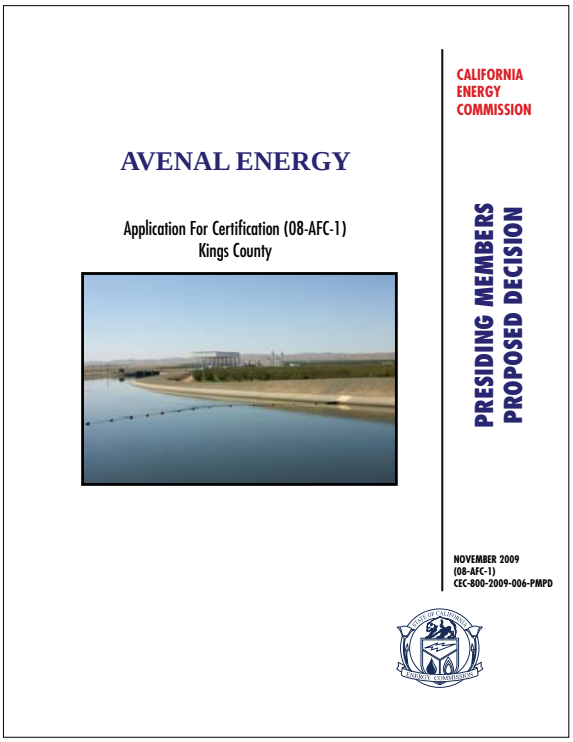
CALIFORNIA
ENERGY
COMMISSION

AVENAL ENERGY

Application For Certification (08-AFC-1)
Kings County

PRESIDING MEMBERS PROPOSED DECISION

NOVEMBER 2009
(08-AFC-1)
CEC-800-2009-006-PMPD



CALIFORNIA ENERGY COMMISSION

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www.energy.ca.gov/sitingcases/avenal/index.html

JEFFREY BYRON
Presiding Committee Member

KAREN DOUGLAS
Associate Committee Member

GARY FAY
Hearing Officer

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
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The Committee hereby submits its Presiding Member's Proposed Decision for the ***AVENAL ENERGY PROJECT*** (Docket Number 08-AFC-1). We have prepared this document pursuant to the requirements set forth in the Commission's regulations. (20 Cal. Code of Regs., §§ 1749-1752.5.)

The Committee recommends that the Application for Certification be approved, subject to the Conditions of Certification set forth herein, and that the Energy Commission grant the Project Owner a license to construct and operate the Project.

Dated November 10, 2009, at Sacramento, California.

JEFFREY D. BYRON
Commissioner and Presiding Committee Member
Avenal Energy Project AFC Committee

KAREN DOUGLAS
Chairman and Associate Committee Member
Avenal Energy Project AFC Committee

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INTRODUCTION

A. SUMMARY OF THE DECISION

This Decision contains the Commission's rationale in determining that the proposed Avenal Energy Project will, as mitigated, have no significant impacts on the environment and complies with all applicable laws, ordinances, regulations, and standards (LORS). The project may therefore be licensed. Our Decision is based exclusively upon the record established during this certification proceeding and summarized in this document. We have independently evaluated the evidence, provided references to the record[1] supporting our findings and conclusions, and specified the measures required to ensure that the Avenal Energy Project is designed, constructed, and operated in the manner necessary to protect public health and safety, promote the general welfare, and preserve environmental quality.

This Decision also assesses the greenhouse gas (GHG) emissions that are likely to result from the construction and operation of the Avenal Energy Project. We conclude that the Avenal Energy Project's GHG emissions will comply with all applicable LORS and will not result in any significant, adverse, unmitigated environmental impacts. We also conclude that the Avenal Energy Project will be consistent with California's ambitious GHG goals and policies.

On February 21, 2008, Avenal Power Center, LLC (Avenal Power or Applicant) filed an Application for Certification (AFC) for the Avenal Energy Project with the Energy Commission seeking approval to construct and operate a 600-megawatt (MW) power plant in the City of Avenal in Kings County. The project would be built on approximately 34 acres of a 148-acre site that is just south of the Fresno County line, and approximately two miles east of Interstate 5. Although the proposed project is within City of Avenal town limits in an area zoned for industrial use, it is located approximately six miles from the city's residential and commercial districts. Current land use at the project site is irrigated agriculture, as is the surrounding land use. (Ex. 200, p. 3-2.) The Energy Commission has exclusive jurisdiction to license this project and is considering the proposal under a review process established by Public Resources Code section 25540.6. The

[1] The Reporter's Transcript of the evidentiary hearings is cited as "date of hearing RT page __." For example: 7/07/09 RT 77. The exhibits included in the evidentiary record are cited as "Ex. number." A list of all exhibits is contained in Appendix B of this Decision.

Energy Commission began review of the Avenal Energy Project on April 16, 2008.

The proposed Avenal Energy Project would be a combined cycle generating plant consisting of two natural gas-fired General Electric 7FA Gas Turbines with Heat Recovery Steam Generators (HRSG) and one General Electric Steam Turbine. Oxidation catalysts would also be located within each heat recovery steam generator to reduce carbon monoxide (CO) and volatile organic compounds (VOC) in the exhaust gases exiting the stack.

Natural gas would be provided via a 2.5-mile, 20-inch underground pipeline interconnection to Pacific Gas and Electric Company's (PG&E) natural gas pipeline transmission system at the Kettleman compressor station. The City of Avenal would provide water to the proposed project from the City's water treatment plant adjacent to the site. Groundwater from three local wells would provide a back-up water source to the project via two separate pipelines, totaling less than 1.4-miles. The proposed project would use a dry cooling process and recycling equipment to reduce water use. The use of a zero liquid discharge system would further minimize water consumption and eliminate waste water discharge. The project would be connected to the PG&E transmission grid via a 6.4-mile single-circuit 230 kV transmission line, traversing agricultural land to the Gates substation in Fresno County.

Avenal Power proposes to initiate the construction of the Avenal Energy Project in April of 2010. Construction is expected to take approximately 27 months. Assuming there are no unanticipated delays, commercial operation would begin in June of 2012. The greatest number of construction workers would occur in the 19th and 20th month of construction, with the number of construction workers ranging from approximately 58 in the first month of construction to 550 workers at peak construction. There would be an average of 326 workers per month during construction. (Ex. 200, 4.8-4.)

Avenal Power anticipates that once completed, the facility will be operated up to 7 days per week, 24 hours a day, employing up to 25 full-time employees. Applicant estimates capital costs associated with the project to be approximately $530 million. (Ex. 200, p. 4.8-11.)

B. SITE CERTIFICATION PROCESS

The Avenal Energy Project and its related facilities are subject to Energy Commission licensing jurisdiction. (Pub. Res. Code, § 25500 et seq.). During licensing proceedings, the Commission acts as lead state agency under the California Environmental Quality Act (CEQA). (Pub. Res. Code, §§ 25519(c), 21000 et seq.) The Commission's regulatory process, including the evidentiary record and associated analyses, is functionally equivalent to the preparation of an Environmental Impact Report. (Pub. Res. Code, § 21080.5.) The process is designed to complete the review within a specified time period when the required information is submitted in a timely manner; a license issued by the Commission is in lieu of other state and local permits.
The Commission's certification process provides a thorough review and analysis of all aspects of a proposed power plant project. During this process, the Energy Commission conducts a comprehensive examination of a project's potential economic, public health and safety, reliability, engineering, and environmental ramifications.

Specifically, the Commission's process allows for and encourages public participation so that members of the public may become involved either informally or on a formal level as intervenor parties who have the opportunity to present evidence and cross-examine witnesses. Public participation is encouraged at every stage of the process.

The process begins when an Applicant submits an AFC. Commission staff reviews the data submitted as part of the AFC and makes a recommendation to the Commission on whether the AFC contains adequate information to begin the certification process. After the Commission determines an AFC contains sufficient analytic information, it appoints a Committee of two Commissioners to conduct the formal licensing process. This process includes public conferences and evidentiary hearings, where the evidentiary record is developed and becomes the basis for the Presiding Member's Proposed Decision (PMPD). The PMPD determines a project's environmental impact and conformity with applicable laws, ordinances, regulations, and standards and provides recommendations to the full Commission.

The initial portion of the certification process is weighted heavily toward assuring public awareness of the proposed Project and obtaining necessary technical information. During this time, the Commission staff sponsors public workshops at which Intervenors, agency representatives, and members of the public meet

with Staff and Applicant to discuss, clarify, and negotiate pertinent issues. Staff publishes its initial technical evaluation of the Project in its Preliminary Staff Assessment (PSA), which is made available for a 30-day public comment period. Staff's responses to public comment on the PSA and its complete analyses and recommendations are published in the Final Staff Assessment (FSA, also Exhibit 200).

Following this, the Committee conducts a Prehearing Conference to assess the adequacy of available information, identify issues, and determine the positions of the parties. Based on information presented at this event, the Committee issues a Hearing Order to schedule formal evidentiary hearings. At the evidentiary hearings, all formal parties, including intervenors, may present sworn testimony, which is subject to cross-examination by other parties and questioning by the Committee. Members of the public may offer oral or written comments at these hearings. Evidence submitted at the hearings provides the basis for the Committee's analysis and recommendations to the full Commission.

The Committee's analysis and recommendations appear in the PMPD, which is available for a 30-day public comment period. Depending upon the extent of revisions necessary after considering comments received during this period, the Committee may elect to publish a revised version. If so, the Revised PMPD triggers an additional public comment period. Finally, the full Commission decides whether to accept, reject, or modify the Committee's recommendations at a public hearing.

Throughout the licensing process, members of the Committee, and ultimately the Commission, serve as fact-finders and decision-makers. Other parties, including the Applicant, Commission staff, and formal intervenors, function independently with equal legal status. An "ex parte" rule prohibits parties in the case, or other persons with an interest in the case, from communicating on substantive matters with the decision-makers, their staffs, or assigned hearing officer unless these communications are made on the public record. The Office of the Public Adviser is available to assist the public in participating in all aspects of the certification proceeding.

C. PROCEDURAL HISTORY

Public Resources Code, sections 25500 et seq. and Energy Commission regulations (Cal. Code Regs., tit. 20, § 1701, et seq.) mandate a public review process and specify the occurrence of certain procedural events in which the

public may participate. The key procedural events that occurred in the present case are summarized below.

On February 21, 2008, Avenal Power filed an AFC for the Avenal Energy Project with the Energy Commission seeking approval to construct and operate a 600-MW power plant in the City of Avenal in Kings County. On April 16, 2008, the Energy Commission deemed the AFC data adequate (sufficient data to proceed) and assigned a Committee of two Commissioners to conduct proceedings.

The formal parties included the Applicant, the Energy Commission staff (Staff), Intervenors: California Unions for Reliable Energy (CURE); the Center on Race, Poverty and the Environment; Rob Simpson; and the Tehipite Chapter of the Sierra Club.

On April 30, 2008, the Committee issued a Notice of "Informational Hearing and Site Visit". The Notice was mailed to local agencies and members of the community who were known to be interested in the project, including the owners of land adjacent to or in the vicinity of the Avenal Energy Project. The Public Adviser's Office prepared a bilingual Notice about the public hearing and site visit and distributed it to local officials and sensitive receptors surrounding the project site.[2] The Notice was also published in the *Avenal Chimes*, a weekly newspaper with the highest circulation in the area.

On Tuesday, May 20, 2008, the Committee conducted a Site Visit to tour the proposed Avenal Energy Project site and then convened a public Informational Hearing at the Avenal Recreation Center in Avenal. At that event, the Committee, the parties, interested governmental agencies, and other public participants discussed issues related to development of the Avenal Energy Project, described the Commission's review process, and explained opportunities for public participation. On May 27, 2008, the Committee issued an initial Scheduling Order and on April 24, 2009, the Committee issued a Revised Scheduling Order.

In the course of the review process, Staff conducted public workshops on July 1, 2008 and on February 18, 2009, to discuss the resolution of issues and concerns with the Applicant, governmental agencies, and interested members of the public.

[2] Sensitive receptors are people or institutions with people that are particularly susceptible to illness, such as the elderly, very young children, people already weakened by illness (e.g., asthmatics), and persons engaged in strenuous exercise.

On March 23, 2009, the Committee conducted a Status Conference in Sacramento at the Energy Commission's headquarters, to consider the progress of the AFC, hear comments on status reports filed by the parties, allow the Committee and parties to discuss ways in which the case may most efficiently proceed to evidentiary hearings, and to discuss other matters relevant to the application.

Staff issued its Preliminary Staff Assessment (PSA) on February 2, 2009 and on February 18, 2009, Staff conducted a public workshop to discuss the topics of Air Quality, Biology, Cultural Resources, Land Use, and Traffic and Transportation. Staff issued its Final Staff Assessment (FSA) on June 5, 2009, and held a workshop on June 23, 2009 in Avenal, California, to accept comments.

On June 15, 2009, the Committee issued a Notice of Prehearing Conference and Notice of Evidentiary Hearings. The Prehearing Conference was held at the Energy Commission headquarters in Sacramento, on June 30, 2009. The Evidentiary Hearing was conducted in the City of Avenal on July 7, 2009. The Committee directed parties to submit opening briefs by August 12, 2009 and reply briefs by August 24, 2009.

The Committee published this PMPD on November 10, 2009, and scheduled a Committee Conference in Sacramento at Commission Headquarters for Wednesday, December 2, 2009. At the hearing, the parties may comment on the PMPD. The 30-day comment period on the PMPD will expire on December 10, 2009. Written comments should be submitted by December 10, 2009. A Notice of Availability was published in the *Avenal Chimes*, a general circulation publication.

D. COMMISSION OUTREACH

Several entities within the Energy Commission provide various notices concerning power plant siting cases. Staff provides notices of staff workshops and the release of the Preliminary and Final Staff Assessments. The Hearing Office notices Committee-led events such as the informational hearing and site visit, status conferences, the prehearing conference, and evidentiary hearings. The Public Adviser's Office provides additional outreach for critical events as well as provides information to interested persons that would like to become more actively involved in a power plant siting proceeding. (7/7/09 RT 55-59.) Further, the Media Office provides notice of events to local and regional press through

press releases. The public may also subscribe to the proceeding's e-mail List Server offered on the web page for each project which gives an immediate notification of documents posted to the project web page. Through the activities of these entities, the Energy Commission has made every effort to ensure that interested persons are notified of activities in this proceeding. (Ex. 200, pp. 1-2 to 1-3; 7/7/09 RT 53-60.)

In addition to sending notices to residents and entities in Avenal, the noticing efforts included outreach to entities and residents in Kettleman City and Huron as well as including notices of key hearings in the local newspapers in both English and Spanish. (7/7/09 RT 47, 57-58.) Additionally, an informational sheet describing the proposed project was provided in Spanish and a Spanish interpreter was present at most staff workshops and at the evidentiary hearing to provide interpretation for those that preferred Spanish-English translation. (7/7/09 RT 57-58.) An informational sheet describing the project was provided in Spanish and the Public Adviser, who speaks Spanish, on several occasions offered to help members of the public to participate more actively in the proceeding. (7/7/09 RT 58-59.)

E. PUBLIC COMMENT

The record contains public comments from concerned individuals and organizations. Throughout these proceedings, as reflected in the transcribed record, the Committee provided an opportunity for public comment at each Committee-sponsored conference and hearing. The following table shows the names of those offering public comments at the Evidentiary Hearing on July 7, 2009.

//

//

Public Comment
Evidentiary Hearing, July 7, 2009

Avenal Superior Court
501 E. Kings Street
Avenal, California

Name and Organization
Gabriela Torres, Interpreter
Jim Swaney, San Joaquin Valley Air Pollution Control District
Harlan Casida, Mayor, City of Avenal
Melissa Whitten, City Manager
Sid Craighead, City Council Member, City of Avenal
Dagoberto Ovalle, City Council Member, City of Avenal
Shelley Buranek (via teleconference), United States Fish and Wildlife Service
Jay Salyer, Kings County Economic Development Corporation
Tom Frantz, Association of Irritated Residents
Shawn Smith, Carpenters Local 1109
Miguel Rodriguez
Ken Lavinder
Carolyn Shaffer
Santano Rios
John Moreno
Charles Adams
Tony Castillo
Gloria Preciado
Gilbert Garza
Donna Curty
Ismael Vitela
Jeannie Tillotson
Miguel Aluniz
Maria Elena Aluniz
Pedro Mora
Manuel Villa
Ray Leon, Latino Policy Project

I. PROJECT DESCRIPTION

Avenal Power Center, LLC, wholly-owned subsidiary of Macquarie Energy North America Trading Inc, filed an Application for Certification (AFC) with the California Energy Commission on February 21, 2008, to construct and operate a combined-cycle natural gas-fired power plant. The proposed Avenal Energy project site is located on approximately 34 acres of land in a predominantly agricultural region of the southwestern San Joaquin Valley within the City of Avenal in western Kings County, just south of the Fresno County line, and two miles east of Interstate 5. While the site is within the city limits of Avenal, it is separated from the business, commercial development, and residential districts of the city by the Kettleman Hills and approximately six miles of rolling, open agricultural lands. See **Regional Local Map Figure 1** and **Site Location Map Figure 2**. (Ex. 200, p. 3-1.)

The proposed project would consist of two natural gas-fired General Electric 7FA gas turbines with heat recovery steam generators and one General Electric steam turbine, would utilize dry cooling, and would be nominally rated at 600 megawatts (MW).

Project construction, from the site preparation through commercial operation, will take about twenty-seven months. Operation is anticipated by 2012. Construction is expected to cost approximately $530 million. (7/7/09 RT 26.)

1. Project Objectives

According to the AFC, Avenal Energy's project objectives are:

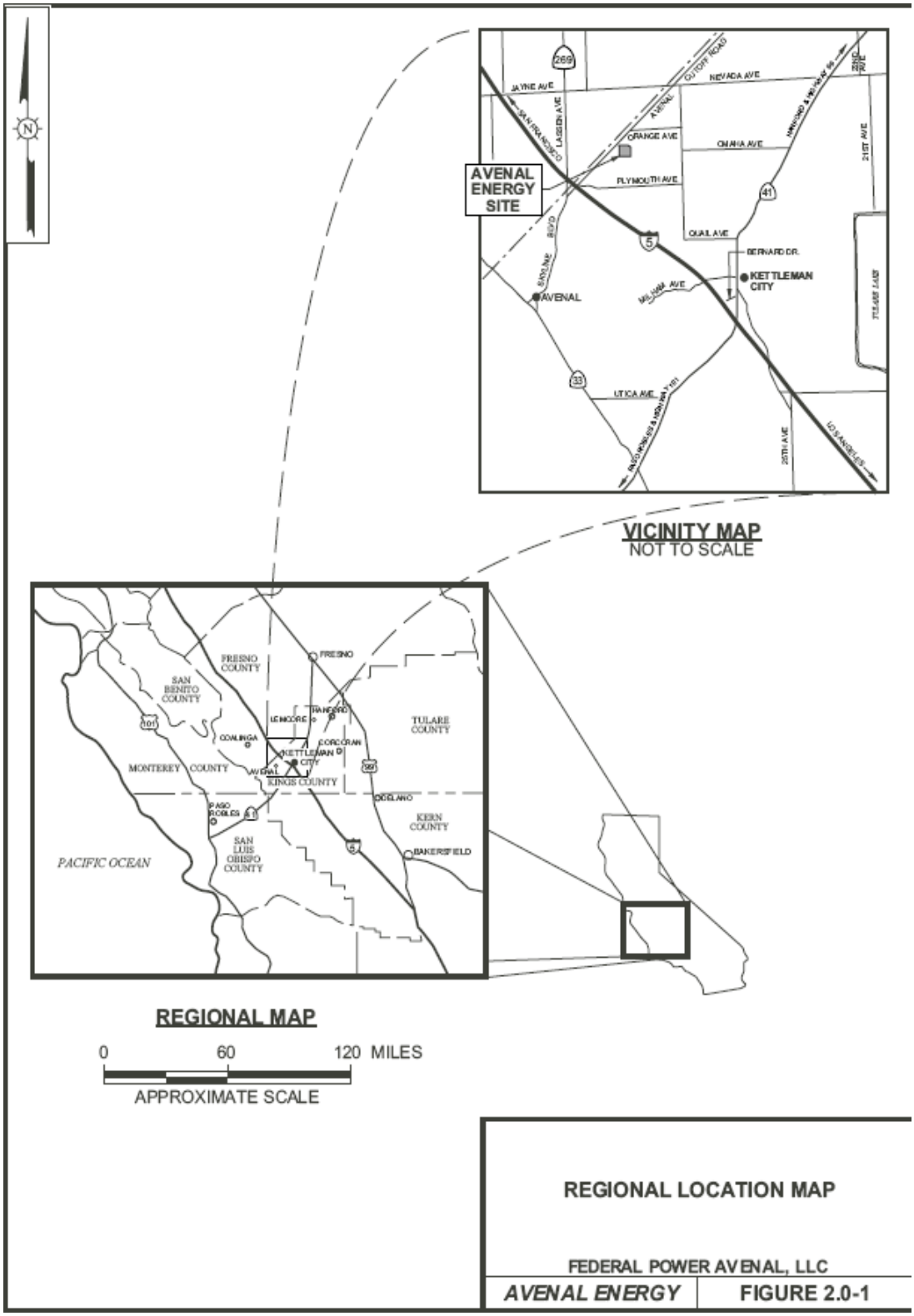
- To construct and operate a cost-effective, environmentally sound, and efficient natural gas-fired, combined-cycle merchant generating facility to provide 600 MW of power generation to California's energy market;

- To minimize or eliminate the length of any new project linear facilities, including gas and water supply lines, discharge lines, and transmission interconnections by using existing infrastructure where feasible; and

- To develop a site consistent with community planning and existing zoning at a location that is supported by the local community.

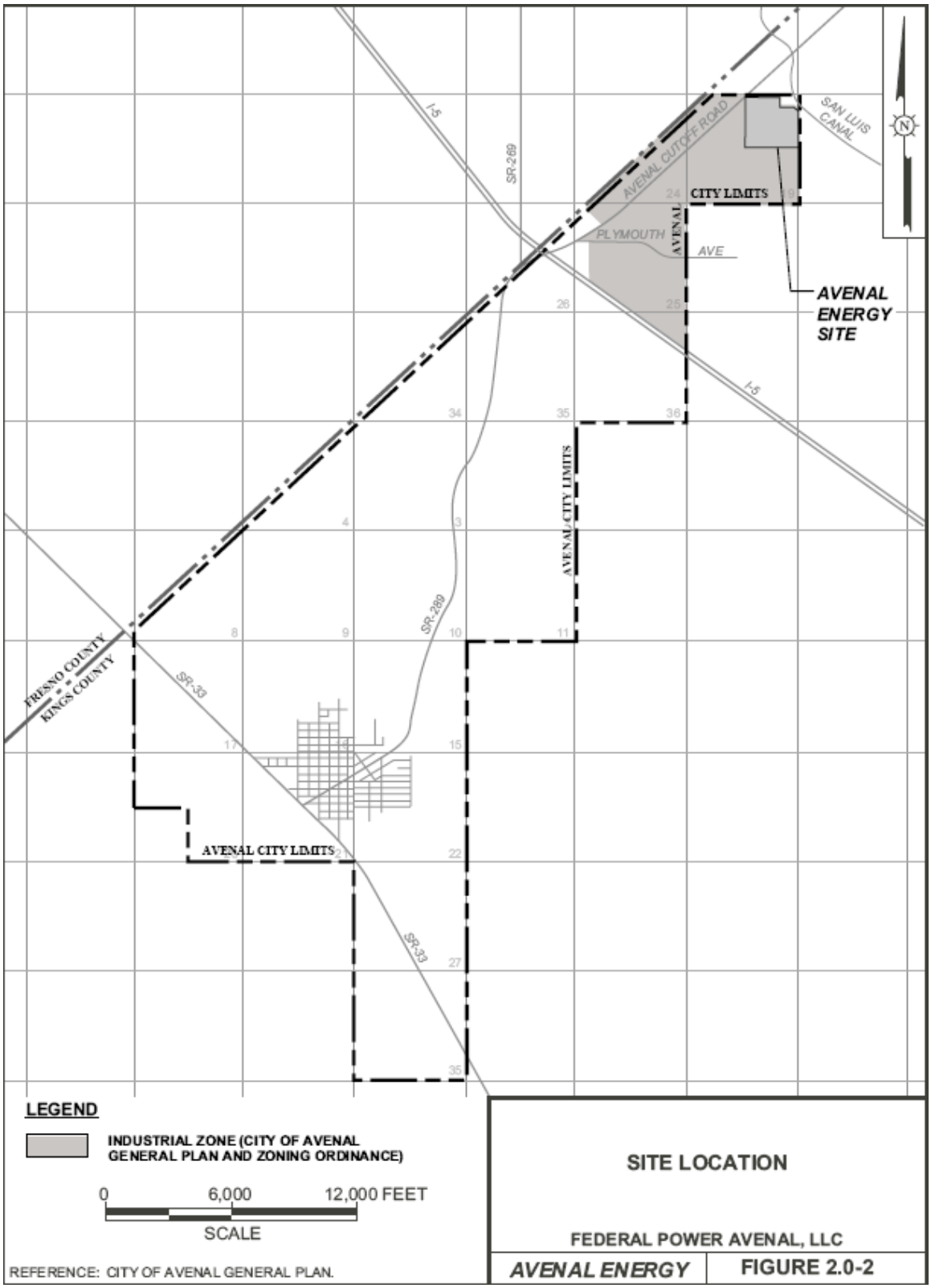
Regional Location Map – Figure 1

Source: Ex. 200.



Site Location Map – Figure 2

Source: Ex. 200



2. Site Conditions

The approximate 34-acre project would include the power plant footprint and ancillary infrastructure including 1.2 acres of permanent disturbance resulting from tower footing for an electrical transmission line and approximately 1.3 acres to be used for an access road. The construction phase would require a 24-acre temporary laydown area also within the 148-acre parcel. The geographical location of the site is Section 19, Township 21 south, and Range 18 east of the Mt. Diablo Base and Meridian, Assessor's Parcel No. 36-170-035. (Ex. 200, p. 3-2.)[3]

The proposed Avenal Energy Project site is zoned M-2 Industrial. City of Avenal zoning ordinance section 9.31 specifies that an electric power generating plant is an allowable use in the M-2 zone. The northernmost backup water supply well and a portion of the transmission line are located in Fresno County on land designated for agricultural use. However, the county does permit transmission lines on agricultural land. (Ex. 200, pp. 3-2 to 3-3)

3. Power Plant Features

The primary features of the proposed Avenal Energy Project would be placed both within and outside of the 34-acre site. Features within the 34-acre fenced area are:

- Two combustion turbine generators/heat recovery steam generators to one steam turbine generator (two-on-one configuration);
- Natural gas-fired General Electric 7FA model PG7241 combustion turbine generators, equipped with dry low-nitrogen oxide (NO_x) combustors and inlet-air mechanical chillers;
- Selective catalytic reduction and oxidation catalysts in the heat recovery steam generator; and
- Oxidation catalysts located within each heat recovery steam generator

[3] On August 25, 2009, City of Avenal Community Development Director Steven Sopp sent a letter to the Hearing Officer in an effort to answer any questions regarding the address of the Avenal Energy Center. He stated that when the AFC process began the address, 33119 Avenal Cutoff, Avenal, CA, was assigned by City Staff. However, the address was not registered at the U.S. Post Office as an official address. There is no mail box on the site and the Kings County Assessor does recognize it as the official site address. The City assumes the address will be registered when the plant is approved or starts construction. At that time it will become the official address of the plant. (Letter from Steven Sopp, City of Avenal to Gary Fay, California Energy Commission, dated August 25, 2009.)

Elements that will be located outside the fenced area include:

- Backup water supply from new underground raw, recycled, potable and waste water pipelines connecting to the city of Avenal water treatment plant and additional underground pipes from existing agricultural wells;

- A plant access road and turn around to connect to the Avenal Cutoff Road (a county road);

- A 20-inch, 2.5-mile long underground gas pipeline tie-in to the PG&E Kettleman Compressor Station; and

- A 6.4-mile, single-circuit, 230-kV transmission line connecting the on-site switchyard to the existing PG&E Gates Substation. (Ex. 200, p. 3-2.)

Avenal Power anticipates that Avenal Energy Project will be operated up to 7 days per week, 24 hours a day, employing up to 25 full-time employees. Overall annual availability of the project is expected to be approximately 90 percent or greater. The project capacity factor would depend upon the demand for electricity and ancillary services. (Ex. 1, p. 1-8.)

4. Associated Facilities

***Transmission Lines*:** Electricity generated by the proposed project would be delivered by 6.4 miles of new, single circuit, 230-kV transmission line extending from the onsite switchyard to the existing PG&E Gates Substation. The new line would be located within a 120 foot-wide right-of-way.

Roads: Access to the proposed Avenal Energy Project would be provided by a road and turn-around on the project site that would connect to the Avenal Cutoff Road.

Gas Line: Natural gas would be conveyed by a new 20-inch diameter, 2.5-mile long underground pipeline interconnection from existing lines at the PG&E Kettleman compressor station, located approximately 7,000 feet southwest of the proposed Avenal Energy Project site.

***Water Supply and Turbine Cooling*:** The project turbines will require an estimated 20 acre-feet of water in a typical year and 104 acre-feet of water in a maximum use year. To minimize water consumption, the project will incorporate dry cooling, zero liquid discharge (ZLD) resulting in no wastewater disposal needs, dry low-NO_x reduction, and closed loop inlet air chillers to minimize water use.

The primary water source identified in the AFC is the City of Avenal turnout on the California Department of Water Resources' San Luis Canal (located adjacent to the site). The City of Avenal has provided a will-serve letter for the use of the San Luis Canal water. An on-site Service Water/Firewater Storage Tank, providing up to 750,000 gallons of water storage, would be provided on-site in the event that water sources are temporarily interrupted or water quality is temporarily degraded. Domestic water, supplied by the City of Avenal, would be treated onsite and used for toilets, showers, emergency eyewash, and shower stations. Bottled water would be used for drinking. Additional backup water supplies would come from nearby agricultural wells, requiring several new pipelines. (Ex. 200, p. 3-3.)

5. Facility Closure

The Avenal Energy Project would be designed for a 30-year operating life. At some point in the future, the project would cease operation and shut down. At that time, it would be necessary to ensure that the closure occurs in a manner that protects public health and safety and the environment from adverse effects. Decommissioning activities would be designed to optimize the recycling of facility components. Unused chemicals would be returned to suppliers or sold to other users. Equipment containing chemicals would be drained and shut down in a manner to assure public health and safety and protect the environment. Nonhazardous wastes would be collected and disposed of in licensed landfills or recycled at licensed waste collection facilities. Hazardous wastes would be disposed of according to applicable laws, ordinances, regulations, and standards. The site would be secured 24 hours per day during the decommissioning activities.

FINDINGS

Based on the evidentiary record, we find as follows:

1. Avenal Power Center, LLC, will own and operate the Avenal Energy Project.

2. The Avenal Energy Project involves the construction and operation of a nominal 600 MW natural gas-fired, combined-cycle electrical generating facility on approximately 34 acres of land in the City of Avenal, Kings County, California.

3. The project includes associated transmission, gas supply, and water supply lines.

4. The project and its objectives are adequately described by the relevant documents contained in the record.

CONCLUSION

We therefore conclude that the Avenal Energy Project is described at a level of detail sufficient to allow review in compliance with the provisions of both the Warren-Alquist Act and the California Environmental Quality Act.

