.

PUBLIC COMMENTS

Staff has not received any public comments for visual resources issues.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The HPP as proposed with the recommended mitigation measures should cause no significant visual impacts.

RECOMMENDATIONS

If the Energy Commission approves the HPP, staff recommends that the Commission adopt the following proposed conditions of certification.

PROPOSED CONDITIONS OF CERTIFICATION

VIS-1 The project owner shall ensure that visual impacts of the project construction are adequately mitigated by implementing the following measures:

All evidence of construction activities, including ground disturbance due to staging and storage areas, shall be removed and remediated upon completion of construction. Any vegetation removed in the course of construction will be replaced on a 1-to-1, in-kind basis. Such replacement planting shall be monitored for a period of three years to ensure survival. During this period, all dead plants shall be replaced.

Protocol: The project owner shall submit a plan for restoring the surface conditions of any right-of-way disturbed during construction of the transmission line and underground pipelines. The plan shall include grading to the original grade and contouring and revegetation of the rights-of-way.

The project owner shall not implement the plan until receiving written approval of the submittal from the California Energy Commission Compliance Project Manager (CPM).

Verification: At least 60 (sixty) days prior to the start of site mobilization, the project owner shall submit the plan to the CPM for review and approval.

If the CPM notifies the project owner that any revisions of the plans 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.

The project owner shall notify the CPM within seven days after completing the surface restoration that the areas disturbed during construction are ready for inspection.

VIS-2 Prior to the first turbine roll, the project owner shall treat project structures, including the transmission facilities, and buildings in appropriate colors or hues that minimize visual intrusion and contrast by blending with the surrounding landscape, and shall treat those items in non-reflective, appropriately textured finishes. The project owner shall ensure that the transmission facilities use non-specular conductors, and non-reflective and non-refractive insulators. A specific treatment plan shall be developed for CPM approval to ensure that the proposed colors and treatment do not unduly contrast with the surrounding landscape. The plan shall be submitted sufficiently early to ensure that any pre-colored buildings, structures, and linear facilities will have colors approved and included in bid specifications for such buildings or structures. Prior to submittal of the plan to the CPM, the project owner shall submit the plan to the Kings County Planning Department for review and comment.

Protocol: Following review of the treatment plan by the Kings County Planning Department and submittal of the County's comments to the CPM, the

project owner shall submit the treatment plan for the project to the CPM for review and approval. The treatment plan shall include:

- specifications, and 11” x 17” color simulations, of the treatment proposed for use on project structures, including structures treated during manufacture;
- 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;
- documentation that non-specular conductors, and non-reflective and non-refractive insulators will be used on the transmission facilities; and,
- a procedure to ensure proper treatment maintenance for the life of the project.

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.

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 plans 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 the start of commercial operation, 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-3 All fences and walls for the project shall be treated with a non-reflective finish and appropriate colors or hues that minimize visual intrusion and contrast by blending with the surrounding landscape. Fences and walls for the project shall comply with the applicable requirements in the Kings County zoning ordinance that relate to visual resources.

Protocol: Prior to ordering fences and walls the project owner shall submit to the Kings County Planning Department for review and comment, and to the CPM for review and approval, design specifications for fences and walls and documentation of their conformance with the Kings County zoning ordinances. The submittal to the CPM shall include the County Planning Department's comments.

The project owner shall not order fences and walls until the submittal is approved by the CPM.

Verification: At least 30 (thirty) days prior to ordering fences and walls, the project owner shall submit the specifications and documentation 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-4 Prior to first turbine roll, 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 during both project construction and operation. The project owner shall develop and submit a lighting plan for the project to the CPM for review and approval. Prior to submittal of the plan to the CPM, the project owner shall submit the plan to the Kings County Planning Department for review and comment. Lighting shall not be installed before the plan is approved.

Protocol: Following review of the lighting plan by the Kings County Planning Department and submittal of the Department's comments to the CPM, the project owner shall submit the lighting plan for the project to the CPM for review and approval. The lighting plan shall require that:

- all new night lighting shall be of minimum necessary brightness consistent with operational safety;
- exterior lighting and parking lot lighting shall be provided in accordance with the Kings County ordinance;
- non-glare light fixtures shall be specified;
- lighting shall be 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 shall be provided with switches or motion detectors to light the area only when occupied; and
- a lighting complaint resolution form (following the format of **APPENDIX VISUAL RESOURCES-3**) shall be used by plant operations, to record all lighting complaints received and to document the resolution of those complaints. All records of lighting complaints shall be kept in the on-site compliance file.

Verification: At least 60 (sixty) days prior to 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 of receiving that notification, the project owner shall submit to the CPM a revised plan.

The project owner shall notify the CPM within 7 (seven) days of completing exterior lighting installation that the lighting is ready for inspection.

VIS-5 Where signs are visible by the public, the project owner shall design project signs using non-reflective materials and unobtrusive colors. The project owner shall ensure that signs comply with the applicable Kings County zoning requirements that relate to visual resources. The design of any signs required by safety regulations shall conform to the criteria established by those regulations.

Protocol: The project owner shall submit a signage plan for the project to the Kings County Planning Department for review and comment, and to the CPM for review and approval. The submittal to the CPM shall include the Department's comments.

The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM.

Verification: At least 60 (sixty) days prior to installing signage, 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 plan 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 signage that they are ready for inspection.

VIS-6 Prior to the start of commercial operation, the project owner shall prepare and implement an approved perimeter landscape plan to partially screen the west and south views of the power plant to the greatest extent possible. Fast growing tree species shall be used to ensure that maximum screening is

achieved as quickly as possible, will remain year-round, and will create the appearance of an orchard to blend the trees into the surrounding environment. This screen planting shall take the form of one row of trees placed between the HPP and 25th Avenue (western perimeter of the HPP) and three rows of trees along the southern perimeter of the HPP. These trees shall be spaced 25 feet apart in straight rows. The trees should be of a variety found in agricultural use in the surrounding region such as the Chinese Pistache tree (Pistacia chinensis) and be a minimum size of 15 gallon container. Suitable irrigation shall be installed to ensure survival of the plantings. Landscaping shall be installed consistent with the Kings County zoning ordinance.

Protocol: Prior to the start of commercial operation, the project owner shall submit a perimeter landscape plan to the Kings County Planning Department for review and comment, and to the CPM for review and approval. The submittal to the CPM shall include the Department's comments. The plan shall include, but not be limited to:

1. a detailed landscape, grading, and irrigation plan, at a reasonable scale, which includes a list of proposed tree and shrub species and installation sizes, and a discussion of the suitability of the plants for the site conditions and mitigation objectives. A list of potential tree species that would be viable in this location shall be prepared by a qualified arborist familiar with local growing conditions, with the objective of providing the widest possible range of species from which to choose. The plan shall demonstrate how the screening conditions called for above shall be met, including evidence provided by a qualified professional arborist that the species selected are both viable and available;

2. maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project; and

3. a procedure for monitoring for and replacement of unsuccessful plantings for the life of the project.

The project owner shall not implement the plan until the project owner receives approval of the plan from the CPM.

Verification: At least 60 days prior to the start of commercial operation, the project owner shall submit the perimeter landscape plan to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the plan 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 landscape screening that the planting and irrigation system are ready for inspection.

The project owner shall report landscape maintenance activities, including replacement of dead vegetation, for the previous year of operation in the Annual Compliance Report.

REFERENCES

GWF (GWF Energy LLC). 2001a. Application for Certification for the Henrietta Peaker Power Plant. Submitted to the California Energy Commission on August 27, 2001

GWF (GWF Energy LLC) Data Responses. Submitted to the California Energy Commission on November 13, 2001

Kings County General Plan 1998

Kings County Zoning Ordinance No. 269.53 (July 5, 2001)

APPENDIX VR-1: SUMMARY OF ANALYSIS

APPENDIX VR-2: 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

Energy Commission staff considered the following criteria in determining whether a visual impact would be significant.

STATE

The California Environmental Quality Act (CEQA) Guidelines define 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 visual significance (CA Code Regs., tit. 14 § 15382).

Appendix G of the Guidelines, under Aesthetics, lists the following four questions to be addressed regarding whether potential impacts of a project are significant.

1. Would the project have a substantial adverse effect on a scenic vista?

2. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

3. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

4. 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 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 and persistent visible exhaust plume?

Views Areas and Key Observation Points

The proposed project is visible from a number of areas in the project region. Energy Commission staff evaluated the visual impact of the project from each of these areas. Staff used Key Observation Points, or KOPs, as representative locations from which to conduct detailed analyses of the proposed project and to obtain existing conditions photographs and prepare visual simulations. KOPs are selected to be representative of the most critical locations from which the project would be seen. However, KOPs are not the only locations that staff considered in each view area.

Evaluation Process and Terminology

For each view area, staff considered the existing setting and the visual changes that the project would cause to determine impact significance. The results of staff's analysis are summarized in **VISUAL RESOURCES APPENDIX VR-1**. Photographs of existing conditions and photosimulations from each KOP are presented in **VISUAL RESOURCES APPENDIX VR-4** and **VR-5.**

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 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).

Viewer Concern

Viewer concern is a measurement of the level of viewer interest regarding the visual resources in the 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 concern. 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 have high viewer concern. Travelers on a

other highways and roads, including those in agricultural areas, may have moderate viewer concern depending on viewer expectations as conditioned by regional and local landscape features. Commercial uses, including business parks, typically have low-to-moderate viewer concern, though some commercial developments have specific requirements related to visual quality, with respect to landscaping, building height limitations, building design, and prohibition of above ground utility lines, that indicate high viewer concern. Industrial uses typically have the lowest viewer concern because workers are focused on their work, and generally are working in surroundings with relatively low visual value.

Viewer Exposure

The visibility of a landscape feature, the viewing distance to the landscape feature, the number of views, and the duration of the view, all affect the exposure of viewers to a given landscape feature. Visibility is highly dependent on screening and angle of view. The smaller degree of screening and/or the closer the feature is to the center of the view area, the greater its visibility is. Increasing distance reduces visibility. Viewer exposure can range from low values for all factors, such as a partially obscured and brief background view for a few motorists, to high values for all factors, such as an obstructed foreground view from a large number of residences.

Visual Sensitivity

The overall level of sensitivity of a view area to impacts due to a visual change is a function of visual quality, viewer concern, and viewer exposure and can range from low to high.

Types of Visual Change

To assess the visual changes that the project would cause, staff considered the following factors:

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 low to high. The presence of forms, lines, colors, and textures in the landscape similar to those of a proposed project indicates a landscape more capable of accepting those project characteristics than a landscape where those elements are absent. This ability to accept alteration is often referred to as visual absorption capability and typically is inversely proportional to visual contrast.

Dominance

Another measure of visual change is project dominance. Dominance is a measure of a feature's apparent size relative to other visual landscape features and the total field of view (scale dominance). A feature's dominance is affected by its relative location in the field of view and the distance between the viewer and the feature (spatial dominance). The level of dominance can range from subordinate to dominant.

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 visual impacts. The degree of view blockage can range from none to high.

APPENDIX VR-3: LIGHTING COMPLAINT RESOLUTION FORM

LIGHTING COMPLAINT RESOLUTION FORM

HENRIETTA PEAKER PROJECT Kings County, California
Complaintant'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)

APPENDIX VR-4: TURBINE EXHAUST VISIBLE PLUMES

Staff compared operating data, based on anticipated turbine exhaust parameters for the simple-cycle Henrietta Peaker Project (GW LM6000 PC Sprint turbines), to the results of the operating data for the simple-cycle Spartan I Energy Center Project (GE Model LM6000 turbines). Refer to Tables 1 and 2 for Henrietta and Spartan, respectively.

Table 1 – Turbine Operating and Exhaust Parameters
Henrietta Peaker Plant Project

Parameter	**Turbine Exhausts**					
Number of Units	2					
Stack Height	25.91 meters					
Stack Diameter	3.05 meters (per turbine)					
% Base Load	**100%**	**60%**	**100%**	**60%**	**100%**	**60%**
Ambient Temperature	**@15°F**	**@15°F**	**@63°F**	**@63°F**	**@115°F**	**@115°F**
Exhaust Temperature	679.8°K (764°F)	634.3°K (682°F)	712.0°K (822°F)	671.5°K (749°F)	715.9°K (829°F)	690.9°K (784°F)
Exhaust mass flow rate	1,130,760 lbs/hr	947,880 lbs/hr	1,035,000 lbs/hr	863,280 lbs/hr	956,520 lbs/hr	785,160 lbs/hr
Molecular Weight[1]	28.25 lbs/lb-mol	28.44 lbs/lb-mol	28.13 lbs/lb-mol	28.30 lbs/lb-mol	28.01 lbs/lb-mol	28.15 lbs/lb-mol
Moisture Content (% by wt)	5.87%	4.44%	6.74%	5.32%	7.31%	5.93%

Source: (Henrietta 2001, AFC Table 8.1-17 and Appendix B, Turbine Vendor Data).

Table 2 – Turbine Operating and Exhaust Parameters
Spartan I Energy Center Project

Parameter	**Turbine Exhausts**					
Number of Units	2					
Stack Height	24.4 meters					
Stack Diameter	3.8 meters (per turbine)					
Ambient Temperature	**@30°F**	**@40°F**	**@59°F**	**@80°F**	**@90°F**	**@100°F**
Exhaust Temperature	705.00°K (809.60°F)	723.89°K (846.60°F)	727.78°K (850.61°F)	730.56°K (855.61°F)	726.67°K (848.61°F)	733.33°K (860.59°F)
Exhaust mass flow rate	1,104,840 lbs/hr	1,074,960 lbs/hr	1,046,520 lbs/hr	992,880 lbs/hr	952,920 lbs/hr	912,960 lbs/hr
Molecular Weight[1]	28.17 lbs/lb-mol	28.15 lbs/lb-mol	28.09 lbs/lb-mol	28.03 lbs/lb-mol	28.00 lbs/lb-mol	27.92 lbs/lb-mol
Moisture Content (% by wt)	6.31%	6.51%	6.82%	7.18%	7.32%	7.76%

Source: (Fugundes 2001, Spartan 2001, AFC Table 5.13.1 and Appendix L-3).
[1] – Calculated from the exhaust data provided.

Staff compared exhaust temperatures and moisture content for henrietta and Spartan to determine the potential of visible water vapor plumes. Exhaust temperatures are slightly lower for Henrietta (682-829°F) vs. Spartan (810-861°F). Moisture contents are also slightly lower for Henrietta as compared to spartan. Diluting the exhasts for these two projects to a common temperature shows that they are essentially identical, which should be expected since these two projects use similar turbine sets. Therefore, the results from the plume analysis for Spartan, Attachment I, would reasonably estimate the plume potential for Henrietta.

ATTACHMENT I

SPARTAN I ENERGY CENTER TURBINE EXHAUST VISIBLE PLUME ANALYSIS

The following provides the assessment of the Spartan I Energy Center Project Phase I turbine exhausts visible plume analysis.

OPERATING DATA

The project consists of two LM6000 turbines. There is no wet cooling equipment proposed for the project. The applicant provided the following operating data for the turbine exhausts:

Table 1 –Turbine Operating and Exhaust Parameters

Parameter	**Turbine Exhausts**					
Number of Units	2					
Stack Height	24.4 meters					
Stack Diameter	3.8 meters (per turbine)					
Ambient Temperature	**@30°F**	**@40°F**	**@59°F**	**@80°F**	**@90°F**	**@100°F**
Exhaust Temperature	705.00°K (809.60°F)	723.89°K (846.60°F)	727.78°K (850.61°F)	730.56°K (855.61°F)	726.67°K (848.61°F)	733.33°K (860.59°F)
Exhaust mass flow rate	1,104,840 lbs/hr	1,074,960 lbs/hr	1,046,520 lbs/hr	992,880 lbs/hr	952,920 lbs/hr	912,960 lbs/hr
Molecular Weight[1]	28.17 lbs/lb-mol	28.15 lbs/lb-mol	28.09 lbs/lb-mol	28.03 lbs/lb-mol	28.00 lbs/lb-mol	27.92 lbs/lb-mol
Moisture Content (% by wt)	6.31%	6.51%	6.82%	7.18%	7.32%	7.76%

Source: (Spartan2001, AFC Table 5.13.1 and Appendix L-3).
[1] – Calculated from the exhaust data provided.