II. PROJECT ALTERNATIVES

The California Environmental Quality Act (CEQA) Guidelines and the Energy Commission's regulations require an evaluation of the comparative merits of a range of feasible site and facility alternatives which meet the basic objectives of the proposed project but would avoid or substantially lessen potentially significant environmental impacts. [Cal. Code Regs., tit. 14, §§ 15126.6(c) and (e); tit. 20, § 1765.]

The range of alternatives, including the "No Project" alternative, is governed by the "rule of reason" and need not include those alternatives whose effects cannot be reasonably ascertained and whose implementation is remote and speculative. [Cal. Code Regs., tit. 14, § 15126.6(f).] Rather, the analysis is necessarily limited to alternatives that the "lead agency determines could feasibly attain most of the basic objectives of the project." (*Id*.)

In addition, state policy favors a "loading order" for meeting electricity needs: first in this order is a preference for adding energy efficiency and demand response, followed by renewables and distributed generation, combined heat and power (cogeneration) and then fuel efficient fossil-fueled generation and infrastructure development.

Applicant provided an alternatives analysis in the Application for Certification (AFC) (Ex. 1, Vol. I, § 5.0), describing the site selection process and project configuration in light of project objectives. Staff included a similar analysis in the Final Staff Assessment (FSA). (Ex. 200, p. 6-1 et seq.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

Energy Commission staff used the following methodology to analyze project alternatives:

- identified basic objectives of the project and its potentially significant adverse impacts (which are discussed by topic in this Decision);
- identified and evaluated alternative sites to determine whether an alternative site would mitigate impacts of the proposed site and whether an alternative site would create impacts of its own;
- identified and evaluated technology alternatives, including conservation and other renewable sources; and

- evaluated consequences of not constructing the project, i.e., the "No Project" alternative. (Ex. 200, p. 6-4.)

1. Project Objectives

The evidentiary record establishes that the project objectives are:

- To construct and operate a cost-effective, environmentally sound, and efficient merchant generating facility to provide power generation to California's energy market;

- To minimize or eliminate the length of any project linear facilities, including gas and water supply lines, discharge lines, and transmission interconnections;

- To deliver electricity to the California transmission system backbone; and

- To develop a site consistent with community planning and existing zoning at a location that is supported by the local community. (Ex. 200, p. 6-5.)

2. Alternative Sites

Energy Commission staff's review of alternative sites was based on the following criteria:

- Avoid or substantially lessen one or more of the potential significant effects of the project;
- Site size of approximately 40+ acres, to accommodate both the actual project site and any temporary construction areas;
- Compliance with general plan designation and zoning classification;
- Within a reasonable distance of the electric transmission system, natural gas supply, and water supply;
- Available for lease or purchase; and
- Not adjacent to moderate or high density residential areas, sensitive receptors (such as schools and hospitals), or recreation areas. (Ex. 200, p. 6-9.)

The evidence of record shows that Staff initially identified several alternative sites to which it applied the above screening criteria. After rejecting those sites which

did not meet the screening criteria, Staff conducted a detailed evaluation of five remaining options. These include two site alternatives proposed by the Applicant in the AFC, one site alternative proposed by Staff in the FSA, one project alternative, and the “No Project” alternative. (Ex. 200, pp. 6-11 to 6-17.)

Avenal Power Alternative Site A is located within the City of Avenal near the Kettleman compressor station, approximately one mile southwest of the Avenal Energy site. The site is between 34½ Avenue and 34th Avenue, north of Plymouth Avenue. This site is also within the City of Avenal's industrial park, and zoned for heavy industry.

Avenal Power Alternative Site B is located near the PG&E Gates Substation in Fresno County, approximately three miles north of the Avenal Energy site. The site is near the corner of Jayne Avenue and Lassen Avenue (Route 269). This site is outside the City of Avenal's industrial park, and is zoned for agriculture.

Staff Alternative Site A is located on the southern side of the San Ardo Oil Field, a large oil field in the upper Salinas Valley of Monterey County, about five miles south of the town of San Ardo, and about 20 miles north of the City of Paso Robles. The PG&E San Ardo Substation is located adjacent to the San Ardo Fields and would be the logical connection point for this alternative site.

3. Generation Technology Alternative

Commission staff also analyzed the alternative of reducing the size of the project in order to reduce its impacts. The proposed project would consist of two natural gas-fired combustion turbines with inlet-air mechanical chillers, each generating approximately 172 MW of gross power at 101°Farenheit ambient temperature. All of the steam exiting the two heat recovery steam generators (HRSGs) would be directed to the one steam turbine generator (STG), which would generate approximately 291 MW of gross power with duct burners in service. Under these conditions, the power plant would produce approximately 636 MW of gross power; however, for the purposes of analyzing the smaller power plant project, Staff used the net output of 600 MW (project operating with both inlet air chillers and duct burners) as the standard.

The smaller power plant project alternative is based on the construction of one GE 7FA 180 MW natural gas-fired combustion turbine with inlet air chilling and an appropriately sized STG with duct burners. The efficiency of operating two combustion turbines into one STG is approximately equal to operating one

combustion turbine into a proportionally smaller STG. This translates into a 300 MW power plant with approximately half the air emissions of the proposed 600 MW project.

Intervenor Rob Simpson suggests three alternative generation technologies. First, Mr. Simpson urges the Commission to explore the possibility of developing solar photovoltaic (PV) resources over the State Water Project. (Simpson Opening Brief at 6.) Second, he suggests the development of solar PV generation on farmland. (*Id*.) Third, Mr. Simpson suggests the installation of PV resources on rooftops. (*Id*.)

Regarding the proposal to install PV generation over the State Water Project, Mr. Simpson cites recent legislation allowing the Department of Water Resources (DWR) to establish a program to allow this type of development. (Water Code § 141[a].) However, Mr. Simpson provides no evidence that DWR has established such a program. He further offers nothing to establish the feasibility of installing PV over the SWP. Due to the large area of solar panels required, the evidence shows there could be substantial disruption not only to biological resources, but also to operations access for the SWP and local agriculture. (7/7/2009 RT 415:18-416:12, 427:4-16, 430:22-431:3.)

Mr. Simpson neither established the feasibility of placing PV on local farmland, nor demonstrated any reduction of significant impacts over those of the proposed project. In fact, Staff's examination of a solar alternative had revealed substantial impacts related to that alternative. (Ex. 200 p. 6-20; 7/7/09 RT 423-424.)

As to Mr. Simpson's proposal for a rooftop solar alternative to the Project, Staff examined that alternative, stating that "[p]hotovoltaic arrays mounted on buildings generally require about 4 acres per MW." (Ex. 200 at 6-20.) To generate 600 MW, therefore, 2400 acres of solar photovoltaic arrays would be needed. As a practical matter, the quantity of suitable structures required for placement of large-scale photovoltaic generation is found almost exclusively in urban or suburban areas where the roofs of factories and warehouses, and vehicle shelters over parking lots, provide an opportunity for installation of solar arrays without occupying otherwise useful space. The evidence shows that there are very few rooftops or parking lots in the project vicinity. (Ex. 1, figure 2.1-5A.) Staff ultimately concluded that alternative generation technologies such as solar PV do not present feasible alternatives for this and other reasons, including development uncertainties, the fact that renewable generation may not be available on demand, particularly in a base load situation, and the fact that such

alternatives do not meet the project objectives. (Ex. 200 p. 6-21; 7/7/2009 RT 434:21 to 435:3.)

Alternatives Table 1, below, summarizes the Staff analysis of the site and project alternatives in terms of impact relative to the proposed site. This analysis shows that none of the alternative sites is environmentally superior to the proposed site. Although some air quality benefits could be derived from halving the size of the project, the environmental impacts in other areas would be reduced very little, if at all. The acreage needed to place the 300 MW project and the associated facilities would be considerably greater than half of the 40 acres of the proposed Avenal Energy project. Most other impacts would also be very similar to the full project.

In light of the evidence of record as summarized herein, we find that none of the alternative sites, nor the 300 MW alternative, is environmentally superior to the proposed project.

ALTERNATIVES TABLE 1
Comparison of Impacts of Alternatives to the Proposed Avenal Energy*

Issue Area	Avenal Power Alternative Site A	Avenal Power Alternative Site B	Staff Alternative Site A	Staff Alternative B - 300 MW Project
Air Quality	Similar to proposed site	Similar to proposed site	Similar to proposed site	Less than proposed project
Biological Resources	Less than proposed site	Less than proposed site	Greater than proposed site	Similar to proposed project
Cultural Resources	Similar to proposed site	Similar to proposed site	Greater than proposed site	Similar to proposed project
Hazardous Materials	Similar to proposed site	Similar to proposed site	Similar to proposed site	Similar to proposed project
Land Use	Similar to proposed site	Greater than proposed site	Similar to proposed site	Similar to proposed project
Noise and Vibration	Greater than proposed site	Greater than proposed site	Similar to proposed site	Similar to proposed project
Public Health	Similar to proposed site	Similar to proposed site	Similar to proposed site	Similar to proposed project
Socio-economic Resources	Similar to proposed site	Similar to proposed site	Similar to proposed site	Similar to proposed project
Soil and Water Resources	Similar to proposed site	Similar to proposed site	Similar to proposed site	Similar to proposed project

Issue Area	Avenal Power Alternative Site A	Avenal Power Alternative Site B	Staff Alternative Site A	Staff Alternative B - 300 MW Project
Traffic and Transportation	Similar to proposed site	Similar to proposed site	Similar to proposed site	Similar to proposed project
Visual Resources	Greater than proposed site	Greater than proposed site	Greater than proposed site	Similar to proposed project
Waste Management	Similar to proposed site	Similar to proposed site	Similar to proposed site	Similar to proposed project
Worker Safety	Similar to proposed site	Similar to proposed site	Similar to proposed site	Similar to proposed project
Geology, Mineral Resources, and Paleontology	Similar to proposed site	Similar to proposed site	Similar to proposed site	Similar to proposed project
Transmission System Engineering	Similar to proposed site	Similar to proposed site	Greater than proposed site	Similar to proposed project

*Gray shaded cells identify impacts greater or less than the proposed project

Source: Ex. 200, p. 6-16.

4. No Project Alternative

CEQA requires an evaluation of the "No Project" alternative "… to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." [14 Cal. Code Regs., § 15126.6(e)(1).]

The "No Project" analysis assumes:

- That baseline environmental conditions would not change because the proposed project would not be installed; and
- That the events or actions reasonably expected to occur in the foreseeable future would occur if the project were not approved.

If the "No Project" alternative were selected, the construction and operational impacts to biological resources and prime farmland from the proposed Avenal Energy Project would not occur. However, proposed mitigation in the **LAND USE** and **BIOLOGICAL RESOURCES** sections of this Decision will reduce potential impacts to biological resources and prime farmland to a less than significant level.

Furthermore, all of the Avenal Energy Project's impacts to air quality, both local and regional, have been mitigated to less than significant levels. Additionally, we have concluded that the Avenal Energy Project would displace and facilitate the replacement of some older, less-efficient power plants, thus providing a reduction in overall greenhouse gas emissions. Thus, substantial evidence establishes that the "No-Project" alternative is not environmentally superior to Avenal Energy. The "No Project" alternative would neither facilitate the possible closure of older, less efficient existing generation facilities nor provide competitively priced power to the California electricity market to help meet the state's growing demand for electricity. (Ex. 1, p. 5-2; Ex. 200, p. 6-21.)

5. Alternative Fuels and Technologies

Applicant presented evidence on alternative fuels, including nuclear, hydroelectric, geothermal, biomass, solar, and wind energy. (Ex. 1, § 5.6.) However, Applicant and Staff agreed that none of these alternatives is feasible due to unavailability at the proposed site (hydro, geothermal), lack of suitable space at or near the proposed site (wind, biomass, and solar), environmental impacts (biomass), and/or legal prohibitions (nuclear). (Ex. 200, p. 6-20.)

Applicant also reviewed alternative technologies for air pollution control and combustion modification, including the XONON catalytic combustor and $SCONO_x$. None of the alternative pollution control technologies is more effective than the Selective Catalyst Reduction (SCR) system proposed for the project. (Ex. 1, pp. 5-19 to 5-20.) Applicant also considered the option of using a urea-based system to generate ammonia on-site, which would eliminate the need for transport and storage of ammonia used in the SCR system. However, urea has not been commercially demonstrated for use with SCR on gas turbines attempting to meet the extremely low NO_x levels proposed for the project. (*Id.*)

Therefore, the evidence shows that none of the alternative fuels or technologies is a feasible option.

6. Arguments of Intervenors

Intervenors Center on Race, Poverty, and the Environment (CRPE) and Rob Simpson attack the Applicant's and Staff's alternatives analyses for their alleged failure to analyze alternatives that avoid or lessen the proposed project's significant environmental impacts, and alleged failure to adequately analyze

renewable energy alternatives. As noted above, the primary goal of an alternatives analysis is to avoid or substantially lessen any of the significant effects of the project. However, in this case these Intervenors appear to overlook the fact that the proposed project, as mitigated by the conditions of certification in this Decision, *does not have* any significant environmental impacts. (Ex. 200 at 1-4.) When a proposed project has been shown under CEQA to be lacking any significant environmental impacts, it may not be necessary to analyze the feasibility of alternatives. (*Laurel Hills Homeowners Assoc. v. City Council* (1978) 83 Cal.App.3d 515, 521.) ("…if the feasible mitigation measures substantially lessen or avoid generally the significant adverse environmental effects of a project, the project may be approved without resort to an evaluation of the feasibility of various project alternatives contained in the environmental impact report.") Nevertheless, the record shows that both Staff and Applicant presented evidence analyzing a reasonable range of alternative sites and generation technologies, none of which proved superior to the proposed Avenal Energy Project.

FINDINGS OF FACT

Based upon the evidence of record, including that presented on each subject area described in other portions of this Decision, we find and conclude as follows:

1. The evidence of record contains an acceptable analysis of a reasonable range of site location and generation alternatives to the project as proposed.
2. None of the site location and generation alternatives to the project offer a superior alternative in terms of feasibly meeting project objectives or of reducing any significant potential environmental impacts.
3. The evidentiary record contains an adequate review of alternative linear facility routings, fuels, technologies, and the "No Project" alternative.
4. Alternative fuels and technologies are not capable of meeting project objectives.
5. The "No Project" alternative would not avoid or substantially lessen potentially significant environmental impacts since no unmitigable impacts have been found.
6. The "No Project" alternative would not provide electrical system benefits such as the likely displacement of greenhouse gas emissions from older, less efficient power plants.

7. If all Conditions of Certification contained in this Decision are implemented, construction and operation of the Avenal Energy Project will not create any significant direct, indirect, or cumulative adverse environmental impacts.

CONCLUSIONS OF LAW

1. The evidence of record contains a sufficient analysis of Alternatives and complies with the requirements of the California Environmental Quality Act, the Warren-Alquist Act, and their respective regulations.

2. The proposed project's potential adverse environmental impacts will be mitigated to a level below the threshold of significance; therefore detailed analysis of the feasibility of the alternatives discussed in the record is not necessary.

No Conditions of Certification are required for this topic.

III. COMPLIANCE AND CLOSURE

Public Resources Code section 25532 requires the Commission to establish a post-certification monitoring system. The purpose of this requirement is to assure that certified facilities are constructed and operated in compliance with applicable laws, ordinances, regulations, standards, as well as the specific Conditions of Certification adopted as part of this Decision.

SUMMARY OF THE EVIDENCE

The evidence of record contains a full explanation of the purposes and intent of the Compliance Plan (Plan). The Plan is the administrative mechanism used to ensure that the Avenal Energy Project is constructed and operated according to the Conditions of Certification. It essentially describes the respective duties and expectations of the Project Owner and the Staff Compliance Project Manager (CPM) in implementing the design, construction, and operation criteria set forth in this Decision.

Compliance with the Conditions of Certification contained in this Decision is verified through mechanisms such as periodic reports and site visits. The Plan also contains requirements governing the planned closure, as well as the unexpected temporary and unexpected permanent closure, of the Project.

The Compliance Plan is composed of two broad elements. The first element establishes the "General Conditions," which:

- Set forth the duties and responsibilities of the Compliance Project Manager (CPM), the Project Owner, delegate agencies, and others;
- Set forth the requirements for handling confidential records and maintaining the compliance record;
- Set forth procedures for settling disputes and making post-certification changes;
- Set forth the requirements for periodic compliance reports and other administrative procedures necessary to verify the compliance status of all Commission imposed Conditions; and

- Set forth requirements for facility closure.

The second general element of the Plan contains the specific "Conditions of Certification." These are found following the summary and discussion of each individual topic area in this Decision. The individual Conditions contain the measures required to mitigate potentially adverse Project impacts associated with construction, operation, and closure to levels of insignificance. Each Condition also includes a verification provision describing the method of assuring that the Condition has been satisfied.

The contents of the Compliance Plan are intended to be implemented in conjunction with any additional requirements contained in the individual Conditions of Certification.

FINDINGS OF FACT

The evidence of record establishes:

1. Requirements contained in the Compliance Plan and in the specific Conditions of Certification are intended to be implemented in conjunction with one another.

2. We adopt the following Compliance Plan as part of this Decision.

CONCLUSIONS OF LAW

1. The compliance and monitoring provisions incorporated as a part of this Decision satisfy the requirements of Public Resources Code section 25532.

2. The Compliance Plan and the specific Conditions of Certification contained in this Decision assure that the Avenal Energy Project will be designed, constructed, operated, and closed in conformity with applicable law.

GENERAL CONDITIONS OF CERTIFICATION

DEFINITIONS

The following terms and definitions are used to establish when Conditions of Certification are implemented.

PRE-CONSTRUCTION SITE MOBILIZATION

Site mobilization is limited preconstruction activities at the site to allow for the installation of fencing, construction trailers, construction trailer utilities, and construction trailer parking at the site. Limited ground disturbance, grading, and trenching associated with the above mentioned pre-construction activities is considered part of site mobilization. Walking, driving, or parking a passenger vehicle, pickup truck and light vehicles is allowable during site mobilization.

CONSTRUCTION

Onsite work to install permanent equipment or structures for any facility.

Ground Disturbance

Construction-related ground disturbance refers to activities that result in the removal of top soil or vegetation at the site beyond site mobilization needs, and for access roads and linear facilities.

Grading, Boring, and Trenching

Construction-related grading, boring, and trenching refers to activities that result in subsurface soil work at the site and for access roads and linear facilities, e.g., alteration of the topographical features such as leveling, removal of hills or high spots, moving of soil from one area to another, and removal of soil.

Notwithstanding the definitions of ground disturbance, grading, boring and trenching above, construction does **not** include the following:

1. The installation of environmental monitoring equipment;

2. A soil or geological investigation;

3. A topographical survey;

4. Any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility; and

5. Any work to provide access to the site for any of the purposes specified in “Construction” 1, 2, 3, or 4 above.

START OF COMMERCIAL OPERATION

For compliance monitoring purposes, “commercial operation” begins after the completion of start-up and commissioning, when the power plant has reached reliable steady-state production of electricity at the rated capacity. At the start of commercial operation, plant control is usually transferred from the construction manager to the plant operations manager.

COMPLIANCE PROJECT MANAGER RESPONSIBILITIES

The Compliance Project Manager (CPM) shall oversee the compliance monitoring and is responsible for:

1. Ensuring that the design, construction, operation, and closure of the project facilities are in compliance with the terms and Conditions of this Decision;

2. Resolving complaints;

3. Processing post-certification changes to the Conditions of Certification, project description (petition to amend), and ownership or operational control (petition for change of ownership) (see instructions for filing petitions);

4. Documenting and tracking compliance filings; and

5. Ensuring that compliance files are maintained and accessible.

The CPM is the contact person for the Energy Commission and will consult with appropriate responsible agencies, and Energy Commission staff 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, the approval will involve all appropriate Energy Commission staff and management. All submittals must include searchable electronic versions (pdf or Microsoft WORD files).

PRE-CONSTRUCTION AND PRE-OPERATION COMPLIANCE MEETING

The CPM usually schedules pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. The purpose of these meetings is to assemble both the Energy Commission’s and 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. This is to confirm that all applicable Conditions of Certification have been met, or if they have not been met, to ensure that the proper action is taken. In addition, these meetings ensure, to the extent possible, that Energy Commission Conditions will not delay the construction and operation of the plant due to oversight 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 the following documents and information as a public record, in either the Compliance file or Dockets file, for the life of the project (or other period as required):

- All documents demonstrating compliance with any legal requirements relating to the construction and operation of the facility;
- All monthly and annual compliance reports filed by the project owner;
- All complaints of noncompliance filed with the Energy Commission; and
- All petitions for project or Condition of Certification changes and the resulting staff or Energy Commission action.

PROJECT OWNER RESPONSIBILITIES

The project owner is responsible for ensuring that the compliance Conditions of Certification and all other Conditions of Certification that appear in the Commission Decision are satisfied. The compliance conditions regarding post-certification changes specify measures that the project owner must take when requesting changes in the project design, Conditions of Certification, or ownership. Failure to comply with any of the Conditions of Certification or the compliance conditions may result in reopening of the case and revocation of Energy Commission certification; an administrative fine; or other action as appropriate. A summary of the Compliance Conditions of Certification is included as **Compliance Table 1** at the conclusion of this section.

COMPLIANCE CONDITIONS OF CERTIFICATION

Unrestricted Access (COMPLIANCE-1)

The CPM, responsible Energy Commission staff, and delegated 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 (COMPLIANCE-2)

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

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

Compliance Verification Submittals (COMPLIANCE-3)

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.

Verification of compliance with the Conditions of Certification can be accomplished by the following:

1. Monthly and/or annual compliance reports, filed by the project owner or authorized agent, reporting on work done and providing pertinent documentation, 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 work, or other evidence that the requirements are satisfied.

Verification lead times 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 project by AFC number, the appropriate condition(s) of certification by condition number(s), and 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 and CEC submittal number.

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 hardcopy submittals shall be addressed as follows:

Compliance Project Manager
Docket No. 08-AFC-1C
California Energy Commission
1516 Ninth Street, MS-2000
Sacramento, CA 95814

Those submittals shall be accompanied by a searchable electronic copy, on a CD or by e-mail, as agreed upon by the CPM.

If the project owner desires Energy Commission staff action by a specific date, that request shall be made in the submittal cover letter and shall include a detailed explanation of the effects on the project if that date is not met.

Pre-Construction Matrix and Tasks Prior to Start of Construction (COMPLIANCE-4)

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 or prior to the first pre-construction meeting, whichever comes first. It will be submitted in the same format as the compliance matrix described below.

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. Various lead times for submittal of compliance verification documents 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.

Failure to submit compliance documents within the specified lead-time may result in delays in authorization to commence various stages of project development.

If the project owner anticipates commencing project construction as soon as the project is certified, it may be necessary for the project owner to file compliance submittals prior to project certification. Compliance submittals should be completed in advance where the necessary lead time for a required compliance event extends beyond the date anticipated for start of construction. The project owner must understand that the submittal of compliance documents prior to project certification is at the owner's own risk. Any approval by Energy Commission staff is subject to change, based upon the Commission Decision.

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 Energy 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 (COMPLIANCE-5)

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 Conditions of Certification 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 of each condition, e.g., “not started,” “in progress” or “completed” (include the date).
8. If the condition was amended, the date of the amendment.

Satisfied conditions shall be placed at the end of the matrix.

Monthly Compliance Report (COMPLIANCE-6)

The first Monthly Compliance Report is due one month following the Energy Commission business meeting date upon which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include the AFC number and an initial list of dates for each of the events identified on the Key Events List Form, 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 an electronic searchable version 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, as well as the conditions they satisfy and submitted as attachments to the Monthly Compliance Report;

3. An initial, and thereafter updated, compliance matrix showing the status of all Conditions of Certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);

4. A list of conditions that have been satisfied during the reporting period, and a description or reference to the actions that 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 submitted to, 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. A listing of complaints, notices of violation, official warnings, and citations received during the month, a description of the resolution of the resolved actions, and the status of any unresolved actions.

All sections, exhibits, or addendums shall be separated by tabbed dividers or as acceptable by the CPM.

Annual Compliance Report (COMPLIANCE-7)

After construction is complete, 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 include the AFC number, identify the reporting period and shall contain the following:

1. An updated compliance matrix showing the status of all Conditions of Certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);

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, with the condition it satisfies, and 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 submitted 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;

9. An evaluation of the on-site contingency plan for unplanned facility closure, including any suggestions necessary for bringing the plan up to date [see Compliance Conditions for Facility Closure addressed later in this section]; and

10. A listing of complaints, notices of violation, official warnings, and citations received during the year, a description of the resolution of any resolved matters, and the status of any unresolved matters.

Confidential Information (COMPLIANCE-8)

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

Annual Energy Facility Compliance Fee (COMPLIANCE-9)

Pursuant to the provisions of Section 25806(b) of the Public Resources Code, the project owner is required to pay an annual compliance fee, which is adjusted annually. The amount of the fee for FY2007-2008 was $17,676. The initial payment is due on the date the Energy Commission adopts the final decision. You will be notified of the amount due. All subsequent payments are due by July 1 of each year in which the facility retains its certification. The payment instrument shall be made payable to the California Energy Commission and mailed to: Accounting Office MS-02, California Energy Commission, 1516 9th St., Sacramento, CA 95814.

Reporting of Complaints, Notices, and Citations (COMPLIANCE-10)

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 complaints 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:

http://www.energy.ca.gov/sitingcases/power_plants_contacts.html

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 to the CPM of all complaint forms, including noise and lighting complaints, notices of violation, notices of fines, official warnings, and citations, within 10 days of receipt. 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 (Attachment A).

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 that provide the flexibility to deal with the specific situation and project setting that exist at the time of closure. Laws, Ordinances, Regulations and Standards (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, unplanned temporary closure and unplanned permanent closure**.**

CLOSURE DEFINITIONS

Planned Closure

A planned closure occurs 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.

Unplanned Temporary Closure

An unplanned 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.

Unplanned Permanent Closure

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

COMPLIANCE CONDITIONS FOR FACILITY CLOSURE

Planned Closure (COMPLIANCE-11)

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 12 months (or other period of time agreed to by the CPM) prior to commencement of closure activities. 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, and local/regional plans in existence at the time of facility closure, and applicable Conditions of Certification.

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

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 Energy Commission may hold public hearings as part of its approval procedure.

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 the Energy Commission approves the facility closure plan.

Unplanned Temporary Closure/On-Site Contingency Plan (COMPLIANCE-12)

In order to ensure that public health and safety and the environment are protected in the event of an unplanned 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 impacts 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 than 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 unplanned 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 unplanned temporary closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, 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 an unplanned temporary closure is likely to be permanent, or for a duration of more than 12 months, a closure plan consistent with the requirements 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).

Unplanned Permanent Closure/On-Site Contingency Plan (COMPLIANCE-13)

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

In the event of an unplanned permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, 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 the requirements for a planned closure, shall be developed and submitted to the CPM within 90 days of the permanent closure or another period of time agreed to by the CPM.

Post Certification Changes to the Energy Commission Decision: Amendments, Ownership Changes, Staff Approved Project Modifications and Verification Changes (COMPLIANCE-14)

The project owner must petition the Energy Commission pursuant to Title 20, California Code of Regulations, section 1769, in order to modify the project (including linear facilities) design, operation or performance requirements, and to transfer ownership or operational control of the facility. It is the responsibility of the project owner to contact the CPM to determine if a proposed project change should be considered a project modification pursuant to section 1769. Implementation of a project modification without first securing Energy Commission, or Energy Commission staff approval, may result in enforcement action that could result in civil penalties in accordance with section 25534 of the Public Resources Code.

A petition is required for amendments and for insignificant project changes as specified below. Both shall be filed as a "Petition to Amend." Staff will determine if the change is significant or insignificant. 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 CPM, who will file it with the Energy Commission's Dockets Unit in accordance with Title 20, California Code of Regulations, section 1209.

The criteria that determine which type of approval and the process that applies are explained below. They reflect the provisions of Section 1769 at the time this condition was drafted. If the Commission's rules regarding amendments are amended, the rules in effect at the time an amendment is requested shall apply.

Amendment

The project owner shall petition the Energy Commission, pursuant to Title 20, California Code of Regulations, Section 1769(a), when proposing modifications to the project design (including linear facilities), operation, or performance requirements. If a proposed modification results in deletion or change of a Condition of Certification, or makes changes that would cause the project not to comply with any applicable laws, ordinances, regulations or standards, the petition will be processed as a formal amendment to the final decision, which requires public notice and review of the Energy Commission staff analysis, and approval by the full Commission. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(a). Upon request, the CPM will provide you with a sample petition to use as a template.

Change of Ownership

Change of ownership or operational control also requires that the project owner file a petition pursuant to section 1769 (b). This process requires public notice and approval by the full Commission. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(b). Upon request, the CPM will provide you with a sample petition to use as a template.

Staff Approved Project Modifications

Modifications that do not result in deletions or changes to Conditions of Certification, and that are compliant with laws, ordinances, regulations, and standards may be authorized by the CPM as an insignificant project change pursuant to section 1769(a) (2). This process usually requires minimal time to complete, and it requires a 14-day public review of the Notice of Staff Approved Project Modification that includes staff's intention to approve the modification unless substantive objections are filed. These requests must also be submitted in the form of a "petition to amend" as described above.

Verification Change

A verification may be modified by the CPM without requesting an amendment to the decision if the change does not conflict with the Conditions of Certification and provides an effective alternate means of verification.

CBO DELEGATION AND AGENCY COOPERATION

In performing construction and operation monitoring of the project, Energy Commission staff acts as, and has the authority of, the Chief Building Official (CBO). Energy Commission staff may delegate CBO responsibility to either an independent third party contractor or the local building official. Energy Commission staff retains CBO authority when selecting a delegate CBO, including enforcing and interpreting state and local codes, and use of discretion, as necessary, in implementing the various codes and standards.

Energy Commission staff may also seek the cooperation of state, regional and local agencies that have an interest in environmental protection when conducting project monitoring.

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 Energy Commission Decision. The specific action and amount of any fines the Energy 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, oversight, unforeseeable events, and other factors the Energy Commission may consider.

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 1237, 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 future law or regulations.

Informal Dispute Resolution Process

The following procedure is designed to informally resolve disputes concerning the 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 an informal dispute resolution process. Disputes may pertain to actions or decisions made by any party, including the Energy Commission's delegate agents.

This process may precede the more formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1237, 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 process 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 brought before the full Energy Commission for consideration via the complaint and investigation procedure.

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. Within seven working days of the CPM's request, provide a written report to the CPM of the results of the investigation, including corrective measures proposed or undertaken. Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request the project owner to also provide an initial verbal report, within 48 hours.

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 proposed or undertaken, either party may submit a written request to the CPM for a meeting with the project owner. Such request shall be made within 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 agencies 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 that fairly and accurately identifies the positions of all parties and any understandings 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

Any person may file a complaint with the Energy Commission's Dockets Unit alleging noncompliance with a Commission decision adopted pursuant to Public Resources Code section 25500. Requirements for complaint filings and a description of how complaints are processed are in Title 20, California Code of Regulations, section 1237.