TURBINE EXHAUST VISIBLE PLUME MODELING ANALYSIS

A psychrometric analysis was performed to determine the potential for turbine exhaust visible plumes. The Combustion Stack Visible Plume (CSVP) model was used to estimate the potential visible plume frequency. A five-year meteorological data set for the years 1991 through 1995 from San Jose Airport and the operating data for the turbine exhausts provided by the Applicant was used for the CSVP model. The turbine exhaust parameters provided by the Applicant, as shown previously in Table 1, where used to perform the psychrometric modeling analysis. The results indicated that there was no potential for the formation of visible vapor plumes. The extremely high turbine exhaust temperature precludes the formation of visible water vapor plumes, even under the most extreme weather conditions. However, there is the potential that other visual phenomena, such as heat distortion of the view directly through the exhaust plume, may

be observed. This modeling analysis is specific to the simple cycle turbine operation for Spartan I Energy Center Project.

CONCLUSIONS AND RECOMMENDATIONS

The modeling analysis indicates that visible plumes are not expected to occur from the turbine exhausts. Therefore, no mitigation of turbine exhaust plumes is necessary for the Spartan I Energy Center Project.

REFERENCES

Spartan (Spartan Power LLC). 2001. Application for Certification, Spartan I Energy Center Project. Volumes 1 and 2. Submitted to the California Energy Commission, August 2001.

APPENDIX VR-5: VISUAL RESOURCES FIGURES

APPENDIX VR – 1
HENRIETTA PEAKER PROJECT STAFF ASSESSMENT - VISUAL RESOURCES SUMMARY OF ANALYSIS

VIEWPOINT		EXISTING VISUAL SETTING								VISUAL CHANGE					IMPACT SIGNIFICANCE	
				Viewer Exposure												
Key Observation Point (KOP)	Description	Visual Quality	Viewer Concern	Visibility	Distance Zone	Number of Viewers	Duration of View	Overall Viewer Exposure	Overall Visual Sensitivity	Description of Visual Change	Visual Contrast	Project Dominance	View Blockage	Overall Visual Change	Mitigation / Conditions	Impact Significance with Mitigation
KOP 1 **SR 198 looking SW** **VR Figure 3**	View looking southwest toward the HPP site from SR 198 & Lemoore NAS base housing. Location is1.4 miles east of 25th Avenue.	Low	Low to Moderate	Low	Distant Middleground	Moderate Motorists westbound on SR 198 & NAS base housing	Low to Moderate	Low	Low to Moderate	Project would cause low visual contrast with existing structures in regard to form and line. The project would occupy an insignificant part of the field of view and position in the landscape.	Low	Scale Dominance: Subordinate Spatial Dominance: Subordinate	Low	Low	VIS-2 VIS-4	Insignificant
KOP 2 **SR 198/NAS looking SW** **VR Figure 4**	View looking southeast from SR 198 & Lemoore NAS base housing. Location is 1 mile east of 25th Ave.	Low	Moderate	Low	Distant Middleground	Moderate Motorists westbound on SR 198 & NAS base housing	Low to Moderate	Low to Moderate	Low to Moderate	Similar to KOP-1; project would cause low visual contrast with existing structures in regard to form and line. The project would occupy an insignificant part of the field of view and position in the landscape.	Low	Scale Dominance: Subordinate Spatial Dominance: Subordinate	Low	Low	VIS-2 VIS-4	Insignificant
KOP 3 **Lemoore NAS Entrance looking south** **VR Figure 5**	View of the HPP site looking south on 25th Ave. from the Lemoore NAS entrance.	Low	Low	Low to Moderate	Middleground	Low to Moderate (Viewers leaving Lemoore NAS)	Low to Moderate	Low to Moderate	Low	Project would cause low visual contrast with existing structures in regard to form and line. The project would occupy an insignificant part of the field of view and position in the landscape.	Low to Moderate	Scale Dominance: Subordinate Spatial Dominance: Subordinate	Low	Low to Moderate	VIS-2 VIS-4	Insignificant
KOP 4 **EB SR 198 looking SE** **VR Figure 6**	View of the HPP looking southeast from motorists traveling eastbound on SR 198 from Interstate 5. Location is .5 miles west of 25th Ave, Lemoore NAS entrance.	Low	Moderate	Low	Distant Middleground	Moderate	Low	Low to Moderate	Low to Moderate	Project would cause low visual contrast with existing structures in regard to form and line. The project would occupy an insignificant part of the field of view and position in the landscape.	Low to Moderate	Scale Dominance: Subordinate Spatial Dominance: Subordinate	Low	Low	VIS-2 VIS-4	Insignificant
KOP 5 **25th Avenue looking north** **VR Figure 7**	Motorist's views traveling northbound on 25th Avenue toward Lemoore NAS entrance.	Low	Low to Moderate	Moderate to High	Near Foreground	Low	Moderate	Moderate to High	Moderate	Project would cause low visual contrast with existing structures in regard to form and line. The project would dominate the field of view and position in the landscape.	Low to Moderate	Scale Dominance: Co-Dominant Spatial Dominance: Co-Dominant	Moderate (no quality views)	Moderate	VIS-1 VIS-2 VIS-3 VIS-4 VIS-5 VIS-6	Less Than Significant

WASTE MANAGEMENT

Testimony of Alvin Greenberg, Ph.D.

INTRODUCTION

This section discusses the potential impacts of GWF Energy's proposed Henrietta Peaker Project (HPP) from the generation and management of hazardous and nonhazardous wastes. Energy Commission staff's objective is to ensure that there will be no significant adverse impacts from wastes generated during project construction, operation and closure. A brief overview of the project is provided, as are discussions regarding selected California Environmental Quality Act (CEQA) checklist items with respect to hazardous and nonhazardous wastes. A discussion of additional items listed in the Hazards and Hazardous Materials portion of the checklist may be found in the **Hazardous Materials Management** section of this staff analysis. The section concludes with staff's proposed conditions of certification.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

FEDERAL

Resource Conservation and Recovery Act (RCRA) (42 U.S.C., Section 6922)

The RCRA establishes requirements for the management of hazardous wastes from the time of generation to the point of ultimate treatment or disposal. Section 6922 requires the generators of hazardous wastes to comply with requirements regarding:

- record keeping practices which identify the quantities and disposal of hazardous wastes generated;
- labeling practices and use of appropriate containers;
- use of a recording or manifest system for transportation; and
- submission of periodic reports to the EPA or an authorized state agency.

Title 40, Code of Federal Regulations, Parts 260-272

These sections specify the regulations promulgated by the EPA to implement the requirements of RCRA as described above. To facilitate such implementation, the defining characteristics of each hazardous waste are specified in terms of toxicity, ignitability, corrosivity, and reactivity.

Title 49, Code of Federal Regulations, Parts 172, 173 and 179

These sections provide standards for the packing, labeling, documenting and shipping of hazardous wastes.

STATE

California Health and Safety Code Section 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 or 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 specific criteria and guidelines for classifying such wastes. The act also requires all hazardous waste generators to file specific notification statements with Cal EPA and creates a manifest system to be used when transporting such wastes.

California Health and Safety Code, Section 41700

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."

Title 14, California Code of Regulations, Section 17200 et seq. (Minimum Standards for Solid Waste Handling and Disposal)

These regulations specify the minimum standards applicable to the handling and disposal of solid wastes. They also specify the guidelines necessary to ensure that all solid waste management facilities comply with the solid waste management plans of the administering county agency and the California Integrated Waste Management Board.

Title 22, California Code of Regulations, Section 66262.10 et seq. (Generator Standards)

These sections establish specific requirements for generators of hazardous wastes with respect to handling and disposal. Under these requirements, all waste generators are required to determine whether or not their wastes are hazardous according to state-specified criteria. As with the federal program, every hazardous waste generator is required to obtain an EPA identification number, prepare all relevant manifests before transporting the waste off-site, and use only permitted treatment, storage, and disposal facilities. Additionally, all hazardous wastes are required to be handled only by registered hazardous waste transporters. Requirements for record keeping, reporting, packaging, and labeling are also established for each generator.

LOCAL

The Kings County Division of Environmental Health Services is the Certified Unified Permitting Agency (CUPA) which will administer and enforce compliance with the Hazardous Waste Control Act. This agency will also regulate hazardous waste management, handling and disposal procedures at the proposed project.

SETTING

GWF Energy LLC proposes to construct, own, and operate an electric generating facility located approximately 10 miles southwest of the community of Lemoore in Kings County, California. This facility, to be known as the Henrietta Peaker Project (HPP), will consist of two, natural-gas-fired, simple-cycle combustion turbine electric generators (CTG) rated at a nominal gross generating capacity of 46.9 megawatts (MW) each. The net electrical output of the facility would be 91.4 MW after station service power is consumed.

The proposed seven-acre project site is situated within a 20-acre parcel located south of, and adjacent to, the PG&E Henrietta Substation on the eastern side of 25th Avenue, approximately one mile south of State Route 198. The AFC identifies the surrounding land use as primarily agricultural and industrial with a few businesses and residences. The proposed project site is currently under cultivation in cotton. The HPP would be accessed directly from 25th Avenue. The site topography is flat. Please refer to the **Project Description** section for more detail.

Waste of both non-hazardous and hazardous natures will be generated during all phases of the facility's permitted existence as described below.

ANALYSIS OF IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport or use of hazardous materials?		X		
b) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
c) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?			X	
UTILITIES AND SERVICE SYSTEMS – Would the project:				

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
d) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	
e) Comply with federal, state, and local statutes and regulations related to solid waste?			X	

DISCUSSION OF IMPACTS

a. <u>Create a significant hazard to the public through routine transport or use of hazardous materials - Less Than Significant Impact with Mitigation Incorporated</u>

The HPP would generate minor quantities of hazardous wastes during project construction and operation. Consequently, both the project construction contractor (see AFC section 8.13.2.1) and the project operator would be generators of hazardous waste and would fall under the jurisdiction of both federal law (the Resource Conservation and Recovery Act – 42 U.S.C. 6901 et seq.), and state law (California Hazardous Waste Control Act – Health and safety Code Sections 25100 et seq.). These laws govern the storage, transport, and disposal of hazardous waste. Condition of Certification **WASTE-1** requires both HPP and its construction contractor to obtain unique hazardous waste generator identification numbers.

Construction

The types of hazardous wastes anticipated to be generated during project construction are listed in Table 8.13-1 on page 8.13-20 of the AFC, along with a description of each waste and the estimated quantity to be generated. These wastes include empty hazardous materials containers, solvents, used lubricating oils, paints, adhesives, batteries, oily rags and absorbents, combustion turbine lubricating flush oil, welding materials, lamps, and soils contaminated by small volumes of waste oil. As discussed in Section 8.13.2.1, the construction contractor will be responsible for all hazardous wastes during the construction phase. Many of the wastes will be recycled. All others will be appropriately classified, stored for fewer than 90 days, transported, and disposed of in a licensed hazardous waste treatment or disposal facility (TSDF) in accordance with all applicable LORS. (See recommended Condition of Certification **WASTE-2**).

Operation and Maintenance

Table 8.13-2 on page 8.13-21 of the Application lists the names, descriptions, and estimated volumes of hazardous wastes expected to be generated during facility operation and maintenance. These wastes include spent air pollution control catalysts, used oils, paints and thinners, used batteries, and limited other materials.

The most significant hazardous wastes include approximately 525 cubic feet of waste catalyst used for the removal of NO_X and carbon monoxide from the turbine exhaust gasses on a periodic basis; approximately 7,400 gallons of used turbine lubricating oil changed-out once each ten years; approximately 300 gallons per year of waste oil; and glycol turbine generator coolant replaced periodically.

The majority of the hazardous wastes can be recycled, such as used oils, solvents, batteries, glycol, and the spent SCR (Selective Catalytic Reduction NO_X control) and CO catalysts (both classified as hazardous due to heavy metal content). Wastewater from off-line turbine washing has a potential to be a hazardous waste, and so will be collected and stored in a dedicated storage tank where it can be analyzed for hazardous characteristics, then disposed of offsite as appropriate. The remaining wastes will require off-site disposal in permitted Class I facilities identified and described in AFC Section 8.13.3.2. These wastes will be appropriately classified, stored for fewer than 90 days, transported, and disposed of in accordance with all applicable LORS. Per AFC Section 8.13.7, HPP intends to follow the hierarchical approach to waste management that begins with reduction, then recycling, then treatment, followed finally by disposal when necessary.

All hazardous wastes generated during construction and operation will be managed in accordance with federal, state and local laws and regulations including licensing, personnel training, and record keeping and reporting. The wastes will be properly characterized, stored, and accumulated for time periods less than 90 days. They will then be transported offsite to approved treatment, storage, or disposal (TSD) facilities by licensed hazardous waste haulers using appropriate manifests. To help ensure the use of appropriate hazardous waste disposal facilities, staff proposes Condition of Certification **WASTE-3**, which requires the project owner to notify staff of any known enforcement actions against hazardous waste facilities or companies used for project wastes.

Because the waste management and disposal measures proposed by the Applicant will comply with all applicable federal and state laws, ordinances, regulations, and standards, staff expects that there will be no significant impacts to the public or the environment from the generation, transport or disposal of project-related hazardous wastes. Since final facility design and operational procedures may impact the amounts and types of wastes ultimately generated, the project owner would be required to submit waste management plans for project construction and operation to staff under Condition of Certification **WASTE-2**.

b. Handle hazardous waste within one-quarter mile of an existing or proposed school - No Impact

There are no schools within one-quarter mile of the proposed project.

In all cases, licensed hazardous waste transporters using proper containers and transportation procedures conforming to applicable Caltrans requirements would be used. Staff therefore concludes that impacts from the transportation of project-related hazardous wastes would be less than significant.

c. Located on a hazardous waste site - Less Than Significant Impact

As noted in AFC Section 8.13.1, Harding ESE performed a Phase I Environmental Site Assessment (ESA), of the entire 20-acre parcel that contains the proposed seven-acre project site and an additional five-acre temporary construction staging and laydown area. The report of the Assessment, included as Appendix F of the AFC, indicates that no adverse environmental conditions exist at the proposed HPP site. However, a crystalline substance was observed two to three inched below the surface of tilled soil. Staff's proposed **Condition of Certification Waste-5** will address this issue. Section 8.13.7 of the AFC lists eight mitigation measures proposed by the applicant to be put into practice to ensure that the project will not result in significant impacts to human health or the environment due to hazardous wastes. The recommended condition of certification **WASTE-2** requires HPP to prepare, submit, and follow a Waste Management Workplan including these eight measures. Waste related impacts resulting from pipeline and electric transmission line construction are expected to be less than significant.

d. Served by a landfill with sufficient capacity - Less Than Significant Impact

Solid waste disposal sites suitable for recycling and disposal of project-related non-hazardous construction and operation wastes are described in Section 8.13.3.1 of the AFC. Solid wastes from the city of Lemoore are locally collected and sorted and recyclables removed, then are transferred to the Chemical Waste Management facility in Kettleman City under agreement with the Kings Waste Recycling Authority. The Kettleman Hills facility has a permitted capacity of 10.7 million cubic yards with a remaining capacity of six million cubic yards. The facility plans to increase its permitted capacity to 16.7 million cubic yards, thereby extending its estimated closure date from 2007 to 2013.

During construction of the proposed project it is estimated that a total of approximately 40 cubic yards of nonhazardous solid waste would be generated each week consisting of paper, wood, glass, plastics, excess concrete, scrap metal, insulating materials, packaging containers, steel cuttings and electrical wiring. Recycling of empty containers, absorbent materials, scrap metal and wire will reduce the amounts of solid wastes during construction by about 20 cubic yards every two to three weeks, with the remainder being placed in covered temporary storage for periodic removal to the offsite disposal facility.

Project operation will generate minimal amounts of nonhazardous solid wastes typical of office and maintenance activities at an industrial facility. Anticipated wastes include rags, broken parts and components, empty containers, pallets, and other materials.

The total amounts of all nonhazardous solid wastes from both construction and operation activities will slightly reduce the available capacity of the noted landfill. However, it is estimated that this impact will be less than significant, particularly with the inclusion of recycling efforts.

e. Comply with LORS - Less Than Significant Impact

All nonhazardous solid wastes from both construction and operation activities will be handled and disposed of according to appropriate standard procedures and all applicable LORS. Project-related solid wastes will typically be placed in covered, temporary storage containers. Recyclable materials, especially metals, will be placed in segregated collection centers for accumulation. All solid wastes will be transported by certified haulers to permitted facilities in accordance with applicable laws, ordinances, regulations, and standards. Staff concludes that the proposed project will comply with all applicable federal, state, and local statutes and ordinances regarding solid waste management.

CUMULATIVE IMPACTS

Due to the minor amounts of wastes generated during project construction and operation, the insignificant impacts on individual recycling and disposal facilities, and the availability of additional regional landfills, cumulative impacts will be insignificant for both hazardous and nonhazardous wastes.