KEY EVENTS LIST

PROJECT: _____

DOCKET #: _____

COMPLIANCE PROJECT MANAGER: _____

EVENT DESCRIPTION	DATE
Certification Date	
Obtain Site Control	
Online Date	
POWER PLANT SITE ACTIVITIES	
Start Site Mobilization	
Start Ground Disturbance	
Start Grading	
Start Construction	
Begin Pouring Major Foundation Concrete	
Begin Installation of Major Equipment	
Completion of Installation of Major Equipment	
First Combustion of Gas Turbine	
Obtain Building Occupation Permit	
Start Commercial Operation	
Complete All Construction	
TRANSMISSION LINE ACTIVITIES	
Start T/L Construction	
Synchronization with Grid and Interconnection	
Complete T/L Construction	
FUEL SUPPLY LINE ACTIVITIES	
Start Gas Pipeline Construction and Interconnection	
Complete Gas Pipeline Construction	
WATER SUPPLY LINE ACTIVITIES	
Start Water Supply Line Construction	
Complete Water Supply Line Construction	

Compliance Table 1
Summary of Compliance Conditions of Certification

CONDITION NUMBER	SUBJECT	DESCRIPTION
COMPLIANCE-1	Unrestricted Access	The project owner shall grant Energy Commission staff and delegate agencies or consultants unrestricted access to the power plant site.
COMPLIANCE-2	Compliance Record	The project owner shall maintain project files on-site. Energy Commission staff and delegate agencies shall be given unrestricted access to the files.
COMPLIANCE-3	Compliance Verification Submittals	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 or the project owner or his agent.
COMPLIANCE-4	Pre-construction Matrix and Tasks Prior to Start of Construction	Construction shall not commence until the all of the following activities/submittals have been completed: ▪ property owners living within one mile of the project have been notified of a telephone number to contact for questions, complaints or concerns, ▪ a pre-construction matrix has been submitted identifying only those conditions that must be fulfilled before the start of construction, ▪ all pre-construction conditions have been complied with, ▪ the CPM has issued a letter to the project owner authorizing construction.
COMPLIANCE-5	Compliance Matrix	The project owner shall submit a compliance matrix (in a spreadsheet format) with each monthly and annual compliance report which includes the status of all compliance Conditions of Certification.
COMPLIANCE-6	Monthly Compliance Report including a Key Events List	During construction, the project owner shall submit Monthly Compliance Reports (MCRs) which include specific information. The first MCR is due the month following the Energy Commission business meeting date on which the project was approved and shall include an initial list of dates for each of the events identified on the Key Events List.

CONDITION NUMBER	SUBJECT	DESCRIPTION
COMPLIANCE-7	Annual Compliance Reports	After construction ends and throughout the life of the project, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports.
COMPLIANCE-8	Confidential Information	Any information the project owner deems confidential shall be submitted to the Energy Commission's Dockets Unit with a request for confidentiality.
COMPLIANCE-9	Annual fees	Payment of Annual Energy Facility Compliance Fee
COMPLIANCE-10	Reporting of Complaints, Notices and Citations	Within 10 days of receipt, the project owner shall report to the CPM, all notices, complaints, and citations.
COMPLIANCE-11	Planned Facility Closure	The project owner shall submit a closure plan to the CPM at least 12 months prior to commencement of a planned closure.
COMPLIANCE-12	Unplanned Temporary Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned temporary closure, the project owner shall submit an on-site contingency plan no less than 60 days prior to commencement of commercial operation.
COMPLIANCE-13	Unplanned Permanent Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned permanent closure, the project owner shall submit an on-site contingency plan no less than 60 days prior to commencement of commercial operation.
COMPLIANCE-14	Post-certification changes to the Decision	The project owner must petition the Energy Commission to delete or change a Condition of Certification, modify the project design or operational requirements and/or transfer ownership of operational control of the facility.

ATTACHMENT A
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.)

IV. ENGINEERING ASSESSMENT

The broad engineering assessment conducted for the Avenal Project consists of separate analyses that examine facility design, engineering, efficiency, and reliability aspects. These analyses include the on-site power generating equipment and project-related linear facilities.

A. FACILITY DESIGN

This review covers several technical disciplines including the civil, electrical, mechanical, and structural engineering elements related to project design and construction. The evidentiary presentations were uncontested. (7/7/09 RT 446-48; Exs. 1; 25(q); 200, § 5.1.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

The Application for Certification (AFC) describes the preliminary facility design. In considering the adequacy of the plans, the Commission reviews whether the power plant and linear facilities are described with sufficient detail to assure the project can be designed and constructed in accordance with applicable engineering laws, ordinances, regulations, and standards (LORS). The review also includes, as appropriate, the identification of special design features that are necessary to deal with unique site conditions which could impact public health and safety, the environment, or the operational reliability of the project. (Ex. 200, pp. 5.1-1 to 5.1-2.)

Staff proposed several Conditions of Certification, which we have adopted, that establish a design review and construction inspection process to verify compliance with applicable standards and special requirements. (Ex. 200, pp. 5.1-2, 5.1-5.) The project will be designed and constructed in conformance with the latest edition of the California Building Standards Code (currently the 2007 CBSC) and other applicable codes and standards in effect at the time design approval and construction actually begin. (Ex. 200, p. 5.1-3.) Condition of Certification **GEN-1** incorporates this requirement.

We considered potential geological hazards and reviewed the preliminary project design with respect to grading, flood protection, erosion control, site drainage, and site access in addition to the criteria for designing and constructing related linear facilities such as the natural gas pipeline and the transmission interconnection facilities. (Ex. 200, pp. 5.1-2 to 5.1-3; see also, the **GEOLOGY**

AND PALEONTOLOGY section of this Decision.) The evidence establishes that the project will incorporate accepted industry standards. This includes design practices and construction methods for preparing and developing the site. (Ex. 200, p. 5.1-3.) Conditions **CIVIL-1** through **CIVIL-4** ensure that these activities will be conducted in compliance with applicable LORS.

Major structures, systems, and equipment include those structures and associated components necessary for power production and facilities used for storage of hazardous or toxic materials, as well as those capable of becoming potential health and safety hazards if not constructed properly. (Ex. 200, p. 5.1-3.) **Table 1**, contained in Condition **GEN-2,** lists the major structures and equipment included in the initial engineering design for the project. Conditions **GEN-3** through **GEN-8** require that qualified individuals oversee and inspect construction of the facility. Similarly, Conditions **MECH-1** through **MECH-3** address compliance of the project's mechanical systems with appropriate standards, and a quality assurance/quality control program assures that the Avenal Project will be designed, procured, fabricated, and installed as described. Condition **ELEC-1** provides that design and construction of major electrical features will comply with applicable LORS. (Ex. 200, pp. 5.1-3 to 5.1-4.) Compliance with design requirements will be verified through specific inspections and audits.

The power plant site is located in Seismic Risk Zone 4. (Ex. 200, p. 5.4-5.) The 2007 CBC requires specific "dynamic" lateral force procedures for certain structures to determine their seismic design criteria; others may be designed using a "static" analysis procedure. To ensure that project structures are analyzed appropriately, Condition **STRUC-1** requires the project owner to submit its proposed lateral force procedures to the Chief Building Official (CBO)[4] for review and approval prior to the start of construction. (Ex. 200, p. 5.1-3.)

The evidentiary record also addresses project closure, which may range from "mothballing" the facility to removing all equipment and restoring the site. (Ex. 200, p. 5.1-5.) To ensure that decommissioning of the facility will conform to

[4] The Energy Commission is the CBO for facilities we certify. We may delegate CBO authority to local building officials and/or independent consultants to carry out design review and construction inspections. When CBO duties are delegated, we require a Memorandum of Understanding with the delegate entity to outline respective roles, responsibilities, and qualifications of involved individuals such as those described in Conditions of Certification **GEN-1** through **GEN-8**. (Ex. 200, p. 5.1-4.) The Conditions further require that every appropriate element of project construction be first approved by the CBO and that qualified personnel perform or oversee inspections.

applicable LORS and be completed in a manner that protects the environment and public health and safety, the project owner is required to submit a decommissioning plan which will identify: decommissioning activities; applicable LORS in effect when decommissioning occurs; activities necessary to restore the site, if appropriate; and decommissioning alternatives. (*Id.*) Related requirements are described in the general closure provisions of the Compliance Monitoring and Closure Plan. *See* **GENERAL CONDITIONS** in the Compliance section of this Decision.

Overall, the evidentiary record conclusively establishes that the project will be designed and constructed in compliance with all applicable LORS, and that these activities will not negatively impact public health and safety.

FINDINGS OF FACT

Based on the uncontroverted evidence, the Commission makes the following findings and reaches the following conclusions:

1. The Avenal Project is currently in the preliminary design stage.
2. The evidentiary record contains sufficient information to establish that the proposed facility can be designed and constructed in conformity with the applicable laws, ordinances, regulations, and standards (LORS) set forth in the appropriate portion of **Appendix A** of this Decision.
3. The Conditions of Certification set forth below provide, in part, that qualified personnel will perform design review, plan checking, and field inspections of the proposed project.
4. The Conditions of Certification set forth below are necessary to ensure that the project is designed and constructed both in accordance with applicable law and in a manner that protects environmental quality as well as public health and safety.
5. The **GENERAL CONDITIONS,** included in a separate section of this Decision, establish requirements to be followed in the event of facility closure.

CONCLUSION OF LAW

1. Implementation of the Conditions of Certification listed below will ensure that the Avenal Project will be designed and constructed in conformance with the applicable laws pertinent to the engineering aspects summarized in **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

GEN-1 The project owner shall design, construct, and inspect the project in accordance with the 2007 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and all other applicable engineering laws, ordinances, regulations, and standards (LORS) in effect at the time initial design plans are submitted to the chief building official (CBO) for review and approval. The CBSC in effect is the edition that has been adopted by the California Building Standards Commission and published at least 180 days previously. The project owner shall ensure that all the provisions of the above applicable codes are enforced during the construction, addition, alteration, moving, demolition, repair, or maintenance of the completed facility (2007 CBC, Appendix Chapter 1, § 101.2, Scope). All transmission facilities (lines, switchyards, switching stations, and substations) are covered in the Conditions of Certification in the **TRANSMISSION SYSTEM ENGINEERING** section of this Decision.

In the event that the initial engineering designs are submitted to the CBO when the successor to the 2007 CBSC is in effect, the 2007 CBSC provisions 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.

The project owner shall ensure that all contracts with contractors, subcontractors, and suppliers clearly specify that all work performed and materials supplied comply with the codes listed above.

Verification: Within 30 days following receipt of the certificate of occupancy, the project owner shall submit to the 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 (2007 CBC, Appendix Chapter 1, § 110, Certificate of Occupancy).

Once the certificate of occupancy has been issued, the project owner shall inform the CPM at least 30 days prior to any construction, addition, alteration, moving,

demolition, repair, or maintenance to be performed on any portion(s) of the completed facility that requires CBO approval for compliance with the above codes. The CPM shall then determine if the CBO needs to approve the work.

GEN-2 Before submitting the initial engineering designs for CBO review, the project owner shall furnish the CPM and the CBO with a schedule of facility design submittals, master drawings, and master specifications lists. 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 upon request.

Verification: At least 60 days (or within a project owner and CBO approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO and to the CPM the schedule, the master drawing, and master specifications lists 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 **Facility Design 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.

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Facility Design Table 1
Major Structures and Equipment List

Equipment/System	***Quantity (Plant)***
Combustion Turbine & Generator (CTG) Foundation and Connections	2
Steam Turbine & Generator (STG) Foundation and Connections	1
Heat Recovery Steam Generator (HRSG) & Stack Structure, Foundation and Connections	2
CTG Main Transformer Foundation and Connections	2
STG Main Transformer Foundation and Connections	1
CTG Air Inlet Structure, Foundation and Connections	2
CTG Inlet Air Chiller Foundation and Connections	4
Electrical Auxiliary Transformers Foundation and Connections	2
CEMS Enclosure Structure, Foundation and Connections	2
Air Cooled Condenser Structure, Foundation and Connections	1
Auxiliary Boiler Structure, Foundation and Connections	1
Boiler Feed Water Pump Foundation and Connections	4
Fuel Gas Separator and Heating Foundation and Connections	2
CTG Support Skid Foundation and Connections	2
Power Distribution Center Foundation and Connections	5
Demineralized Water Storage Tank Structure, Foundation and Connections	1
Fire Water Pump Skid Foundation and Connections	1
HRSG Blowdown Tank and Sump Structure, Foundation and Connections	2
Gas Metering and Regulating with Fuel Gas Filter/Separators Foundation and Connections	2
Water Treatment Area Structure, Foundation and Connections	1
Ammonia Storage Tank, Foundation and Connections	1
Ammonia Transfer Pumps Foundation and Connections	3
Raw/Firewater Tank Structure, Foundation and Connections	1
Septic Tank Structure, Foundation and Connections	1
Storage Building Structure Foundation and Connections	2
Condensate Tank and Pumps Foundation and Connections	1
Closed Loop Cooling Water Pumps Foundations and Connections	2
Fin Fan Coolers Structure, Foundation and Connections	2
Ammonia Dilution Skid Foundation and Connections	2
STG Electrical Equipment Foundation and Connections	1
Switchgear Building Structure, Foundation and Connections	1
Unit Auxiliary Transformer Foundation and Connections	2

Equipment/System	*Quantity (Plant)*
Generator Breaker Foundation and Connections	2
Air Compressor Skid Foundation and Connections	2
Backup Generator Foundation and Connections	1
Hydrogen Storage Area Tank Structure, Foundation and Connections	1
Phosphate Feed Skid Foundation and Connections	2
Sample Panel Foundation and Connections	2
Auxiliary Cooling Water Pumps & Heat Exchanger Foundation and Connections	1
Oil/Water Separator Foundation and Connections	1
Control Room/Administration Building Structure, Foundations and Connections	1
STG Lube Oil Skid Foundations and Connections	1
Switchyard Control House Structure, Foundation and Connections	1
Drainage Systems (including sanitary drain and waste)	1 Lot
High Pressure and Large Diameter Piping and Pipe Racks	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
Zero Liquid Discharge System Structures, Foundation and Connections	1

GEN-3 The project owner shall make payments to the CBO for design review, plan checks, and construction inspections 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 2007 CBC (2007 CBC, Appendix Chapter 1, § 108, Fees; Chapter 1, Section 108.4, Permits, Fees, Applications and Inspections), 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 otherwise agreed upon 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 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 the resident engineer in charge of the project (2007 California Administrative Code, § 4-209, Designation of Responsibilities). All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in the Conditions of Certification in the **TRANSMISSION SYSTEM ENGINEERING** section of this Decision.

The resident engineer 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 that each part is clearly defined as a distinct unit. Separate assignments of general responsibility may be made for each designated part.

The resident engineer shall:

1. Monitor progress of construction work requiring CBO design review and inspection to ensure compliance with LORS;

2. Ensure that construction of all facilities subject to CBO design review and inspection conforms in every material respect to applicable LORS, these Conditions of Certification, approved plans, and specifications;

3. Prepare documents to initiate changes in approved drawings and specifications when either directed by the project owner or as required by the conditions of the project;

4. Be responsible for providing project inspectors and testing agencies with complete and up-to-date sets 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 when they do not conform to approved plans and specifications.

The resident engineer shall have the authority to halt construction and to require changes or remedial work if the work does not meet requirements.

If the resident engineer 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 within a project owner and CBO approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO, for review and approval, the resume and registration number of the resident engineer and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the resident engineer and other delegated engineer(s) within five days of the approval.

If the resident engineer or the delegated engineer(s) is subsequently reassigned or replaced, the project owner has five days to submit the resume 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 civil engineer; a soils, geotechnical, or civil engineer experienced and knowledgeable in the practice of soils engineering; and an engineering geologist. Prior to the start of construction, the project owner shall assign at least one of each of the following California registered engineers to the project: 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; a mechanical engineer; and an electrical engineer. (California Business and Professions Code section 6704 et seq., and sections 6730, 6731 and 6736 require state registration to practice as a civil engineer or structural engineer in California.) All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in the Conditions of Certification in the **TRANSMISSION SYSTEM ENGINEERING** section of this Decision.

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 (for example, 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 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 (2007 CBC, Appendix Chapter 1, § 104, Duties and Powers 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.

A. The civil engineer shall:

   1. Review the foundation investigations, geotechnical, or soils reports prepared by the soils engineer, the geotechnical engineer, or by a civil engineer experienced and knowledgeable in the practice of soils engineering;

   2. Design (or be responsible for the design of), 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; and construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads and sanitary sewer systems; and

   3. Provide consultation to the resident engineer during the construction phase of the project and recommend changes in the design of the civil works facilities and changes to the construction procedures.

B. The soils engineer, geotechnical engineer, or civil engineer experienced and knowledgeable in the practice of soils engineering shall:

   1. Review all the engineering geology reports;

   2. Prepare the foundation investigations, geotechnical or soils reports containing field exploration reports, laboratory tests, and engineering analysis detailing the nature and extent of the soils that could be susceptible to liquefaction, rapid settlement, or collapse when saturated under load (2007 CBC, Appendix J, § J104.3, Soils Report; Chapter 18, § 1802.2, Foundation and Soils Investigations);

   3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with requirements set forth in the 2007 CBC, Appendix J, section J105, Inspections, and the 2007 California Administrative Code, section 4-211, Observation and Inspection of Construction

(depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both); and

4. Recommend field changes to the civil engineer and resident engineer.

This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform to the predicted conditions used as the basis for design of earthwork or foundations (2007 CBC, Appendix Chapter 1, § 114, Stop Orders).

C. The engineering geologist shall:

1. Review all the engineering geology reports and prepare a final soils grading report; and

2. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the 2007 California Administrative Code, section 4-211, Observation and Inspection of Construction (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both).

D. The design engineer shall:

1. Be directly responsible for the design of the proposed structures and equipment supports;

2. Provide consultation to the resident engineer 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.

E. 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 to all of the mechanical engineering design requirements set forth in the Energy Commission's Decision.

F. 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 within a project owner and CBO approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO, for review and approval, resumes and registration numbers of the responsible civil engineer, soils (geotechnical) engineer, and engineering geologist assigned to the project.

At least 30 days (or within a project owner and CBO approved alternative time frame) prior to the start of construction, the project owner shall submit to the CBO, for review and approval, resumes and registration numbers of the responsible design engineer, mechanical engineer, and electrical engineer assigned to the project.

The project owner shall notify the CPM of the CBO's approvals of the responsible engineers within five days of the approvals.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the resume 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 2007 CBC, Chapter 17, Section 1704, Special Inspections; Chapter 17A, Section 1704A, Special Inspections; and Appendix Chapter 1, Section 109, Inspections. All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in Conditions of Certification in the **TRANSMISSION SYSTEM ENGINEERING** section of this Decision.

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).

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 resident engineer. All discrepancies shall be brought to the immediate attention of the resident engineer for correction then, if uncorrected, to the CBO and the CPM for corrective action (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements); and

4. Submit a final signed report to the resident engineer, 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, specifications, and other provisions of the applicable edition of the CBC.

At least 15 days (or within a project owner and CBO approved alternative time frame) 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 required corrective actions (2007 CBC, Appendix Chapter 1, § 109.6, Approval Required; Chapter 17, § 1704.1.2, Report Requirements). 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, 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 necessary to obtain the 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 that the CBO inspect the completed structure and review the submitted documents. The project owner shall notify the CPM after obtaining the CBO's final

approval. The project owner shall retain one set of approved engineering plans, specifications, and calculations (including all approved changes) at the project site or at an alternative site approved by the CPM during the operating life of the project (2007 CBC, Appendix Chapter 1, § 106.3.1, Approval of Construction Documents). Electronic copies of the approved plans, specifications, calculations, and marked-up as-builts shall be provided to the CBO for retention by the CPM.

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 the final approved engineering plans, specifications, and calculations described above, the project owner shall submit to the CPM a letter stating both that the above documents have been stored and the storage location of those documents.

Within 90 days of the completion of construction the project owner, at its own expense, shall provide to the CBO three sets of electronic copies of the above documents. These are to be provided in the form of "read only" files (Adobe .pdf 6.0), with restricted (password-protected) printing privileges, on archive quality compact discs.

CIVIL-1 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, geotechnical, or foundation investigation reports required by the 2007 CBC, Appendix J, section J104.3, Soils Report, and Chapter 18, section 1802.2, Foundation and Soils Investigation.

Verification: At least 15 days (or within a project owner and CBO approved alternative time frame) prior to the start of site grading 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 soils engineer, geotechnical engineer, or the 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 (2007 CBC, Appendix Chapter 1, § 114, Stop Work Orders).

Verification: The project owner shall notify the CPM within 24 hours when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions. Within 24 hours 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 2007 CBC, Appendix Chapter 1, section 109, Inspections, and Chapter 17, section 1704, Special Inspections. All plant site-grading operations for which a grading permit is required shall be subject to inspection by the CBO.

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 (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements). The project owner shall prepare a written report, with copies to the CBO and the CPM, detailing all discrepancies, non-compliance items, and the proposed corrective action.

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 for review and approval. 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 work, the project owner shall obtain the CBO's approval of the final grading plans (including final changes) for the erosion and sedimentation control work. The civil engineer shall state that the work within his/her area of responsibility was done in accordance with the final approved plans (2007 CBC, Chapter 17, § 1703.2, Written Approval).

Verification: Within 30 days (or within a project owner and CBO approved alternative time frame) of the completion of the erosion and sediment control mitigation and drainage work, the project owner shall submit to the CBO, for review and approval, the final grading plans (including final changes) and 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, along with a copy of the transmittal letter to the CPM. The project owner shall submit a copy of the CBO's approval 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 **Facility Design 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; and

3. Large field-fabricated tanks.

Construction of any structure or component shall not begin until the CBO has approved the lateral force procedures to be employed in designing that structure or component.

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 (for example, 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 (2007 CBC, Appendix Chapter 1, § 109.6, 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 prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation (2007 California Administrative Code, § 4-210, Plans, Specifications, Computations and Other Data);

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,

5. Submit to the CBO the responsible design engineer's signed statement that the final design plans conform to applicable LORS (2007 CBC, Appendix Chapter 1, § 106.3.4, Design Professional in Responsible Charge).

Verification: At least 60 days (or within a project owner and CBO approved alternative time frame) prior to the start of any increment of construction of any structure or component listed in **Facility Design Table 1** of Condition of Certification **GEN-2**, above, the project owner shall submit to the CBO the above final design plans, specifications, and calculations, with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM, in the next monthly compliance report, a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and comply with the requirements set forth in 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 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 2007 CBC, Chapter 17, section 1704, Special Inspections, and section 1709.1, Structural Observations.

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 and the proposed corrective action to the CBO, with

a copy of the transmittal letter to the CPM (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements). 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, of the reason for disapproval and the revised corrective action necessary to obtain the CBO's approval.

STRUC-3 The project owner shall submit to the CBO design changes to the final plans required by the 2007 CBC, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give to the CBO prior notice of the intended filing (2007 CBC, Appendix Chapter 1, § 106.1, Submittal Documents; § 106.4, Amended Construction Documents; 2007 California Administrative Code, § 4-215, Changes in Approved Drawings and Specifications).

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 the 2007 CBC, Chapter 3, Table 307.1(2) shall, at a minimum, be designed to comply with the requirements of that chapter.

Verification: At least 30 days (or within a project owner and CBO approved alternate time frame) 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 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 **Facility Design 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 that construction (2007 CBC, Appendix Chapter 1, § 106.1, Submittal Documents; § 109.5, Inspection Requests; § 109.6, Approval Required; 2007 California Plumbing Code, § 301.1.1, Approvals).

The responsible mechanical engineer shall stamp and sign all plans, drawings, and calculations for the major piping and plumbing systems, subject to CBO design review and approval, and submit a signed statement to the CBO when the proposed piping and plumbing systems have been designed, fabricated, and installed in accordance with all of the applicable laws, ordinances, regulations, and industry standards (2007 CBC, Appendix Chapter 1, § 106.3.4, Design Professional in Responsible Charge) which may include, but are not 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
- Kings County codes.

The CBO may deputize inspectors to carry out the functions of the code enforcement agency (2007 CBC, Appendix Chapter 1, § 103.3, Deputies).

Verification: At least 30 days (or within a project owner and CBO approved alternative time frame) prior to the start of any increment of major piping or plumbing construction listed in **Facility Design 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 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 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 that installation (2007 CBC, Appendix Chapter 1, § 109.5, Inspection Requests).

The project owner shall:

1. Ensure that all boilers and fired and unfired pressure vessels are designed, fabricated, and installed in accordance with the appropriate section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, or other applicable code. Vendor certification, with identification of applicable code, shall be submitted for prefabricated vessels and tanks; and

2. Have the responsible design engineer submit a statement to the CBO that the proposed final design plans, specifications, and calculations conform to all of the requirements set forth in the appropriate ASME Boiler and Pressure Vessel Code or other applicable codes.

Verification: At least 30 days (or within a project owner and CBO approved alternative time frame) 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 The project owner shall submit to the CBO for design review and approval the design plans, specifications, calculations, and quality control procedures for any heating, ventilating, air conditioning (HVAC) or refrigeration system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

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 that 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 (2007 CBC, Appendix Chapter 1, § 109.3.7, Energy Efficiency Inspections; § 106.3.4, Design Professionals in Responsible Charge).

Verification: At least 30 days (or within a project owner and CBO approved alternative time frame) 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 all electrical equipment and systems 480 Volts or higher (see a representative list, 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 (2007 CBC, Appendix Chapter 1, § 106.1, 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 (2007 CBC, Appendix Chapter 1, § 109.6, Approval Required; § 109.5, Inspection Requests). All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in Conditions of Certification in the **TRANSMISSION SYSTEM ENGINEERING** section of this Decision.

A. Final plant design plans shall include:

1. one-line diagrams for the 13.8 kV, 4.16 kV, and 480 V systems; and

2. system grounding drawings.

B. Final plant calculations must 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.

C. The following activities shall be reported to the CPM in the monthly compliance report:

1. Receipt or delay of major electrical equipment;

2. Testing or energization of major electrical equipment; and

3. 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 within a project owner and CBO approved alternative time frame) 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.

B. POWER PLANT EFFICIENCY

The Avenal Project will use substantial amounts of natural gas for its fuel. Pursuant to the California Environmental Quality Act (CEQA), we must determine whether the consumption of this non-renewable form of energy will result in substantial impacts upon energy resources. (Cal. Code Regs., tit. 14 § 15126.4(a)(1), App.F.)

The evidence of record on this matter is uncontested and examines the project's: energy requirements and energy use efficiency, effects on local and regional energy supplies and resources, requirements for additional energy supply capacity, and compliance with applicable energy standards. In addition, the evidence of record addresses whether there are feasible alternatives which would reduce any wasteful, inefficient, or unnecessary energy consumption attributable to the project. (7/7/09 RT 446-448; Exs. 1; 25(s); 200, § 5.3.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

The project objectives include providing approximately 600 MW of steady electrical power and enhancing power supply reliability in the California electricity market. The Avenal facility will operate in a combined cycle mode, utilizing two General Electric (GE) frame 7FA combustion turbine generators (CTGs) with mechanical inlet air chillers, two multi-pressure heat recovery steam generators (HRSGs) with duct burners, and one reheat steam turbine generator (STG) with an air cooled condenser for exhaust steam cooling. (7/7/09 RT 24; Ex. 200, p. 5.3-1.) The CTGs will be equipped with dry low-NO_x combustors and the HRSGs with selective catalytic reduction (SCR) systems. (Ex. 200, pp. 5.3-1 to 5.3-2.)

The project will burn natural gas at a rate of approximately 3,236 million Btu (British Thermal Units) per hour, lower heating value (LHV), during base load operation at average ambient conditions. With duct firing, fuel consumption increases to 4,055 million Btu per hour. Under expected conditions, Avenal will generate electricity at a full load efficiency of approximately 50.5 percent, LHV. (Ex. 200, p. 5.3-2.) 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.

The Avenal Project will be configured as a combined cycle power plant in which electricity is generated by two gas turbine generators and additionally by a reheat steam turbine generator that operates on heat energy recovered from the gas

turbines' exhaust. By recovering this heat which would otherwise be lost up the exhaust stacks, the efficiency of any combined cycle power plant is increased considerably from that of either gas turbines or a steam turbine operating alone. (Ex. 200, p. 5.3-3.)

The project will incorporate mechanical inlet air chillers, HRSG duct burners (re-heaters), multi-pressure HRSGs, and a steam turbine unit with an air cooled condenser to cool steam exhaust. (*Id.*) The evidence shows that these features contribute to meaningful efficiency enhancement. The two-train CTG/HRSG configuration allows for high efficiency during unit turndown because one CTG can operate at a more efficient full load while the other is shut down, rather than operating two CTGs at an inefficient 50 percent load. The project includes HRSG duct burners to augment heat to the STG cycle during high ambient temperatures when CTG capacity drops and for added power output. Duct firing also provides a number of operational benefits such as load following, as well as balancing and optimizing the operation of the STG cycle. The evidence establishes that Avenal's configuration is well-suited to large, steady loads met by a base load power plant intended to supply energy efficiently for long periods of time. (*Id.*)

Modern gas turbines embody the most fuel-efficient generating technology currently available. The turbines can be grouped into three categories: conventional; advanced; and next generation. The evidence of record contains an analysis of equipment proposed for the project. The alternatives to the GE Frame 7FA, i.e. the Siemens SCC6-5000F and the Alstom KA24-2, present no significant improvements in actual operating efficiency. (Ex. 200, p. 5.3-4.) Similarly, the evidence indicates that next generation machines such as the Siemens-Westinghouse 501G and the Frame 7H have not yet been shown to possess significant energy efficiency improvements over the Frame 7FA. (Ex. 200, p. 5.3-5.) The evidence also establishes that the use of a mechanical chiller, as proposed, is appropriate since the alternative – the evaporative cooler – possesses no real efficiency benefit. (*Id.*)

The fuel will be delivered via a new 2.5 mile long, 20 inch diameter, underground natural gas pipeline which will interconnect with the existing Pacific Gas and Electric (PG&E) lines. The evidence conclusively establishes that PG&E's present fuel supply capacity is sufficient to meet the demands of the Avenal Energy Project. (Ex. 200, pp. 5.3-2 to 5.3.-3.) Moreover, the evidence shows that only natural gas burning technologies are feasible for this project. Other technologies such as nuclear, solar, biomass, hydroelectric, wind and geothermal

were all considered but cannot meet project objectives or are simply not feasible or are unavailable in the area. (Ex. 200, p. 5.3-4.) The evidence addressing these other technologies is discussed further in the Alternatives section of this Decision.[5]

In conclusion, the uncontradictated evidence of record convincingly shows that the Avenal Project will benefit the State's electrical system by enhancing power supply reliability and displacing operation of older, less efficient power plants. (7/7/09 RT 72.) It will provide this benefit in the most fuel efficient manner practicable, without creating adverse effects on energy supplies or resources. The project will not require additional sources of energy supply or consume energy in a wasteful or inefficient manner. (Ex. 200, p. 5.3-6.)

FINDINGS OF FACT

Based on the uncontroverted evidence of record, we make the following findings and reach the following conclusions:

1. The Avenal Project will provide approximately 600 MW of electrical power, operate in combined cycle mode, and utilize two GE Frame 7FA gas turbines.

2. Under average annual ambient conditions, Avenal will generate electricity at a full load efficiency of approximately 50.5 percent, LHV.

3. The project's combined cycle configuration incorporates HRSG duct burners and a mechanical chiller. This configuration is well suited to the large steady loads met by a base load plant to efficiently supply energy for long periods of time.

4. Use of the GE Frame 7FA is appropriate for the Avenal Project.

5. The Avenal Project will not require the development of new fuel supply resources.

6. The Avenal Project will consume natural gas in as efficient a manner as practicable.

[5] See the **Alternatives** section of this Decision for a discussion of why rooftop solar is not a feasible alternative to the Avenal Energy Project.