ENVIRONMENTAL JUSTICE

In the **Socioeconomics** section of this staff analysis, staff presents census tract information that shows significant minority populations within six miles of the proposed project. Based on the 2000 census, 44 percent of Kings County was non-white. Census 1990 information shows low-income population of less than 50 percent with the same radius. Since staff has concluded that there will be no significant direct or cumulative waste management-related impacts, there will also be no significant impact to any minority populations that are identified. Therefore, there are no environmental justice issues.

FACILITY CLOSURE

Facility closure, with respect to waste management, is discussed in section 8.13.4 of the AFC. During any type of facility closure (see staff's **General Conditions and Compliance** section which discusses planned, unexpected temporary, and unexpected permanent closure), the primary waste management related concern is that project wastes not pose any potentially significant problem to the public, workers, or the environment. Staff has determined that conditions of certification in the **General Conditions and Compliance** 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. Section 8.13.4.1 of the AFC commits to waste minimizing or elimination actions established prior to construction in Contingency and

Hazardous Materials Business plans, should temporary closure of the facility be necessary.

An approved on-site contingency plan is also required to protect public health and safety in the case of unexpected *permanent* closure. As above, 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.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No comments were received.

CONCLUSIONS

As discussed under section (e) above, staff concludes that the project will comply with all applicable LORS pertaining to the management and disposal of nonhazardous wastes. Additionally, because the Henrietta Peaker Project must implement a comprehensive program to manage hazardous wastes and obtain a hazardous waste generator identification number (required by law for any generator of hazardous wastes), staff also concludes that the project will comply with all applicable LORS pertaining to the management and disposal of hazardous wastes. All hazardous wastes will be properly managed on site, transported by permitted hazardous waste haulers, and treated or disposed of at permitted facilities.

Management of hazardous and nonhazardous wastes generated during construction and operation of the Henrietta Peaker Project will not result in any significant adverse impacts if GWF Energy implements the waste management procedures described in the Application and staff's proposed conditions of certification.

PROPOSED CONDITIONS OF CERTIFICATION

WASTE-1 Both the project owner and its construction contractor shall obtain unique hazardous waste generator identification numbers from the Department of Toxic Substances Control prior to generating any hazardous waste.

Verification: The project owner and its construction contractor shall keep copies of the identification numbers on file at the project site and notify the CPM via the monthly compliance report of their receipt.

WASTE-2 Prior to the start of construction and operation, the project owner shall prepare and submit to the Energy Commission CPM, for review and comment, a waste management plan for all wastes generated during construction and then operation and maintenance of the facility, respectively. The plans shall contain, at minimum, the following:

- a description of all waste streams, including projections of frequency, amounts generated, and hazard classifications;
- methods of managing each waste, including but not limited to: waste testing methods to assure correct classification, specific waste segregation and storage procedures and facilities, treatment methods and companies contracted with for treatment services, methods of transportation and companies contracted with for transportation, disposal requirements and sites, employee hazmat training, employee protection, spill response and reporting, and recycling and waste minimization/reduction plans. These methods must include, but not be limited to, the eight Waste Mitigation Measures listed by the applicant in section 8.13.7 of the AFC; and
- methods to be put into place to audit and ensure continuing compliance with the Workplan and all applicable LORS.

Verification: No less than 30 days prior to the start of construction 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 20 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-3 Upon becoming aware of any impending waste management-related enforcement action by any local, state, or federal authority, the project owner shall notify the CPM of any such action taken or proposed to be taken against the project itself, 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. The CPM shall notify the project

owner of any changes that will be required in the manner in which project-related wastes are managed.

WASTE-4 The project owner shall have a Registered Professional Engineer or Geologist, with experience in remedial investigation and feasibility studies, available for consultation during soil excavation and grading activities.

Verification: At least 30 days prior to the start of construction, the project owner shall submit the name, affiliation, qualifications and experience of the Registered Professional Engineer or Geologist contracted for consultation to the CPM for approval.

WASTE-5 The unidentified crystalline substance found in soil at the site as reported in the Phase I ESA along with any other potentially contaminated soil unearthed during excavation at either the proposed site or in linear facilities as evidenced by discoloration, odor, detection by handheld instruments, or other signs, shall be the subject of a review and evaluation by a Registered Professional Engineer or Geologist. This review and evaluation shall include at a minimum:

- an inspection of the site,
- a determination of the need for sampling to confirm the nature and extent of contamination,
- actions to ensure that verbal notification has been made to the project owner and the CPM, and
- the filing of a written report to the project owner and the CPM stating the recommended course of action.

Depending on the nature and extent of contamination, the Registered Professional Engineer or Geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the Registered Professional Engineer or Geologist, significant remediation may be required, the project owner shall contact representatives of the Central Valley Regional Water Quality Control Board, the Kings County Division of Environmental Health Services (CUPA), and the Northern California 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 Registered Professional Engineer or Geologist to the CPM within 5 days of their receipt.

REFERENCES

GWF (GWF Energy LLC). 2001. Henrietta Peaker Project, Application for Certification. Prepared for submission to the California Energy Commission, August, 2001.

GWF (GWF Energy LLC). 2001. Henrietta Peaker Project, Application for Certification Supplement. Prepared for submission to the California Energy Commission, October 9, 2001.

ENGINEERING ASSESSMENT

FACILITY DESIGN

Testimony of Shahab Khoshmashrab, Al McCuen and Steve Baker

INTRODUCTION

Facility Design encompasses the civil, structural, mechanical and electrical engineering design of the project. The purpose of the Facility Design analysis is to:

- verify that the laws, ordinances, regulations and standards (LORS) applicable to the engineering design and construction of the project have been identified;
- verify that the project and ancillary facilities have been described in sufficient detail, including proposed design criteria and analysis methods, to provide reasonable assurance that the project can be designed and constructed in accordance with all applicable engineering LORS, and in a manner that assures public health and safety;
- determine 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; and
- describe the design review and construction inspection process and establish Conditions of Certification that will be used to monitor and ensure compliance with the intent of the engineering 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 discussed in this analysis include:

- Identification of the engineering LORS applicable to facility design;
- Evaluation of the applicant's proposed design criteria, including the identification of those criteria that are essential to ensuring public health and safety;
- Proposed modifications and additions to the Application for Certification (AFC) that are necessary to comply with applicable engineering LORS; and
- Conditions of Certification proposed by staff to ensure that the project will be designed and constructed to assure public health and safety and comply with all applicable engineering LORS.

SETTING

GWF Energy, LLC (GWF) proposes to construct and operate a nominally rated 91.4-megawatt simple cycle power plant known as Henrietta Peaker Power Project. The project will be located in an unincorporated portion of Kings County. The site will occupy approximately 7 fenced acres located about 29 miles southwest of Hanford and will lie in seismic zone 4. For more information on the site and related project description, please see the **Project Description** section of this document. References to "the County" designate Kings County. Additional engineering design details are contained in the Application for Certification (AFC), in Appendices H1 through H5 (GWF 2001a).

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Lists of LORS applicable to each engineering discipline (civil, structural, mechanical and electrical) are described in the AFC (GWF 2001a, AFC Appendices H1 through H5 and Table 2-5). Some of these LORS include; California Building Code (CBC), American National Standards Institute (ANSI), American Society of Mechanical Engineers (ASME), American Society for Testing and Materials (ASTM) and American Welding Society (AWS).

ANALYSIS

The basis of this analysis is the applicant's proposed analysis and construction methods and list of engineering LORS and design criteria set forth in the AFC.

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 Appendices H1 through H5 for a representative list of applicable industry standards), design practices, and construction methods in preparing and developing the site. Staff concludes that the project, including its linear facilities, will likely comply with all applicable site preparation LORS, and proposes Conditions of Certification (see below and the **Geology and Paleontology** section of this document) 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, that require a long lead time to repair or replace, or that are used for the storage, containment, or handling of hazardous or toxic materials. Major structures and equipment will be identified through compliance with proposed Condition of Certification **GEN-2** (below).

The AFC contains lists of the civil, structural, mechanical and electrical design criteria that demonstrate the likelihood of compliance with applicable engineering LORS, and that staff believes are essential to ensuring that the project is designed in a manner that protects public health and safety.

The project shall be designed and constructed to the 1998 edition of the California Building Code (CBC), and other applicable codes and standards in effect at the time design and construction of the project actually commence. In the event the initial designs are submitted to the Chief Building Official (CBO) 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.

Certain structures in a power plant may be required, under the CBC, to undergo dynamic lateral force (structural) analysis; others may be designed using the simpler static analysis 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.

PROJECT QUALITY PROCEDURES

The AFC (GWF 2001a, § 2.4.5) describes a Project Quality Program that will be used on the project 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 power plant. Compliance with design requirements will be verified through an appropriate program of inspections and audits. Employment of this Quality Assurance/Quality Control (QA/QC) program will ensure that the project is actually designed, procured, fabricated and installed as contemplated in this analysis.

COMPLIANCE MONITORING

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 delegates typically include the local building official and/or 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 will invite the local building authority, the County, or a third party engineering consultant, to act as CBO for the project. When an entity has been identified to perform the duties of CBO, Energy Commission staff will complete a Memorandum of Understanding (MOU) with that entity that outlines its roles and responsibilities and those of its subcontractors and delegates.

Staff has developed proposed Conditions of Certification to ensure public health and safety and compliance with engineering design LORS. Some of these conditions address the roles, responsibilities and qualifications of the applicant'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 subject to CBO review and approval shall 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 in scheduling construction activities, these conditions are written to require that no element of construction of permanent facilities subject to CBO review and approval, which would be difficult to reverse or correct, 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 bear 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

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 and restoration of the site. 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 for review and approval prior to the commencement of decommissioning. The plan shall include a discussion of the following items:

- proposed decommissioning activities for the project and all appurtenant facilities constructed as part of the project;
- all applicable LORS, local/regional plans, and the conformance of the proposed decommissioning activities to the applicable LORS and local/regional plans;

- the activities necessary to restore the site if the plan requires removal of all equipment and appurtenant facilities; and
- decommissioning alternatives, other than complete site restoration.

The above requirements should serve as adequate protection, even in the unlikely event of project abandonment. Staff has proposed general conditions (see **General Conditions**) to ensure that these measures are included in the Facility Closure plan.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

1. The laws, ordinances, regulations, and standards (LORS) identified in the AFC and supporting documents are those applicable to the project.

2. Staff has evaluated the proposed engineering LORS, design criteria and design methods in the record, and concludes that the design, construction and eventual closure of the project are likely to comply with applicable engineering LORS.

3. The Conditions of Certification proposed will ensure that the proposed facilities are designed and constructed in accordance with applicable engineering LORS. This will occur through the use of design review, plan checking and field inspections, which are to be performed by the CBO or other Energy Commission delegate. Staff will audit the CBO to ensure satisfactory performance.

4. 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 as required in the General Conditions portion of this document prior to the commencement of decommissioning, the decommissioning procedure is likely to occur in compliance with all applicable engineering LORS.

RECOMMENDATIONS

Energy Commission staff recommends that:

1. The Conditions of Certification proposed herein be adopted to ensure that the project is designed and constructed to assure public health and safety, and to ensure compliance with all applicable engineering LORS;

2. The project be designed and built to the 1998 CBC (or successor standard, if such is in effect when the initial project engineering designs are submitted for review); and

3. The CBO shall review the final designs, conduct plan checking and perform field inspections during construction, and Energy Commission staff shall 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) and all other applicable engineering 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 in the **Transmission System Engineering** section of this document.

Protocol: In the event that the initial engineering designs are 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 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 Prior to submittal of the initial engineering designs for CBO review, 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 List. The schedule shall contain a list of proposed submittal packages of designs, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide specific packages to the CPM when requested.

Verification: At least 60 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 and to the CPM the schedule, the Master Drawing List, and the Master Specifications List of documents to be submitted to the CBO for review and approval. These documents shall be the pertinent design documents for the major structures and equipment listed in Table 1 below. Major structures and equipment shall be added to or deleted from the Table only with CPM approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

TABLE 1: MAJOR STRUCTURES AND EQUIPMENT LIST

Equipment/System	Quantity (Plant)
Combustion Turbine Generator Foundation and Connections	2
SCR Unit Structure, Foundation and Connections	2
Transformer Foundation and Connections	2
CT Inlet Air Filter/Duct Structure, Foundation and Connection	2
Exhaust Stack Structure, Foundation and Connections	2
Fuel Gas Filter Foundation and Connections	2
Fuel Gas Compressor Skid 1A, 1B, 1C Foundation and Connections	1
Fuel Gas Cooler Foundation and Connections	1
Fuel Gas Waste Sump/Blower Foundation and Connections	1
Gas Turbine Enclosure Structure, Foundation and Connections	2
Ammonia Storage Tank & Pump Foundation and Connections	1
Auxiliary Skid Foundation and Connections	2
Air Compressor Skid Foundation and Connections	1
Oil/Water Separator Foundation and Connections	1
Waste Water Wash Tank Foundation and Connections	1
Fuel Gas Metering Station Structure, Foundation and Connections	1
Administration Building Structure, Foundation and Connections	1
Continuous Emission Monitoring Equipment Foundation and Connections	2
Ammonia Injection Skid Foundation and Connections	2
Raw Water Forwarding Pumps Foundation and Connection	1
Raw Water Storage Tank Foundation and Connections	1
Water Treatment Module Foundation and Connections	1
Waste Water Storage Tank Foundation and Connections	1
Waste Water Process Equipment Foundation and Connections	1
Demineralized Water Storage Tank Foundation and Connections	1
Demineralized Water Injection Forwarding Pumps Foundation and Connections	1
Water Injection Boost Pump Skid 2A, 2B Foundation and Connections	2
Sprint Performance Skid Foundation and Connections	2
High Pressure Demineralized Water Filter Skid Foundation and Connections	2
Inlet Air Fogger Foundation and Connections	2
Closed Loop Cooler Foundation and Connections	2
Anti-Icing Heat Exchanger System Foundation and Connections	2
Maintenance Building Structure, Foundation and Connections	1

Equipment/System	Quantity (Plant)
Power Control Module Structure, Foundation and Connections	1
Emergency Diesel Generator Foundation and Connections	1
Lighting Panel with Transformer Foundation and Connections	1
Auxiliary Transformer Foundation and Connections	2
Gas Compressor Transformer Foundation and Connections	2
480 V Distribution Switchboard Foundation and Connections	1
Gas Compressor 480 V MCC Foundation and Connections	1
4160 Distribution Panel Foundation and Connections	1
Medium Voltage Switch Gear Foundation and Connections	2
Transformer Fire Wall Structure, Foundation and Connections	1 Lot
Potable Water Systems	1 Lot
Drainage Systems (including sanitary drain and waste)	1 Lot
High Pressure and Large Diameter Piping	1 Lot
HVAC and Refrigeration Systems	1 Lot
Temperature Control and Ventilation Systems (including water and sewer connections)	1 Lot
Building Energy Conservation Systems	1 Lot
Switchyard, Buses and Towers	1 Lot
Electrical Duct Banks	1 Lot

GEN-3 The project owner shall make payments to the CBO for design review, plan check and construction inspection based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. These fees may be consistent with 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], adjusted for inflation and other appropriate adjustments; may be based on the value of the facilities reviewed; may be based on hourly rates; or may be as otherwise agreed by the project owner and the CBO.

Verification: The project owner shall make the required payments to the CBO in accordance with the agreement between the project owner and the CBO. 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 in the **Transmission System Engineering** section of this document.

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.

Protocol: The RE shall:

1. Monitor construction progress of work requiring CBO design review and inspection to ensure compliance with LORS;

2. Ensure that construction of all the facilities subject to CBO design review and inspection 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 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 power plant 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 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, power plant 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.

Protocol: The project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all responsible engineers assigned to the project [1998 CBC, Section 104.2, Powers and Duties of Building Official].

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned responsible 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 requiring design review and inspection by the CBO. 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 engineering 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 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, 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 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 [1998 CBC, Chapter 17, Section 1701.3, Duties and Responsibilities of the Special Inspector]; 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 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend the corrective action required [1998 CBC, Chapter 1, Section 108.4, Approval Required; Chapter 17, Section 1701.3, Duties and Responsibilities of the Special Inspector; Appendix Chapter 33, Section 3317.7, Notification of Noncompliance]. 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 transmit a copy of the CBO's approval of any corrective action taken to resolve a discrepancy to the CPM in the next Monthly Compliance Report. If any corrective action is disapproved, the project owner shall advise the CPM, within five days, of 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 that has undergone CBO design review and approval. 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]. The project owner shall retain one set of approved engineering plans, specifications and calculations at the project site or at another accessible location during the operating life of the project [1998 CBC, Section 106.4.2, Retention of Plans].

Verification: Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM in the next Monthly Compliance Report, (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. After storing final approved engineering plans, specifications and calculations as described above, the project owner shall submit to the CPM a letter stating that the above documents have been stored and indicate the storage location of such documents.