7. The evidence of record contains a comparative analysis of alternative fuel sources and generation technologies, none of which is superior to the proposed project at meeting project objectives in an efficient manner.

8. The Avenal Project will benefit the State's electrical system as a whole by enhancing power supply reliability and displacing the operation of older, less efficient power plants.

9. No Federal, State, or local laws, ordinances, regulations, or standards apply to the efficiency of this project.

CONCLUSION OF LAW

1. The Avenal Project will not create adverse effects upon energy supplies or resources, require additional sources of energy supply, or consume energy in a wasteful or inefficient manner. No Conditions of Certification are required for this topic area.

C. POWER PLANT RELIABILITY

We must determine whether the project will be designed, sited, and operated to ensure safe and reliable operation. [Pub. Res. Code, § 25520(b); Cal. Code Regs., tit. 20 § 1752(c)(2).] However, there are no LORS that establish either power plant reliability criteria or procedures for attaining reliable operation. Therefore, we look to typical industry norms for reliability of power generation as a benchmark against which to evaluate this proposal. Where a power plant compares favorably to industry norms, it is not likely to degrade the overall reliability of the electric system it serves. (Ex. 200, p. 5.4-3.)

The CAISO has begun to establish specific criteria for each load-serving entity under its jurisdiction to help the entities decide how much generating capacity and ancillary services to build or purchase. Load serving entities then issue power purchase agreements to satisfy these needs. Avenal must satisfy these criteria, which include maintaining a 15 percent reserve margin and increasing local generation to reduce reliance on imported power. (Ex. 200, p. 5.4-2.) The Applicant has elected to pursue a power purchase agreement with Pacific Gas and Electric (PG&E) after this licensing process concludes. (7/7/09 RT 79-80, 102 – 03.)

The CAISO criteria are designed to maintain system-wide reliability. However, it is possible that, if numerous power plants operated at reliability levels sufficiently lower than historical levels, the assumptions used by CAISO to ensure system reliability would prove invalid. As a result, the Commission must ensure that individual power plant owners continue to build and operate their projects to the traditional level of reliability reflected in the power generation industry. The evidence presented was uncontested. (7/7/09 RT 446 - 48; Exs.1; 25 (t); 200, § 5.4.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

Applicant expects an availability factor of 92-96 percent for the Avenal Project.[6] The availability factor for a power plant is the percentage of time that it is available to generate power. Both planned and unplanned outages subtract from a plant's availability. For practical purposes, a reliable power plant is one that is available when called upon to operate. The evidence of record shows that delivering acceptable reliability entails: 1) adequate levels of equipment

[6] The project is expected to operate at a capacity factor of 80 percent, with 25 percent duct firing each year of its operating life.

availability; 2) plant maintainability with scheduled maintenance outages; 3) fuel and water availability; and 4) resistance to natural hazards.

Commission staff evaluated the proposed project against typical industry norms as a benchmark for assessing plant reliability. If the factors mentioned above compare favorably to industry norms, then the power plant will be at least as reliable as other power plants on the electric system and will therefore not degrade overall system reliability. (Ex. 200, pp. 5.4-2 to 5.4-3.)

1. 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 adequate maintenance and repair of the equipment and systems. The project owner will use a QA/QC program typical in the power industry. Equipment will be purchase from qualified suppliers and the project owner will perform receipt inspections, test components, and administer independent testing contracts. To ensure these measures are taken, we have incorporated appropriate Conditions of Certification in the **FACILITY DESIGN** section of this Decision. (*Id.*)

2. Plant Maintainability

A generating facility called upon to operate in base load service for long periods of time must be capable of being maintained while operating. A typical approach for achieving this is to provide redundancy for those pieces of equipment most likely to require service or repair. (Ex. 200, p. 5.4-4.)

The evidence shows that the project incorporates an appropriate redundancy of function. It consists of two combustion turbine generators operating in parallel as independent equipment trains. A single equipment failure cannot disable both trains; this allows the plant to continue to generate at reduced output. In addition, all plant ancillary systems are designed with adequate redundancy to ensure continued operation in the face of equipment failure. (*Id*.)

The project owner will establish a maintenance program typical of the power generation industry and based on recommendations from the various equipment manufacturers. This will encompass both preventive and predictive maintenance techniques. Maintenance outages will be planned for periods of low electricity

demand. The evidence establishes that the planned maintenance measures will ensure acceptable reliability. (*Id.*)

3. Fuel and Water Availability

For any power plant the long-term availability of fuel, and water for cooling or process use, is necessary to ensure reliability. The Avenal Project will burn natural gas supplied by PG&E. This fuel will be supplied via a new 20 inch, 2.5 mile long underground pipeline which will connect to the existing system near the Kettleman compressor station. (7/7/09 RT 25; Ex. 202, p. 2.) The line offers access to adequate supplies of gas to meet the project's needs. (Ex. 200, p. 5.4-4.)

The project will obtain untreated fresh water from the City of Avenal's water treatment facility, supplied by the San Luis Canal, and treat the raw water on the project site to suit project needs for steam cycle makeup water and fire and service water. The City will also supply potable water which will be used as domestic water including drinking water. The water supply plans include a backup source of raw water which, if needed, will be obtained from existing agricultural wells. A 750,000 gallon raw water/firewater storage tank will allow plant operations to continue if the primary water supply is interrupted. Use of an air cooled condenser and a zero liquid discharge system minimize water usage. (Exs. 200, pp. 5.4-4 to 5.4-5; 202, pp. 2-3.)

4. Natural Hazards

The site lies in Seismic Risk Zone 4. The project will be designed and constructed to the Seismic Zone 4 standards of the latest appropriate LORS. By implementing these seismic design criteria, this project will likely perform at least as well as, and perhaps better than, existing plants in the electric power system. We have adopted Conditions of Certification in the **FACILITY DESIGN** section to ensure this occurs.

The site does not receive stormwater runoff nor does it lie within a 100-year floodplain. The record establishes that there should be no significant concerns with power plant functional reliability due to flooding. (Ex. 200, p. 5.4-5.)

5. Comparison to Industry Norms

The North American Electric Reliability Corporation (NERC) maintains statistics for availability factors and other related reliability data. NERC currently reports summary generating unit statistics for the years 1999 through 2003 for combined cycle units of all sizes; these statistics demonstrate an availability factor of 89 percent. (Ex. 200, pp. 5.4-5 to 5.4-6.) Since the project's Frame 7FA machines will outperform many of the various gas turbines that make up the NERC figure, we are persuaded that the Avenal Project will likely exceed industry norms in this regard and reach its predicted annual availability factor of 92-96 percent.

Finally, the evidence shows that the Avenal Project will enhance the reliability of California's electricity supply, contribute to electricity reserves in the region, and provide operating flexibility, load following capability, and spinning reserve. (7/7/09 RT 76 – 77, 93-94.) The evidence of record characterizes these factors as "noteworthy projects benefits." (Ex. 200, p. 5.4-6.)

FINDINGS OF FACT

Based on the uncontested evidence, we make the following findings:

1. No federal, state, or local/county LORS apply to the reliability of the Avenal Project.

2. A project's reliability is acceptable if it does not degrade the reliability of the utility system to which it is connected.

3. The North American Electric Reliability Corporation (NERC) reports that for the years 1999 through 2003 combined cycle units of all sizes exhibited an availability factor of 89 percent.

4. Undisputed evidence indicates that an availability factor of 92-96 percent is achievable by the Avenal Project.

5. Implementation of Quality Assurance/Quality Control (QA/QC) programs during design, procurement, construction, and operation of the plant, as well as adequate maintenance and repair of the equipment and systems, will ensure the project is adequately reliable.

6. Appropriate Conditions of Certification included in the **FACILITY DESIGN** portion of this Decision ensure implementation of the QA/QC programs and conformance with seismic design criteria.

7. The project's fuel and water supply will be reliable.

8. The project will meet or exceed industry norms for reliability, including reliability during seismic events, and will not degrade the overall electrical system.

9. The Avenal Project is expected to operate at an annual capacity factor of 80 percent, with 25 percent duct firing.

10. The use of two combustion turbine generators, configured as independent equipment trains, provides the Avenal Project inherent reliability.

11. The Applicant intends to procure a power purchase agreement with Pacific Gas and Electric Company following completion of this licensing proceeding.

12. The project will enhance California's power supply reliability, contribute to electricity reserves in the region, and provide operating flexibility.

CONCLUSION OF LAW

1. The project will be constructed and operated in accordance with the typical power industry norms for reliable electricity generation and will not degrade overall system reliability. No Conditions of Certification other than those included in the **FACILITY DESIGN** portion of this Decision are required for this topic.

D. TRANSMISSION SYSTEM ENGINEERING

The Commission's jurisdiction includes "… any electric power line carrying electric power from a thermal power plant … to a point of junction with an interconnected transmission system." (Pub. Res. Code § 25107.) The Commission assesses the engineering and planning design of new transmission facilities associated with a proposed project to ensure compliance with applicable law. The record indicates that the Applicant in this case has adequately identified all necessary interconnection facilities based on the information currently available.

The California Independent System Operator (CAISO) is responsible for ensuring electric system reliability for participating entities, and determines both the standards necessary to achieve system reliability and whether a proposed project conforms to those standards. The Energy Commission works in conjunction with the CAISO in assessing a project. Commission Staff normally relies on the interconnecting authority, CAISO, or the interconnecting utility (in this case PG&E) for the analysis of impacts on the transmission grid as well as the identification and approval of required new or modified facilities downstream from the proposed interconnection.

However, the CAISO's generator interconnection process is transitioning from a queue or serial study process to a cluster window process for Phase 1 and Phase 2 Interconnection studies. This transition has also caused significant delays in the interconnection studies for several projects. As a result, the Energy Commission is allowing Applicants to file "third party" or non-CAISO or utility studies during the CAISO's transition period in order to allow the AFC process to continue throughout the CAISO's transition period. The third party System Impact Study (SIS) must be sufficient for the Energy Commission to determine whether or not a proposed project interconnection would comply with reliability LORS and allow the identification of any additional or modified downstream facilities that might be required to ensure compliance with the CEQA. The Applicant has provided a third party SIS for the Avenal Energy Project.

The Avenal Project will not be allowed to interconnect to the CAISO controlled grid without completion of the CAISO Large Generator Interconnection Process (LGIP) and the execution of a Large Generator Interconnection Agreement (LGIA). Both PG&E and the CAISO would review Phase 1 and Phase 2 Interconnection studies to be carried out for the Avenal Project. Condition of Certification **TSE-5 F** requires that the project owner provide the executed LGIA

to the Energy Commission before starting construction on any transmission facilities.

The analysis of record evaluated the power plant switchyard, outlet line, termination, and downstream facilities identified by the Applicant. The record also includes Conditions of Certification to ensure the project complies with applicable laws during the design review, construction, operation, and potential closure of the project. No evidence of record disputes these matters. (Exs. 1, 3(e),(u),(v),(w), 7(g), 13, 17(d), 19(e), 20, 21(l), 22, 24, 25(u); 200; 7/7/09 RT 447-448)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Transmission Facilities Description

Each of the project's two combustion turbine generators (CTGs) unit rated at 205 megavolt ampere (MVA), 18-kV would be connected through an 8,000-ampere segregated bus duct and a 7,500-ampere, 18-kV breaker to the low voltage terminal of a dedicated 132/176/220 megavolt ampere (MVA), 18/230-kV generation step-up (GSU) transformer with a specified impedance of 9.00 percent at 132 MVA. The steam turbine generator (STG) unit rated 373 MVA, 18-kV would be connected through a 13,000-ampere bus duct to the low voltage terminal of a dedicated 234/312/390 MVA, 18/230-kV GSU transformer with a specified impedance of 9 percent at 234 MVA. (Ex. 1, § 1.5, p. 1-6; § 2.3.6, pp. 2-13 to 2-15; Fig. 2.3-6.)

The new Avenal Energy 230-kV switchyard would be interconnected to PG&E's Gates substation 230-kV bus by building a new 6.4-mile long single circuit overhead line with a bundled 954 thousand circular mil (kcmil) aluminum cable steel reinforced (ACSR) conductor on 120-foot high tubular steel poles within a new 120-foot right-of-way on public and private lands adjacent to existing PG&E 230 and 500-kV transmission lines. The Applicant will build, own and operate the Avenal Energy 230-kV switchyard and the overhead tie line. (Ex. 1, § 2.4, pp 2-53 to 2-55, Figs. 2.4-3 & 2.4-4.) PG&E would build and operate the terminating facilities at the Gates substation.

Construction of the new additional switching bays at the Gates substation would involve extension of the substation fence line on the east side by approximately 240 feet west-east and 360 feet north-south. Evidence of record establishes that the likely expansion area is owned and maintained by PG&E and is considered

disturbed land. The expansion area was analyzed under parameters for soils, water resources, biological resources, cultural resources, paleontological resources and land use. (Ex. 24.) The results of the facilities study will be updated in the Phase 1 Interconnection study currently being performed by PG&E for CAISO. The evidence establishes high probabilities the proposed interconnection is feasible with expansion of the Gates substation 230-kV bus. The Interconnection Feasibility study [7] dated March 24, 2008, performed by CAISO and PG&E also had identified the proposed interconnection as feasible. Any changes to the interconnection could be identified in the CAISO Phase 1 Interconnection study. The Applicant has agreed to provide timely information in case the interconnection to the PG&E system changes from the Gates substation to a different location. Notification is required in Condition of Certification **TSE-5**.

2. Transmission System Impacts Analysis

For Avenal Energy, PG&E and CAISO are responsible for ensuring grid reliability. In accordance with the FERC/CAISO/Utility Tariffs, the Interconnection Feasibility study (IFS), SIS, and Facilities Study (FS) are normally conducted by the participating transmission owner (PTO), in this case PG&E, and CAISO to determine the preferred and alternate interconnection methods to the grid, the downstream transmission system impacts, and the mitigation measures needed to ensure system conformance with reliability criteria of the local utility, North American Electric Reliability Council (NERC) planning standards, Western Electricity Coordinating Council (WECC) reliability criteria, and CAISO reliability criteria. In this case, the SIS was performed by a third party (Navigant Consulting, Inc.) at the request of the Applicant. The Avenal Energy Project will still be required to complete the CAISO Large Generator Interconnection Process (LGIP) before being allowed to connect to the CAISO controlled grid. (Ex. 200, p. 5.5-6.)

The SIS and Facilities Study (FS) analyze the grid with and without the proposed project under conditions specified in the planning standards and reliability criteria. The standards and criteria define the assumptions used in the study and establish the thresholds by which grid reliability is determined. If the studies show that the interconnection of the project causes the grid to be out of compliance with reliability standards, the study will then identify mitigation

[7] The Interconnection Feasibility Study conducted by the participating transmission owner (here PG&E) and CAISO is primarily intended to evaluate alternate interconnection points in the system and determine a preferred point which is feasible to minimize interconnection facilities and downstream system impacts.

alternatives or ways in which the grid could be brought into compliance with reliability standards. If the interconnecting utility determines that the only feasible mitigation includes transmission modifications or additions which require CEQA review as part of the "whole of the action," the Energy Commission must analyze those modifications or additions according to CEQA requirements.

The September 18, 2008 SIS and November 11, 2008 supplemental SIS were prepared by Navigant Consulting at the request of the Applicant to evaluate impacts of the proposed Avenal Energy Project's generation on the PG&E transmission system. The SIS cases were prepared with and without Avenal Energy Project's 600 MW generation output assuming June 1, 2012, operation date:

- A 2013 summer peak base case was developed from PG&E 2007 base case series and has 1-in -10 year extreme weather load level (PG&E load 28,118 MW) for the greater Fresno area;

- A 2013 summer off-peak base case with the load in the greater Fresno area at 50 percent of the summer peak load level (PG&E load 13,995 MW) and two units at the Helms pump storage plant in pumping mode; and

- A 2013 spring peak base case developed with typical spring season load conditions (PG&E load 22,792 MW) and high hydro generation available.

In each of the cases Northern California generation and critical seasonal power flows in WECC Paths 15, 26, 65 and 66 were maintained within limits. Each of the cases included planned CAISO-approved transmission upgrades that would be operational by 2013.

The SIS performed for the Applicant by Navigant Consulting demonstrates that the addition of the Avenal Energy Project would cause some adverse impacts on the PG&E's system for new overloads on nine transmission lines during emergency contingency conditions for which the Avenal Energy Project should be responsible. The Commission staff's analysis identified the lines potentially impacted and summarized the recommended mitigation approaches. (Ex. 200, pp. 5.5-8 to 5.5-9.) Depending on the line impacted, mitigation steps include: re-rating the line for higher emergency rating, or installing a special protections system (SPS) operations procedure for curtailing the Avenal Energy Project generation output. Commission staff found the applicant's mitigation recommendations to be reasonable. (*Id*.) However, Staff noted that the SIS is valid only for the AFC process for interconnection of the Avenal Energy Project at

the PG&E Gates substation. Thus, the analysis would not apply if the interconnection of the project changes from the Gates substation to a different location. (Ex. 200, p. 5.5-10.) Condition of Certification **TSE-5** requires the Applicant to provide timely information in case the interconnection to the PG&E system changes from the Gates substation to a different location.

Staff analysis also determined that the Avenal Energy Project will have no unmitigated significant impacts concerning short circuits, transient stability, post-transient voltage, reactive power deficiencies, or downstream facilities. (Ex. 220. pp. 5.5-10 to 5.5-11.)

3. Cumulative Impacts

Because Avenal Energy is proposed to be connected to the Gates 500/230/115-kV substation, which is an important junction of Northern California bulk power system, the project could create some cumulative effects in the CAISO network. However, the evidence shows that cumulative impacts identified in the SIS as attributable to the Avenal Energy Project would be mitigated to a less than significant level. (Exs. 20; 200, p. 5.5-11.) In addition, the evidence establishes that interconnecting the project at the Gates substation would result in some positive impacts. This is because the Avenal Energy Project's generation would meet the increasing load demand in the Fresno and Kings Counties areas, would provide additional reactive power and voltage stability support in the network, enhance reliability, and may reduce system losses in the PG&E system. (*Id*.)

The evidence also contains an examination of potential alternative transmission routes. Applicant's proposed route was deemed superior because it would minimize environmental impacts and be an extension of the existing transmission corridor.

FINDINGS OF FACT

Based on the uncontroverted evidence of record, the Commission makes the following finding:

1. The proposed interconnection facilities including the Avenal Energy 230-kV switchyard, the generator overhead 230-kV tie line to the existing PG&E Gates substation and its terminating facilities, are adequate in accordance with NESC standards, GO-95 Rules and good utility practices, and are acceptable according to engineering LORS contained in Appendix A.

2. Construction of the new additional switching bays at the Gates substation would involve extension of the substation fence line on the east side by approximately 240 feet west-east and 360 feet north-south.

3. The likely substation expansion area is owned and maintained by PG&E and is considered disturbed land. The expansion area was analyzed under parameters for **SOIL AND WATER RESOURCES, BIOLOGICAL RESOURCES, CULTURAL RESOURCES, PALEONTOLOGICAL RESOURCES** and **LAND USE**.

4. Evidence of record found in Exhibit 22 establishes that potential environmental impacts of the anticipated expansion of the Gates substation related to the Avenal Energy Project have been analyzed and are not significant.

5. The record includes a System Impact Study (SIS) which analyzes potential reliability and congestion impacts that could occur when the Avenal Energy Project interconnects to the grid.

6. The System Impact Studies performed by Navigant Consulting demonstrate that the addition of the Avenal Energy Project would cause some adverse impacts on the PG&E's system for new overloads on nine transmission lines during emergency contingency conditions.

7. The System Impact Studies conclude that according to PG&E re-rating guidelines, re-rating the lines with identified overloads during 2013 summer peak system conditions for higher ampere ratings based on higher wind speed is a feasible mitigation option and preferable to the alternate option of reconductoring the lines.

8. Re-rating the lines is valid for summer daylight hours only and would be subject to PG&E re-rate study guidelines including detailed study and cost estimates.

9. The mitigation plan identified in Exhibits 20 and 200 would be adequate to eliminate the adverse impacts from the project. For single (N-1) contingency overload violations on three transmission lines, the mitigation option includes re-rating two 230-kV and one 70-kV transmission lines for higher emergency ampere ratings. The System Impact Studies also identified six lines that overload under double or category B contingency (N-2 or more) conditions.

10. The evidence contains mitigation options which include re-rating for higher emergency rating or installing Special Protection System (SPS) for curtailing Avenal Energy generation for two 230-kV and one 115-kV lines, SPS or operation procedure for two 230-kV lines, and operation procedure for one 70-kV line.

11. PG&E has indicated some uncertainty about interconnecting the Avenal Energy Project at the PG&E Gates substation due to potential lack of room in the substation. However, in the absence of written confirmation from

PG&E or the CAISO about any change in the interconnection point, consideration of changes to the proposed interconnection would be speculative and premature at this time.

12. Testimony of record establishes high probabilities exist that the proposed interconnection is feasible through expansion of the Gates substation 230-kV bus. The Interconnection Feasibility Study dated March 24, 2008 performed by the CAISO and PG&E also identified the proposed interconnection as feasible.

13. Condition of Certification **TSE-5** requires the Applicant to provide timely information in case the interconnection to the PG&E system changes from the Gates substation to a different location.

14. On completion of the Phase 1 & Phase 2 Interconnection Studies, the CAISO would execute a LGIA with the Applicant before interconnecting the Avenal Energy Project to the CAISO grid.

15. The Avenal Energy Project, as local generation, would meet the increasing load demands in the Fresno and Kings Counties, provide additional reactive power and voltage support in the local network, enhance reliability in the grid and may reduce system losses in the PG&E system.

CONCLUSIONS OF LAW

1. With the implementation of the various mitigation measures specified in this Decision, and the Conditions of Certification which follow, and assuming interconnecting directly into PG&E Gates substation, the proposed transmission interconnection for the project will not contribute to significant adverse direct, indirect, or cumulative impacts.

2. The Conditions of Certification below ensure that the transmission-related aspects of the Avenal Energy Project will be designed, constructed, and operated in conformance with the applicable laws, ordinances, regulations, and standards identified in the appropriate portion of **Appendix A** of this Decision.

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 major structures and equipment (see a list of major equipment in **Table 1: Major Equipment List** 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 List
Breakers
Step-up Transformer
Switchyard
Busses
Surge Arrestors
Disconnects and Wave-traps
Take off facilities
Electrical Control Building
Switchyard Control Building
Transmission Pole/Tower
Insulators and Conductors
Grounding System

TSE-2 Prior to the start of construction 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. (Business and Professions Code Sections 6704 et seq., require 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 with 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 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 corrective action (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 become a controlled document and shall be submitted to the CBO for review and approval and shall reference this Condition of Certification.

Verification: The project owner shall submit a copy of the CBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days of receipt. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action required to obtain the 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 energization 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 to compliance with the applicable LORS, and 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 project owner shall submit the required number of copies of the design drawings and calculations to the CBO 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 and Regulations (Title 8), Articles 35, 36 and 37 of the “High Voltage Electric Safety Orders”, California ISO standards, National Electric Code (NEC) and related industry standards.

B. Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to accommodate full output from the project and 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. The project conductors shall be sized to accommodate the full output from the project.

E. Termination facilities shall comply with applicable PG&E interconnection standards.

F. The project owner shall provide to the CPM:

1. Confirmation that Avenal Energy will be interconnecting directly into the PG&E Gates substation.
2. The Special Protection System (SPS) sequencing and timing if applicable,
3. A letter stating that the mitigation measures or projects selected by the transmission owners for each criteria violation are acceptable,
4. The Phase 1 and Phase 2 interconnection study reports from the California ISO and/or PG&E, and
5. A copy of the executed LGIA signed by the California ISO and the project owner.

Verification: At least 60 days prior to the start of construction of transmission facilities (or a lesser number of days mutually agreed to by the project owner and CBO), the project owner shall submit to the CBO for approval:

A. Design drawings, specifications and calculations conforming with CPUC General Order 95 or NESC, Title 8, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", NEC, applicable interconnection standards and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems and major switchyard equipment.

B. For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions"[8] 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, 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. Confirmation that Avenal Energy will be interconnecting directly into the PG&E Gates substation.

E. The Special Protection System (SPS) sequencing and timing if applicable shall be provided concurrently to the CPM.

F. A letter stating that the mitigation measures or projects selected by the transmission owners for each criteria violation are acceptable.

[8] Worst case conditions for the foundations would include for instance, a dead-end or angle pole.

G. The Phase 1 and Phase 2 interconnection study reports from the California ISO and/or PG&E.

H. A copy of the executed LGIA signed by the California ISO and the project owner.

TSE-6 The project owner shall inform the CPM and CBO of any impending changes that may not conform to 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, the project owner shall inform the CBO and the CPM of any impending changes that` may not conform to requirements of **TSE-5** and request approval to implement such changes.

TSE-7 The project owner shall provide the following Notice to the California Independent System Operator (California ISO) prior to synchronizing the facility with the California Transmission system:

1. At least one week prior to synchronizing the facility with the grid for testing, provide the California ISO a letter stating the proposed date of synchronization; and
2. At least one business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the California ISO Outage Coordination Department.

Verification: The project owner shall provide copies of the California ISO letter to the CPM when it is sent to the California ISO one week prior to initial synchronization with the grid. The project owner shall contact the California ISO Outage Coordination Department, Monday through Friday, between the hours of 0700 and 1530 at (916) 351-2300 at least one business day prior to synchronizing the facility with the grid for testing. A report of conversation with the California ISO shall be provided electronically to the CPM one day before synchronizing the facility with the California transmission system for the first time.

TSE-8 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", 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 electrical, 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 charge.

E. TRANSMISSION LINE SAFETY AND NUISANCE

The Avenal Project's transmission line must be constructed and operated in a manner that protects environmental quality, assures public health and safety, and complies with applicable law. This portion of the Decision assesses the potential impacts of the transmission line on aviation safety, radio frequency interference, audible noise, fire hazards, and hazardous and nuisance shocks. It also examines any risks arising from electric and magnetic field (EMF) exposure, as well as whether mitigation measures are required to reduce any potential impacts to insignificant levels. The evidence submitted by Applicant and Staff was uncontested. (7/7/09 RT 446-48; Exs. 1; 25(m); 200, § 4.11.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

The Avenal Project's associated transmission tie-line will extend from its switchyard to Pacific Gas and Electric's (PG&E) Gates Substation. The single circuit, 230 kV line will be approximately 6.4 miles long. Conductors will be standard low-corona aluminum steel reinforced cables erected on new single tubular support structures. (Ex. 200, p. 4.11-4.) It will be located within a 120 foot wide right-of-way as it runs adjacent to the existing PG&E transmission corridor. The line will traverse land which is largely agricultural, with no residences nearby. (Ex. 200, pp. 4.11-1, 4.11-3.) Since the tie-line will be operated in the PG&E service area, its design, erection, and maintenance will conform to standard PG&E practices. This, in turn, assures compliance with applicable LORS. (Ex. 200, p. 4.11-1.)

The potential impacts from the project's transmission line involve aircraft collisions, interference with radio frequency communication, audible noise, hazardous shocks, nuisance shocks, fire danger, and EMF exposure. Regarding each of these potential impacts, the evidence of record conclusively establishes the following:[9]

- *Aviation Safety*

Any potential hazard to area aircraft would relate to the potential for collision in the navigable airspace and the need to file a "Notice of Proposed Construction or Alteration" with the FAA. The project site is located more than six miles from the

[9] The evidence also considered whether the transmission line would cause disproportionate impacts to minority and low-income populations. (Staff's Opening Brief, at 12.)

nearest population centers, and there are no nearby airports; this alleviates concern over a collision hazard to aircraft from the presence of the project and related facilities. The nearest airport, the Avenal Airport, is more than seven miles southwest of the site. Thus, it is too far according to FAA distance specifications for the project's transmission line to pose a collision hazard to aircraft utilizing that airport. Furthermore, the maximum height of the supporting structures would, at 120 feet, be much less than the 200 feet regarded by the FAA as posing a potential impact to aviation safety. (Ex. 200, pp. 4.11-4 to 4.11-5.)

- *Interference with Radio-Frequency Communication*

This potential impact arises from corona discharge and is primarily a concern for lines larger than 345 kV. The project's 230 kV line will be built and maintained according to standard PG&E practices aimed at minimizing any interference. Moreover, there are no nearby residential receptors. If interference should occur, however, Condition of Certification **TLSN-2** requires the project owner to mitigate these effects as feasible. (Ex. 200, p. 4.11-5.)

- *Audible Noise*

This is typically perceived as a characteristic crackling, hissing, or frying sound or hum, especially in wet weather. The noise level depends upon the strength of the line's electric field, and is a concern mainly from lines of 345 kV or higher. The project line (230 kV) will embody a low corona design to minimize field strengths. It is not expected that the line will add significantly to the current background noise levels. (Ex. 200, pp. 4.11-5 to 4.11-6.)

- *Hazardous Shocks*

These could result from contact between an individual and the energized line. Compliance with the CPUC's GO-95, as required in Condition of Certification **TLSN-1**, will ensure that adequate measures are implemented to mitigate this potential impact. (Ex. 200, p. 4.11-6.)

- *Nuisance Shocks*

Nuisance shocks are typically caused by direct contact with metal objects electrically charged by fields from the energized line. They are effectively minimized through grounding procedures for all metallic objects within the right-

of-way as specified in Condition of Certification **TLSN-5**. (Ex. 200, pp. 4.11-6 to 4.11-7.)

- *Fire Hazards*

Fire can be caused by sparks from the line's conductors or by direct contact between the line and nearby trees or other combustible objects. PG&E's standard fire prevention and suppression measures, and compliance with the clearance-related aspects of GO-95 as required in Condition of Certification **TLSN-4**, ensure that appropriate fire prevention measures are implemented. (Ex. 200, p. 4.11-6.) Furthermore, the line will traverse an agricultural area with no trees of sufficient size to pose a contact-related fire hazard. (Ex. 200, p. 4.11-6.)

- *Exposure to Electric and Magnetic Fields*

Electric and magnetic fields (EMF) occur whenever electricity flows. The possibility of deleterious health effects from exposure to EMF has raised public health concerns about living and working near high-voltage lines.[10] Due to the present scientific uncertainty regarding potential health effects from EMF exposure, CPUC policy requires reduction of such fields, if feasible, without affecting the safety, efficiency, reliability, and maintainability of the transmission grid. (Ex. 200, p. 4.11-7.)

The CPUC requires each new transmission line in California to be designed according to the EMF-reducing guidelines of the electric utility in the service area involved. EMF fields produced by new lines must be similar to the fields of comparable lines in that service area. To comply with CPUC requirements for EMF management, PG&E's specific field strength-reducing measures will be incorporated into the project line's design and include (Ex. 200, pp. 4.11-8 to 4.11-9.):

- Increasing the distance between the conductors and the ground to an optimal level;

- Reducing the spacing between the conductors to an optimal level;

[10] While scientific research has not established a definitive correlation between EMF exposure and adverse health effects, the potential for EMF-related health hazards remains at issue. In this regard, the CPUC requires the regulated utilities, including PG&E, to incorporate EMF-reducing measures in the design, construction, and maintenance of new or modified transmission facilities within their service areas. (Ex. 200, p. 4.11-7.)

- Minimizing the current in the line; and

- Arranging current flow to maximize the cancellation effects from the interacting of conductor fields. (Ex. 200, p. 4.11-9.)

The evidentiary record contains an estimation of the field strengths for specific points along the line's 120 foot wide right-of-way to reflect the interactive effects of all conductors.[11] Condition of Certification **TLSN-3** requires that actual field strengths are measured, according to accepted procedures, before and after energization of the line. These measurements will be used to assess any contribution the project may make to cumulative area exposures. (Ex. 200, p. 4.11-9.)

Since there are no residences in the vicinity of the proposed project line, there would not be the long-term human residential EMF exposures primarily responsible for the health concern of recent years. The only project-related EMF exposures of potential significance are the short-term exposures of plant workers, regulatory inspectors, maintenance personnel, visitors, or individuals in the immediate vicinity of the line. These types of exposures are well understood as not being significantly related to the perceived health effect. (Ex. 200, p. 4.11-8.)

Overall, the evidence shows that the project will be designed, constructed, operated, and maintained in compliance with applicable LORS. Implementation of the Conditions of Certification will ensure that any impacts are reduced to less than significant levels. (Ex. 200, p. 4.11-11.)

FINDINGS OF FACT

Based on the uncontroverted evidence of record, we make the following findings and conclusions:

1. The Avenal Project will interconnect to the existing PG&E Gates Substation via a new 230-kV single circuit overhead outlet line approximately 6.4 miles long.

[11] The magnetic field intensity within the route would decrease from a maximum of 217 mG to 49 mG depending on the distance from the centerline. The maximum electric field strength was calculated to vary from 0.1 kV/m to 3.8 kV/m. The evidence indicates that these field strengths reflect the effectiveness of PG&E's field-reducing designs. These field strengths are similar to those of other PG&E lines. (Ex. 200, p. 4.11-9.)

2. The evidentiary record includes analyses of potential impacts from the project's transmission line involving aircraft collisions, interference with radio frequency communication, audible noise, hazardous shocks, nuisance shocks, fire danger, and EMF exposure.

3. The new interconnection line will traverse land primarily used for agriculture.

4. The available scientific evidence does not establish that EMF fields pose a significant health hazard to humans.

5. There are no residences along the route of the project's transmission line.

6. The electric and magnetic fields generated by the project's transmission line will be managed to the extent the CPUC considers appropriate, based on available health effects information.

7. The Avenal transmission line will comply with existing LORS for public health and safety.

8. The Avenal transmission line will incorporate standard EMF-reducing measures established by the CPUC and used by PG&E.

9. The project owner will provide field intensity measurements before and after line energization to assess EMF contributions from the project-related current flow.

10. The Avenal transmission line will not result in significant adverse environmental impacts to public health and safety or cause significant direct, indirect, or cumulative impacts in the areas of aviation safety, radio frequency communication, fire hazards, nuisance or hazardous shocks, or electric and magnetic field exposure.

CONCLUSIONS OF LAW

1. Implementation of the Conditions of Certification, below, will ensure that the Avenal Project's outlet line complies with all applicable laws, ordinances, regulations, and standards relating to transmission line safety and nuisance as identified in the pertinent portion of **Appendix A** of this Decision.

2. The Avenal Project's transmission outlet lines will have no significant impact on the environment related to transmission line safety or nuisance.

CONDITIONS OF CERTIFICATION

TLSN-1 The project owner shall construct the proposed transmission line according to the requirements of California Public Utility Commission's GO-95, GO-52, GO-131-D, Title 8, and Group 2, High Voltage Electrical Safety Orders, Sections 2700 through 2974 of the California Code of Regulations, and Pacific Gas and Electric's EMF-reduction guidelines.

Verification: At least thirty days before starting construction of the transmission line or related structures and facilities, the project owner shall submit to the Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming that the lines will be constructed according to the requirements stated in the Condition.

TLSN-2 The project owner shall ensure that every reasonable effort will be made to identify and correct, on a case-specific basis, any complaints of interference with radio or television signals from operation of the project-related lines and associated switchyards. The project owner shall maintain written records for a period of five years of all complaints of radio or television interference attributable to line operation together with the corrective action taken in response to each complaint.

Verification: All reports of line-related complaints shall be summarized for the project-related lines and included during the first five years of plant operation in the Annual Compliance Report.

TLSN-3 The project owner shall use a qualified individual to measure the strengths of the electric and magnetic fields from the line at the points of maximum intensity identified by the Applicant in Exhibit 1, Table A-6.18-1. The measurements shall be made before and after energization according to the American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) standard procedures. These measurements shall be completed not later than six months after the start of operations.

Verification: The project owner shall file copies of the pre-and post-energization measurements with the CPM within 60 days after completion of the measurements.

TLSN-4 The project owner shall ensure that the right-of-way for the project's transmission line is kept free of combustible material, as required under the provisions of Section 4292 of the Public Resources Code and Section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first five years of operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the right-of-way and provide such summaries in the Annual Compliance Report.

TLSN-5 The project owner shall ensure that all permanent metallic objects within the right-of-way of the project-related lines are grounded according to industry standards regardless of ownership.

Verification: At least 30 days before the lines are energized, the project owner shall transmit to the CPM a letter confirming compliance with this Condition.

V. PUBLIC HEATH AND SAFETY

Operation of the Avenal Energy Project will create combustion products and utilize certain hazardous materials that could potentially cause adverse health effects to the general public and to the workers at the facility. The following sections describe the regulatory programs, standards, protocols, and analyses that address these issues.

A. GREENHOUSE GAS (GHG) EMISSIONS

1. Introduction and Summary

The generation of electricity using fossil fuels, such as the natural gas that Avenal will consume, produces both "criteria pollutants" and greenhouse gas (GHG) emissions. Criteria pollutants are emissions that are known to adversely affect public health and for which regulatory agencies have established legal "criteria," which limit both the amount of the pollutants that may be emitted as well as the concentrations of the pollutants in the air. Avenal's criteria pollutant emissions, and the project's compliance with applicable air quality laws, are discussed in the Air Quality section of this Decision.

This part of the PMPD assesses the GHG emissions that are likely to result from the construction and the operation of the Avenal facility.

The greenhouse gases are carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFC), and perflurocarbons (PFC). CO_2 emissions are far and away the most common of these emissions; as a result, even though the other GHGs have a greater impact on climate change on a per-unit basis, GHG emissions are often expressed in terms of "metric tons of CO_2-equivalent" ($MTCO_2e$) for simplicity. (See, 7/7/09 RT 191: 19 to 192: 4; Ex. 200, p. 4.1-76 - 4.1-77.)

Prevailing scientific opinion considers GHG emissions to be the cause of significant changes in climate over the past several decades, and that such emissions "if not sufficiently curtailed, are likely to contribute further to continued increases in global temperatures." (Ex. 200, p. 4.1-73.) Adding GHG to the atmosphere increases the insulating power of the air and thereby traps more heat at and near the earth's surface. The California Legislature has declared that "[g]lobal warming poses a serious threat to the economic well-being, public

health, natural resources, and the environment of California." (Health & Saf. Code, § 38500.)

In this part of the PMPD we determine that:

- The Avenal Energy Project's GHG construction emissions will be insignificant;

- from a physical standpoint, the GHG emissions from a power plant's operation should be assessed not by inaccurately treating the plant as a standalone facility operating in a vacuum, but rather in the context of the operation of the entire electricity system of which the plant is an integrated part;

- from a policy and regulatory standpoint, the GHG emissions from a power plant's operation should be assessed in the context of the state's GHG laws and policies, such as AB 32; and

- Avenal's operation will be consistent with the state's GHG policies and will help achieve the state's GHG goals, by (1) causing a decrease in overall electricity system GHG emissions; and (2) fostering the addition of renewable generation into the system, which will further reduce system GHG emissions.

As a result we conclude that the Avenal Energy Project's GHG emissions will comply with all applicable LORS and will not result in any significant, adverse, unmitigated environmental impacts. We also conclude that the Avenal Energy Project will be consistent with California's ambitious GHG goals and policies.

2. Policy and Regulatory Framework

We begin with the simple observation that, as the Legislature stated 35 years ago, "it is the responsibility of state government to ensure that a reliable supply of electrical energy is maintained at a level consistent with the need for such energy for protection of public health and safety, for promotion of the general welfare, and for environmental quality protection." (Pub. Resources Code, § 25001.) Today, as a result of legislation, the most resent aspect of "environmental quality protection" is the reduction of GHG emissions. Several laws and statements of policy are applicable.

a. AB 32

The organizing framework for California's GHG policy is set forth in the California Global Warming Solutions Act of 2006. [Assembly Bill 32, codified in Health &

Saf. Code, § 38560 et seq. (hereinafter AB 32).] AB 32 requires the California Air Resources Board ("CARB") to adopt regulations that will reduce statewide GHG emissions, by the year 2020, to the level of statewide GHG emissions that existed in 1990. Gubernatorial Executive Order S-3-05 (June 1, 2005) requires a further reduction, to a level 80 percent below the 1990 GHG emissions, by the year 2050.

Along with all other regulatory agencies in California, the Energy Commission recognizes that meeting the AB 32 goals is vital to the state's economic and environmental health. While AB 32 goals have yet to be translated into regulations that limit GHG emissions from generating facilities, the scoping plan adopted by ARB relies heavily on cost effective energy efficiency and demand response, renewable energy, and other priority resources in the loading order to achieve significant reductions of emissions in the electricity sector by 2020. Even more dramatic reductions in electricity sector emissions would likely be required to meet California's 2050 greenhouse gas reduction goal. Facilities under our jurisdiction, such as the Avenal Energy Project, must be consistent with these policies.[12]

In addition to AB 32, are several other important components of the GHG policy and regulatory structure.

b. Renewable Portfolio Standard

California statutory law requires the state's utilities to be providing at least 20 percent of their electricity supplies from renewable sources by the year 2020. (Pub. Util. Code, § 399.11 et seq.) Recent gubernatorial Executive Orders increase the requirement to 33 percent and require CARB to adopt regulations to achieve the goal. [Governor's Exec. Orders Nos. S-21-09 (Sept. 15, 2009), S-14-08 (Nov. 17, 2008).]

c. Emissions Performance Standard

Senate Bill (SB) 1368 of 2006, and regulations adopted by the Energy Commission and the Public Utilities Commission pursuant to the bill, prohibits utilities from entering into long-term commitments with any base load facilities

[12] Of course, the Avenal Energy Project and all other stationary sources will need to comply with any applicable GHG LORS that take effect in the future.

that exceed an Emission Performance Standard (EPS) of 0.500 metric tonnes of CO_2 per megawatt-hour (this is the equivalent of 1100 pounds CO_2/MWh). (Pub. Util. Code, § 8340 et seq.; Cal. Code Regs., tit. 20, § 2900 et seq.; CPUC D0701039.) Currently, the EPS is the only LORS that limits power plant emissions.

d. Loading Order

In 2003 the Energy Commission and the CPUC agreed on a "loading order" for meeting electricity needs: the first resources that should be added are energy efficiency and demand response (at the maximum level that is feasible and cost-effective); followed by renewables and distributed generation, and combined heat and power (also known as cogeneration); and finally efficient fossil sources and infrastructure development.[13] CARB's AB 32 Scoping Plan reflects these policy preferences. (California Air Resources Board, Climate Change Scoping Plan, December 2008.)

3. Construction Emissions

Power plant construction involves vehicles and other equipment that emit GHG. The Avenal Energy Project's construction emissions are likely to be between 3,000 and 7,000 metric tons of CO_2-equivalent GHG during the 27-month construction period. (7/7/09 RT p. 176; Ex. 200, p. 4.1-76.) On an annual basis, this is between 1333 and 3111 metric tons of CO_2-equivalent GHG per year. (By way of comparison, as discussed in the next section, Avenal's GHG emissions from operations could be well over a million Metric Tons annually.)

There is no adopted, enforceable federal or state LORS applicable to the Avenal Energy Project's construction emissions of GHG. Nor is there a quantitative threshold over which GHG emissions are considered "significant" under CEQA. Nevertheless, there is guidance from regulatory agencies on how the significance of such emissions should be assessed.

Thus, for example, the most recent guidance from CARB staff recommends a "best practices" threshold for construction emissions. (CARB, Preliminary Draft Staff Proposal, Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act (Oct. 24, 2008), p. 9 [available at: **www.arb.ca.gov/cc/localgov/ -ceqa/meetings/102708/prelimdraftproposal102408.pdf**, last visited Oct. 26,

[13] California Energy Commission 2008, *2008 Integrated Energy Policy Report Update*, (IEPR) (CEC-100-2008-008-CMF.)

2009].) Such an approach is also recommended on an interim basis, or proposed, by major local air districts. (See, e.g.: **www.aqmd.gov/ceqa/handbook/GHG/oct22mtg/GHGguidance.pdf** [last visited Oct. 26, 2009]; **www.valleyair.org/Programs/CCAP/06-30-09/DRAFT%20CCAP%20GHG%20staff%20report_June%2030,%202009.pdf** [last visited Oct. 26, 2009].)

We understand that "best practices" includes the imposition of all feasible methods to control construction-related GHG emissions. As the "best practices" approach is currently recommended by the state agency primarily responsible not only for air quality standards but also for GHG regulation, we will use it here to assess the GHG emissions from Avenal's construction.

In order to limit vehicle emissions of both criteria pollutants and GHG during construction, the Avenal Energy Project project will use (1) operational measures, such as limiting vehicle idling time and shutting down equipment when not in use; (2) regular preventive maintenance to prevent emission increases due to vehicular engine problems; and (3) use of low-emitting diesel engines meeting federal emissions standards for construction equipment, whenever available. (Ex. 200 at 4.1-15.) These are the current "best practices" for limiting emissions from construction equipment; no party suggested otherwise. (Ex. 200 at 4.1-88 to 4.1-89; 7/7/2009 RT 147:3-148:7, 173:22-175:20.)

CRPE, however, recommends that we find any increase in GHG emissions to be "significant" – in effect, a "one-molecule" theory (the theory that an increase of one molecule of an air pollutant constitutes a significant increase). We reject this notion and CRPE offers no legal support for the proposition. In addition, even if we were to adopt CRPE's threshold of significance, we would still find that the project's GHG emissions are more likely than not insignificant. That is because, when the project is viewed as a whole – both its construction and its operation – overall GHG emissions from electricity generation will likely decline as a result of the project. The next part of this chapter explains why.

4. Emissions During Operation of the Facility

a. The Avenal Energy Project's Emissions

The primary sources of GHG emissions during the Avenal Energy Project's operation will be from the natural gas-fired combustion turbines. There will also be a small amount of GHG emissions from the auxiliary boiler, diesel-fueled fire pump engine, emergency generator, and electrical equipment. (Ex. 200, p. 4.1-

77.) If the Avenal Energy Project operated for one year (assuming 7,960 hours at 500 MW during normal operation, plus 800 hours at 600 MW during duct firing), it would be expected to produce 1,712,224 metric tons of CO_2 equivalent annually. (Ex. 200, p. 4.1-77; Ex. 1 Table 6.2-41 and Appendix Table 6.2-1.8.)

The Avenal Energy Project's annual GHG emissions from operation equate to an emissions performance factor of 0.383 metric tons of CO_2 per megawatt hour. This is less than the Emission Performance Standard of 0.500 metric tons of CO_2 per megawatt-hour described above. (See Ex. 200, p. 4.1-78.) Therefore, under SB 1368 California utilities will be allowed to purchase power from Avenal under long-term contracts (five or more years).

As we also noted above, the EPS is the only GHG LORS currently applicable to the Avenal Energy Project and determining compliance was easily calculated. Assessing whether the Avenal Energy Project's operational emissions are "significant" under CEQA is a more complicated matter.

b. Determining Significance: the Necessity of a System Approach

The process of electricity generation, production, and consumption has a unique physical reality. As a result, assessing the GHG impacts of power plants requires an approach that is different from the approach taken to analyze any other type of project, whether the analysis is scientific or legal.

In general, when an agency conducts a CEQA analysis of a proposed factory, shopping mall, or residential subdivision, it does not need to analyze how the operation of the proposed project is going to affect the entire system of factories, malls, or houses in a large multistate region. Rather, analyses of such projects are generally on a stand-alone basis. Power plants are different.

California's electricity system – which is actually a system serving the entire western region of the U.S., Canada, and Mexico – is large and complex. Hundreds of power plants, thousands of miles of transmission and distribution lines, and millions of points of electricity demand operate in an interconnected, integrated, and simultaneous fashion. Because the system is integrated, and because electricity is produced and consumed instantaneously, and will be unless and until large-scale electricity storage technologies are available, any change in demand and, most important for this analysis, any change in output from any generation source, is likely to affect the output from all generators. (7/7/09 RT 83 - 84, 139 - 142; Ex. 203, pp. 8, 23, 28, 47, 86, 98 - 99; Ex. 200, pp. 4.1-75, 4.1-79 - 4.1-86, 6-8; Ex. 19(a), Resp. 1; Ex. 23, pp. 10-14; Committee

CEQA Guidance (*Committee Guidance on Fulfilling California Environmental Quality Act Responsibilities for Greenhouse Gas Impacts in Power Plant Siting Applications,* CEC-700-2009-004, pp. 20 to 22.)[14]

Not only is the electricity system integrated physically, but it is also operated as such. The California Independent System Operator (CAISO) is responsible for operating the system so that it provides power reliably and at the lowest cost. Thus the CAISO dispatches generating facilities generally in order of cheapest to operate (i.e., typically the most efficient) to most expensive (i.e., typically the least efficient). (Committee CEQA Guidance, p. 20.) Because operating cost is correlated with heat rate (the amount of fuel that it takes to generate a unit of electricity), and, in turn, heat rate is directly correlated with emissions (including GHG emissions), *when one power plant runs, it usually will take the place of another facility with higher emissions that otherwise would have operated*. (See 7/7/09 RT 72, 84, 92:9-17, 150; Ex. 200, pp. 4.1-79 - 4.1-80; Committee CEQA Guidance, p. 20; 2007 IEPR, p. 63.)

In sum, the unique nature of how power plants operate in an integrated system means that we must assess their operational GHG emissions on a system-wide basis.

We now turn to the specifics of the Avenal Energy Project's operation.

c. The Avenal Energy Project's Effects on the Electricity System

(1) Providing Capacity and Ancillary Services

Power plants serve a variety of functions. Most obviously, they provide energy to keep lights shining and machinery working (typically referred to as "load"). But in order to keep the system functioning properly, they must also meet local needs for capacity and for the "ancillary services" of regulation, spinning reserve, non-spinning reserve, voltage support, and black start capability. (7/7/09 RT 140 - 142; Ex. 200, p. 4.1-75.)

Even as more renewable generation is introduced into the system, gas-fired power plants such as the Avenal Energy Project will be necessary to provide intermittent generation support, grid operations support, extreme load and system emergencies support, and general energy support, as well as meet local capacity requirements. (Ex. 200, pp. 4.1-76, 4.1-79.) At this time, gas-fired

[14] The report was issued in March 2009 and is found on the Commission website at: **http://www.energy.ca.gov/2009publications/CEC-700-2009-004-CEC-700-2009-004.PDF**

plants are better able to provide such services than are most renewables because they can be called upon when they are needed (dispatchable). (7/7/09 RT 74 - 75, 140; Ex. 203, pp. 47, 93.)

(2) Displacement of More-Costly, Less-Efficient, and Higher-Emitting Power Plants

The Avenal Energy Project will have a heat rate between 6,800 and 7,400 Btu/kWh, depending on local climatic conditions and whether duct firing is being used. This heat rate is lower than the heat rates of most other generating units in the area. (Ex. 200, Table 3, p. 4.1-80.) Therefore, when the Avenal Energy Project operates, it will most likely displace one or more of those plants and reduce the GHG emissions that would otherwise occur. (7/7/09 RT 92:9-17, 150; Ex. 200, pp. 4.1-79 - 4.1-80.) Indeed, the project's "worst-case" impact on GHG would likely be when it was not operating (e.g., when it is down for maintenance), because during those times other plants with higher costs (and thus higher heat rates and higher emissions) would have to run. (7/7/09 RT 72, 84.)

Parties in the AFC proceeding challenge several aspects of the system approach and the ways in which Applicant and Staff recommended that it be applied to the Avenal Energy Project (which we have generally adopted here).

First, CRPE claims that the Avenal Energy Project would displace *more efficient* generators because, CRPE says, the project's heat rate is higher than the California system average. (CRPE Opening Brief, citing PSA p. 4.1-71.) But the system-wide heat rate reflects much non-fossil generation, such as nuclear and renewables, with lower heat rates or lower running costs, that the Avenal Energy Project would never displace. (7/7/09 RT 74, 148–149; Ex. 26, p. A10; Ex. 203, p. 28.) Indeed, subject to a few narrow exceptions, the Avenal Energy Project will never run at all unless it can displace other less desirable generation. Therefore, what matters is whether there is enough less efficient (fossil) generation in the system so that the Avenal Energy Project is likely to displace that generation when it runs. The record shows that there is more than enough. (E.g., 7/7/09 RT 72-73, 84, 92, 114–115, 143–144, 148, 150; Ex. 26, p. A11; Ex. 200, pp. 4.1-71 to 4.1-72; Ex. 203, pp. 8, 28.)

CRPE also challenges the conclusion that electricity from the project will permanently displace electricity from less efficient sources, particularly if inefficient generators that may be displaced in the short term are brought back online or ramped up in the long term. (See Opening Brief of CRPE pp. 16–17; CRPE Reply Brief, p. 4.) It is quite possible, indeed practically certain over the

lifetime of a facility such as the Avenal Energy Project, that another generator displaced by the Avenal Energy Project on one day will operate on another day. But that is not the point. The point is that whenever the Avenal Energy Project operates, it will take the place of *a* less-efficient plant that otherwise would have operated. One day the displaced generation might be from plant A, another day from plant B, and so on. It is not necessary, as CRPE asserts, that there be evidence "showing that aging power plants *are decommissioned* as a consequence of new power plant approval" (CRPE Reply Brief, p. 5, italics added) in order to conclude that the Avenal Energy Project's operation will reduce GHG emissions. Such an approach would require us to ignore "physical changes to the environment [that] are a reasonably foreseeable result" of a project, which CRPE correctly instructs us we cannot do. (CRPE Reply Brief, p. 4 [quoting *Davidon Homes v. City of San Jose* (1997) 54 Cal.App.4th 106, 119].) Here, is it "reasonably foreseeable" – in fact, highly likely – that whenever the Avenal Energy Project runs, the "physical changes to the environment" will be an overall reduction in emissions from the electricity system compared to the same system operating without the Avenal Energy Project.

CRPE's fundamental concern, however, is valid: "Taken to its logical conclusion, under [the displacement theory] one could add an infinite number of power plants to the system without any present or future impact on greenhouse gas production . . . ." (CRPE Reply Brief, p. 4.) There are indeed limits to the number of natural-gas-fired power plants that should be added to the system. We are confident that the Avenal Energy Project does not run up against that limit (see, e.g., 7/7/09 RT 90 - 91, 188), but in order to ensure that the limit is not crossed we describe analytic and decision-making principles for future fossil plants below, in part 4.d. of this chapter, "The Limited Benefits Effects of Natural Gas Powerplants."

CRPE also contends that the system-wide approach incorporates an inappropriate "future baseline" for assessing a project's impact. (7/7/09 RT 162 - 163.) Not so. When assessing the impacts of any *proposed* project, an agency necessarily must analyze what is likely to happen *in the future* as the project is constructed and operates. The starting point for the analysis is "normally" the "environmental setting" at the time the agency begins analysis. (CEQA Guidelines, Cal. Code Regs., tit. 14, § 15125.) The agency then assesses what the impacts of the project (necessarily, again, impacts in the future) will be to that existing, current, environment. What we are determining here is that with the operation of the Avenal Energy Project, the GHG impacts to the *current* environment will most likely be beneficial – in other words, all else being equal, there will be fewer GHG emissions from the electricity system than there are

now. (Of course, all else will not be equal – there will be many other changes to the electricity system besides the addition of the Avenal Energy Project – but the basic point remains: during the foreseeable lifetime of the project, at any particular time the electricity system is likely to have fewer, not more, GHG emissions as a result of the Avenal Energy Project's operation.)

CRPE next contends that the system approach fails to account for "how increasing energy capacity in the State of California may have a growth inducing effect." (CRPE Opening Brief, p. 19.) This ignores the legal reality that utilities are obligated to meet whatever demand exists; therefore, additional demand is not going to be created simply as a result of building more capacity.[15] (Moreover, no matter what the demand is, the most efficient plants will generally be dispatched first. (7/7/09 RT 114.) Intervenor Rob Simpson takes the argument further by asserting that by increasing generation capacity, the project could drive down the price of electricity and thereby increase demand. (Simpson Reply Brief p. 6; 7/7/2009 RT 110–112.) While this argument has some merit in abstract economic theory, Mr. Simpson offered no evidence to support his theoretical contention (for example, an analysis of the Avenal Energy Project's price versus system prices and the price elasticity of electricity demand), so we cannot consider it here.

CRPE's final contentions about the system approach concern alleged "mitigation." CRPE suggests that approval of the project would be premised on mitigation that is not legally enforceable, i.e. the future displacement of electricity from less efficient sources, and that taking into account the GHG reductions from less efficient displaced generation could result in double-counting of mitigation if a cap and trade system goes into effect. (CRPE Opening Brief, pp. 19, 22.) These contentions are based on an erroneous view of mitigation. Evidence from the Applicant and Staff that the Avenal Energy Project would displace other generation was a description of the project's *impacts*, not a description of recommended mitigation. That evidence indicated, and we conclude, that mitigation is unnecessary because the project will not cause a significant GHG impact (and would in fact cause a net reduction of GHG emission). CRPE also states that because of the importance of reducing GHG emissions, "the CEC cannot afford to squander any opportunity to adopt feasible mitigation and alternatives that reduce greenhouse gas emissions from the proposed project." (CRPE Reply Brief, p. 5.) However, because there is no significant impact from

[15] California's electric utilities must serve their customers on demand. (Pub. Util. Code, § 451 [investor-owned utilities]; *Hotchkiss v. Moran* (1930) 109 Cal.App. 321, 324 [same]; see *Nourse v. City of Los Angeles* (1914) 25 Cal.App. 384, 385-386 [municipally-owned utilities].)

the operation of the Avenal Energy Project, we are precluded from adopting any "mitigation" or "alternatives" to reduce impacts from power plant operation. We agree, however, with CRPE's main point, that it is critically important to reduce the GHG emissions of our electricity generation system. As the foregoing discussion indicates, we believe that the Avenal Energy Project will help meet that goal.

(3) Replacement of Generation from Out-of-State Coal Powerplants and In-State Once-Through-Cooling Powerplants

The Avenal Energy Project's role in displacing higher-GHG-emitting powerplants will be accentuated by the future unavailability of tens of thousands of megawatts of generation.

The State Water Resources Control Board has proposed significant curtailment or retirements of dozens of coastal power plants that use environmentally-threatening once-through cooling systems, which in 2008, collectively produced around 58,000 GWh, with average GHG emissions of approximately 0.75 $MTCO_2$/MWh. Ex. 200, pp. 4.1-83 to 4.1-84.) This is about two times more than the Avenal Energy Project. (*Ibid.* p. 4.1-84.) In addition, coal-fired power plants located out of state that are currently selling power to California are effectively prohibited from entering into new long-term contracts for California deliveries as a result of the EPS adopted under SB 1368. Thus between now and 2020, more than 18,000 GWh of energy now supplied to California utilities under existing long-term contracts with out-of-state coal plants will have to be replaced, as the contracts expire. (Ex. 200, p. 4.1-82.) Those coal plants average around 1.0 $MTCO_2$/MWh of GHG emissions, almost three times more than new natural gas-fired combined-cycle projects like the Avenal Energy Project. This will likely result in a significant net reduction in GHG emissions for the California electricity sector. (7/7/09 RT 76- 8, 82-83, 108:5-9; Ex. 200, pp. 4.1-71-4.1-72, 4.1-83.)

CRPE raises a concern related to the Avenal Energy Project's ability to displace generation from out of state facilities. It contends that if the project exports power outside of California, then the emissions that are consequentially displaced should not count toward "offsetting the project's impacts." (CRPE Reply Brief, p. 4.) While CEQA analyses might ordinarily distinguish between in-state and out-of-state impacts, doing so would be improper for the GHG impacts of an electrical system that serves the entire western region of the United States, Canada and Mexico. The impacts of GHGs are global rather than local, so a ton

of CO_2 emitted in Nevada or Utah contributes to global warming, and thus to global warming's impacts in California, as much as does a ton emitted within California. (Ex. 200, p. 4.1-82.) Moreover, there is nothing to indicate that the market-based system approach analysis described above is unique to California. Thus, the project would only export electricity outside of California if, and to the extent that, it is more efficient than the resources available out-of-state. Consequently, the operation of the project will result in a net GHG benefit, irrespective of where its power is ultimately consumed and the consequential displacement of less-efficient generation occurs.

(4) Fostering Renewables Integration

Most new renewable generation in California will be wind and solar generated power. (Ex. 200, p. 4.1-81.) Unfortunately, the wind does not blow, nor does the sun shine, around the clock. As a result, in order to rely on such intermittent sources of power, utilities must have available other generating resources or significant storage that can fill the gap when renewable generation decreases (*Id*., citing CAISO, Integration of Renewable Resources, November 2007). Indeed, because of this need for backup generation, or if and when utility-scale storage becomes feasible and cost-effective, nonrenewable generation will have to increase in order for the state to meet the 20 percent renewable portfolio standard. (Ex. 200, p. 4.1-82.)

The Avenal Energy Project is such a resource. Because it can ramp quickly (greater than 10 MW/minute), it will provide flexible, dispatchable power necessary to integrate some of the growing generation from intermittent wind and solar generation. (7/7/09 RT 194: 19 to 195: 25; Ex. 200, p. 4.1-71.) It is true that the Avenal Energy Project will not be able to support or firm up intermittent renewables as well as a simple-cycle, combustion-turbine-only facility, at least when it is ramping up from a cold start. (7/7/09 RT 93 - 95, 177, 201 - 202; Ex. 200, pp. 4.1-81, 4.1-87.) However, it will still provide some of the necessary backup. In addition, because the Avenal Energy Project will be more efficient than simple cycle power plants, it will produce fewer GHG emissions per MW. (7/7/09 RT 86.)

The precise degree to which the Avenal Energy Project will back up new renewable generation is uncertain, because the project does not yet have a power purchase agreement specifying its contractual obligations to generate. (7/7/09 RT 143: 20 to 144: 3, 167.) The uncontroverted evidence does, however, establish that addition of the project to the system is likely to displace less

efficient plants and facilitate the addition of renewable resources. (7/7/09 RT 72: 10–21, 81– 82, 182: 5–11; Ex. 200, pp. 4.1-71 to 4.1-72.)

The concern of Mr. Simpson – that "[a] built or even an approved fossil fuel fired plant could 'crowd out' new renewable facilities" (Simpson Reply Brief, p. 5) – has no support in the record, and the record actually demonstrates the contrary, for several reasons. First, most renewable energy facilities have contracts requiring utilities to take all the electricity they can generate (7/7/09 RT 149, 194-95), which eliminates the possibility of those facilities getting "crowding out." Moreover, the recent executive order increasing the RPS target to 33 percent by 2020 ensures that electricity from renewable energy generation will have priority for at least the next decade, and a state or federal cap-and-trade program (or similar mechanism for pricing GHG emissions) would likewise ensure that electricity from non-GHG emitting renewable resources receives priority over fossil sources such as the Avenal Energy Project. Finally, renewable generation facilities are generally able to sell their power at a lower cost than gas-fired facilities because they need not purchase fuel; therefore electricity from renewable facilities would likely be utilized first even without the must-take and RPS policies. (7/7/09 RT 88–89, 149, 195.) Consequently, the concern that the Avenal Energy Project could crowd out generation from renewable resources is not supported.

d. The Limited Benefits of Natural Gas Power Plants

The previous discussion reflects a basic fact about the California electricity system at this time: it needs new efficient gas-fired generation to displace and replace less efficient generation, and to help integrate additional intermittent renewable generation. But as new gas plants are built to meet those needs, the system will of course change; moreover, the specific location, type, operation, and timing of each plant will be different. As a result, each plant will have somewhat different impacts. Furthermore, future implementation of efficiency and demand response measures, and new technologies such as storage, smart grid, and distributed generation, may also significantly change the physical needs and operation of the electrical system.