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 (or a lesser number of days mutually agreed to by the project owner and the CBO), the project owner shall submit the documents described above to the CBO for design 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 to resume earthwork and construction in the affected areas, the project owner shall provide to the CPM a copy of the CBO's approval.

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 for which a grading permit is required shall be subject to inspection by the CBO.

Protocol: If, in the course of inspection, it is discovered that the work is not being performed in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO, and the CPM [1998 CBC, Appendix Chapter 33, Section 3317.7, Notification of Noncompliance]. 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.

STRUC-1 Prior to the start of any increment of construction of any major structure or component listed in **Table 1** of Condition of Certification **GEN-2**, above, the project owner shall submit to the CBO for design 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 the following items (from **Table 1**, above):

1. Major project structures;

2. Major foundations, equipment supports and anchorage;

3. Large field fabricated tanks;

4. Turbine/generator pedestal; and

5. Switchyard structures.

Construction of any structure or component shall not commence until the CBO has approved the lateral force procedures to be employed in designing that structure or component.

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 60 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 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 of any structure or component listed in Table 1 of Condition of Certification GEN-2 above, 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 non-conforming 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 engineering LORS.

STRUC-2 The project owner shall submit to the CBO the required number of sets of the following documents related to work that has undergone CBO design review and approval:

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 structural 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 [1998 CBC, Chapter 17, Section 1701.3, Duties and Responsibilities of the Special Inspector]. 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.

Verification: At least 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 toxic or hazardous materials, the project owner shall submit to the CBO for design 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 major piping or plumbing construction, the project owner shall submit, for CBO design review and approval, the proposed final design, specifications and calculations for each plant major piping and plumbing system listed in Table 1, Condition of Certification GEN 2, above. Physical layout drawings and drawings not related to code compliance and life safety need not be submitted. The submittal shall also include the applicable QA/QC procedures. Upon completion of construction of any such major piping or plumbing 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, Section 108.4, Approval Required; 1998 California Plumbing Code, Section 103.5.4, Inspection Request, Section 301.1.1, Approval].

Protocol: The responsible mechanical engineer shall stamp and sign all plans, drawings and calculations for the major piping and plumbing systems subject to the CBO design review and approval, and submit a signed statement to the CBO when the said proposed piping and plumbing systems have been designed, fabricated and installed in accordance with all of the applicable laws, ordinances, regulations and industry standards [Section 106.3.4, Architect or Engineer of Record], which may include, but not be limited to:

- 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);
- Title 24, California Code of Regulations, Part 5 (California Plumbing Code);
- Title 24, California Code of Regulations, Part 6 (California Energy Code, for building energy conservation systems and temperature control and ventilation systems);
- Title 24, California Code of Regulations, Part 2 (California Building Code); and
- Specific City/County code.

The CBO may deputize inspectors to carry out the functions of the code enforcement agency [1998 CBC, Section 104.2.2, Deputies].

Verification: At least 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 major piping or plumbing construction listed in Table 1, Condition of Certification GEN-2 above, the project owner shall submit to the CBO for design review and approval the final plans, specifications and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the applicable LORS, and shall send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

The project owner shall transmit to the CPM, in the Monthly Compliance Report following completion of any inspection, a copy of the transmittal letter conveying the CBO's inspection approvals.

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].

Protocol: 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 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 design review and approval, the above listed documents, 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 transmit to the CPM, in the Monthly Compliance Report following completion of any inspection, a copy of the transmittal letter conveying the CBO's and/or Cal-OSHA inspection approvals.

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 design 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 CBC and other applicable codes. 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 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 CBC and other applicable codes, with a copy of the transmittal letter to the CPM.

ELEC-1 Prior to the start of any increment of electrical construction for electrical equipment and systems 480 volts and higher, listed below, with the exception of underground duct work and any physical layout drawings and

drawings not related to code compliance and life safety, the project owner shall submit, for CBO design review and approval, the proposed final design, specifications and calculations [CBC 1998, Section 106.3.2, Submittal documents]. Upon approval, the above listed plans, together with design changes and design change notices, shall remain on the site or at another accessible location for the operating life of the project. 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 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; and

2. system grounding drawings.

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; and

7. lighting energy calculations.

Protocol: C. The following activities shall be reported to the CPM in the Monthly Compliance Report:

- receipt or delay of major electrical equipment;
- testing or energization of major electrical equipment; and
- 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 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 design review and approval the above listed documents. The project owner shall include in this submittal a copy of

the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS, and shall send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

REFERENCES

GWF Energy, LLC (GWF). 2001 a. Application for Certification for the Henrietta Peaker Power Plant (01-AFC-18). Submitted to the California Energy Commission on August 27, 2001.

GEOLOGY, MINERAL RESOURCES, AND PALEONTOLOGY

Testimony of Dr. Dal Hunter

INTRODUCTION

In the geology and paleontology section, staff discusses potential impacts of the proposed Henrietta Peaker Project (HPP) regarding geological hazards, geological (including mineralogical) and paleontological resources. Energy Commission staff's objective is to ensure that there will be no significant adverse impacts to significant geological and paleontological resources during project construction, operation and closure. All of the California Environmental Quality Act (CEQA) checklist items for geology and paleontology were designated by Energy Commission staff as "no impact" or "less than significant with mitigation incorporated." A brief geological and paleontological overview of the project is provided, as are comments regarding selected CEQA checklist items with respect to geological hazards and resources, and paleontological resources. The section concludes with staff's proposed monitoring and mitigation measures with respect to geological hazards, and geological and paleontological resources.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

The applicable LORS are listed in the Application For Certification (AFC), in Section 8.15.5 and 8.16.5 of the AFC (GWF, 2001a). A brief description of the LORS for geological hazards and resources, and paleontological resources follows.

FEDERAL

The proposed HPP is not located on federal property but will be connected to the existing Pacific Gas & Electric (PG&E) Henrietta Substation. This substation currently supplies power to the United States Naval Air Station at Lemoore (about one mile to the north) via a 70 kV transmission line. There are no federal LORS for geological hazards and resources or grading for the proposed project. The Federal Antiquities Act of 1906 (16 United States Codes 431 *et seq*), in part, protects paleontological resources from vandalism and unauthorized collection on federal land. The National Environmental Policy Act of 1968, as amended, requires analysis of potential environmental impacts to important historic, cultural and natural aspects of our national heritage (Title #42 United States Code, Sections 4321-4327; Title 40 Code of Federal Regulations, Section 1502.25).

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 [CBC, 1998]). The CBC supplements the UBC's grading and construction ordinances and regulations.

The 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" are a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources (Society of Vertebrate Paleontologists [SVP], 1994). They were adopted in October 1994 by a national organization of vertebrate paleontologists (SVP).

The Kings County General Plan provides a brief discussion of geologic hazards in Section II, under the heading "Safety Element" (Kings County Board of Supervisors, 1983). The following goal, objective and associated policies are listed.

GOAL 36: Minimize loss of life and personal property caused by geologic hazards.

Objective 36.1: Regulate new construction to achieve acceptable levels of risk posed by geologic hazards.

Policy 36a: Prevent structural failure caused by groundshaking and other geologic hazards by adopting the latest version of the Uniform Building Code.

Policy 36b: Consider seismic hazards in the environmental review process. Include landslides, subsidence, liquefaction, flooding, local soils, and geologic conditions.

Policy 36c: To further reduce possible damage in case of earthquake, require open space land uses in areas identified for hazardous activities.

Policy 36d: Use the Uniform Code for the Abatement of Dangerous Buildings and the Uniform Housing Code to further assure safe construction and rehabilitation.

Policy 36e: Prohibit new construction directly astride known faults or fault zones. Allow only nonstructural land uses in such zones.

In addition, the discussion states: "There are no areas within Kings County in which a particular land use should be prohibited because of seismic conditions. Construction in the more critical seismic zones, however, would probably require additional reinforcement to offset increased, expected seismic forces."

SETTING

REGIONAL AND SITE GEOLOGY

The Henrietta Peaker project site is located in the south-central portion of the Great Valley physiographic province of California at 36.240,150,2 degrees north latitude by 119.901,721,3 degrees west longitude. The Great Valley is bounded by the Klamath and Cascade Ranges on the north, the Sierra Nevada Mountains to the east, the Coast Ranges to the west, and the Tehachapi Mountains on the south. The project site is located in the southern end of the San Joaquin Valley, in the extreme northwest corner of Kings County, California. The HHP is on the eastern side of 25th Avenue, approximately 1 mile south of State Route 198 and directly south of the existing PG&E Henrietta Substation. The Naval Air Station at Lemoore lies approximately one mile to the north, just across State Route 198.

The site is nearly flat and lies approximately 225 feet above mean sea level. The natural sloughs and meandering creeks that originally dissected the area have been filled and leveled for farming. The HPP site is located in the largest ground water basin in the state, the San Joaquin Valley. Shallow ground water in the perched aquifer was encountered at a depth of approximately six feet in July 2001 by the project geotechnical consultant (Kleinfelder, 2001). Long-term ground water withdrawal from the deeper aquifers has resulted in as much as 30 feet of surface subsidence in the San Joaquin Valley (Ireland, et al, 1984).

The HPP site lies in an area of undifferentiated fluvial, alluvial, and lacustrine deposits associated with the Kings River. The geotechnical borings indicate that the surface soils generally consist of sandy to silty clay and clayey silt, interbedded with lenses of silty sand and poorly graded sand (Kleinfelder, 2001). These soils extend to the full depth of exploration (91.5 feet) but include interbeds of silty sand and clean (poorly graded) sand at depths between 20 and 45 feet. There is no published detailed geologic mapping that includes the site. Regional scale mapping suggests that the fluvial/alluvial soils may be underlain by sandstone and shale deposited in a marine basin (CDMG, 1966). The HPP site is not crossed by any known active or potentially active faults and does not lie within an Alquist-Priolo special studies zone (ICBO, 1998). There are, however, a number of active faults within a 50- to 60-mile radius of the site, including the San Andreas Fault and the Coastal Range/Sierran block boundary zone, both of which have produced major historical earthquakes.

SITE SEISMICITY

Energy Commission staff reviewed the California Division of Mines and Geology (CDMG) publications “Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions,” (CDMG, 1994), Maps of Known Active Fault Near-source Zones in California and Adjacent Parts of Nevada (International Conference of Building Officials [ICBO], 1998), and the Alquist-Priolo Special Studies Zone Act (CDMG, 1997). The project is located within Seismic Zone 3 as delineated on Figure 16-2 of the CBC, but not within an Alquist-Priolo Special Studies Zone.

The Coast Ranges/Sierran Block (CRSB) boundary zone is a complex faulting system along the boundary between the Sierra Nevada mountain block and the Coast Range mountain block. The Kettleman Hills segment of the CRSB is situated approximately 12 miles southwest of the HPP. This fault is thought to be capable of generating a maximum credible earthquake (MCE) of magnitude 6.8 (Wong, Ely and Kollmann, 1988). The 1983 Coalinga earthquake (Richter magnitude 6.5) and the 1985 North Kettleman Hills earthquake (Richter magnitude 6.0+) both occurred along the Kettleman Hills segment of the CRSB, nearly due west of the proposed HPP (Wong and Ely, 1983; Working Group on Northern California Earthquake Potential, 1996). The San Andreas Fault, a fault with known potential for activity, lies approximately 34 miles to the southwest. This major northwest-trending transform fault parallels the CRSB and has the potential to generate a magnitude 7.8 earthquake (ICBO, 1998). Historical earthquakes along the San Andreas Fault in this area have included the 1857 Fort Tejon earthquake at an estimated magnitude of 7.8. A number of other earthquakes have occurred along this segment of the San Andreas Fault between 1901 and 1906, ranging in magnitude from 6.3 to 6.5 (Townley and Allen, 1939; Bakun and McEvilly, 1984).

The applicant has estimated the maximum peak ground acceleration at this site would be 0.35g (35 percent of the acceleration of the force of gravity) as a result of a magnitude 6.5 earthquake on the Kettleman Hills portion of the CRSB. The U.S. Geological Survey (Frankel et al, 1987) indicates that there is a 10 percent probability that a peak ground acceleration of 0.24 g will be exceeded in any 50-year period. Similar mapping provided by the CDMG indicates a peak ground acceleration in the range of 0.2 g to 0.3 g for the same 10 percent probability in 50 years (CDMG, 1996). In all cases the estimated acceleration is based on the behavior of weak rock/stiff soil and may be amplified by the relative soft (S_E) soil profile found at the site by the geotechnical consultant (Kleinfelder, 2001).

Liquefaction, Dynamic Compaction, Hydrocompaction, Subsidence, Expansive Soils, and Landslides

Liquefaction is a nearly complete loss of soil shear strength that can occur during an earthquake. During the seismic event, cyclic shear stresses cause the development of excessive pore water pressure between the soil grains, greatly reducing the internal strength of the soil. This phenomenon is generally limited to unconsolidated, clean to silty sand (up to 35 percent non to slightly plastic fines) and very soft silts, all lying below the ground water table. The higher the ground acceleration caused by the earthquake, the more likely liquefaction is to occur. Severe liquefaction can result in catastrophic settlements of overlying structural improvements and lateral spreading of the liquefied layer when confined vertically but not horizontally. The geotechnical investigation contained in the AFC indicates ground water is present at depths between 3-1/2 and 6 feet below existing grade (Kleinfelder, 2001). The borings also indicate the site is underlain by sandy to silty clay soils to the depths explored (91.5 feet) with interbeds of silty sand and poorly graded sand. The sand layers seem to dip to the south and were found at depths of about 20 feet and between 33 and 45 feet. The geotechnical consultant concluded that liquefaction in the saturated, granular sediments would be unlikely, even with a maximum credible earthquake on the CRSB fault zone. No significant seismically induced settlement would be expected (Kleinfelder, 2001).

Staff concurs with the methodologies and conclusions presented by the Applicant with regard to liquefaction and seismically induced settlement.

Partially saturated soils can possess bonds that are a result of chemical precipitates that accumulate under semi-arid conditions. Such soluble compound bonds provide the soils with cohesion and rigidity; however, these bonds can be destroyed upon prolonged submergence. When destroyed, a substantial decrease in the material's void ratio is experienced even though the vertical pressure does not change. Materials that exhibit this decrease in void ratio and corresponding decrease in volume with the addition of water are defined as collapsible soils. Collapsible soils are typically limited to fine flash flood deposits, true loess, clayey loose sands, loose sands cemented by soluble salts, and windblown silts. Based on the nature and shallow water table of the existing native soils, hydrocompaction potential is not considered significant at the proposed HPP site.

Ground subsidence is typically caused when ground water is drawn down by irrigation activities such that the effective unit weight of the soil mass is increased, which in turn increases the effective stress on underlying soils, resulting in consolidation/settlement of the underlying soils. Mapping of the San Joaquin Valley indicates that about 8 feet of subsidence has occurred in an area about one mile south of the HPP site. As much as 4 feet of subsidence may have occurred nearer the site between 1920 and 1970 (Ireland, et al, 1984; USGS, 2000). Since subsidence of this type is a regional occurrence, it would not be expected to adversely affect the HPP. However, possible subsidence effects might need to be considered in geotechnical design, particularly for underground pipelines.

Soil expansion occurs when clay-rich soils, with an affinity for water, exist in-place at a moisture content below their plastic limit. The addition of moisture from any source (typically precipitation, irrigation, capillary tension from ground water, water line breaks, etc.) allows the clay soils to draw water molecules in their structure which, in turn, causes an increase in the volume of the soil. This increase in volume can cause movement of overlying structural improvements. The geotechnical report identified lean clays with moderate to high expansion potential in the upper 30 feet of the soils (Kleinfelder, 2001). Clay soils below the water table are saturated and thus prone to consolidation (settlement) rather than expansion. The Applicant has proposed the use of deep foundations to mitigate settlement. Shallow foundations will be designed to mitigate expansive soil, as appropriate. A site visit by Energy Commission staff verified the presence of expansive surface clays that also contain a significant percentage of unidentified salts. Testing performed by the geotechnical consultant showed low levels of soluble sulfate and chloride. The unidentified salts are most likely related to fertilizer and/or other chemicals used in growing cotton.

Landslides typically involve rotational slump failures within surficial soils/colluvium and/or weakened bedrock that are usually implemented by an increase of the material's moisture content above a layer which exhibits a relatively low strength. Debris-flows are shallow landslides that travel downslope very rapidly as muddy slurry. Based on the staff's review of the site topography (flat) and geology as presented in the AFC, the potential for landslides and debris-flows at the site is considered low (GWF, 2001a).

GEOLOGICAL, MINERALOGICAL, AND PALEONTOLOGICAL RESOURCES

Energy Commission staff have reviewed applicable geologic mapping and literature for this area (CMDG 1999; CDMG, 2001). Based on this information, the information contained in the AFC (GWF, 2001a), and a site visit, there are no known geological or mineralogical resources located on or immediately adjacent to the proposed HPP site.

During the site visit staff noted that the site and surrounding area are deeply cultivated. As a consequence, the potential for finding significant fossils in the upper few feet of the soils profile is remote.

A paleontological resources field survey and sensitivity analysis was conducted by the applicant for the proposed HPP and the proposed linear facility improvements to support the HPP. No fossil materials were identified by the field survey. However, several paleontological localities are, reportedly, present near the site in the same geologic formation as present beneath the site's disturbed surface soils. As a result, the proposed HPP site has been assigned a high sensitivity rating for paleontological resources (Lawler, 2001). Mitigation procedures (see **PAL-1** through **PAL-7)** are necessary for areas with a highly sensitive rating.

IMPACTS

ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
GEOLOGY – Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:			X	
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
ii) Strong seismic ground shaking?		X		
iii) Seismic-related ground failure, including liquefaction?				X
iv) Landslides?				X
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				X
d) Be located on expansive soil, as defined in Table 18- 1-B of the Uniform Building Code (1994), creating substantial risks to life or property?		X		
MINERAL RESOURCES – Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
PALEONTOLOGICAL RESOURCES – Would the project:				
a) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		

DISCUSSION OF IMPACTS

Geology

A. Expose People or Structures to Potential Substantial Adverse Effects: Less Than Significant Impact

I. Rupture of Known Earthquake Faults

No Impact
The proposed HPP and related linear facilities are not located on a fault, as delineated by the ICBO (1998). Rupture is highly unlikely on sites where there are no pre-existing faults.

II. Strong Seismic Ground Shaking

Less Than Significant Impact with Mitigation Incorporated
The proposed project is located in CBC Seismic Zone 3. The estimated peak horizontal ground acceleration for the site is approximately 0.35g. Staff has recommended conditions of certification that, if adopted, would reduce the potential for significant impacts due to seismic ground shaking, to less than significant. (See **GEN-1, GEN-5, CIVIL-1,** and **CIVIL-3** under **FACILITY DESIGN**). These conditions relate to geotechnical verification of the seismic soils profile and structural design to resist seismic forces.

III. Seismic Related Ground Failure, Including Liquefaction:

No Impact
Based on site geology, the potential for liquefaction is considered low. The soils profile is dominated by cohesive soils with only minor interbeds of dense sands at depth. Such soils are not prone to liquefaction.

IV. Landslides

No Impact
Based on the flat site topography and configuration of the proposed structures, the potential for landsliding at or adjacent to the site is considered to be negligible.

B. Not Applicable

C. Be Located on a Geologic Unit or Soil that is Unstable:

No Impact
Based on the site geology and soils profile, the potential for lateral spreading and collapse are negligible. There is dumented, regional ground subsidence in the area that has likely included the site. Subsidence in this area has been caused by ground water withdrawal. Although the magnitude of past subsidence may have been several feet, it has occurred over the course of many years and over a very broad area. Subsidence at this rate, even if it continued, would be unlikely to affect the project significantly since the HPP and the surrounding area would subside together. There is a minor possibility

that underground pipelines serving the HPP from off-site would be damaged if they run from an area of high to low subsidence or vice versa. However, since the proposed natural gas supply line is only 2.2 miles long, the potential for significant differential subsidence is considered low. Water will be supplied via and existing underground pipeline which has been in service for many years.

Soils on this site are compressible and would be expected consolidate (settle) under heavily loaded shallow foundations (footings). The applicant has proposed the use of deep foundations (driven piles) to mitigate settlement potential and maintain the integrity of the structures. Staff concurs that a properly designed and installed pile foundation system will adequately mitigate structural settlement for heavily loaded structures.

D. Be Located on an Expansive Soil:

Less Than Significant Impact With Mitigation Incorporated
Expansive soils are present at this site. Mitigation of expansive soils will be necessary. Staff has recommended conditions of certification (see **GEN-5, CIVIL-1,** and **CIVIL-3** under **FACILITY DESIGN**) to reduce the impact of expansive soils to a level of insignificance. The Applicant has proposed deep foundations to mitigate settlement of the site's compressible soils. Such foundations will also mitigate expansive soils.

Mineral Resources

A. Result in the Loss of Availability of a Known Mineral Resource:

No Impact
The site is surrounded by agricultural fields. No mineral resources are known in the area.

B. Result in the Loss of Availability of a Locally Important Mineral Resource:

No Impact

Paleontological Resources

A. Directly or Indirectly Destroy a Unique Paleontological Resource:

Less Than Significant Impact With Mitigation Incorporated
No fossils were encountered or are known to be located on site; however, known paleontological sites have been documented near the site. As a result, a strict protocol will be required during construction (see **PAL-1 through PAL-7**). These conditions require that a professional paleontologist prepare a Monitoring and Mitigation Plan prior to site mobilization. The plan will include a training session for earthwork contractor, to aid in fossil recognition, as well as periodic site visits by the paleontologist.

CUMULATIVE IMPACTS

The HPP lies in an area of no known or likely geologic resources such as minerals, aggregates, oil or natural gas. Therefore, the project will not contribute to significant cumulative impacts. No known Paleontologic resources were identified during the field

survey. In the event that paleontological resources are revealed during grading, a mitigation plan will be in place to assure proper protection and recovery. Increased surface water from construction of impermeable surfaces can be handled by a properly designed surface water drainage system.

Therefore, the project is unlikely to contribute to any significant adverse cumulative impacts on paleontological resources, geological resources, or surface water hydrology if the project is constructed according to the recommended conditions of certification.

FACILITY CLOSURE

Facility closure activities are not anticipated to impact geological or paleontological resources since no paleontological or geological resources are known to exist at the HPP location. In addition, decommissioning and closure of the power plant should not negatively affect geological or paleontological resources because the majority of the ground disturbed in plant decommissioning and closure would have been disturbed during construction and operation of the plant. Surface water hydrology impacts will depend upon the closure activities proposed.

CONCLUSIONS

The project will result in no significant impacts to the public or the environment with respect to geological hazards, geological, mineralogical, paleontological resources or to soils, provided that the proposed conditions of certification are implemented.

PROPOSED CONDITIONS OF CERTIFICATION

General Conditions of Certification with respect to Geology are covered under Conditions of Certification **GEN-1**, **GEN-5**, and **CIVIL-1** in the **FACILITY DESIGN** section. A site-specific geological condition of approval is presented below:

PAL-1 Prior to ground disturbance, 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.

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 resource 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, 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 ninety (90) days prior to site mobilization, the project owner shall submit the name, resume, and the availability of its designated paleontological

resource specialist, to the CPM for review and approval. The CPM shall provide approval or disapproval 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 site mobilization, 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 shall 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 the project construction.

The Paleontological Resources Monitoring and Mitigation Plan to be developed in accordance with the guidelines of the Society of the Vertebrate Paleontologists (SVP, 1994) 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 sixty (60) days prior to site mobilization or a lesser number of days agreed to by the CPM on the project, 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 necessary changes.

PAL-3 Prior to ground disturbance, and throughout the project construction period, as needed for all new employees, the project owner and the designated paleontological resource specialist shall prepare and conduct CPM-approved training for 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.

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 site mobilization, or a lesser number of days agreed to by the CPM, the project owner shall submit to the CPM for review, comment, and written 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 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 the 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 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.

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: Within 90 days following completion of the analysis of the recovered fossil materials, 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.

PAL-7 The project owner shall include in the facility closure plan a description regarding the potential for closure of the facility 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.

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.

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POWER PLANT EFFICIENCY

Testimony of Steve Baker

INTRODUCTION

The Energy Commission makes findings as to whether energy use by the Henrietta Peaker Project (HPP) 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 HPP'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

GWF Energy LLC (GWF) proposes to construct and operate a (nominal) 91.4 MW simple cycle power plant to generate peaking, load following and/or baseload power, selling under contract with the California Department of Water Resources (CDWR) and on the deregulated energy spot market (GWF 2001a, AFC §§ 1.1, 1.5.2, 1.6, 2.1, 2.2.2). (Note that this nominal rating is based upon preliminary design information and generating equipment manufacturers' guarantees. The project's actual maximum generating capacity will differ from, and may exceed, this figure.) The HPP will consist of two General Electric LM6000 Sprint combustion turbine generators with inlet air fogging producing up to 46.9 MW gross each, for a total of 91.4 MW net. The gas turbines will be equipped with water spray intercooling for power augmentation, and with water injection, selective catalytic reduction (SCR) and oxidation catalysts to control air emissions (GWF 2001a, AFC §§ 1.1, 1.5.2, 1.5.6, 2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.4.1; GWF 2001b, Data Responses 11 and 12).

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 HPP will burn natural gas at a nominal rate up to 20.4 billion Btu per day LHV[1] (GWF 2001a, AFC §§ 1.5.5, 2.2.6). 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 of 39.2 percent LHV (GWF 2001a, AFC Figure 2-6). This can be compared to the average fuel efficiency of a typical 1960s-era utility company baseload power plant, commonly used for peaking power, at approximately 35 percent LHV. As will be seen below, the project's fuel efficiency compares favorably to other possible peaking technologies.

Adverse Effects on Energy Supplies and Resources

The applicant has described its sources of supply of natural gas for the HPP (GWF 2001a, AFC §§ 1.5.2, 1.5.5, 2.1, 2.4.3, 7.0). The project will burn natural gas from the

[1] Lower heating value.

existing Southern California Gas Company (SoCalGas) Line 800. The SoCalGas gas supply infrastructure is extensive, offering access to vast reserves of gas from the Rocky Mountains, Canada and the Southwest. This source represents far more gas than would be required for a project of this size. The Energy Commission predicts that natural gas supplies will be adequate for many years into the future. It is therefore highly unlikely that the HPP 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 a new 2.2 mile long, 12 inch diameter pipeline from the existing SoCalGas Line 800 (GWF 2001a, AFC §§ 1.5.2, 1.5.5, 2.1, 2.4.3, 7.0, 7.4). This line is of sufficient size to serve the project, and should provide adequate access to natural gas fuel. There is no real likelihood that the HPP will require the development of additional energy supply capacity.

Compliance with Energy Standards

No standards apply to the efficiency of the HPP or other non-cogeneration projects.

Alternatives to Reduce Wasteful, Inefficient and Unnecessary Energy Consumption

The HPP 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 HPP will be configured as two simple cycle power plants in parallel, in which electricity is generated by two gas turbine generators (GWF 2001a, AFC §§ 1.5.2, 2.2.2, 2.2.4, 5.3.1). This configuration, with its short start-up time and fast ramping[2] capability, is well suited to providing peaking power.

Equipment Selection

Modern gas turbines embody the most fuel-efficient electric generating technology available today. The LM6000 Sprint gas turbine to be employed in the HPP represents one of the most modern and efficient such machines now available. The applicant will employ two General Electric LM6000 Sprint gas turbine generators (GWF 2001a, AFC §§ 1.5.2, 2.2.2, 2.2.4, 5.3; GWF 2001b, Data Response 12). The Sprint version of this machine is nominally rated at 48.1 MW and 39.6 percent efficiency LHV at ISO[3] conditions (GTW 2000a).

[2] Ramping is increasing and decreasing electrical output to meet fluctuating load requirements.

[3] International Standards Organization (ISO) standard conditions are 15°C (59°F), 60 percent relative humidity, and one atmosphere of pressure (equivalent to sea level).

Efficiency of Alternatives to the Project

The project objective is to generate peaking, load following and/or baseload power. Power will be sold on the spot market or via contract with the California Department of Water Resources (CDWR) (GWF 2001a, AFC §§ 1.6, 2.2.2).

Alternative Generating Technologies

The applicant addresses alternative generating technologies in its application (GWF 2001a, AFC § 5.3.2). Crude oil-, distillate oil-, petroleum coke-, coal-, natural gas-, produced gas- and biomass-burning technologies were all considered. Given the project objective, location and air pollution control requirements, staff agrees with the applicant that only natural gas-burning, simple-cycle gas turbines are feasible. The only more efficient alternative, a combined cycle gas turbine power plant, is considered as a possible future modification (GWF 2001a, AFC § 5.3.3).

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 gas turbines, incorporating technological advances made in the development of aircraft (jet) engines, combined with the cost advantages of assembly-line manufacturing, has made available machines that not only offer the lowest available fuel costs, but at the same time sell for the lowest per-kilowatt capital cost.

GWF has selected the General Electric (GE) LM6000 Sprint, one of the most modern simple cycle gas turbine generators available (GWF 2001a, AFC § 5.3). Alternative machines that can meet the project's objectives are:

Machine	Generating Capacity (MW)	ISO Efficiency (LHV)
GE LM2500	24.0	35.1 %
GE LM2500+	31.0	36.7 %
GE LM6000	43.5	40.2 %
GE LM6000 Sprint	**48.1**	**39.6 %**
Turbo Power FT8 TwinPac	51.4	38.4 %

Source: GTW 2000a

The LM2500 and FT8 are aeroderivative machines, adapted from General Electric and Pratt & Whitney aircraft engines, respectively. The LM2500 is popular in ships, and sees much service in new and refitted commercial and naval vessels. The LM6000 is also an aeroderivative, based on a larger aircraft engine.

The LM6000 Sprint is further enhanced by the incorporation of spray intercooling (thus the name, SPRay INTercooling). This takes advantage of the aeroderivative machine's

two-stage compressor.[4] By spraying water into the airstream between the two compressor stages, the partially compressed air is cooled, reducing the amount of work that must be performed by the second stage compressor. This reduces the power consumed by the compressor, yielding greater net power output and higher fuel efficiency. The benefits in generating capacity and fuel efficiency increase with rising ambient air temperatures. At temperatures above 90°F, the Sprint machine enjoys a four percent increase in both power output and efficiency (GTW 2000b).

Inlet Air Cooling

A further choice of alternatives involves the selection of gas turbine inlet air cooling methods.[5] The three commonly used techniques are the evaporative cooler, the fogger and the chiller. A mechanical chiller can offer greater power output than the evaporative cooler or fogger 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 fogger offers the benefits of evaporative cooling without the need to handle and recycle blowdown wastewater. The difference in efficiency among these techniques is relatively insignificant.

The applicant proposes to employ fogging (GWF 2001b, Data Response 11). 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 simple cycle units in parallel) and generating equipment (LM6000 Sprint 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

GWF owns and operates several nearby natural gas-fueled power plants that hold the potential for cumulative energy consumption impacts when aggregated with the HPP. Due to the robust nature of the deregulated market for natural gas, and to the active participation of the pipeline companies that compete to serve California, Energy Commission staff believes there will be no cumulative impacts on fuel supplies due to the HPP.

Staff further believes that construction and operation of the HPP will not bring about indirect impacts, in the form of additional fuel consumption, that would not have

[4] The larger industrial type gas turbines typically are single-shaft machines, with single-stage compressor and turbine. Aeroderivatives are two-shaft (or, in some cases, three-shaft) machines, with two-stage (or three-stage) compressors and turbines.

[5] A gas turbine's power output decreases as ambient air temperatures rise. The LM6000 Sprint produces peak power at 50°F; this peak output can be maintained in much hotter weather by cooling the inlet air.

occurred but for the HPP. California's electric power will be generated by those power plants that bid most successfully to sell their output to the competitive market. Since no significantly more efficient peaking power plants are envisioned to compete against the HPP, no indirect impacts are likely.

FACILITY CLOSURE

Closure of the facility, whether planned or unplanned, will not affect, nor will it be affected 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 to ensure the efficient management of the system, all lend assurance that closure of this facility will not produce significant adverse impacts on efficiency.

CONCLUSIONS AND RECOMMENDATIONS

The HPP, if constructed and operated as proposed, would generate approximately 91.4 MW of electric power at an overall project fuel efficiency around 39.2 percent LHV. 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 HPP 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.

No Power Plant Efficiency Conditions of Certification are proposed.

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POWER PLANT RELIABILITY

Testimony of Shahab Khoshmashrab

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 GWF Energy, LLC (GWF) has predicted a level of reliability for the power plant (see below), staff believes GWF 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 (CaISO), which purchases, dispatches and sells electric power throughout the state. How CaISO will ensure system reliability is currently being determined; protocols are being employed that will, it is anticipated, 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 CaISO 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 CaISO (Detmers 1999, pers. comm.).

The CaISO'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 CaISO 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.