Therefore, although the parties disagree about the extent to which new gas-fired generation is appropriate, they all agree that we cannot and should not continue adding gas-fired plants *ad infinitum*. (See, e.g., 7/7/09 RT 187-188.) First, of course, we must ensure that all feasible, cost-effective efficiency and demand response, and other priority resources in the loading order, are implemented. Then, to the extent that new gas-fired plants are proposed, we must ensure that

they support the goals and policies of AB 32 and the related parts of California's GHG framework. To do so, we intend to require that any new natural-gas-fired plant certified by the Energy Commission will likely:

(1) not increase the overall system heat rate for natural gas plants;

(2) not interfere with generation from existing renewable facilities nor with the integration of new renewable generation; and

(3) take into account the factors listed in (1) and (2), reduce system-wide GHG emissions and support the goals and policies of AB 32.

This part of the Decision (section A.4.d. of this chapter) is a "precedent decision" under section 11425.60 of the Government Code.[16]

FINDINGS OF FACT

1. The GHG emissions from the Avenal Energy Project construction are likely to be 3000 - 7000 $MTCO_2$ equivalent ("$MTCO_2E$") during the 27-month construction period, which is the annual equivalent of 1333 – 3111 $MTCO_2E$.

2. There is no numerical threshold of significance under CEQA for construction-related GHG emissions.

3. Construction-related GHG emissions are less than significant if they are controlled with best practices.

4. The Avenal Energy Project will use best practices to control its construction-related GHG emissions.

5. State government has a responsibility to ensure a reliable electricity supply, consistent with environmental, economic, and health and safety goals.

6. California utilities are obligated to meet whatever demand exists from any and all customers.

[16] "An agency may designate as a precedent decision or part of a decision that contains a significant legal or policy determination of general application that is likely to occur." [Gov. Code, § 11425.60, subd. (b).] Once an agency has adopted a precedent decision, it may rely in future proceedings on the rule, guideline, or other general principle in the decision, even though the principle has not been adopted in a rulemaking proceeding. (*Ibid*.)

7. Under SB 1368 and implementing regulations, California's electric utilities may not enter into long-term commitments with base load power plants with CO_2 emissions that exceed the Emissions Performance Standard ("EPS") of 0.500 $MTCO_2$ / MWh.

8. The maximum annual CO_2 emissions from the Avenal Energy Project's operation will be 1,712,224 $MTCO_2$, which constitutes an emissions performance factor of 0.383 $MTCO_2$ / MWh.

9. The SB 1368 EPS is the only LORS applicable to the Avenal Energy Project's GHG emissions.

10. AB 32 requires CARB to adopt regulations that will reduce statewide GHG emissions, by the year 2020, to the 1990 level. Executive Order S-3-05 requires a further reduction, by the year 2050, to 80 percent below the 1990 level.

11. The California Renewable Portfolio Standard (RPS) requires the state's electric utilities obtain at least 33 percent of the power supplies from renewable sources, by the year 2020.

12. California's power supply loading order requires California utilities to obtain their power first from the implementation of all feasible and cost-effective energy efficiency and demand response, then from renewables and distribution generation, and finally from efficient fossil-fired generation and infrastructure improvement.

13. Even as more renewable generation is added to the California electricity system, gas-fired power plants such as the Avenal Energy Project will be necessary to meet local capacity requirements and to provide intermittent generation support, grid operations support, extreme load and system emergencies support, and general energy support.

14. There is no evidence in the record that construction or operation of the Avenal Energy Project will be inconsistent with the loading order.

15. When it operates, the Avenal Energy Project will have a heat rate between 6,800 - 7,400 Btu/kWh.

16. When it operates, the Avenal Energy Project will displace generation from less-efficient (i.e., higher-heat-rate and therefore higher-GHG-emitting) power plants.

17. In addition, the Avenal Energy Project will probably replace power from two types of power plants that are less-efficient (and therefore higher-GHG-emitting): coal-fired power plants that are unable to sell to California utilities under the SB 1368 EPS, and power plants that must be retired because they currently use once-through cooling.

18. The Avenal Energy Project operation will reduce overall GHG emissions from the electricity system.

19. Intermittent solar and wind generation will account for most of the installation of renewables in the next few decades.

20. Intermittent generation needs dispatchable generation, such as the Avenal Energy Project, in order to be integrated effectively into the electricity system.

21. The Avenal Energy Project operation will foster the addition of renewable generation into the electricity system, which will further reduce system GHG emissions.

22. The Avenal Energy Project will not have a growth-inducing impact.

23. The addition of some efficient, dispatchable, natural-gas-fired generation will be necessary to integrate renewables into California's electricity system and meet the state's RPS and GHG goals, but the amount is not without limit.

CONCLUSIONS OF LAW

1. The Avenal Energy Project's construction-related GHG emissions will not cause a significant adverse environmental impact.

2. The GHG emissions from a power plant's operation should be assessed in the context of the operation of the entire electricity system of which the plant is an integrated part.

3. The Avenal Energy Project's operational GHG emissions will not cause a significant adverse environmental impact.

4. The Avenal Energy Project's GHG emissions will comply with the SB 1368 EPS.

5. The Avenal Energy Project's operation will help California utilities meet their RPS obligations.

6. The Avenal Energy Project's construction and operation will not be inconsistent with California's loading order for power supplies.

7. The Avenal Energy Project's operation will foster the achievement of the GHG goals of AB 32 and Executive Order S-3-05.

8. The GHG emissions of any power plant must be assessed within the system on a case-by-case basis.

9. Any new natural-gas-fired power plant that we certify must:

   - not increase the overall system heat rate for natural gas plants;
   - not interfere with generation from existing renewables or with the integration of new renewable generation; and
   - take into account the two preceding factors, reduce system-wide GHG emissions.

B. AIR QUALITY

This section examines the potential adverse impacts of criteria air pollutant emissions resulting from project construction and operation. In consultation with the local air pollution control district, the Commission determines whether the project will likely conform with applicable LORS, whether it will likely result in significant air quality impacts, including violations of ambient air quality standards, and whether the project's proposed mitigation measures will likely reduce potential impacts to insignificant levels.

Applicant and Staff reached agreement on all relevant issues, including the Conditions of Certification following this narrative. Intervenors Rob Simpson and Center on Race, Poverty and the Environment (CRPE) argued that some aspects of the air quality analysis were incorrect, but introduced no evidence in support of those claims.

SUMMARY AND DISCUSSION OF THE EVIDENCE

National Ambient Air Quality Standards (NAAQS) have been established for seven air contaminants identified as "criteria air pollutants." These include sulfur dioxide (SO2), carbon monoxide (CO), ozone (O3), nitrogen dioxide (NO2), lead (Pb), particulate matter less than 10 microns in diameter (PM10) and particulate matter less than 2.5 microns in diameter (PM2.5). The review of potential impacts also includes the precursor pollutants for ozone, which are nitrogen oxides (NO_X) and volatile organic compounds (VOC), and the precursors for PM10 and PM2.5, which are primarily NO_X, sulfur oxides (SO_X), and ammonia (NH_3). Sulfur oxides (SO_X) react in the atmosphere to form particulate matter and are major contributors to acid rain.

Both the U.S. EPA and the California Air Resources Board (CARB) have established allowable maximum ambient concentrations for the criteria pollutants identified above. The California Ambient Air Quality Standards (CAAQS) are more stringent than federal standards. Federal and State ambient air quality standards are shown below in **AIR QUALITY Table 1** of this Decision.

AIR QUALITY Table 1
State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard	Federal Standard
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	None
	8 Hour	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m^3	150 µg/m^3
	Annual	20 µg/m^3	None
Fine Particulate Matter (PM2.5)	24 Hour	None	35 µg/m^3
	Annual	12 µg/m^3	15 µg/m^3
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
	8 Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 µg/m^3)	None
	Annual	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm (655 µg/m^3)	None
	3 Hour	None	0.5 ppm (1300 µg/m^3)
	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)
	Annual	None	0.03 ppm (80 µg/m^3)

Source: Ex. 200, p. 4.1-7.

In general, an area is designated as “attainment” if the concentration of a particular air contaminant does not exceed the standard. Likewise, an area is designated as "non-attainment” for an air contaminant if that contaminant standard is violated. Where not enough ambient data are available to support designation as either attainment or non-attainment, the area can be designated as unclassified. An area could be attainment for one air contaminant while non-attainment for another, or attainment for the federal standard and non-attainment for the state standard for the same air contaminant.

The Avenal Energy Project is located within the San Joaquin Valley and under the jurisdiction of the San Joaquin Valley Air Pollution Control District (District). Violations of Federal and State Ambient Air Quality Standards for O3, particulate matter, and CO have occurred historically throughout the region. Since the early 1970s, substantial progress has been made toward controlling these pollutants. Although air quality improvements have occurred, violations of standards for particulate matter and ozone persist.

Air Quality Table 2
Attainment Status of San Joaquin Valley Air Pollution Control District

Pollutants	Federal Classification	State Classification
Ozone (1-hr)	No Federal Standard	**Nonattainment (Severe)**
Ozone (8-hr)	**Nonattainment (Serious)** [a]	**Nonattainment**
PM10	Attainment [b]	**Nonattainment**
PM2.5	**Nonattainment**	**Nonattainment**
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment

Source; Ex. 200, p. 4.1-8

[a] In April 2007, the San Joaquin Valley Air Pollution Control District (SJVAPCD) Governing Board proposed to re-classify the region as "extreme" nonattainment, and the U.S. EPA is reviewing the request.

[b] In November 2008, EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan.

The local and recent ambient air quality data show existing violations of ambient air quality standards for O3, PM10, and PM2.5. Staff used the highest locally-measured (Hanford or Corcoran) background ambient air concentrations as the baseline in its analysis of potential ambient air quality impacts for the proposed Avenal Energy Project. (Ex. 200, p. 4.1-12.) Data from the nearest sites in Hanford, Visalia, and Sacramento are used for CO, NO_2, and SO_2, respectively. The highest concentrations are shown in **Air Quality Table 3**.

Air Quality Table 3

Highest Local Background Concentrations Used in Staff Assessment ($\mu g/m^3$) Shown in Micrograms Per Cubic Meter

Pollutant	Averaging Time	Background	Limiting Standard	Percent of Standard
PM10	24 hour	**351**	50	**702**
	Annual	**59.5**	20	**298**
PM2.5	24 hour	**75.0**	35	**214**
	Annual	**18.4**	12	**153**
CO	1 hour	4,222	23,000	18
	8 hour	2,900	10,000	29
NO_2	1 hour	137.2	339	40
	Annual	22.6	57	40
SO_2	1 hour	47.2	655	7
	24 hour	7.9	105	8
	Annual	2.6	80	3

Source: Ex. 200, p. 4.1-12

The Avenal Energy Project would include the following stationary sources of emissions: two stationary natural gas-fired combustion turbine generators (CTGs) in a combined-cycle configuration. Each rated at 180 MW each, consisting of General Electric Model PG7241FA (Frame 7FA) combustion turbine with a heat recovery steam generator (HRSG) and a duct burner of 562 million British thermal units (Btu) per hour (MMBtu/hr) heat input, with duct firing up to 800 hours per year per CTG; one condensing steam turbine generator (STG) rated at 300 MW shared between the two CTGs; one natural gas-fired auxiliary boiler to provide steam that facilitates startup of the combined-cycle turbine system, with a maximum firing rate of 37.4 MMBtu/hr heat input, operating up to 1,248 hours per year; one 288 bhp diesel fuel oil-fired emergency fire water pump engine, Cummins model CFP83-F40 or Clarke model JW6H-UF40, that would be either U.S. EPA Tier 2 certified or Tier 3, depending on purchase date (Ex. 1, p. 6.2-31 and Appendix 6.2-1.4). This emergency-use engine would use ARB ultra-low-sulfur (0.0015 percent or 15 ppm sulfur by weight) diesel fuel; and one nominal 550 kilowatt (kW) Caterpillar model G3512LE, natural gas-fired emergency engine-generator set, rated at 860 bhp.

1. Proposed Construction Emissions

Construction of Avenal Energy is expected to take about 27 months. On-site construction activities include clearing of agricultural vegetation, grading, hauling and layout of equipment, materials and supplies, facility construction and testing (Ex. 1, § 2.3.18). During the construction period, air emissions would be generated from the exhaust of off-road/non-road construction equipment and on-road vehicles and fugitive dust from activity on unpaved surfaces and material handling. Construction activities would occur during an approximate 8-hour day staggered over multiple shifts (Ex. 1, § 2.3.18). Construction of the gas pipeline and transmission system interconnections and water pipelines would also occur for three to five months, during which the emissions would occur along the length of the linear facilities.

Fugitive dust emissions would result from:

- dust entrained during preparation and grading/excavation at the construction site and along linear facilities;
- dust entrained during on-site travel on paved and unpaved surfaces;
- dust entrained during aggregate and soil loading and unloading operations; and
- wind erosion of soil at areas disturbed during construction activities.

Combustion emissions during construction would result from:

- exhaust from the diesel construction equipment used for site preparation, grading, excavation, and construction of on-site structures;
- exhaust from water trucks used on-site and along linear facilities to control construction dust emissions;
- exhaust from use of diesel-powered welding machines, electric generators, air compressors, water pumps, etc.;
- off-site exhaust from on-road diesel trucks used to deliver concrete, fuel, and construction supplies to the construction site; and
- off-site exhaust from on-road automobiles and trucks used by workers to commute to the construction site.

Estimates for the highest daily emissions and total annual emissions over the 27-month construction period are shown in **Air Quality Table 4**.

Air Quality Table 4
Avenal Energy, Estimated Maximum Construction Emissions

Activity	NO_X	VOC	PM10/PM2.5	CO	SO_x
On-site Construction Equipment (lb/day)	181.5	25.5	7.7	230.1	0.4
On-site Fugitive Dust (lb/day)	---	---	5.9	---	---
Off-site (On-road) Worker Travel (lb/day)	357.5	99.0	25.2	2,740	2.6
Off-site (On-road) Truck Deliveries (lb/day)	157.8	8.7	7.1	34.8	0.2
Off-site Linear Construction Equipment (lb/day)	43.1	4.8	1.9	32.6	0.1
Off-site Linear Fugitive Dust (lb/day)	---	---	5.4	---	---
Off-site Linear (On-road) Deliveries (lb/day)	53.9	3.0	2.4	11.9	0.1
Maximum Daily Emissions (lb/day, excluding off-site linear)	**697**	**133**	**46.0**	**3,005**	**3.2**
On-site Construction Equipment (tpy)	14.1	2.2	0.7	22.3	0.03
On-site Fugitive Dust (tpy)	---	---	0.4	---	---
Off-site (On-road) Worker Travel (tpy)	24.6	6.8	1.7	188.7	0.18
Off-site (On-road) Truck Deliveries (tpy)	9.2	0.5	0.4	2.0	0.01
Total Annual Emissions (tpy)	**47.9**	**9.5**	**3.2**	**213.0**	**0.2**

Source: Ex. 200, p. 4.1-15.

The Applicant proposes to reduce construction emissions with the following measures to control exhaust emissions from the diesel heavy equipment used for construction (Ex. 1, Appendix 6.2-3.3):

- Operational measures, such as limiting engine idling time and shutting down equipment when not in use;
- Regular preventive maintenance to prevent emission increases due to engine problems;

- Use of low sulfur and low aromatic fuel meeting California standards for motor vehicle Diesel fuel; and
- Use of low-emitting Diesel engines meeting federal emissions standards for construction equipment if available.

The Applicant proposes to implement the following measures to control construction-related fugitive dust emissions (Ex. 1, Appendix 6.2-3.3):

- Use either water application or chemical dust suppressant application to control dust emissions from unpaved surface travel and unpaved parking areas;
- Use vacuum sweeping and/or water flushing of paved road surface to remove buildup of loose material to control dust emissions from travel on the paved access road (including adjacent public streets impacted by construction activities) and paved parking areas;
- Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard;
- Limit traffic speeds on unpaved surfaces to 25 mph;
- Install sandbags or other erosion control measures to prevent silt runoff to roadways;
- Re-plant vegetation in disturbed areas as quickly as possible;
- As needed, use gravel pads along with wheel washers or wash tires of all trucks exiting construction site that carry track-out dirt from unpaved surfaces; and
- Mitigate fugitive dust emissions from wind erosion of areas disturbed from construction activities (including storage piles) by application of either water or chemical dust suppressant and/or use of wind breaks.

The Applicant proposes to reduce emissions of particulate matter, particulate matter precursors, and ozone precursors by implementing measures consistent with local air district recommendations, soil erosion control requirements, and nuisance prohibitions.

Additional measures recommended by Staff would reduce construction-phase impacts to a less than significant level by further reducing construction emissions of particulate matter and combustion contaminants. The evidence shows that the use of oxidizing soot filters is a viable emissions control technology for all heavy diesel-powered construction equipment that does not use an ARB-certified low emission diesel engine. (Ex. 200, p. 4.1-23.) In addition, we will require through the adoption of Conditions of Certification that, prior to beginning construction, the Applicant shall provide an Air Quality Construction Mitigation Plan (AQCMP)

that specifically identifies mitigation measures to be employed by the Applicant to limit air quality impacts during construction. We adopt Conditions of Certification **AQ-SC1** through **AQ-SC5** to implement these requirements. These Conditions are consistent with both the Applicant's proposed mitigation and the Conditions of Certification adopted in similar prior licensing cases. Compliance with these Conditions would substantially reduce the potential for significant air quality impacts during construction of the Avenal Energy Project.

Initial Commissioning Emissions

New electrical generation facilities must go through initial commissioning phases before becoming commercially available to generate electricity. During this period, initial firing causes greater emissions than those that occur during normal operations because of the need to tune the combustor, conduct numerous startups and shutdowns, operate under low loads, and conduct testing before emission control systems are functioning or fine-tuned for optimum performance.

The Applicant identifies the series of commissioning tests and expects that up to 408 hours of operation would be needed for each CTG to complete initial commissioning, and the Applicant proposes to conduct initial commissioning on each CTG sequentially so that both CTGs would not undergo commissioning simultaneously (Ex. 1, Appen. **Table 6.2-1.9**). We adopt Condition of Certification **AQ-SC9** to ensure that initial commissioning would occur on each CTG sequentially.

Operation emissions

Particulate matter emissions from routine operation would cause a significant impact because they will contribute to existing violations of PM10 and PM2.5 ambient air quality standards. The predicted maximum concentrations of non-reactive pollutants are summarized in **Air Quality Table 5**.

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Air Quality Table 5
Avenal Energy, Routine Operation Maximum Impacts (μg/m^3)

Pollutant	Averaging Time	Modeled Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24 hour	2.9	**351**	**353.9**	50	**708**
	Annual	0.8	**59.5**	**60.3**	20	**302**
PM2.5	24 hour	2.9	**75.0**	**77.9**	35	**223**
	Annual	0.8	**18.4**	**19.2**	12	**160**
CO	1 hour	2,175	4,222	6,397	23,000	28
	8 hour	337	2,900	3,237	10,000	32
NO_2	1 hour	190.0	137.2	327.2	339	97
	Annual	0.5	22.6	23.1	57	41
SO_2	1 hour	9.7	47.2	56.9	655	9
	24 hour	1.5	7.9	9.4	105	9
	Annual	0.1	2.6	2.7	80	3

Source: Ex. 200, p. 4.1-24

The project's gaseous emissions of NO_X, SO_X, VOC, and ammonia are precursor pollutants that can contribute to the formation of the secondary pollutants ozone, PM10, and PM2.5. Gas-to-particulate conversion in ambient air involves complex chemical and physical processes that depend on many factors, including local humidity, pollutant travel time, and the presence of other compounds. Currently, there are no agency-recommended models or procedures for estimating ozone or particulate nitrate or sulfate formation from a single project or source. However, because of the known relationships of NO_X and VOC to ozone and of NO_X, SO_X, and ammonia emissions to secondary PM10 and PM2.5 formation, it can be said that unmitigated emissions of these pollutants would contribute to higher ozone and PM10/PM2.5 levels in the region. Significant impacts of ozone and PM10/PM2.5 precursors would be mitigated with SJVAPCD offsets in accord with Condition of Certification **AQ-SC7** which we hereby adopt.

Ammonia is a particulate precursor but not a criteria pollutant. Reactive with sulfur and nitrogen compounds, ammonia is especially abundant in the San Joaquin Valley from natural sources, agricultural sources, and as a byproduct of tailpipe controls on motor vehicles. Ammonia particulate forms more readily with sulfates than with nitrates, and particulate formation in the San Joaquin Valley

has been found to be limited by the availability of SO_X and NO_X in ambient air, rather than the availability of ammonia. (Ex. 200, p. 4.1-25.) Off-setting SO_X and NO_X emissions would both avoid significant secondary PM10/PM2.5 impacts and reduce secondary pollutant impacts to a less than significant level.

Energy Commission staff recommends limiting ammonia slip emissions to the extent feasible. The evidence of record supports our adoption of Condition of Certification **AQ-SC10** establishing an ammonia slip limit for each combustion turbine at 5 ppmvd. (*Id*.)

The evidence shows that impacts during fumigation conditions, impacts from commissioning-phase operations, and visibility impacts were evaluated by the Applicant and that there would either be no significant impact or that any impacts would be reduced below the level of significance by the mitigation measures we are adopting in this Decision. (Ex. 200, pp 4.1-25 to 4.1-26.)

The Applicant has proposed emission control devices for the project. Those, along with the use of the latest clean-burning equipment and emission reduction credits (ERCs) would reduce the air quality impacts below the level of significance. (Ex. 200, p. 4.1-26)

The proposed combustion turbines would limit NO_x formed during combustion using dry low-NO_X (DLN) combustors. (*Id*.) To further reduce the emissions from the combustion turbines before they are exhausted into the atmosphere, flue gas controls, primarily catalyst systems, will be installed in the HRSG. The Applicant proposes two catalyst systems for each combustion turbine: the SCR system to reduce NO_X; and the oxidation catalyst system to reduce CO and VOC. The exclusive use of pipeline-quality natural gas, a relatively clean-burning fuel, would further limit the formation of VOC, PM10, and SO_2 emissions. (*Id*.)

The project's dry cooling design would eliminate the use of a wet cooling tower, which would otherwise be a source of particulate matter drift or mist. The auxiliary boiler would include ultra low-NO_X burners to achieve the District's limits. The fire pump engine would achieve the equivalent of U.S. EPA Tier 2 or Tier 3 standards, depending on purchase date, and the emergency standby generator would include a non-selective catalytic reduction (NSCR) system for exhaust control. (Ex. 200, p. 4.1-27.)

In addition to emission control strategies included in the project design, SJVAPCD Rule 2201 requires the Applicant to provide ERCs to offset the new

emissions of NO_X, VOC, and PM10. **Air Quality Table 6** summarizes the emissions as viewed by the District, assuming a distance-based (greater than 15 miles) offset ratio of 1.5-to-1. The standard offset ratios of either 1.0-to 1 or 1.3-to-1 would not apply to Avenal Energy because all of the off-sets are likely to originate more than 15 miles away from the new sources at Avenal. The District conducted a case-by-case analysis of offset requirements and distance ratios depending on the specific ERCs held by the Applicant and set forth its findings in the Final Determination of Compliance (FDOC, Ex. 58).

The evidence shows that the Applicant holds sufficient NO_X and VOC ERCs that it will use to fully satisfy the District's NO_X and VOC offset requirements (Ex. 200, p. 4.1-28 and 4.1-29.) These offsets will also satisfy the CEQA mitigation requirements for ozone impacts.

The evidence also shows that the Applicant holds SO_X and PM10 ERCs sufficient to fully satisfy the District offset requirements for PM10. This will be accomplished through the use of interpollutant trading ratios established by the District on a case-by-case basis. Since SO_X is accepted as one of the major precursors of PM10 and PM 2.5 through reaction with ammonia, reductions in SO_X can reduce particulate formation. The District's case-by-case analysis of the interpollutant ratio for Avenal Energy resulted in a ratio of one-to-one based on a consideration of the shared emission inventory and local concentrations within Kings and Tulare counties (Ex. 58); the District notes that this is the "minimum technical value" due to a small inventory of local SO_X sources in Kings and Tulare counties. In early 2009, the SJVAPCD recalculated the ratio and confirmed the one-to-one ratio as being appropriate throughout the entire air basin. (*Id.*)

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Air Quality Table 6
Avenal Energy, SJVAPCD Offset Determination and Requirements (lb)

Source	NO_X	VOC	PM10/ PM2.5	CO	SO_X
Combustion Turbine #1	143,951	34,489	80,656	601,810	16,694
Combustion Turbine #2	143,951	34,489	80,656	601,810	16,694
Auxiliary Boiler	513	201	233	1,727	132
Fire Pump Engine	108	12	2	14	0
Emergency Standby Generator	95	31	3	57	1
Potential to Emit	**288,618**	**69,222**	**161,550**	**$1.2x10^6$**	**33,521**
Offset Requirements					
Offset Threshold	20,000	20,000	29,200	200,000	54,750
Offsets Triggered?	Yes	Yes	Yes	No[a]	No
Emissions Over Threshold	268,618	49,222	132,350	---	---
Offsets Required [a]	268,415	49,179	132,345	---	---
Offsets Required (lb/quarter)	67,104	12,295	33,085	---	---
Offsets Required (lb/quarter) at Avenal Energy [b]	**100,656**	**18,442**	**49,629**	---	---

Source: Ex. 200, p. 4.1-27.

[a] Emission offsets are not required for CO since the applicant has demonstrated to the satisfaction of the Air Pollution Control Officer (APCO) that the ambient air quality standards are not violated in the areas to be affected, and such emissions will be consistent with Reasonable Further Progress, and will not cause or contribute to a violation of the standards.
[b] Does not include emergency equipment which is exempt from District offset requirements.
[c] Includes a distance ratio factor of 1.5 based on assumption that all ERCs are obtained from sources more than 15 miles away.

We note, however, that the District's use of a 1-to-1 interpollutant ratio for Rule 2201 compliance leads to fewer SO_X reductions for particulate matter than ratios used by the District on some other recent power plant projects. For example, the interpollutant ratio for the Panoche Energy Center in western Fresno County was 1.867-to-1 (06-AFC-5). Furthermore, the Avenal Energy Applicant showed that 1.4 tons of SO_X reductions would be needed to offset each new ton of PM10 emissions. (Ex 1, Table 6.2-39.) Nonetheless, the 1-to-1 interpollutant ratio would provide the minimum level of offsets required by the Commission for PM10/PM2.5 precursors and the Applicant's ERCs would satisfy the CEQA mitigation requirements for particulate matter impacts. (Ex. 200, p. 4.1-31.) The District issued its FDOC (Ex. 58), which finds the project in compliance with District rules and regulations.

We therefore find that the proposed emission offset package, along with the emissions controls described above, would mitigate all project air quality impacts to a less than significant level. We adopt Conditions of Certification **AQ-SC6** and **AQ-SC8** to ensure ongoing compliance through quarterly reports.

Cumulative Impacts and Mitigation

"Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." (CEQA Guidelines, § 15355.) Such impacts can be relatively minor yet still be significant when combined with other closely related past, present, and known or reasonably foreseeable future projects.

Criteria pollutants have impacts that are usually cumulative by their nature. Even if a project would not, by itself, cause a violation of a federal or state criteria pollutant standard, it may contribute to violations of criteria pollutant standards because of pre-existing elevated background conditions. Air districts attempt to reduce background criteria pollutant levels by adopting attainment plans, which are multi-faceted programmatic approaches to attainment. Attainment plans typically include new source review requirements that provide offsets and use Best Available Control Technology (BACT), combined with more stringent emissions controls on existing sources.

The Avenal Energy Project is subject to SJVAPCD rules and regulations that specify performance standards, offset requirements, and emission control requirements for stationary sources. The regulations also include requirements for obtaining Authority to Construct (ATC) permits and subsequent operating permits.

The evidence discussed in this section shows that the Avenal Energy Project would contribute to existing exceedances of the ozone, PM10, and PM2.5 standards. The District has developed the 2007 Ozone Plan to attain the federal 8-hour ozone standard; it was approved by ARB on June 14, 2007. (Ex. 200. p. 4.1-33.) According to the 2007 Ozone Plan, the SJVAPCD would need to revise its New Source Reduction (NSR) rule to increase the standard offset ratio to 1.5-to-1 from the current one-to-one ratio that would be required for Avenal Energy. (*Id*) The Avenal Energy Project would not be subject to the more stringent offset requirements because the revisions to the 2007 Ozone Plan were not adopted at the time the Avenal Energy Project filed its application. Because the project would use BACT to control ozone precursor emissions and ERCs to fully offset

ozone precursors as required by the then existing rules and regulations, we find that the project would not be likely to conflict with the District's 2007 Ozone Plan or regional ozone attainment goals.

The District's 2007 PM10 Maintenance Plan illustrates how the SJVAPCD has implemented aggressive PM10 controls in the region, including Reasonably Available Control Measures (RACM) for large existing sources of PM10 and fugitive dust. The 2007 PM10 Maintenance Plan includes a request for reclassification to "attainment" for the federal PM10 standard, and it provides for continued attainment for 10 years from the designation. In November 2008, the U.S. EPA redesignated the SJVAPCD to attainment for the federal PM10 standard. (Ex. 200, p. 4.1-34.)

The 2008 PM2.5 Plan was adopted by the SJVAPCD Governing Board on April 30, 2008 and adopted by ARB on May 22, 2008, and the plan was subsequently submitted to U.S. EPA. However, there has been no U.S. EPA action on the PM2.5 plan. (Ex. 200, p. 4.1-35.) The 2008 PM2.5 Plan includes measures for attaining the 1997 and 2006 federal PM2.5 standards. The 2008 PM2.5 Plan shows that emission reductions of NO_X, directly emitted PM2.5, and SO_2 are needed to demonstrate attainment of the PM2.5 NAAQS in the San Joaquin Valley. The Applicant relied on data from 1997 and 1998 to show that 1.4 tons of SO_X reductions would be needed to offset each new ton of PM10 emissions (Ex. 1, **Table 6.2-39**), but the FDOC in Attachment H shows that the minimum ratio of one-to-one would apply to Avenal Energy. Although there is no formal federal endorsement of the District's interpollutant trading approach, Energy Commission staff concluded that the Avenal Energy Project would not be likely to conflict with regional particulate matter attainment goals. (Ex. 200, p. 4.1-35.) Furthermore, the SJVAPCD has determined in the FDOC (Ex. 58, p. 45) that the interpollutant trading ratio for Avenal Energy is appropriate. On the basis of the evidence of record, therefore, we find that the Applicant's proposed 1:1 interpollutant trading ratio for PM10 and SO_X will not have any significant adverse environmental impact, and will comply with applicable LORS.