GWF proposes to operate the (nominal) 91.4 MW Henrietta Peaker Project (HPP) as a simple cycle peaking power plant, selling peaking, load following and/or baseload power through contract with the California Department of Water Resources (CDWR) and on the competitive market (GWF 2001a, AFC §§ 1.1, 1.2, 1.5.2, 1.6, 2.1, 2.2.17). The project is expected to operate reliably enough to allow an annual capacity factor[1] exceeding 50 percent (GWF 2001a, AFC §§ 1.6, 2.2.2, 2.2.17). Reliability typical of peaking power plants should easily allow such a capacity factor. The applicant claims to have a contract with the CDWR that allows the purchase of up to 4000 hours per year of plant output; with a favorable spot market, the applicant envisions being able to operate the plant as much as 8000 hours per year.

[1] Annual capacity factor is the amount of electrical energy produced throughout the year divided by the amount of energy that could have been produced had the plant operated at maximum output without interruption. Capacity factor is a function of both reliability and dispatch.

ANALYSIS

A reliable power plant is one that is available when called upon to operate. Throughout its intended life, the HPP will be expected to perform reliably in peaking duty. Peaking power plant systems must be able to operate for only a few hours per day without shutting down for maintenance or repairs. The plant will typically be shut down at night, on weekends, and for periods in the fall, winter and spring, allowing time for maintenance and repairs. Achieving acceptable 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 HPP will be as reliable as other peaking 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 describes a QA/QC program (GWF 2001a, AFC §§ 2.4.5, 2.4.5.2) typical of the power industry. Equipment will be purchased from qualified suppliers that employ an approved QA program. Designs will be checked and equipment will be inspected on receipt; installation will be inspected and systems tested. 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

Maintenance Program

GWF proposes to establish a plant maintenance program typical of the industry (GWF 2001a, AFC §§ 1.6, 2.2.17, 2.4.1, 2.4.5.2). A peaking plant is shut down every night, affording plenty of opportunity to perform any needed maintenance and repairs without compromising plant availability. GWF will develop a maintenance plan during plant construction and startup that will ensure plant maintenance consistent with typical industry standards. In addition, the HPP will be maintained by the experienced maintenance organization that already maintains other GWF power plants in California. In light of these plans, staff expects 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 process water 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 HPP will burn natural gas from the Southern California Gas Company (SoCalGas) system. Gas will be supplied to the plant from SoCalGas' transmission line 800 via a new 12-inch diameter pipeline (GWF 2001a, AFC §§ 1.5.2, 1.5.5, 2.1, 2.4.3, 7.0). This natural gas system, which provides access to gas from California, the Rocky Mountains, Canada and the Southwest, represents a resource of considerable capacity. This system offers access to far more gas than the plant would require. 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 HPP will obtain process water from Westlands Water District and Kings County through an existing water line adjacent to the HPP site (GWF 2001a, AFC §§ 1.5.2, 1.5.6, 2.1, 2.2.7.2, 2.4.4). Bottled water will be supplied for drinking purposes. Note that there is no substantial consumptive use of cooling water, as would be the case with a combined cycle power plant. Staff believes these sources yield 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 seismic shaking (earthquake) and flooding present a credible threat to reliable operation (see those portions of this document entitled **Facility Design** and **Geology and Paleontology**).

Seismic Shaking

The site lies within Seismic Zone 3 (GWF 2001a, AFC §§ 1.7, 1.8.15, 2.3, 2.3.1); see that portion of this document entitled **Geology and Paleontology**. The project will be designed and constructed to the current 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.

Flooding

The project site is essentially flat, with an elevation of 225 feet above mean sea level. The site does not lie within either a 100-year or a 500-year floodplain (GWF 2001a, AFC

§§ 1.7, 2.3.1). Staff therefore believes that flooding presents no threat to the project. For further discussion, see that portion of this document entitled **Water Resources**.

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 1995 through 1999 (NERC 2000):

For Gas Turbine units (50 + MW)

Availability Factor = 90.29 percent

The gas turbine that will be employed in the project, the General Electric (GE) LM6000PC Sprint, has been on the market for several years now, and can be expected to exhibit typically high availability. The applicant's prediction of an annual capacity factor greater than 50 percent (GWF 2001a, AFC §§ 1.6, 2.2.2, 2.2.17) appears reasonable compared to the NERC figure for similar plants throughout North America (see above). The projected capacity factor should be easily achieved with the NERC availability levels for this machine. In fact, the HPP can be expected to achieve greater availability than the NERC figures show for two reasons.

First, since the plant will be utilized chiefly for peaking, it will be shut down many nights and weekends. Necessary maintenance, and non-critical repairs, can be performed when the plant is not dispatched, thus not affecting availability.

Second, the GE LM6000 gas turbine generator has been improved and updated since its introduction several years ago. In particular, control systems have been greatly improved in that time. Where once control systems were a frequent cause of plant outages, the new triply-redundant computer-based control systems (GWF 2001a, AFC § 2.4.2.2) are much more reliable than those making up the NERC statistics; those statistics are heavily weighted by much older machines, some of which have seen service for over 25 years. The modern LM6000PC, then, can be expected to show much higher availability and reliability than the NERC statistical population.

The applicant's estimate of plant capacity factor 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**.

CONCLUSION

The applicant predicts an annual capacity factor of 50 percent or greater, which staff believes is achievable in light of the industry norm for similar plants incorporating older gas turbines, and the reliability record of the gas turbines selected for this project. While GWF proposes to operate the HPP at an annual capacity factor of 50 percent or more, a high number for a peaking plant,[2] market economics in the form of electricity and natural gas prices will control the HPP's dispatch and, thus, its capacity factor. Therefore, the HPP will increase its capacity to higher than peaking capacity, only when and if market economics are favorable.

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. No Conditions of Certification are proposed.

[2] Industry terminology generally refers to a power plant that operates up to 25 percent of the time as a peaker.

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TRANSMISSION SYSTEM ENGINEERING

Testimony of Richard Minetto P.E. and Laiping Ng

INTRODUCTION

The Transmission System Engineering (TSE) analysis provides the basis for the findings in the Energy Commission's Decision. This 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.

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 (CCR, tit. 14, §15378). Therefore, the Energy Commission must identify and evaluate the environmental effect 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. This staff assessment indicates whether or not the applicant has accurately identified all interconnection facilities and determines conformance with all applicable LORS.

GWF Energy LLC (GWF), the applicant proposes to connect their project, the Henrietta Peaker Power Plant (HPP), a net 91.4 megawatt (MW), natural gas fired, simple cycle power plant to the existing Pacific Gas and Electric (PG&E) Henrietta substation. The proposed interconnection consists of approximately 550 feet of new 70 kV transmission line. The applicant indicated the project was expected to be on line for summer peak in 2002 (GWF 2001a). For purposes of transmission planning a Final Facilities Cost Report (FCR) was prepared by Pacific Gas and Electric (PG&E) dated August 7, 2001 and submitted with the Application for Certification on August 27, 2001.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS

- California Public Utilities Commission (CPUC) General Order 95 (GO-95), "Rules for Overhead Electric Line Construction," formulates uniform requirements for construction of overhead lines. Compliance with this order ensures adequate service and safety to persons engaged in the construction, maintenance, operation or use of overhead electric lines and to the public in general.
- CPUC Rule 21 provides standards for the reliable connection of parallel generating stations connected to participating transmission owners.
- 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 a single transmission element out of service) to a performance level that only seeks to prevent system cascading and the subsequent blackout of islanded areas during major disturbances (such as loss of all lines in a right of way). 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 guidelines 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 Reliability Criteria also provide policies, standards, principles and guidelines 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 and the NERC Planning Standards. The Cal-ISO Reliability Criteria incorporate the WSCC Criteria and NERC Planning Standards. However, the Cal-ISO Reliability Criteria also provide some additional requirements that are not found in the WSCC Criteria or the NERC Planning Standards. The Cal-ISO Reliability Criteria apply to all existing and proposed facilities interconnecting to the Cal-ISO controlled grid.
- Cal-ISO Scheduling Protocols and Dispatch Protocols require conformance with NERC, WSCC, and Local Area Reliability and Planning Criteria. These standards will be applied to the assessment of the system reliability implications of the project. Also of major importance to projects, which may sell power to the California deregulated wholesale market, 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 requires 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 so that 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 actual net power output required by the generating units to meet their scheduled obligations. (Cal-ISO 1998a, Cal-ISO 1998b).

- Cal-ISO Participating Generator Agreement consists of detailed explanations of the requirements in the Cal-ISO Tariff pertaining to the paralleled generating unit.

PROJECT DESCRIPTION

The applicant proposes to construct and operate a net 91.4 megawatt (MW) simple-cycle power plant located in unincorporated Kings County, California. GWF has acquired a 20-acre parcel south and adjacent to the PG&E Henrietta substation for the power plant facility and transmission interconnection. The project site is located on the eastern side of 25th Avenue, approximately one mile south of State Rout (SR) 198, and directly south of the PG&E Henrietta substation.

The power plant will be constructed with the 70 kV switchyard located on the north side of the power plant. A single circuit 70 kV transmission line will be built from the HPP switchyard to the north and east, and tie into the existing Henrietta substation bus. The transmission line interconnection is approximately 550 feet in length and is located entirely on the HPP site or within the PG&E site.

EXISTING FACILITIES AND RELATED SYSTEMS

The plant site is located directly to the south of the exiting PG&E Henrietta substation. The Henrietta substation is connected to PG&E's 70 kV, 115 kV, and 230 kV transmission systems. The PG&E 115 kV Henrietta-Kingsburg transmission line is underbuilt with PG&E's 70 kV Henrietta Tulare Lake transmission line parallel to 25th Avenue and entering Henrietta substation from the West.

The interconnection is proposed to be a single-circuit transmission line constructed on wood poles. The proposed line will use single 954-kcmil aluminum conductor steel reinforced (ACSR) per phase. The proposed conductor is rated for full plant output current.

The 70 kV bus on the existing Henrietta substation has four breakers feeding radial 70 kV lines, and a transformer tying the 70 kV bus to the 115 kV bus. The proposed interconnection provides for one additional breaker on the 70 kV bus to interconnect the power generation facility.

The new 70 kV HPP switchyard will be located on the north side of the power plant. This switchyard will utilize two breakers in a radial configuration. Each breaker will be connected to one unit within the generation block.

Facilities in close proximity to the project include:

- the PG&E Henrietta substation; and
- several transmission lines at 70 kV, 115 kV, and 230 kV from the Henrietta Substation region.

A Final Facility Cost Report (FCR) was provided with the application for certification. The FCR was finalized August 7, 2001 (GWF 2001a, Appendix A) based on a study plan

approved by PG&E on May 16, 2001. The Cal-ISO granted final approval for interconnection of the project on September 25, 2001. The FCR and Cal-ISO approval provide the basis for the Staff assessment and Conditions for Certification included herein.

ANALYSIS AND IMPACTS

INTERCONNECTION FACILITIES

The proposed electrical interconnected will employ a 70 kV single-circuit radial transmission interconnection from the new switchyard to the existing Henrietta substation. The connection involves building a new single-circuit 70 kV line for approximately 550 feet (GWF 2001a, Section 2.1).

The radial interconnection will require the following modifications at the Henrietta substation.

- A new 70 kV circuit breaker is required for interconnection of the new switchyard from the project.
- Associated protection and communication revisions and additions as necessary to accommodate plant output and interconnection.

Substation and Switchyard

The project switchyard is to be located on the north side of the Combustion Turbine Generator (CTG) power islands. Each generator will be provided with an independent tie to the switchyard. (GWF 2001a, Section 6.1).

The HPP 70 kV switchyard will consist of two circuit breakers in a radial feed configuration. The equipment will be designed for 2000 amperes continuous rating and 40,000 amperes interrupting capacity. (GWF 2001a, Section 6.1.2.1).

Transmission Line

The proposed interconnection will be one single-circuit 70 kV transmission line from the new switchyard to the Henrietta 70 kV bus. The circuit will be designed and constructed by the applicant to meet all system reliability requirements and all applicable LORS. The line exits the new switchyard to the north and then enters the Henrietta substation to the east. The proposed interconnection uses two new wood poles (GWF 2001a, Figure 6-1).

SYSTEM RELIABILITY

Introduction

A system reliability study is performed to determine the affects of connecting a new power plant to the existing electric grid. The study identifies impacts and also ways negative impacts can be minimized or negated. Any new transmission facilities such as the power

plant switchyard, the outlet line, and downstream facilities, required for connecting a project to the grid are considered part of the project and are subject to the full Application for Certification review process.

System Reliability Study

A system reliability evaluation determines whether the new project would cause thermal overloads, voltage violations (voltages too high or low), and/or electric system instability (excessive oscillations). In addition to the above analysis, studies may be 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. A Generation Transmission Interconnection Study (GTIS) followed by a Final Facilities Cost Report (FCR) provides a summary of the modifications necessary for integration of the power generation facility with the electric grid. The criteria used in these evaluations include the WSCC Planning Criteria, NERC Planning Standards and applicable Cal-ISO reliability criteria. The reliability implications of the project and the need for additional facilities are determined by the Cal-ISO based on the GTIS and the Final Facilities Cost Report.

The FCR provided by PG&E analyzed the impacts on the electrical grid from interconnection of the proposed project. Model analysis and conclusions are based on existing conditions without the project, addition of the project at the appropriate time, and overall plans for system improvement and new generation proposed for the time frame for study purposes. Analysis performed includes normal conditions with all facilities in service, single line and/or equipment outages, multiple equipment outages, short circuit analysis, and stability analysis. Impacts are defined as those conditions where equipment and/or lines are overloaded beyond planning criteria. For the proposed project, the FCR did not identify any impacts to the electric grid with the addition of the generation.

Scope of Reliability Studies

PG&E performed the FCR with input and concurrence from the applicant. For purposes of planning studies, PG&E used the PG&E 2002 Summer Full Loop and 2003 Spring Full Loop base cases. A supplemental study was performed using a 2002 Summer Off-Peak Full Loop base case. These cases analyzed the impacts of the project at times where the impacts would be worst case. The studies then provide assessment of the overloads under normal and contingency conditions.

The studies provide a basis for analysis that includes assumptions related to planned system improvements and proposed additional generation facilities. The following were assumptions used for assessment of this project:

- The maximum net delivery from the project to the PG&E transmission grid will be 95.8 MW modeled at 0.85 lagging power factor.
- The project will be on line at full capacity by Summer 2002.
- The new facility will be connected to the existing Henrietta substation at the 70 kV bus.

- The GWF Hanford 96 MW generation project will be connected to the Henrietta-Kingsburg 115 kV circuit.
- All approved PG&E reliability projects that will be in operation by Summer 2002 are included in the study input.
- For the Summer Off Peak Base Case, the following generation projects were modeled:

  Dinuba Energy Facility;

  Fresno Peaker Project;

  Chowchilla #2 Project;

  Madera Power Project;

  GWF Hanford Project;

  Cal Peak's Panoche Peaker;

  Wellhead's Los Banos Peaker;

  Wellhead's Panoche Peaker;

  Wellhead's Gates Peaker; and

  Wellhead's Panoche Peaker #2.

Normal (Category A) conditions

Under normal operating conditions, no normal overloads were identified due to the addition of the proposed project.

Contingency (Category B and C) Conditions

Under contingency conditions no system overloads were identified due to the addition of the proposed project. For the single contingency outage of the 230 kV Henrietta Bank the proposed project would be islanded under the 2003 Summer Off Peak and 2002 Summer Peak base cases.

Mitigation

No mitigation is required for the proposed project.

Short Circuit Study Results

Short circuit analysis was performed to determine impacts of the proposed generation on existing circuit breaker and other protection equipment. This study details whether any protection equipment would not be capable of interrupting fault current with the addition of the proposed project. Short circuit calculations were performed with and without the proposed generation to determine impacts. The FCR indicates there are no impacts with respect to short circuits for addition of the generation proposed.

Stability Study Results

Dynamic stabilities studies were conducted to determine if the proposed project addition would result in adverse impact on the stable operation of the transmission system.

Selected disturbances as outlined in the FCR and the Cal-ISO documents were simulated for this purpose (GWR 2001a, Appendix A) (Cal-ISO 2001a, Page 2).

The results indicate there were no identified transient stability concerns for integration of the project.

Cal-ISO Review

The Cal-ISO has reviewed the FCR and GWF submittals, and provided final interconnection approval. The Cal-ISO will provide testimony as required on the FCR and will provide conclusions and findings in the Energy Commission's hearings. The Cal-ISO's approval assures conformance with NERC, WSCC and Cal-ISO reliability criteria.

Cumulative Impacts

There are no cumulative impacts as outlined above for integration of the Henrietta Peaking Project into the electrical grid. The Cal-ISO has provided final approval for the interconnection of the project.