Cumulative Impacts

The proposed project and other reasonably foreseeable projects could cause impacts that would be locally combined if present and future projects would introduce stationary sources that are not included in the "background" conditions. The evidence shows that there are no known or reasonably forseeable future

projects that would have emissions sufficient to contribute to a cumulatively considerable future adverse impact. (Ex.1, Appendix 6.2, Table 6.2.)

Compliance With LORS

The FDOC was issued by the SJVAPCD dated October 30, 2008. (Ex. 58.) Compliance with all District Rules and Regulations was demonstrated to the District's satisfaction in the FDOC, and the FDOC conditions are presented in the Conditions of Certification.

40 CFR 52.21, Prevention of Significant Deterioration

The U.S. EPA has not yet issued a preliminary Prevention of Significant Deterioration (PSD) permit for the project[17]. The project is not allowed to commence construction until the PSD permit is issued. The District FDOC would likely serve as the basis for the PSD permit for this project, and to ensure that the Applicant amends the Energy Commission license as necessary to incorporate changes triggered by the PSD permit, if any, we adopt Condition of Certification **AQ-SC6**.

40 CFR 60, NSPS Subpart KKKK

The CTGs proposed for Avenal Energy are likely to comply with the applicable emission limits by achieving a NO_X emission rate of 2.0 ppmvd over any one-hour period except during startup and shutdown periods.

40 CFR 60, NSPS Subpart IIII

It is not clear if the emergency fire water pump engine would be required to meet the currently-applicable U.S. EPA Tier 2 standards or the future Tier 3 standards which would be applicable if the engine is purchased in 2012. (Ex. 1 p. 6.2-31.) We adopt Condition of Certification **AQ-103** to ensure that the Applicant has the appropriate federal operating permits for this engine. Conditions of Certification **AQ-110** and **AQ-111** set forth maximum allowable operating emissions existing

[17] On September 11, 2009 Region 9 of the United States Environmental Protection Agency issued notice of an October 15, 2009 hearing in Avenal on the proposed Avenal Energy Center PSD permit: *ANNOUNCEMENT OF SUPPLEMENTAL PUBLIC HEARING AND REQUEST FOR PUBLIC COMMENT ON PROPOSED PERMIT TO REGULATE THE EMISSION OF AIR POLLUTANTS PERMIT NO. SJ 08-01.* EPA Region 9 also held public hearings on the matter on September 30, and October 1, 2009, in Avenal.

as of the date of this decision for this engine. Any applicable future standard which is more stringent shall supercede these minimum requirements.

The Applicant has demonstrated that the project would comply with Section 41700 of the California State Health and Safety Code, which restricts emissions that would cause nuisance or injury. Compliance with the FDOC and the Conditions of Certification in this Decision support our affirmative finding.

LOCAL

The District issued the FDOC stating that the proposed project is expected to comply with all applicable District rules and regulations. The District rules and regulations specify the emissions control and offset requirements for new sources such as Avenal. The project would use the Best Available Control Technology (BACT) as defined by the District, and ERCs, proposed by the Applicant and approved and certified by the District, would fully mitigate project nonattainment pollutant (including precursors) emissions so that they would be consistent with District rules and regulations.

SJVAPCD Rules 2201, 4001 and 4703

We adopt Conditions of Certification **AQ-26** through **AQ-33** to ensure compliance with the District's emissions limits.

Response to Agency and Public Comments

Energy Commission staff received comments on air quality from the Center on Race, Poverty, and the Environment (CRPE) and the Kings County Department of Public Health. These comments, and Staff's responses, are summarized in the FSA.

In addition, the Committee heard public comments at different times during the July 7, 2009 evidentiary hearing in Avenal. Comments were made in equal numbers by people for and against the project. However, many of those who spoke in opposition noted their concern that the project would contribute to existing air pollution in the area[18]. Several people voiced their concern that the project would worsen existing asthma conditions among their family members and in the community[19].

[18] Those expressing concerns about air pollution included Tom Frantz, Dagoberto Ovalle, Chip Ashley, Maria Elena Alunez, Pedro Mora, Manual Villa,and Ray Leon.

[19] Miguel Rodriguez, Gloria Preciado, and Ray Leon.

In preparing this Decision, we have considered these comments, as well as the comments previously submitted in writing by public agencies and by members of the public on this matter. All such comments are part of the record in this proceeding. We believe that the implementation of the Conditions of Certification sufficiently mitigates all air quality impacts.

FINDINGS OF FACT

Based on the evidence, we find as follows:

1. The proposed Avenal Energy Project is located within the jurisdiction of the San Joaquin Valley Air Pollution Control District.

2. The District is classified as non-attainment for the state 1-hour and federal 8-hour ozone, the state 24-hour and annual $PM_{10,}$ standards and the state and federal PM2.5 standards. The District meets applicable standards for all other criteria pollutants.

3. The project will employ the best available technology (BACT) to control emissions of criteria pollutants.

4. Project nonattainment and nonattainment precursor criteria pollutant emissions will be fully offset.

5. Use of emission reduction credits in this case is appropriate, and is consistent with applicable federal and state emission control strategies.

6. The proposed emission offset package, along with the proposed emissions controls, will mitigate all project air quality impacts to a less than significant level.

7. The District issued a Final Determination of Compliance that finds the Avenal Energy Project will comply with all applicable District rules for project operation.

8. The project's construction-related impacts are temporary and short-term in nature. They are mitigated to below a level of significance by measures identified in the Conditions of Certification.

9. The record contains an adequate analysis of the project's contributions to cumulative air quality impacts.

10. The project's offset package complies with Public Resources Code, Section 25523(d)(2).

CONCLUSIONS OF LAW

1. The mitigation measures imposed are sufficient to ensure that the Avenal Energy Project will conform with all applicable laws, ordinances, regulations, and standards relating to air quality.

2. Implementation of the Conditions of Certification listed below ensures that the Avenal Energy Project will not result in any significant direct, indirect, or cumulative impacts to air quality.

CONDITIONS OF CERTIFICATION

AQ-SC1 Air Quality Construction Mitigation Manager (AQCMM): The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with conditions **AQ-SC3, AQ-SC4** and **AQ-SC5** for the entire project site and linear facility construction. The on-site AQCMM may delegate responsibilities to one or more AQCMM delegates. The AQCMM and AQCMM delegates shall have full access to all areas of construction on the project site and linear facilities, and shall have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM delegates may have other responsibilities in addition to those described in this Condition. The AQCMM shall not be terminated without written consent of the construction project manager (CPM).

Verification: At least 60 days prior to the start of ground disturbance, the project owner shall submit to the CPM for approval the name, resume, qualifications, and contact information for the on-site AQCMM and all AQCMM delegates. The AQCMM and all delegates must be approved by the CPM before the start of ground disturbance.

AQ-SC2 Air Quality Construction Mitigation Plan (AQCMP): The project owner shall provide, for approval, an AQCMP that details the steps to be taken and the reporting requirements necessary to ensure compliance with Conditions of Certification **AQ-SC3, AQ-SC4** and **AQ-SC5**.

Verification: At least 60 days prior to the start of any ground disturbance, the project owner shall submit the AQCMP to the CPM for approval. The CPM will

notify the project owner of any necessary modifications to the plan within 30 days from the date of receipt. The AQCMP must be approved by the CPM before the start of ground disturbance.

AQ-SC3 Construction Fugitive Dust Control: The AQCMM shall submit documentation to the CPM in each monthly compliance report (MCR) that demonstrates compliance with the following mitigation measures for purposes of preventing all fugitive dust plumes from leaving the project site and linear facility routes. Any deviation from the following mitigation measures shall require prior CPM notification and approval.

A. All unpaved roads and disturbed areas in the project and linear construction sites shall be watered as frequently as necessary to comply with the dust mitigation objectives of **AQ-SC4**. The frequency of watering may be either reduced or eliminated during periods of precipitation.

B. No vehicle shall exceed 15 miles per hour within the construction site.

C. The construction site entrances shall be posted with visible speed limit signs.

D. All construction equipment vehicle tires shall be inspected and washed as necessary to be free of dirt prior to entering paved roadways.

E. Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.

F. All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.

G. All construction vehicles shall enter the construction site through the treated entrance roadways unless an alternative route has been submitted to and approved by the CPM.

H. Construction areas adjacent to any paved roadway shall be provided with sandbags or other measures as specified in the Storm Water Pollution Prevention Plan (SWPPP) to prevent run-off to roadways.

I. All paved roads within the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

J. At least the first 500 feet of any public roadway exiting from the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or run-off from the construction site is visible on the public roadways.

K. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered or treated with appropriate dust suppressant compounds.

L. All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks to provide at least two feet of freeboard.

M. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

Verification: The project owner shall include in the MCR: (1) a summary of all actions taken to maintain compliance with this condition; (2) copies of any complaints filed with the air district in relation to project construction; and (3) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this Condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC4 Dust Plume Response Requirement: The AQCMM or an AQCMM delegate shall monitor all construction activities for visible dust plumes. Observations of visible dust plumes with the potential to be transported off the project site, 200 feet beyond the centerline of the construction of linear facilities, or within 100 feet upwind of any regularly occupied structures not owned by the project owner indicate that existing mitigation measures are not providing effective mitigation.

The AQCMM or delegate shall then implement the following procedures for additional mitigation measures in the event that such visible dust plumes are observed.

Step 1: The AQCMM or delegate shall direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination.

Step 2: The AQCMM or delegate shall direct implementation of additional methods of dust suppression if Step 1 specified above fails

to result in adequate mitigation within 30 minutes of the original determination.

Step 3: The AQCMM or delegate shall direct a temporary shutdown of the activity causing the emissions if Step 2 specified above fails to result in effective mitigation within one hour of the original determination. The activity shall not restart until the AQCMM or delegate is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes will not result upon restarting the shutdown source. The owner/operator may appeal to the CPM any directive from the AQCMM or delegate to shut down an activity provided that the shutdown shall go into effect within one hour of the original determination, unless overruled by the CPM before that time.

Verification: The AQCMP shall include a section detailing how additional mitigation measures will be accomplished within specified time limits.

AQ-SC5 Diesel-Fueled Engine Control: The AQCMM shall submit to the CPM, in the MCR, a construction mitigation report that demonstrates compliance with the following mitigation measures for purposes of controlling diesel construction-related emissions. Any deviation from the following mitigation measures shall require prior CPM notification and approval.

A. All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMM showing that the engine meets the conditions set forth herein.

B. All construction diesel engines with a rating of 100 hp or higher shall meet, at a minimum, the Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations, Title 13, section 2423(b)(1), unless certified by the on-site AQCMM that such engine is not available for a particular item of equipment. In the event that a Tier 2 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a Tier 1 engine. In the event a Tier 1 engine is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a diesel particulate filter (DPF) unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for specific engine types. For purposes of this Condition, the use of such devices is “not practical” for the following, as well as other, reasons.

   1. There is no available DPF that has been verified by either the California Air Resources Board or U.S. Environmental Protection Agency for the engine in question; or

2. The construction equipment is intended to be on site for 10 days or less;
3. The CPM may grant relief from this requirement if the AQCMM can demonstrate a good faith effort to comply with this requirement and that compliance is not possible.

C. The use of a soot filter may be terminated immediately if one of the following conditions exists, provided that the CPM is informed within 10 working days of the termination:

1. The use of the soot filter is excessively reducing the normal availability of the construction equipment due to increased down time for maintenance, and/or reduced power output due to an excessive increase in back pressure.

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

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

4. Any other seriously detrimental cause which has the approval of the CPM prior to implementation of the termination.

D. All heavy earth-moving equipment and heavy duty construction-related trucks with engines meeting the requirements of (b) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.

E. All diesel heavy construction equipment shall not idle for more than five minutes, to the extent practical.

Verification: The project owner shall include in the MCR: (1) a summary of all actions taken to maintain compliance with this Condition; (2) a list of all heavy equipment used on site during that month, including the owner of that equipment and a letter from each owner indicating that the equipment has been properly maintained; and (3) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this Condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC6 The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project air permit. The project owner shall submit to the CPM any modification to any permit proposed by the District or U.S. EPA, and any revised permit issued by the District or U.S. EPA, for the project.

Verification: The project owner shall submit any proposed air permit modification to the CPM within five working days of its submittal either by: 1) the project owner to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified air permits to the CPM within 15 days of receipt.

AQ-SC7 The project owner shall provide emission reductions in the form of offsets or emission reduction credits (ERCs) as calculated per SJVAPCD Rule 2201 to offset NO_X, VOC, PM10, and SO_X emissions. The project owner shall demonstrate that the reductions are provided in the form and amount required by the District. The project owner shall surrender the ERCs from among those that are listed in the Final Preliminary Determination of Compliance Conditions (SJVAPCD 2008b) or a modified list, as allowed by this Condition. If additional ERCs are submitted, the project owner shall submit an updated table including the additional ERCs to the CPM. The project owner shall request CPM approval for any substitutions, modifications, or additions to the listed credits.

The CPM, in consultation with the District, may approve any such change to the ERC list provided that the project remains in compliance with all applicable laws, ordinances, regulations, and standards, and that the requested change(s) will not cause the project to result in a significant environmental impact. The District must also confirm that each requested change is consistent with applicable federal and state laws and regulations.

Verification: The project owner shall submit to the CPM records showing that the project's offset requirements have been met prior to initiating construction. If the CPM approves a substitution or modification to the list of ERCs, the CPM shall file a statement of the approval with the project owner and Commission docket. The CPM shall maintain an updated list of approved ERCs for the project.

AQ-SC8 The project owner shall submit to the CPM quarterly operation reports that include operational and emissions information as necessary to demonstrate compliance with the Conditions of Certification. The quarterly operation report shall specifically note or highlight incidences of noncompliance.

Verification: The project owner shall submit quarterly operation reports to the CPM and APCO no later than 30 days following the end of each calendar quarter. This information shall be maintained on site for a minimum of five years and shall be provided to the CPM and District personnel upon request.

AQ-SC9 The facility shall be operated such that simultaneous commissioning of the two combustion turbines without abatement of nitrogen oxide and CO emissions by its SCR system and oxidation catalyst system will not occur. Operation of a combustion turbine during commissioning without abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR or Oxidation Catalyst Systems fully operational.

Verification: The project owner shall submit a monthly compliance report to the CPM during the commissioning period demonstrating compliance with this condition.

AQ-SC10 The ammonia (NH_3) emissions from each combustion turbine shall not exceed 10 ppmvd at 15 percent O_2 averaged over one hour. The selective catalytic reduction (SCR) system catalyst shall be replaced, repaired, or otherwise reconditioned within 12 months if the ammonia slip exceeds 5 ppmvd at 15 percent O_2 over a 24 hour rolling average. The SCR ammonia injection grid replacement, repair, or reconditioning scheduled event may be cancelled if the owner or operator can demonstrate that, subsequent to the initial exceedance, the ammonia slip consistently remains below 5 ppmvd at 15 percent O_2 averaged over 24 hours, and that the initial exceedance does not accurately indicate expected future operating conditions.

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-SC11 While either combustion turbine is in start-up or shutdown, the combined emission rates of the two combustion turbine exhausts shall not exceed 240 lb/hr of NO_X (as NO_2).

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

DISTRICT FINAL DETERMINATION OF COMPLIANCE CONDITIONS

The SJVACPD permits each device separately, which causes duplication of conditions. Staff has compiled the SJVAPCD conditions to eliminate this duplication, with the conditions first for each of the two units in the combined-cycle system (**AQ-1** to **AQ-56**) and facility-wide conditions (**AQ-57** to **AQ-66**), followed by the conditions for the auxiliary boiler (**AQ-67** to **AQ-102**), the fire pump engine (**AQ-103** to **AQ-115**), and the emergency standby generator engine (**AQ-116** to **AQ-131**).

EQUIPMENT DESCRIPTION, UNIT C-3953-10-0
180 mw nominally rated combined-cycle power generating system #1 consisting of a General Electric Frame 7 model PG7241FA natural gas-fired combustion turbine generator with dry low NO_X combustor, a selective catalytic reduction (SCR) system, an oxidation catalyst, heat recovery steam generator #1 (HRSG) with a 562 mmbtu/hr duct burner and a 300 mw nominally rated steam turbine shared with C-3953-11

EQUIPMENT DESCRIPTION, UNIT C-3953-11-0
180 mw nominally rated combined-cycle power generating system #2 consisting of a General Electric Frame 7 model PG7241FA natural gas-fired combustion turbine generator with dry low NO_X combustor, a selective catalytic reduction (SCR) system, an oxidation catalyst, heat recovery steam generator #2 (HRSG) with a 562 mmbtu/hr duct burner and a 300 mw nominally rated steam turbine shared with c-3953-10

AQ-1 Permittee shall submit an application to comply with SJVUAPCD District Rule 2520 – Federally Mandated Operating Permits within twelve months of commencing operation. [District Rule 2520]

Verification: The project owner shall submit to both the District and CPM the Operating Permit application after completing commissioning.

AQ-2 Permittee shall submit an application to comply with SJVUAPCD District Rule 2540 – Acid Rain Program. [District Rule 2540]

Verification: The project owner shall submit to both the District and CPM the Acid Rain Program application after completing commissioning.

AQ-3 Prior to initial operation of C-3953-10-0, C-3953-11-0, and C-3953-12-0, permittee shall provide NO_X (as NO2) emission reduction credits for the following quantities of emissions: 1st quarter – 67,103 lb; 2nd quarter – 67,104 lb; 3rd quarter – 67,104 lb; and 4th quarter – 67,104 lb. Offsets shall be provided at the appropriate distance ratio specified in Rule 2201. [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM records showing that the project's offset requirements have been met prior to initiating operation.

AQ-4 Prior to initial operation of C-3953-10-0, C-3953-11-0, and C-3953-12-0, permittee shall provide VOC emission reduction credits for the following quantities of emissions: 1st quarter – 12,294 lb; 2nd quarter – 12,295 lb; 3rd quarter – 12,295 lb; and 4th quarter – 12,295 lb. Offsets shall be provided at the appropriate distance ratio specified in Rule 2201. [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM records showing that the project's offset requirements have been met prior to initiating operation.

AQ-5 Prior to initial operation of C-3953-10-0, C-3953-11-0, and C-3953-12-0, permittee shall provide PM10 emission reduction credits for the following quantities of emissions: 1st quarter – 33,085 lb; 2nd quarter – 33,085 lb; 3rd quarter – 33,085 lb; and 4th quarter – 33,085 lb. Offsets shall be provided at the appropriate distance ratio specified in Rule 2201. SO_X ERC's may be used to offset PM10 increases at an interpollutant ratio of 1.0 lb-SO_X : 1.0 lb-PM10. [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM records showing that the project's offset requirements have been met prior to initiating operation.

AQ-6 ERC certificate numbers (or any splits from these certificates) C-897-1, C-898-1, N-724-1, N-725-1, S-2812-1, S-2813-1, S-2817-1, C-899-2, C-902-2, N-720-2, N-722-2, N-726-2, N-728-2, S-2814-2, S-2321-2, C-896-4, N-721-4, N-723-4, S-2791-5, S-2790-5, S-2789-5, S-2788-5, or N-762-5 shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this determination of compliance (DOC) shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of the DOC. [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM records showing that the project's offset requirements have been met prior to initiating operation.

AQ-7 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 shall make the site available for inspection by representatives of the District, ARB and the Commission upon request.

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

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

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

Verification: The project owner shall submit the results of source tests to both the District and CPM in accordance with **AQ-42**.

AQ-10 The CTG shall be fired exclusively on PUC-regulated natural gas with a sulfur content of no greater than 1.0 grains of sulfur compounds (as S) per 100 dry scf of natural gas. [District Rule 2201 and 40 CFR 60.4330(a)(2)]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-11 Annual average of the sulfur content of the CTG shall not exceed 0.36 grain of sulfur compounds (as S) per 100 dry scf of natural gas. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-**SC8**).

AQ-12 The owner or operator shall install, certify, maintain, operate and quality-assure a Continuous Emission Monitoring System (CEMS) which continuously measures and records the exhaust gas NO_X, CO and O_2 concentrations. Continuous emissions monitor(s) shall be capable of monitoring emissions during normal operating conditions, and during startups and shutdowns provided the CEMS passes the relative accuracy requirement for startups and shutdowns specified herein. If relative accuracy of CEMS cannot be demonstrated during startup conditions, CEMS 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 1080 and 4703 and 40 CFR 60.4340(b)(1)]

Verification: The project owner shall make the site available for inspection by representatives of the District, ARB and the Commission to verify the continuous monitoring system is properly installed and operational.

AQ-13 The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080 and 40 CFR 60.4345(b)]

Verification: The project owner shall submit to the CPM and APCO CEMS audits demonstrating compliance with this Condition as part of the quarterly operation report (**AQ-SC8**).

AQ-14 The NO_X, CO and O_2 CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), or shall meet equivalent specifications established by mutual agreement of the District, the ARB, and the EPA. [District Rule 1080 and 40 CFR 60.4345(a)]

Verification: The project owner shall submit to the CPM and APCO CEMS audits demonstrating compliance with this Condition as part of the quarterly operation report (**AQ-SC8**).

AQ-15 Audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and compliance source testing are both 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 shall submit to the CPM and APCO CEMS audits demonstrating compliance with this Condition as part of the quarterly operation report (**AQ-SC8**).

AQ-16 The owner/operator shall perform a relative accuracy test audit (RATA) for NO_X, CO and O_2 as specified by 40 CFR Part 60, Appendix F, 5.11, at least once every four calendar quarters. 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 shall submit to the CPM and APCO CEMS audits demonstrating compliance with this Condition as part of the quarterly operation report (**AQ-SC8**).

AQ-17 APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080]

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

AQ-18 Results of the CEM system shall be averaged over a one hour period for NO_X emissions and a three hour period for CO emissions using

consecutive 15-minute sampling periods in accordance with all applicable requirements of CFR 60.13. [District Rule 4703 and 40 CFR 60.13]

Verification: The project owner shall submit to the District and CPM the report of emission data in the quarterly operation report (AQ-SC8) that follows the definitions of this Condition.

AQ-19 Results of continuous emissions monitoring shall be reduced according to the procedures 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 shall submit to the District and CPM emission data in the quarterly operation report (AQ-SC8) that follows the definitions of this Condition.

AQ-20 The owner or operator shall, upon written notice from the APCO, provide a summary of the data obtained from the CEM systems. This summary shall be in the form and the manner prescribed by the APCO. [District Rule 1080]

Verification: The project owner shall submit to the District and CPM the report of CEM operations upon notice from the APCO.

AQ-21 The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080]

Verification: The project owner shall provide a Continuous Emission Monitoring System (CEM) protocol for approval by the APCO and CPM at least 60 days prior to installation of the CEM. The project owner shall make the site available for inspection by representatives of the District, ARB and the Commission upon request.

AQ-22 Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080]

Verification: The project owner shall provide required non-polled CEM data to the District by a District-approved alternative method.

AQ-23 The owner or operator shall submit a written report of CEM operations for each calendar quarter to the APCO. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NO_X emissions, nature and the cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable time and date of each period during which the CEM was inoperative (monitor downtime), except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred. [District Rule 1080 and 40 CFR 60.4375(a) and 60.4395]

Verification: The project owner shall submit to the District and CPM the report of CEM operations, emission data, and monitor downtime data in the quarterly operation report (**AQ-SC8**) that follows the definitions of this Condition.

AQ-24 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, 6.1]

Verification: The project owner shall comply with the notification requirements of the District and submit written copies of these notification reports to the CPM and the APCO as part of the quarterly operation report (**AQ-SC8**).

AQ-25 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, 7.0]

Verification: The project owner shall comply with the notification requirements of the District and submit written copies of these notification reports to the CPM and the APCO as part of the quarterly operation report (**AQ-SC8**).

AQ-26 Emission rates from this unit (with duct burner firing), except during startup and shutdown periods, shall not exceed any of the following limits: NO_X (as NO2) – 17.20 lb/hr and 2.0 ppmvd @ 15 percent O2; VOC (as methane) – 5.89 lb/hr and 2.0 ppmvd @ 15 percent O2; CO – 10.60 lb/hr and 2.0 ppmvd @ 15 percent O2; PM10 – 11.78 lb/hr; or SO_X (as SO2) – 6.65 lb/hr. NO_X(as NO2) emission limits are one hour

rolling averages. All other emission limits are three hour rolling averages. [District Rules 2201, 4001, and 4703]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-27 Emission rates from this unit (without duct burner firing), except during startup and shutdown periods, shall not exceed any of the following limits: NO_X (as NO2) – 13.55 lb/hr and 2.0 ppmvd @ 15 percent O2; VOC (as methane) – 3.34 lb/hr and 1.4 ppmvd @ 15 percent O2; CO – 8.35 lb/hr and 2.0 ppmvd @ 15 percent O2; PM10 – 8.91 lb/hr; or SO_X (as SO2) – 5.23 lb/hr. NO_X (as NO2) emission limits are one hour rolling averages. All other emission limits are three hour rolling averages. [District Rules 2201, 4001, and 4703]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-28 During start-up and shutdown, CTG exhaust emission rates shall not exceed any of the following limits: NO_X (as NO2) – 160 lb/hr; CO – 1,000 lb/hr; VOC (as methane) – 16 lb/hr; PM10 – 11.78 lb/hr; SO_X (as SO_2) – 6.652 lb/hr; or NH_3 – 32.13 lb/hr. [District Rules 2201 and 4703]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-29 Daily emissions from the CTG shall not exceed the following limits: NO_X (as NO2) – 412.8 lb/day; CO – 254.4 lb/day; VOC – 141.4 lb/day; PM_{10} – 282.7 lb/day; SO_X (as SO2) – 159.6 lb/day, or NH_3 – 771.1 lb/day. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-30 Emissions from this unit, on days when a startup and/or shutdown occurs, shall not exceed the following limits: NO_X (as NO2) – 789.6 lb/day; VOC – 202.0 lb/day; CO – 5,590.8 lb/day; PM10 – 282.7 lb/day; SO_X (as SO2) – 159.6 lb/day, or NH_3 – 771.1 lb/day. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-**SC8**).

AQ-31 The ammonia (NH_3) emissions shall not exceed 10 ppmvd @ 15 percent O2 over a 24 hour rolling average. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (AQ-**SC8**).

AQ-32 The CTG shall be fired exclusively on PUC-regulated natural gas with a sulfur content no greater than 1.0 grain of sulfur compounds (as S) per 100 dry scf of natural gas. [District Rule 2201 and 40 CFR 60.4330(a)(2)]

Verification: The result of the natural gas fuel sulfur monitoring data and other fuel sulfur content source data shall be submitted to the District and CPM in the quarterly operation report (**AQ-SC8**).

AQ-33 Annual emissions from the CTG, calculated on a twelve month rolling basis, shall not exceed any of the following limits: NO_X (as NO2) – 143,951 lb/year; CO – 601,810 lb/year; VOC – 34,489 lb/year; PM10 – 80,656 lb/year; or SO_X (as SO2) – 16,694 lb/year; or NH_3 – 208,708 lb/year. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-34 The duration of each startup or shutdown shall not exceed six hours. Startup and shutdown emissions shall be counted toward all applicable emission limits. [District Rules 2201 and 4703]

Verification: The project owner shall submit to the District and CPM the CTG startup and shutdown event duration data demonstrating compliance with this condition as part of the quarterly operation report (**AQ-SC8**).

AQ-35 Each one hour period shall commence on the hour. Each one hour period in a three hour rolling average will commence on the hour. The three hour average will be compiled from the three most recent one hour periods. Each one hour period in a twenty-four hour average for ammonia slip will commence on the hour. [District Rule 2201]

No verification needed.

AQ-36 Daily emissions will be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each month in the twelve consecutive month rolling average emissions shall commence at the beginning of the first day of the month. The twelve consecutive month rolling average emissions to determine compliance with annual emissions limitations shall be compiled from the twelve most recent calendar months. [District Rule 2201]

No verification needed.

AQ-37 Startup shall be defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operations. Shutdown shall be defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off. [District Rules 2201 and 4703]

Verification: The project owner shall submit to the District and CPM the CTG startup and shutdown data demonstrating compliance with this Condition as part of the quarterly operation report (**AQ-SC8**).

AQ-38 The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rule 4703]

Verification: The project owner shall submit to the District and CPM the CTG startup and shutdown emissions data demonstrating compliance with this Condition as part of the quarterly operation report (**AQ-SC8**).

AQ-39 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 O2 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 shall make the site available for inspection by representatives of the District, ARB and the Commission upon request.

AQ-40 Source testing to measure startup NO_X, CO, and VOC mass emission rates shall be conducted for one of the gas turbines (C-3953-10 or C-

3953-11) prior to the end of the commissioning period 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: The results and field data collected during source tests shall be submitted to the District and CPM within 60 days of testing and according to a pre-approved protocol (**AQ-47**). Testing of startups shall be conducted for the CTG upon initial operation, and at least once every seven years.

AQ-41 Source testing (with and without duct burner firing) to measure the NO_X, CO, and VOC emission rates (lb/hr and ppmvd @ 15 percent O2) shall be conducted within 60 days after the end of the commissioning period and at least once every twelve months thereafter. [District Rules 1081 and 4703]

Verification: The results and field data collected during source tests shall be submitted to the District and CPM within 60 days of testing and according to a pre-approved protocol (**AQ-47**). Testing for steady operation shall be conducted upon initial operation and at least once every twelve months.

AQ-42 Source testing (with and without duct burner firing) to measure the PM10 emission rate (lb/hr) and the ammonia emission rate shall be conducted within 60 days after the end of the commissioning period 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 District and CPM within 60 days of testing and according to a pre-approved protocol (**AQ-47**). Testing for steady operation shall be conducted upon initial operation and at least once every twelve months.

AQ-43 Compliance with natural gas sulfur content limit shall be demonstrated within 60 days after the end of the commissioning period and weekly thereafter. After demonstrating compliance with the fuel sulfur content limit for eight consecutive weeks for a fuel source, then the testing frequency shall not be less than monthly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [District Rules 1081, 2540, and 4001].

Verification: The result of the natural gas fuel sulfur monitoring data and other fuel sulfur content source data shall be submitted to the District and CPM in the quarterly operation report (**AQ-SC8**).

AQ-44 Demonstration of compliance with the annual average sulfur content limit shall be demonstrated by a 12 month rolling average of the sulfur content either (i) documented in a valid purchase contract, a supplier

certification, a tariff sheet or transportation contract or (ii) tested using ASTM Methods D1072, D3246, D4084, D4468, D4810, D6228, D6667 or Gas Processors Association Standard 2377. [District Rules 1081 and 2201]

Verification: The result of the natural gas fuel sulfur monitoring data and other fuel sulfur content source data shall be submitted to the District and CPM in the quarterly operation report (**AQ-SC8**).

AQ-45 Source testing to determine compliance with the NO_X, CO and VOC emission rates (lb/hr and ppmvd @ 15 percent O2), NH_3 emission rate (ppmvd @ 15 percnet O2) and PM10 emission rate (lb/hr) shall be conducted at least once every 12 months. [District Rules 1081, 2201 and 4703 and 40 CFR 60.4400(a)]

Verification: The results and field data collected during source tests shall be submitted to the District and CPM within 60 days of testing and according to a pre-approved protocol (**AQ-47**). Testing for steady operation shall be conducted upon initial operation and at least once every twelve months.

AQ-46 Compliance with the NO_X and CO emission limits shall be demonstrated with the auxiliary burner both on and off. [District Rule 4703]

Verification: The project owner shall submit the proposed protocol for the source tests to both the District and CPM for approval in accordance with condition **AQ-47**.