ALTERNATIVE TRANSMISSION LINE ROUTES

Because of the proximity of the proposed plant to the existing Henrietta substation, and the fact that the interconnection was on the project site property, the applicant did not consider alternative transmission line routes and staff agrees that this analysis is not needed (GWF 2001a, Section 5.4).

COMPLIANCE WITH LORS

- The applicant states planned compliance with CPUC GO-95, CPUC Rule 21 and standards for the reliable connection of parallel generating stations connected to participating transmission owners.
- All WSCC Reliability Criteria, NERC policies, standards, principles and guidelines to assure the adequacy and security of the electric transmission system are planned to be met.
- Cal-ISO Reliability Criteria and Interconnection requirements and PG&E interconnection requirements are planned to be met.

Staff concludes that, assuming the Conditions of Certification are met; the project meets the requirements and standards of all applicable LORS.

FACILITY CLOSURE

The parallel operation of generating stations is controlled, in part by CPUC Rule 21, which provides for contractual provisions, which may be developed, to provide backup or other power service during extended periods of non-operation and codify procedures to be followed during parallel operation. Procedures for planned, unexpected temporary closure and unexpected permanent closure must be developed or verified to facilitate effective

communication and coordination between the generating station owner, PTO and the Cal-ISO 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." Condition of certification TSE-5a 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 three scenarios: Planned Closure, Unexpected Temporary Closure, and Unexpected Permanent Closure. Planned 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 provides time for the owner to coordinate with the PTO[1] to assure (as one example) that the PTO's system will not be closed into the outlet thus energizing the power plant switchyard. Alternatively, the owner may coordinate with the PTO to maintain some power service via the outlet line to supply critical station service equipment or other loads[2].

Unexpected temporary 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 Temporary Closure occurs when the project owner closes the facility suddenly and/or unexpectedly, or abandons the facility or 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. 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).

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No agency or public comments related to the TSE discipline have been referred to TSE staff for this case.

[1] The PTO in this instance is PG&E e.g., the system owner to which the project is interconnected.

[2] These are mere examples; many more exist.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Staff concludes that the proposed Henrietta Power Project has no impacts on the transmission system.

Staff concludes the interconnection will be one radial 70 kV transmission lines single-circuited from the HPP switchyard to the existing PG&E Henrietta 70 kV bus. The circuit will be designed and constructed by the applicant to meet all system reliability requirements and all applicable LORS. The new line will take off from the HPP switchyard and traverse approximately 550 feet to the Henrietta substation (GWF 2001a, Section 6). Conditions of Certification TSE-1 through TSE-8 apply to this conclusion.

Staff concludes there are no system impacts associated with the integration of the HPP to the electrical transmission grid. The Cal-ISO has issued final approval for integration of the HPP.

The power plant switchyard, outlet lines, and termination are acceptable and will comply with LORS. Conditions of Certification TSE-1 through TSE-8 apply to this conclusion. The power plant and related facilities will not have an adverse impact on the electrical system (assuming implementation of the Conditions of Certification). Conditions of Certification TSE-1 through TSE-8 apply to this conclusion.

The Cal-ISO will provide testimony on the Final Facilities Cost Report, and will provide conclusions and recommendations in the Energy Commission's hearings.

The issuance of the Cal-ISO's final interconnection approval assures conformance with NERC, WSCC and Cal-ISO reliability criteria. Conditions of Certification TSE-5 and TSE-7 apply to this conclusion.

RECOMMENDATIONS

If the Commission approves the project, the following Conditions of Certification should be required.

CONDITIONS OF CERTIFICATION

TSE-1 The project owner shall furnish to the CPM and to the CBO a schedule of transmission facility design submittals, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested.

Verification: At least 60 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of construction, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the CBO and to the CPM. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for equipment (see a list of major equipment in **Table 1: Major Equipment** below). Additions and deletions shall be made to the table only with CPM and CBO approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

Table 1: Major Equipment

DESCRIPTION
Breakers
Power House 12.5 kV
Switchyards 12.5 kV
Buses
Underground cables
Disconnects
Take off facilities
Overhead lines
Switchyard control building
Step-up transformer
Others

TSE-2 The project owner shall assign an electrical engineer and at least one of each of the following 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 power plant structures and equipment supports; or D) a mechanical 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.]

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, power plant 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 civil, geotechnical or civil and design engineer assigned in conformance with Facility Design condition **GEN-5**, may be responsible for design and review of the TSE facilities.

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. 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. This engineer shall be authorized to halt earthwork and to require changes; if site conditions are unsafe or do not conform to predicted conditions used as a basis for design of earthwork or foundations.
The electrical engineer shall:

1. Be responsible for the electrical design of the power plant switchyard, outlet and termination facilities; and

2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 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.

TSE-3 The project owner shall keep the CBO informed regarding the status of engineering design 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 become a controlled document and shall be submitted to the CBO for review and approval. The discrepancy documentation shall reference this condition of certification.

Verification: The project owner shall submit monthly construction progress reports to the CBO and CPM to be included in response to **TSE-3**. 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.

TSE-4 For the power plant switchyard, outlet line and termination, the project owner shall not begin any increment of 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. The following activities shall be reported in the Monthly Compliance Report:

a) receipt or delay of major electrical equipment;

b) testing or energizing of major electrical equipment; and

c) the number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: At least 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 construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations for equipment and systems of the power plant switchyard, outlet line and termination, including a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS. The project owner shall send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

TSE-5 The project owner shall ensure that the design, construction and operation of the proposed transmission facilities will conform to all applicable LORS, including the requirements listed below. The substitution of Compliance Project Manager (CPM) and CBO approved "equivalent" equipment and equivalent substation configurations is acceptable. The project owner shall submit the required number of copies of the design drawings and calculations as determined by the CBO.

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 of the California Code of Regulations (Title 8), Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", National Electric Code (NEC) and related industry standards.

b) Breakers and buses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.

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) Termination facilities shall comply with CPUC Rule 21 and PG&E applicable interconnection standards.

e) The project conductors shall be sized to accommodate the full output from the HPP plant.

f) The project owner shall provide an Executed Generator Special Facilities Agreement.

Verification: At least 60 days prior to the start of construction of transmission facilities, the project owner shall submit to the CBO for approval:

a) Design drawings, specifications and calculations conforming with CPUC General Order (GO) 95 or NESC, Title 8, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", NEC, CPUC Rule 21, applicable interconnection standards and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, underground cables, grounding systems and major switchyard equipment.

b) For each element of the transmission facilities identified above, the submittal package to the CBO 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", NEC, CPUC Rule 21, applicable interconnection standards, 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-5** a) through f) above.

d) Generator Special Facilities Agreement shall be provided concurrently to the CPM and CBO. Substitution of equipment and substation configurations shall be identified and justified by the project owner for CBO approval.

TSE-6 The project owner shall inform the CPM and CBO of any impending changes, which may not conform to the requirements **TSE-5** a) through f), and have not received CPM and CBO 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 CBO and the CPM.

Verification: At least 60 days prior to the construction of transmission facilities or a lesser number of days agreed to by the CPM, the project owner shall inform the CBO and the CPM of any impending changes which may not conform to requirements of **TSE-5** and request approval to implement such changes.

[3] Worst-case conditions for the foundations would include for instance, a dead-end or angle pole.

TSE-7 The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM and CBO 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", applicable interconnection standards, NEC and related industry standards. In case of non-conformance, the project owner shall inform the CPM and CBO 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 and CBO:

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", CPUC Rule 21, and applicable interconnection standards, NEC, 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 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.

TSE-8 The applicant shall provide the following Notice to the California Independent System Operator (Cal-ISO) prior to synchronizing the facility with the California Transmission system:

1. At least one (1) week prior to synchronizing the facility with the grid for testing, provide the Cal-ISO a letter stating the proposed date of synchronization; and

2. At least one (1) business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the ISO Outage Coordination Department, Monday through Friday, between the hours of 0700 to 1530 at (916)-351-2300.

Verification: The applicant shall provide copies of the Cal-ISO letter to the CPM when it is sent to the Cal-ISO one (1) week prior to initial synchronization with the grid. A report of conversation with the Cal-ISO shall be provided electronically to the CPM one (1) day before synchronizing the facility with the California transmission system for the first time.

REFERENCES

Cal-ISO (California Independent System Operator). 1998a. Cal-ISO Tariff Scheduling Protocol posted April 1998, Amendments 1,4,5,6, and 7 incorporated.

Cal-ISO (California Independent System Operator). 1998b. Cal-ISO Dispatch Protocol posted April 1998.

Cal-ISO (California Independent System Operator) 2001a, Letter of Final Approval and Comments on the Facilities Cost Report for GWF's Henrietta Peaking Power Plant (HPP) Project. Submitted to the California Energy Commission on September 25, 2001.

GWF (GWF Energy LLC) 2001a, Application for Certification for the Russell City Energy Center (01-AFC-18). Submitted to the California Energy Commission August 27, 2001.

PG&E (Pacific Gas and Electric) 2001a, Pacific Gas and Electric Final Cost Report. Submitted to the California Energy Commission on August 7, 2001.

NERC (North American Electric Reliability Council). 1998. NERC Planning Standards, September 1997.

WSCC (Western Systems Coordinating Council) 1997. Reliability Criteria, August 1998.

DEFINITION OF TERMS

AAC — All Aluminum conductor.

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 wires, 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) that carries the current.

Congestion Management
Congestion management is a scheduling protocol, which provides that dispatched generation and transmission loading (imports) will not violate criteria.

Emergency Overload
See Single Contingency. This is also called an L-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.

Loop — An electrical cul de sac. A transmission configuration that interrupts an existing circuit, diverts it to another connection and returns it back to the interrupted circuit, thus forming a loop or cul de sac.

Megavar — One megavolt ampere reactive.

Megavars — Mega-volt-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)
A unit of apparent power, equals the product of the line voltage in kilovolts, current in amperes, the square root of 3, and divided by 1000.

Megawatt (MW) — A unit of power equivalent to 1,341 horsepower.

Normal Operation/ Normal Overload
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.

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 is an 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.

Switchyard A power plant switchyard (switchyard) is an integral part of a power plant and is used as an outlet for one or more electric generators.

Thermal rating See ampacity.

TSE Transmission System Engineering.

Tap	A transmission configuration creating an interconnection through a sort single circuit to a small or medium sized load or a generator. The new single circuit line is inserted into an existing circuit by utilizing breakers at existing terminals of the circuit, rather than installing breakers at the interconnection in a new switchyard.
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.

ALTERNATIVES

Testimony of Susan V. Lee

INTRODUCTION

The purpose of staff's alternatives analysis is to identify the potential significant impacts of the Henrietta Peaker Project (as defined in the other sections of this Staff Assessment) and then evaluate whether there are alternatives capable of reducing or avoiding those impacts. This information is provided to the decisionmakers in this case. If an alternative is identified that meets these criteria, the California Energy Commission (Energy Commission) may only disapprove the proposed project. The Energy Commission does not have the authority to approve the alternative or require the applicant to move the proposed project to another location.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

GWF proposes to interconnect the proposed Henrietta Peaker Project (HPP) to the Henrietta substation. The Energy Commission is the Lead Agency under CEQA.

CALIFORNIA ENVIRONMENTAL QUALITY ACT CRITERIA

The "Guidelines for Implementation of the California Environmental Quality Act," Title 14, California Code of Regulation Section 15126.6(a), provides 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, Section 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, Section 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).

PROJECT DESCRIPTION

The proposed HPP is a nominal 91.4-MW net, simple cycle plant that would be located on seven acres on the northwest corner of a 20-acre parcel located in unincorporated Kings County. The HPP will consist of the power plant, an onsite 70 kilovolt (kV) switchyard and approximately 550 feet of new 70-kV transmission line (GWF, 2001). Natural gas will be delivered via approximately 2.2 miles of new 12-inch pipeline that will connect to the existing Southern California Gas Company Line 800 pipeline, which would interconnect at approximately one mile south of the site at the intersection of 25th

Avenue and the Avenal Cutoff (GWF, 2001). Kings County and the Westlands Water District will supply water to HPP from an existing Westlands Water District pipeline adjacent to 25th Avenue and the proposed HPP site (GWF, 2001). A detailed description of the proposed project and its setting is provided in the **Project Description** section of this SA.

SCOPE AND METHODOLOGY OF THE ALTERNATIVES ANALYSIS

The purpose of staff's alternatives analysis is to provide a reasonable range of feasible alternatives that 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.

To prepare this alternatives analysis, the staff used the methodology summarized below.

- Describe the basic objectives of the project.
- Identify the potential significant environmental impacts of the project.
- Identify and evaluate technology alternatives to the project that could mitigate project impacts.
- Identify and evaluate alternative sites for the project to determine whether these sites could reduce or eliminate project impacts.
- Evaluate the "No Project" Alternative to determine whether this alternative would be superior to the project as proposed.

Alternatives to the proposed project include two general types: (1) other sites where the proposed project (a natural gas burning turbine) could be utilized, and (2) different power generation technologies (not requiring natural gas as fuel). These alternatives are discussed and evaluated below.

PROJECT OBJECTIVES

After studying the Application for Certification (AFC), Energy Commission staff has determined the Henrietta Peaker Project (HPP) project's objectives to be:

- To provide peak load electrical energy in the newly deregulated power market
- To be located near key infrastructure, such as transmission line interconnections, supplies of process water (preferably wastewater), and natural gas.
- To be online by July 1, 2002.

POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACTS

Staff's assessment of environmental impacts is presented in detail in the individual sections of this Staff Assessment. Issues of concern identified in those sections are the following.

- **Air Quality:** The HPP, with the implementation of the measures contained in the Conditions of Certification, will not cause or contribute to any new or existing violations of applicable ambient air quality standards. The project's air quality impacts from directly emitted PM_{10}, the ozone precursor emissions of NO_x and VOC, and PM_{10} precursors of NO_x and SO_2 could be significant if left unmitigated. The applicant will reduce emissions to the extent feasible by using Best Available Control Technology, and provide emission offsets, obtained from stationary sources in the San Joaquin Valley Air Basin.
- **Land Use:** Staff has determined that the project is consistent with land use plans, ordinances and policies. In addition, with the implementation of the recommended conditions of certification, the project would be compatible with existing and planned land uses. Therefore, impacts would be less than significant.
- **Soil and Water Resources:** Staff has determined the proposed project will result in less than significant impacts to soil water if the conditions of certification that ensure proper disposal of wastewater and storm water are implemented and that an Erosion Control Plan is reviewed and approved by the Energy Commission. In addition, a Water Use Summary must be submitted annually and would state the source and quantity of the water used at HPP on a monthly basis, whether the water used was obtained from the current year allocation or the banked surplus allocations from previous years.

SITE ALTERNATIVES

SCREENING CRITERIA USED TO SELECT ALTERNATIVE SITES

The purpose of this section is to evaluate the site alternatives provided by the Applicant and to consider other site possibilities. The evaluation criteria for each site are the following: 1) Will the alternative fulfill the project objectives? 2) Will it reduce the potential significant impacts identified for the proposed project? 3) Will it cause other significant environmental impacts?

Potential alternative sites were therefore considered if they met the following requirements:

- appropriate zoning;
- sufficient land available to construct and operate a generating facility of this size. The proposed power plant requires at least seven acres of land using the proposed technology (GWF, 2001a); and

- connections to infrastructure (gas, water, transmission) available within a reasonable distance.

Staff examines three site alternatives in this report:

- one site proposed by the Applicant: Hanford Energy Park Peaker Project expansion (GWF, 2001a); and
- two other sites (Plymouth Site and Lassen Road Site) identified through staff research.
- Please see **ALTERNATIVES Figure 1** for a map of these three alternative sites.

ALTERNATIVES Figure 1
Map of Proposed Project and Alternative Sites

HANFORD ENERGY PARK PEAKER (HEPP) SITE

The HEPP Site is a seven-acre parcel located in the Kings Industrial Park immediately adjacent to the existing GWF cogeneration facility. The site is located on Idaho Avenue between 10th and 11th Avenues in the City of Hanford in Kings County. The Northern and Santa Fe railroad tracks run north to south to the east of the site. The project site is designated HI-Heavy Industrial in the General Plan and the neighboring uses are industrial (Energy Commission, 2001a). This site is not under Williamson Act contract (Energy Commission, 2001a). Site access is good, and there are no nearby residences. The topography of the area is flat.

According to the AFC, this site is 1.6 miles to a PG&E 115-kilovolt (kV) transmission line. However, the 115-kV line lacks adequate capacity and a project at this location would require reconductoring of 15 miles to the Henrietta substation. Usually, reconductoring does not require ground disturbance. However, in some cases, individual poles could need to be replaced. The existing natural gas connection to the HEPP site also lacks capacity to serve an additional generating facility and therefore, the nearest point of interconnection is the Southern California Gas Company Line 800, 13 miles west of the of the HEPP site. Water supply is sufficient on site (GWF, 2001a).

Advantages

- **Land Use:** The site is zoned for heavy industrial use and several other large industrial facilities are nearby.
- **Visual Resources:** A peaker plant at this site would be consistent with the industrial surroundings. The GWF Hanford site currently has power plant facilities and associated transmission lines.

Disadvantages

- **Air Quality, Cultural Resources, Transportation, and Biological Resources:** This site could require construction of 13 miles of natural gas pipeline, which would create additional short-term air emissions, disrupt traffic flows (if roadways were used), and disturb habitat (if roadways were not used).

PLYMOUTH SITE

The Plymouth Site is on a 60-acre parcel located approximately 16 miles southwest of the proposed site, approximately one-half mile east of the intersection of Avenal Cutoff and Plymouth Avenue. The site is located on the north side of Plymouth Avenue between 34½ Avenue and 34th Avenue, one-half mile east of I-5 at an elevation of about 140 feet. Immediately south of the site (across Plymouth Ave) is a PG&E natural gas compressor station. A gas pipeline and a 500 kV transmission line pass the northeast corner of the parcel. The California Aqueduct is approximately 0.25 mile south of the site. Although the topography of the general area is slightly hillier than the proposed project area, the actual site is flat. The site is currently used for agricultural purposes and is zoned M-Industrial (Ortiz, 2001). This site is not under Williamson Act contract.

(Kings, 2001a) This site is located within the City of Avenal's industrial park area and therefore a power plant would be consistent with existing land use designations.

Advantages

- **Land Use:** This site is included in Avenal's industrial park, so a power plant is an acceptable use. In addition, this site is not under Williamson Act contract.
- **Noise:** There are no nearby sensitive receptors

Disadvantages

- **Visual Resource:** A power plant at this site would be highly visible to travelers on I-5.

LASSEN ROAD SITE

The Lassen Road Site is an 18-acre parcel located in Fresno County, east of Lassen Road and just north of Jayne Avenue. Immediately south of the site is an agricultural production yard, and north of the site is an AT&T Wireless communication tower. The parcel is approximately one mile east of PG&E's Gates Substation, which provides electricity at 500, 230, and 70 kV and is the southern terminus of Path 15, the state's transmission backbone. The site is surrounded by agricultural land. It is zoned Agricultural and is at 110 feet of elevation (Kings, 2001b). This parcel is under Williamson Act contract number 2267 (Schmal, 2001). There are no California Natural Diversity Database (CNDDB) records of occurrences on this site (Duke, 2001). There are several transmission lines in the area; all connect to the Gates Substation. The site is about four miles south of central Huron, and no residences are located nearby. A line of eucalyptus trees borders the site to the north, which would shield part of the project area from view from the north. The parcel has been graded and is currently fenced; no native vegetation is present.

This site would require a one-mile transmission line (to Gates Substation), a 2.5-mile gas pipeline, and about 2 miles of water pipeline (Duke, 2001).

Advantages

- **Biological Resources:** The site is currently vacant and disturbed (graded), and according to the California Natural Diversity Database, there are no records of sensitive species occurrence at this site. Therefore, no habitat disturbance is expected to occur at this site.
- **Noise:** There are no nearby receptors.

Disadvantages

- **Air Quality, Cultural Resources, Transportation, and Biological Resources:** This site would require construction of a one-mile transmission line, 2.5 miles of gas pipeline, and 2 miles of water line which would create additional short-term air emissions, disrupt traffic flows (if roadways were used), and disturb habitat (if roadways were not used).

- **Land Use:** This site is under contract with the Williamson Act, therefore a power plant at this location would not be consistent with the land use designation.
- **Visual Resources:** While trees to the north would partially shield the plant from northern view, it would be highly visible from Jayne Avenue, which is a major roadway in the area.

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 the impacts of that scenario are compared to the impacts of the proposed project.

In the AFC, the Applicant states that the "No Project" Alternative would not provide increased peaking generation to serve the State's electricity demand. Also, the "No Project" Alternative would eliminate the expected economic benefits that the proposed project would bring to Kings County, including increased property taxes, employment, sales taxes, and sales of services, manufactured goods, and equipment (see the **Socioeconomics** chapter of this Staff Assessment).

While no significant impacts have been identified for this project, the "No Project" Alternative would eliminate all impacts to the environment that would result from the construction and operation of the plant at the proposed site. Construction and operation of the proposed project would contribute to the State's policy goals of increasing in-state generation within the next two years; with the "No Project" Alternative, that benefit would not occur. The benefit of a peaker plant such as HPP is that it can respond within 10 minutes to peaks in the demand for energy.

ALTERNATIVES ELIMINATED FROM DETAILED ANALYSIS

This section describes alternatives that did not satisfy the screening criteria for inclusion in the analysis.

SITE ALTERNATIVES ELIMINATED FROM THIS ANALYSIS

CEQA guidelines state that the alternatives analyses need not consider alternatives that are either infeasible or do not avoid significant environmental impacts. The following sites were suggested, but are not considered herein.

Olivera 2 Site

The Olivera 2 Site was suggested by the Applicant and is located between one and two miles east of the proposed site. The site is located adjacent to and southeast of Avenal Cutoff, one mile south of Highway 198 at an elevation of about 70 feet. Immediately west of the site (across Avenal Cutoff) are the Lemoore NAS water treatment ponds. The Kings River is approximately one mile east of the site. There are levees and canals between Avenal Cutoff and the river; the site would be located about 2,000 feet west of the Empire West Levee that protects areas west of the river. As for the proposed project site, the topography is flat and the groundwater is very shallow. The site is

currently used for agricultural purposes and is zoned AX, which is Exclusive Agricultural (Kings, 2001). In addition, this site is under a contract with the Williamson Act. The berms surrounding the Lemoore water treatment ponds are about 12 feet high, creating a partial visual barrier between SR 198 (and the Lemoore NAS housing area) and the site. However, the Olivera Site is one mile closer to residences that the proposed site. This site was eliminated because its setting is virtually identical to that of the proposed project but it would require longer linears (resulting in increased construction emissions). The site would also be more visible from Avenal Cutoff, which is fairly heavily traveled, and would be separated from the Henrietta Substation, eliminating the benefit of collocating these two facilities.

Lemoore Naval Air Station Sites

The Energy Commission's Peaking Power Plant Siting Team identified the Lemoore Naval Air Station as a location where peaking power plants could be located. Two areas within the base were identified. Base lands were considered because they offered nearby water and gas supply, and transmission lines. Also, because much of the base (14,000 acres) is used for agriculture, there is adequate land available for which there are no nearby sensitive noise receptors. However, the NAS was not evaluated for alternative sites in this analysis because (a) the loss of agricultural land would occur at the proposed site as well as on the NAS, so the alternative would not reduce that impact, (b) access to the NAS is restricted (and security has been tightened since September 11), so construction and operational access may be difficult, and (c) construction and operation of a power plant on the NAS would require permission from the federal government.

TECHNOLOGY ALTERNATIVES

Conservation And Demand-Side Management

Conservation and demand-side management (DSM) include a variety of approaches, including energy efficiency and conservation, building and appliance standards, load management and fuel substitution. Public Resources Code Section 25305(c) states that conservation, load management, or other demand reducing measures reasonably expected to occur shall be explicitly examined in the Energy Commission's energy forecasts and shall not be considered as alternatives to a proposed facility during the siting process. The forecast that will address this issue is the Commission's California Energy Outlook. Thus, such alternatives are not included in this analysis.

Since 1975, the displaced peak demand from all of conservation and DSM efforts has been roughly the equivalent of eighteen 500-megawatt power plants. The annual impact of building and appliance standards has increased steadily, from 600 MW in 1980 to 5,400 MW in 2000, as more new buildings and homes in the U.S. are built under increasingly efficient standards. Savings from energy efficiency programs implemented by utilities and state agencies have also increased (from 750 to 3,300 MW). Recent demand reducing proposals from the Governor and Legislature are expected to have an impact of over 2,000 MW during the summer of 2001 and an impact of over 3,400 MW when they are fully implemented. In addition, voluntary conservation measures adopted by residential and commercial/industrial users in

response to the current energy situation led to a 7.5 percent drop in electricity use throughout the state as of August 2001, but that dropped to 1.5 percent in October 2001 (Energy Commission, 2001b).

GENERATION TECHNOLOGY ALTERNATIVES

Staff considered alternative generation technologies that do not burn fossil fuels, such as solar, wind, biomass, geothermal, and hydropower.

Solar and Wind Generation

Solar and wind generation eliminate air pollutant emissions. Water consumption for both wind and solar generation is substantially less than for a natural gas fired plant because there is no thermal cooling requirement.

However, solar and wind resources would require large land areas in order to generate 91.4 MW of electricity. Specifically, assuming location in an area receiving maximum solar exposure (such as desert areas of San Bernardino County), central receiver solar thermal projects require approximately 5 acres per MW, so 91.4-MW solar thermal project would require approximately 457 acres, or over 45 times the amount of land area taken by the proposed plant site. Parabolic trough solar thermal technology requires similar acreage per megawatt. Depending on the size of the wind turbines, wind generation “farms” generally can require between 5 and 17 acres to generate one megawatt (resulting in the need for between approximately 457 and 1,554 acres to generate 91.4 MW) (Energy Commission, 2001c). Additionally, solar and wind energy technologies cannot provide full-time availability due to the inherent intermittent availability of sunlight and wind resources.

Although air emissions are significantly reduced or eliminated for both wind and solar facilities, both can have significant visual effects. Wind turbines can also cause bird mortality resulting from collision with rotating blades.

Biomass Generation

Biomass generation uses a waste vegetation fuel source such as wood chips (the preferred source) or agricultural waste. The fuel is burned to generate steam. Biomass facilities generate substantially greater quantities of air pollutant emissions than natural gas burning facilities. In addition, biomass plants are typically sized to generate less than 20 MW, which is substantially less than the capacity of the 91.4-MW HPP project.

GWF currently owns and operates the Tracy Biomass plant, which is located about 150 miles north of this area. The Tracy Biomass plant is an 18.5 MW (net) wood-fired plant that burns a little under 50 percent orchard wood waste ("agricultural fuel") and a little over 50 percent urban wood waste. The agricultural fuel is required by the permit, which provides an offset from open burning emissions that would normally result from field burning of agricultural waste.

Geothermal

Geothermal technologies use steam or high-temperature water (HTW) obtained from naturally occurring geothermal reservoirs to drive steam turbine/generators. There are

vapor dominated resources (dry, super-heated steam) and liquid-dominated resources where various techniques are utilized to extract energy from the HTW. Geothermal is a commercially available technology, but it is limited to areas with geologic conditions resulting in high subsurface temperatures. There are no viable geothermal resources in the Fresno County or Kings County region (Energy Commission, 2001d).

Hydropower

Hydropower facilities require large quantities of water (either stored or flowing water), and sufficient topography to allow power generation as water drops in elevation and flows through a turbine. These facilities are generally dependent on water flow to generate power, so they cannot serve immediate demand like a peaker plant does.

Conclusion Regarding Alternative Technologies

Because of the typically lower efficiencies, specific resource needs, and intermittent availability of alternative generation technologies, they do not fulfill a basic objective of this plant: which is to provide reliable peak power upon demand. Consequently, staff does not believe that geothermal, hydropower, solar, wind and biomass technologies present feasible alternatives to the proposed project.

CONCLUSIONS

Staff does not believe that alternative technologies (geothermal, solar, wind, biomass, and hydroelectric) currently present feasible alternatives to the proposed project, since the major objective of a peaker project is to provide power immediately on demand. While the “No Project” Alternative would eliminate all impacts of this project, the benefits of increasing in-state generation would also not be achieved.

The three site alternatives considered in this section offer some advantages and disadvantages in comparison to the proposed project, but overall the proposed site has no identified significant impacts. Therefore, no alternative is recommended over the proposed project.

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GENERAL CONDITIONS
INCLUDING
COMPLIANCE MONITORING AND CLOSURE PLAN

Testimony of Christopher Meyer

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

DEFINITIONS

To ensure consistency, continuity and efficiency, the following terms, as defined, apply to all technical areas, including Conditions of Certification:

Site Mobilization:

Moving trailers and related equipment onto the site, usually accompanied by minor ground disturbance, grading for the trailers and limited vehicle parking, trenching for utilities, installing utilities, grading for an access corridor, and other related activities. Ground disturbance, grading, etc. for site mobilization are limited to the portion of the site necessary for placing the trailers and providing access and parking for the occupants. Site mobilization is for temporary facilities and is therefore not considered construction.

Ground Disturbance:

Onsite activity that results in the removal of soil or vegetation, boring, trenching or alteration of the site surface. This does not include driving or parking a passenger vehicle, pickup truck, or other light vehicle, or walking on the site.

Grading:

Onsite activity conducted with earth-moving equipment that results in alteration of the topographical features of the site such as leveling, removal of hills or high spots, or moving of soil from one area to another.

Construction:

[From section 25105 of the Warren-Alquist Act.] Onsite work to install permanent equipment or structures for any facility. Construction does **not** include the following: The installation of environmental monitoring equipment.

a. A soil or geological investigation.

b. A topographical survey.

c. Any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility.

d. Any work to provide access to the site for any of the purposes specified in a., b., c., or d.

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:

1. 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;

2. appropriate letters from delegate agencies verifying compliance;

3. Energy Commission staff audits of project records; and/or

4. 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 date”).

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 request+s 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:

1. 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);

2. a summary of the current project operating status and an explanation of any significant changes to facility operations during the year;

3. 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;

4. a cumulative listing of all post-certification changes approved by the Energy Commission or cleared by the CPM;

5. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;

6. a listing of filings made to, or permits issued by, other governmental agencies during the year;

7. a projection of project compliance activities scheduled during the next year;

8. a listing of the year's additions to the on-site compliance file, and

9. 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].

10. 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. All recorded inquiries shall be responded to within 24 hours. The telephone number shall be posted at the project site and made easily visible to passersby during construction and operation. The telephone number shall be provided to the CPM who will post it on the Energy Commission's web page at www.energy.ca.gov/sitingcases. Any changes to the telephone number shall be submitted immediately to the CPM who will update the web page.

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 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 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 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: _____

DOCKET #: _____

COMPLIANCE PROJECT MANAGER: _____

EVENT DESCRIPTION	DATE
Certification Date	
Online Date	
POWER PLANT SITE ACTIVITIES	
Start Site Mobilization	
Start Ground Disturbance	
Start Rough Grading	
Start Construction	
First Combustion of Gas Turbine	
Start Commercial Operation	
Complete All Construction	
TRANSMISSION LINE ACTIVITIES	
Start T/L Construction	
SYNCHRONIZATION WITH GRID	
COMPLETE T/L CONSTRUCTION	
FUEL SUPPLY LINE ACTIVITIES	
Start Fuel Supply Line Construction	
COMPLETE FUEL SUPPLY LINE CONSTRUCTION	
WATER SUPPLY LINE ACTIVITIES	
START WATER SUPPLY LINE CONSTRUCTION	
COMPLETE WATER SUPPLY LINE CONSTRUCTION	

HENRIETTA PEAKER PROJECT
PREPARATION TEAM

Executive Summary ..... **Bob Eller**

Introduction ..... **Bob Eller**

Project Description ..... **Bob Eller**

Air Quality ..... **Will Walters and Lisa Blewitt**

Public Health ..... **Alvin Greenberg, Ph.D.**

Transmission Line Safety and Nuisance ..... **Obed Odoemelam**

Hazardous Materials and Worker Safety/Fire Protection ..... **Ramesh Sundareswaran**

Waste Management ..... **Alvin Greenberg, Ph.D.**

Land Use ..... **Mark Hamblin**

Traffic and Transportation ..... **Tami Borton**

Noise and Vibration ..... **Fred Greve**

Visual Resources ..... **David Tatsumi**

Cultural Resources ..... **Paul Shattuck**

Socioeconomic Resources ..... **Tami Borton**

Biological Resources ..... **Tom Scofield**

Soil and Water Resources ..... **Jon Schulman**

Paleontological Resources ..... **Robert D. Hunter, Ph.D.**

Facility Design ..... **Steve Baker, Al McCuen, and Shahab Khoshmashrab**

Power Plant Reliability ..... **Steve Baker**

Power Plant Efficiency ..... **Shahab Khoshmashrab**

Transmission System Engineering ..... **Richard Minetto, P.E. and Laiping Ng**

Alternatives ..... **Susan Lee**

Staff Counsel ..... **Lisa DeCarlo**

Project Assistant ..... **Mary Dyas**

Support Staff ..... **Luz Manriquez, Raquel Rodriguez, Pat Owen, Adrian McCullough**