AQ-47 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 shall submit the proposed source test plan or protocol for the source tests 15 days prior to the proposed source test date to both the District and CPM for approval. The project owner shall notify the District and CPM no later than seven days prior to the proposed source test date and time. The project owner shall submit source test results no later than 60 days following the source test date to both the District and CPM.

AQ-48 The following test methods shall be used: NO_X – EPA Method 7E or 20; CO – EPA Method 10 or 10B; VOC – EPA Method 18 or 25; PM10 – EPA Method 5 (front half and back half) or 201 and 202a; ammonia – BAAQMD ST-1B; and O2 – EPA Method 3, 3A, or 20. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703 and 40 CFR 60.4400(1)(i)]

Verification: The project owner shall submit the proposed protocol for the source tests to both the District and CPM for approval in accordance with Condition **AQ-47**.

AQ-49 The sulfur content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored within 60 days of the end of the commission period and weekly thereafter. If the sulfur content is demonstrated to be less than 1.0 gr/100 scf for eight consecutive weeks, then the monitoring frequency shall be every six months. If the result of any six month monitoring demonstrates that the fuel does not meet the fuel sulfur content limit, weekly monitoring shall resume. [District Rule 2201 and 40 CFR 60.4360, 60.4365(a) and 60.4370(c)]

Verification: The result of the natural gas fuel sulfur monitoring data and other fuel sulfur content source data shall be submitted to the District and CPM in the quarterly operation report (**AQ-SC8**).

AQ-50 Excess emissions shall be defined as any operating hour in which the 4-hour or 30-day rolling average NO_X concentration exceeds applicable emissions limit and a period of monitor downtime shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NO_X or O2 (or both). [40 CFR 60.4380(b)(1)]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-51 Fuel sulfur content shall be monitored using one of the following methods: ASTM Methods D1072, D3246, D4084, D4468, D4810, D6228, D6667 or Gas Processors Association Standard 2377. [40 CFR 60.4415(a)(1)(i)]

Verification: The result of the natural gas fuel sulfur monitoring data and other fuel sulfur content source data shall be submitted to the District and CPM in the quarterly operation report (**AQ-SC8**).

AQ-52 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 shall compile the required NO_X control system and emissions data and submit the information to the District and CPM before issuance of the Operating Permit.

AQ-53 The permittee shall maintain the following records: the date, time and duration of any malfunction of the continuous monitoring equipment; dates of performance testing; dates of evaluations, calibrations, checks, and adjustments of the continuous monitoring equipment; date and time period which a continuous monitoring system or monitoring device was inoperative. [District Rules 1080 and 2201 and 40 CFR 60.8(d)]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-54 The permittee shall maintain the following records: 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: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-55 The permittee shall maintain the following records: hours of operation, fuel consumption (scf/hr and scf/rolling twelve month period), continuous emission monitor measurements, calculated ammonia slip, and calculated NO_X mass emission rates (lb/hr and lb/twelve month rolling period). [District Rules 2201 and 4703]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-56 The owner or operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rules 2201 and 4703]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-57 Disturbances of soil related to any construction, demolition, excavation, extraction, or other earthmoving activities shall comply with the requirements for fugitive dust control in District Rule 8021 unless specifically exempted under Section 4.0 of Rule 8021 or Rule 8011. [District Rules 8011 and 8021]

Verification: A summary of significant construction activities and monitoring records required shall be included in the construction monthly compliance report (**AQ-SC3**).

AQ-58 An owner/operator shall submit a Dust Control Plan to the APCO prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or five acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. [District Rules 8011 and 8021]

Verification: The Dust Control Plan shall be included within the Air Quality Construction Mitigation Plan and submitted to the District and CPM (**AQ-SC2**), and a summary of significant construction activities and monitoring records required shall be included in the construction monthly compliance report (**AQ-SC3**).

AQ-59 An owner/operator shall prevent or cleanup any carryout or trackout in accordance with the requirements of District Rule 8041 Section 5.0, unless specifically exempted under Section 4.0 of Rule 8041 (8/19/04) or Rule 8011(8/19/04). [District Rules 8011 and 8021]

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

AQ-60 Whenever open areas are disturbed, or vehicles are used in open areas, the facility shall comply with the requirements of Section 5.0 of District Rule 8051, unless specifically exempted under Section 4.0 of Rule 8051 or Rule 8011. [District Rules 8011 and 8051]

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

AQ-61 Any paved road or unpaved road shall comply with the requirements of District Rule 8061 unless specifically exempted under Section 4.0 of Rule 8061 or Rule 8011. [District Rules 8011 and 8061]

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

AQ-62 Water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure shall be applied to unpaved vehicle travel areas as required to limit Visible Dust Emissions to 20 percent opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]

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

AQ-63 Where dusting materials are allowed to accumulate on paved surfaces, the accumulation shall be removed daily or water and/or chemical/organic dust stabilizers/suppressants shall be applied to the paved surface as required to maintain continuous compliance with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011 and limit Visible Dust Emissions (VDE) to 20 percent opacity. [District Rule 8011 and 8071]

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

AQ-64 On each day that 50 or more Vehicle Daily Trips or 25 or more Vehicle Daily Trips with three axles or more will occur on an unpaved vehicle/equipment traffic area, permittee shall apply water, gravel, roadmix, or chemical/organic dust stabilizers/suppressants, vegetative materials, or other District-approved control measure as required to limit Visible Dust Emissions to 20 percent opacity and comply with the requirements for a stabilized unpaved road as defined in Section 3.59 of District Rule 8011. [District Rule 8011 and 8071]

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

AQ-65 Whenever any portion of the site becomes inactive, Permittee shall restrict access and periodically stabilize any disturbed surface to

comply with the conditions for a stabilized surface as defined in Section 3.58 of District Rule 8011. [District Rules 8011 and 8071]

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

AQ-66 Records and other supporting documentation shall be maintained as required to demonstrate compliance with the requirements of the rules under Regulation VIII only for those days that a control measure was implemented. Such records shall include the type of control measure(s) used, the location and extent of coverage, and the date, amount, and frequency of application of dust suppressant, manufacturer's dust suppressant product information sheet that identifies the name of the dust suppressant and application instructions. Records shall be kept for one year following project completion that results in the termination of all dust generating activities. [District Rules 8011, 8031, and 8071]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

EQUIPMENT DESCRIPTION, UNIT C-3953-12-0

37.4 mmbtu/hr Cleaver Brooks model CBL-700-900-200#ST natural gas-fired boiler with a Cleaver Brooks model Profire, or district approved equivalent, ultra low NO_X burner.

AQ-67 Permittee shall submit an application to comply with SJVUAPCD District Rule 2520 – Federally Mandated Operating Permits within twelve months of commencing operation. [District Rule 2520]

Verification: The project owner shall submit to both the District and CPM the Operating Permit application after completing commissioning.

AQ-68 Prior to initial operation of C-3953-10-0, C-3953-11-0, and C-3953-12-0, permittee shall provide NO_X (as NO2) emission reduction credits for the following quantities of emissions: 1st quarter – 67,103 lb; 2nd quarter – 67,104 lb; 3rd quarter – 67,104 lb; and 4th quarter – 67,104 lb. Offsets shall be provided at the appropriate distance ratio specified in Rule 2201. [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM records showing that the project's offset requirements have been met prior to initiating operation.

AQ-69 Prior to initial operation of C-3953-10-0, C-3953-11-0, and C-3953-12-0, permittee shall provide VOC emission reduction credits for the following quantities of emissions: 1st quarter – 12,294 lb; 2nd quarter – 12,295 lb; 3rd quarter – 12,295 lb; and 4th quarter – 12,295 lb. Offsets shall be provided at the appropriate distance ratio specified in Rule 2201. [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM records showing that the project's offset requirements have been met prior to initiating operation.

AQ-70 Prior to initial operation of C-3953-10-0, C-3953-11-0, and C-3953-12-0, permittee shall provide PM10 emission reduction credits for the following quantities of emissions: 1st quarter – 33,087 lb; 2nd quarter – 33,086 lb; 3rd quarter – 33,086 lb; and 4th quarter – 33,086 lb. Offsets shall be provided at the appropriate distance ratio specified in Rule 2201. SO_X ERC's may be used to offset PM10 increases at an interpollutant ratio of 1.0 lb-SO_X : 1.0 lb-PM10. [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM records showing that the project's offset requirements have been met prior to initiating operation.

AQ-71 ERC certificate numbers (or any splits from these certificates) C-897-1, C-898-1, N-724-1, N-725-1, S-2812-1, S-2813-1, S-2817-1, C-899-2, C-902-2, N-720-2, N-722-2, N-726-2, N-728-2, S-2814-2, S-2321-2, C-896-4, N-721-4, N-723-4, S-2791-5, S-2790-5, S-2789-5, S-2788-5, or N-762-5 shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this determination of compliance (DOC) shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of the DOC. [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM records showing that the project's offset requirements have been met prior to initiating operation.

AQ-72 The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM the application for equivalent equipment as needed.

AQ-73 The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2010]

Verification: The project owner shall submit to both the District and CPM the application for equivalent equipment as needed.

AQ-74 Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM the application for equivalent equipment as needed.

AQ-75 No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201]

Verification: The project owner shall submit to both the District and CPM the application for equivalent equipment as needed.

AQ-76 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 Rule 2201]

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

AQ-77 No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

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

AQ-78 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 shall make the site available for inspection by representatives of the District, ARB and the Commission upon request.

AQ-79 Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-80 The unit shall only be fired on PUC-regulated natural gas. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-81 Emission rates from this unit shall not exceed any of the following limits: NO_X (as NO2) – 9.0 ppmvd @ 3 percent O2 or 0.011 lb/MMBtu; VOC (as methane) – 10.0 ppmvd @ 3 percent O2; CO – 50.0 ppmvd @ 3 percent O2 or 0.037 lb/MMBtu; PM10 – 0.005 lb/MMBtu; or SO_X (as SO2) – 0.00285 lb/MMBtu. [District Rules 2201, 4305, and 4306].

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-82 All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4306. [District Rules 4305 and 4306]

Verification: The project owner shall submit the proposed protocol for the source tests to both the District and CPM for approval in accordance with Condition **AQ-47**.

AQ-83 Source testing to measure NO_X and CO emissions from this unit while fired on natural gas shall be conducted within 60 days of initial start-up. [District Rules 2201, 4305, and 4306]

Verification: The project owner shall submit the proposed protocol for the source tests to both the District and CPM for approval in accordance with Condition **AQ-47**.

AQ-84 Source testing to measure NO_X and CO emissions from this unit while fired on natural gas shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305 and 4306]

Verification: The project owner shall submit the proposed protocol for the source tests to both the District and CPM for approval in accordance with Condition **AQ-47**. Testing for steady operation shall be conducted upon initial operation and at least once every twelve months.

AQ-85 The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305 and 4306]

Verification: The project owner shall submit the proposed protocol for the source tests to both the District and CPM for approval in accordance with Condition **AQ-47**.

AQ-86 Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]

Verification: The project owner shall submit the proposed protocol for the source tests to both the District and CPM for approval in accordance with Condition **AQ-47**.

AQ-87 NO_X emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis, or EPA Method 19 on a heat input basis. [District Rules 4305 and 4306]

Verification: The project owner shall submit the proposed protocol for the source tests to both the District and CPM for approval in accordance with Condition **AQ-47**.

AQ-88 CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rules 4305 and 4306]

Verification: The project owner shall submit the proposed protocol for the source tests to both the District and CPM for approval in accordance with Condition **AQ-47**.

AQ-89 Stack gas oxygen (O2) shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 4305 and 4306]

Verification: The project owner shall submit the proposed protocol for the source tests to both the District and CPM for approval in accordance with Condition **AQ-47**.

AQ-90 For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305 and 4306]

Verification: The project owner shall submit the proposed protocol for the source tests to both the District and CPM for approval in accordance with Condition **AQ-47**.

AQ-91 The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

Verification: The project owner shall submit the proposed protocol for the source tests to both the District and CPM for approval in accordance with Condition **AQ-47**. The results of each source test shall be submitted to the District within 60 days thereafter.

AQ-92 A non-resettable, totalizing mass or volumetric fuel flow meter to measure the amount of fuel combusted in the unit shall be installed, utilized and maintained. [District Rules 2201 and 40 CFR 60.48 (c)(g)]

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

AQ-93 Permittee shall maintain daily records of the type and quantity of fuel combusted by the boiler. [District Rules 2201 and 40 CFR 60.48 (c)(g)]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-94 All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, and 4306]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-95 The exhaust stack shall be equipped with a continuous emissions monitor (CEM) for NO_X, CO, and O2. The CEM shall meet the requirements of 40 CFR parts 60 and 75 and shall be capable of monitoring emissions during startups and shutdowns as well as during normal operating conditions. [District Rules 2201 and 1080]

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

AQ-96 The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080]

Verification: The project owner shall provide a Continuous Emission Monitoring System (CEM) protocol for approval by the APCO and CPM at least 60 days prior to installation of the CEM. The project owner shall make the site available for inspection by representatives of the District, ARB and the Commission upon request.

AQ-97 Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080]

Verification: The project owner shall provide required non-polled CEM data to the District by a District-approved alternative method.

AQ-98 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 O2 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 Source Emission Monitoring and Testing. [District Rule 1081]

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

AQ-99 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 shall submit to the District and CPM emission data in the quarterly operation report (**AQ-SC8**) that follows the definitions of this Condition.

AQ-100 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 shall submit to the CPM and APCO CEMS audits demonstrating compliance with this Condition as part of the quarterly operation report (**AQ-SC8**).

AQ-101 The owner/operator shall perform a relative accuracy test audit (RATA) as specified by 40 CFR Part 60, Appendix F, 5.11, at least once every four calendar quarters. 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 shall submit to the CPM and APCO CEMS audits demonstrating compliance with this Condition as part of the quarterly operation report (**AQ-SC8**).

AQ-102 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 emissions (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 shall submit to the District and CPM the report of CEM operations, emission data, and monitor downtime data in the quarterly operation report (**AQ-SC8**) that follows the definitions of this Condition.

EQUIPMENT DESCRIPTION, UNIT C-3953-13-0:
288 Bhp Clarke Model Jw6h-Uf40 Diesel-Fired Emergency IC Engine Powering A Fire Pump

AQ-103 Permittee shall submit an application to comply with SJVUAPCD District Rule 2520 – Federally Mandated Operating Permits within twelve months of commencing operation. [District Rule 2520]

Verification: The project owner shall submit to both the District and CPM the Operating Permit application after completing commissioning.

AQ-104 No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

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

AQ-105 Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

Verification: The project owner shall submit the results of source tests to both the District and CPM in accordance with **AQ-111**.

AQ-106 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 shall make the site available for inspection by representatives of the District, ARB and the Commission upon request.

AQ-107 The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

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

AQ-108 Only CARB certified diesel fuel containing not more than 0.0015 percent sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115]

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

AQ-109 This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702 and 17 CCR 93115]

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

AQ-110 Emissions from this IC engine shall not exceed any of the following limits: 3.4 g-NO_X/bhp-hr, 0.447 g-CO/bhp-hr, or 0.38 g-VOC/bhp-hr. [District Rule 2201 and 13 CCR 2423 and 17 CCR 93115]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-111 Emissions from this IC engine shall not exceed 0.059 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 13 CCR 2423 and 17 CCR 93115]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-112 This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. For testing purposes, the engine shall only be operated the number of hours necessary to comply with the testing requirements of the National Fire Protection Association (NFPA) 25 – "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems", 1998 edition. Total hours of operation for all maintenance, testing, and required regulatory purposes shall not exceed 50 hours per calendar year. [District Rule 4702 and 17 CCR 93115]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-113 An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702]

No verification necessary.

AQ-114 The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, and the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.). For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-115 All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

EQUIPMENT DESCRIPTION, UNIT C-3953-14-0
860 Bhp Caterpillar Model 3456 Natural Gas-Fired Emergency IC Engine Powering With Non-Selective Catalytic Reduction (Nscr) Powering A 500 Kw Electrical Generator

AQ-116 Permittee shall submit an application to comply with SJVUAPCD District Rule 2520 – Federally Mandated Operating Permits within twelve months of commencing operation. [District Rule 2520]

Verification: The project owner shall submit to both the District and CPM the Operating Permit application after completing commissioning.

AQ-117 Permittee shall submit an application to comply with SJVUAPCD District Rule 2540 – Acid Rain Program within 12 months of commencing operation. [District Rule 2540]

Verification: The project owner shall submit to both the District and CPM the Acid Rain Program application after completing commissioning.

AQ-118 No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

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

AQ-119 Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

Verification: The project owner shall provide emissions records to both the District and CPM in accordance with **AQ-124**.

AQ-120 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 shall make the site available for inspection by representatives of the District, ARB and the Commission upon request.

AQ-121 The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

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

AQ-122 This IC engine shall be equipped with a three-way catalyst. [District Rule 2201]

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

AQ-123 This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702]

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

AQ-124 Emissions from this IC engine shall not exceed any of the following limits: 1.0 g-NO_X/bhp-hr, 0.034 g-PM10/bhp-hr, 0.6 g-CO/bhp-hr, or 0.33 g-VOC/bhp-hr. [District Rule 2201]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-125 This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702]

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

AQ-126 During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702]

Verification: The project owner shall submit to the District and CPM engine operation procedures and data demonstrating compliance with this Condition as part of the quarterly operation report (**AQ-SC8**).

AQ-127 This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 50 hours per calendar year. [District Rule 4702]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-128 An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702]

No verification necessary.

AQ-129 This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rule 4702]

Verification: The project owner shall submit to the District and CPM engine operation procedures and data demonstrating compliance with this Condition as part of the quarterly operation report (**AQ-SC8**).

AQ-130 The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of

emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

AQ-131 All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702]

Verification: A summary of significant operation and maintenance events and monitoring records required shall be included in the quarterly operation report (**AQ-SC8**).

C. PUBLIC HEALTH

The public health analysis supplements the previous discussion on air quality and considers the potential public health effects from project emissions of toxic air contaminants. In this analysis, we review the evidence concerning whether such emissions will result in significant adverse public health impacts that violate standards for public health protection.[20]

SUMMARY AND DISCUSSION OF THE EVIDENCE

Project construction and operation will result in routine emissions of toxic air contaminants (TACs). These substances are categorized as noncriteria pollutants because there are no ambient air quality standards established to regulate their emissions.[21] In the absence of standards, state and federal regulatory programs have developed a health risk assessment procedure to evaluate potential health effects from these emissions.

The risk assessment consists of the following steps:

- Identify the types and amounts of hazardous substances that the Avenal Project could emit to the environment;
- Estimate worst-case concentrations of project emissions in the environment using dispersion modeling;
- Estimate amounts of pollutants to which people could be exposed through inhalation, ingestion, and dermal contact;[22] and
- Characterize potential health risks by comparing worst-case exposure to safe standards based on known health effects. (Ex. 200, p. 4.7-5.)

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[20] This Decision discusses other potential public health concerns in the following sections. The accidental release of hazardous materials is discussed in **HAZARDOUS MATERIALS MANAGEMENT** and **WORKER SAFETY AND FIRE PROTECTION**. Electromagnetic fields are discussed in the section on **TRANSMISSION LINE SAFETY AND NUISANCE**. Potential impacts to soils and surface water sources are discussed in the **SOIL AND WATER RESOURCES** section. Hazardous and non-hazardous wastes are described in **WASTE MANAGEMENT**.

[21] Criteria pollutants are discussed in the **AIR QUALITY** section of this Decision, *supra*.

[22] 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.

Typically, the initial risk analysis for a project is performed at a "screening level" which is designed to estimate actual health risks. The risks for screening purposes are based on examining conditions that would lead to the highest, or worst-case, risks and then using those conditions 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 estimated to be the highest;
- Assuming that an individual's exposure to cancer-causing agents occurs continuously for 70 years; and
- Using health-based standards designed to protect the most sensitive members of the population (i.e., the young, elderly, and those with respiratory illnesses). (Ex. 200, p. 4.7-5.)

The risk assessment process addresses three categories of health impacts:

- acute (short-term) health effects;
- chronic (long-term) non-cancer effects; and
- cancer risk (also long-term).

Acute health effects result from short-term (one-hour) exposure to relatively high concentrations of pollutants. 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 twelve to one hundred percent of a lifetime, or from eight to seventy years. (*Id*.)

The analysis for non-cancer 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. 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 make them more sensitive to the effects of toxic substance exposure. The RELs are based

on the most sensitive adverse health effects reported, and include margins of safety.

For carcinogenic substances, the health assessment considers the total risk from all cancer-causing chemicals from the source in question. The risk that is calculated is not meant to predict the actual expected incidence of cancer, but is rather a theoretical estimate based on worst-case assumptions. (Ex. 200, pp. 4.7-5 to 4.7-6.)

Cancer risk is usually expressed in cases per million, and is a function of the maximum expected pollutant concentration, the probability that a particular pollutant will cause cancer, and the length of the exposure period. Title 22, California Code of Regulations, section 12703(b) states in this regard 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 risk level is equivalent to a cancer risk of 10 in one million, or $10x10^{-6}$. The conservative nature of the screening assumptions used means that actual cancer risks due to project emissions are likely to be considerably lower than those estimated. (Ex. 200, pp. 4.7-5 to 4.7-6.)

If the screening analysis predicts no significant risks, then no further analysis is required. However, if the predicted risk is significant then further analysis, using more realistic, site-specific assumptions, is performed to obtain a more accurate assessment of potential public health risks. If this analysis confirms that the risk exceeds the significance level of 10 in one million, we would require appropriate measures to reduce the risk to less than significant. If, after all risk reduction measures have been considered, a refined analysis still identifies a cancer risk of greater than ten in one million, the Commission would not approve a project. (Ex. 200, p. 4.7-6.)

Toxic emissions will be attributable to the project during its construction and operation phases. Applicant and Staff each performed an analysis of the construction and operation impacts of the Avenal Project which evaluated potential cancer and non-cancer health risks to the public. (Ex.1, pp. 6.6-13 to 6.6-18; Ex 200, pp. 4.7-1 to 4.7-143.)

Possible construction-phase health impacts are those from human exposure to the windblown dust from site excavation and grading, and emissions from construction-related equipment. (Ex. 1, p. 6.16-11; Ex. 200, p. 4.7-8.) The Applicant has specified mitigation measures to minimize construction-related

fugitive dust. The requirements for these mitigation measures are adopted as Conditions of Certification in the **AIR QUALITY** section of this Decision.

It is well established that the exhaust from diesel-fueled construction and other equipment is a potent human carcinogen. (Ex. 200, p. 4.7-9.) **Table 6.16-4** of the AFC (Ex. 1, p. 6.16-11) shows that emissions from the diesel equipment to be used in the construction phase will be 7.7 lbs per day or 0.66 tons per year. The maximum cancer risk from these diesel emissions was calculated as 3.6 in one million for an uninhabited zone immediately beyond the project's boundaries. (Ex. 200, p. 4.7-9.) This risk estimate is significantly below the significance criterion of 10 in one million for such emissions. We find the recommended control measures specified in **AIR QUALITY** Condition of Certification **AQ-SC3** and **AQ-SC4** to be adequate to minimize this cancer risk during the construction period.

During operation, the emission sources at the Avenal Project will be its combustion turbines and the diesel engine of the emergency fire water pump. The evidence of record explains, in depth, the methodology used in identifying and quantifying the emission rates of the toxic non-criteria pollutants which could adversely affect public health. (Ex. 200, pp. 4.7-9 to 4.7-12.) **Public Health Table 1** of the FSA (Ex. 200, p. 4.7-11) lists the project's toxic emissions and shows how each contributes to the risk estimated from the health risk analysis.

The Applicant's estimates of the project's potential contribution to the area's carcinogenic and non-carcinogenic pollutants were obtained from a screening-level health risk assessment conducted according to procedures specified in the 1993 California Air Pollution Control Officers Association (CAPCOA) guidelines.

The results from this assessment, expressed as the "hazard index," are summarized in **PUBLIC HEALTH Table 2** of the FSA (Ex. 200, p. 4.7-12). The chronic noncancer hazard index for the maximally exposed individual is 0.023 while the maximum hazard index for acute noncancer effects is 0.19. (*Id*.) These values are well below the Commission's significance criterion of 1.0, suggesting that the pollutants in question are unlikely to pose a significant risk of chronic or acute noncancer health effects anywhere in the project area. The cancer risk to the maximally exposed individual from normal project operation is shown as 0.046 in one million, which is well below the Commission's significance criterion of 10 in one million for this screening-level assessment. (Ex. 200, p. 4.7-12.)

The project's contributions to health risks are well below the level of significance and therefore do not contribute significantly to a cumulative health impact. (07/07/09 RT 371:14-25 to 372:1-3.)

Intervenors Center on Race, Poverty and the Environment (CRPE) and Rob Simpson contend that the analysis of record is insufficient in that it does not adequately account for cumulative impacts to public health. These Intervenors, however, offered no expert testimony to contradict the evidence from Applicant and Staff summarized above. (07/07/09 RT 354 to 367.)

In their respective post-hearing submissions, both Applicant and Staff thoroughly discount the validity of the Intervenors' contentions by convincingly showing that an adequate cumulative impacts analysis has in fact been performed. This analysis clearly establishes the lack of adverse public health impacts attributable to construction and operation of the Avenal Energy Project. (Applicant Opening Brief, pp. 39 to 42; Applicant Reply Brief, pp. 2 to 7; Staff Opening Brief, pp. 8 to 9; Staff Reply Brief, pp. 6 to 8.)

No credible evidence of record rebuts these conclusions.

FINDINGS OF FACT

Based on the persuasive weight of the evidence of record, the Commission makes the following findings and conclusions:

1. Construction and normal operation of the project will result in the routine release of criteria and noncriteria pollutants that have the potential to adversely impact public health.

2. Potential construction-related adverse health effects from diesel emissions and fugitive dust will be mitigated to insignificant levels.

3. Emissions of criteria pollutants, which are discussed in the **AIR QUALITY** section of this Decision, will be mitigated to levels consistent with applicable standards.

4. Applicant performed a health risk assessment, using well-established scientific protocol, to analyze potential adverse health effects of toxic air contaminants.

5. The accepted method used by state regulatory agencies in assessing the significance for both acute and chronic noncarcinogenic public health effects

is known as the hazard index method. A similar method is used for assessing the significance of potential carcinogenic effects.

6. Application of the hazard index method establishes that emission of non-criteria pollutants from the Avenal Project will not cause acute or chronic adverse public health effects.

7. The maximum non-cancer and the maximum cancer risks associated with the project are substantially below the significance thresholds commonly accepted for risk analysis purposes.

8. Cumulative impacts from noncriteria pollutants were analyzed in accordance with the provisions of CEQA. Impacts from the Avenal Project's emissions of these pollutants are not expected to be significant.

9. Emissions from the construction and operation of the proposed natural gas-burning Avenal Project will not have a significant adverse impact on the public health of the surrounding population.

CONCLUSIONS OF LAW

1. Project emissions do not pose a significant direct, indirect, or cumulative adverse public health risk.

2. The project will comply with the applicable laws, ordinances, regulations, and standards specified in the appropriate portion of **Appendix A** of this Decision.

No Conditions of Certification are adopted in connection with this section of the Decision.

D. WORKER SAFETY AND FIRE PROTECTION

Industrial workers are exposed to potential health and safety hazards on a daily basis. Implementation of various existing laws and standards will suffice to reduce these hazards to minimal levels. Therefore, this subsection focuses on whether Applicant's proposed health and safety plans are in accordance with all applicable LORS and thus will be adequate to protect industrial workers. The record also addresses the availability and adequacy of fire protection and emergency response services, as well as potential site contamination concerns. The evidence on this topic was presented as part of the discussion on public health matters. (7/7/09 RT 347-50, 353, 357 to 58, 370-71, 377-80, 390; Exs. 1, §2.3.11.5, 6.17, Appen. 6.17-1, 6.17-2, 6.17-3, 6.17-4; 7(i); 8(b); 25(p); 54; 200, § 4.14.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Site and Soil Contamination

Contaminated soils may be exposed during site preparation. The Phase I Environmental Site Assessment (ESA) did not find evidence or record of any use, spillage, or disposal of hazardous substances on the site or nearby, nor any other environmental concern that would require remedial action. (7/7/09 RT 357, 378-79.) However, the Phase I ESA did not address the use of agricultural chemicals on the site prior to its being certified "organic" by the US Department of Agriculture (USDA) National Organic Program.[23]

To ensure there is no risk to public or worker health and safety from residual pesticides, we have required that the project owner develop and implement a sampling and analysis plan, in accordance with Condition of Certification **WASTE-1**, so the site can be screened for the presence of agricultural chemicals and evaluated as to whether they are present in hazardous concentrations. Furthermore, to address the possibility that soil contamination could be encountered during construction, Conditions of Certification **WASTE-2** and **WASTE-3** require that a registered professional engineer or geologist be available during soil excavation and grading to ensure proper handling and

[23] Certified "organic" means that documentation must indicate that no synthetic or prohibited substances (pesticides, herbicides, chemical fertilizers) have been applied to the site for a period of three years immediately preceding harvest of a crop. (7/7/09 RT 357, 378:23 to 379:3.)

disposal of contaminated soil.[24] (Ex. 200, pp. 4.14-3 to 4.14-4, 4.14-14.) These measures will provide adequate safeguards in the event contaminated soil is discovered and they are consistent with the uncontradicted expert testimony of record. (7/7/09 RT 357:23 to 358:18, 378:12 to 379:19.) If contaminated soil is found, a Phase II ESA may be required. (7/7/09 RT 390:1-12.)

2. Worker Safety

Industrial environments are potentially dangerous during construction, operation, and demolition activities. Workers at the Avenal Project will be exposed to loud noises, moving equipment, trenches, and confined space entry and egress problems. The workers may experience falls, trips, burns, lacerations, and various other injuries. They may be exposed to falling equipment or structures, chemical spills, hazardous waste, fires, explosions, and electrical sparks and electrocution. Thus, it is important for the project to have well-defined policies and procedures, training, and hazard recognition and controls to minimize injuries and protect workers. (Ex. 200, pp. 4.14-4 to 4.14-5.)

The evidence extensively details the type and content of several plans which will be developed to ensure the protection of worker health and safety, as well as compliance with applicable LORS. (7/7/09 RT 377-78; Ex. 200, pp. 4.14-5 to 4.14-9.) For example, the project owner will develop and implement a "Construction Safety and Health Program" and an "Operations and Maintenance Safety and Health Program," both of which must be reviewed by the Compliance Project Manager prior to project construction and operation. A separate "Injury and Illness Prevention Program," "Personal Protective Equipment Program," "Emergency Action Plan," "Fire Protection and Prevention Plan," and other general safety procedures will be prepared for both the construction and operation phases of the project. (*Id.*) Conditions of Certification **WORKER SAFETY-1** and **-2** ensure that these measures will be developed and implemented.

OSHA and Cal-OSHA standards encourage employers to monitor worker safety by employing a "competent person" who has knowledge and experience with enforcing OSHA/Cal-OSHA standards, can identify workplace hazards relating to specific project operations, and has authority to take appropriate action. To implement the intent to provide a safe work place during power plant construction

[24] The **WASTE MANAGEMENT** portion of this Decision contains a more detailed analysis of the matter.

expressed in these standards, Condition **WORKER SAFETY-3** requires the project owner to designate a power plant Construction Safety Supervisor. This individual will coordinate and implement the Construction and Operation Safety and Health programs, as well as investigate any safety-related incidents and emergency responses. (Ex. 200, p. 4.14-10.)

To reduce and/or eliminate safety hazards during project construction and operation, it is also necessary to employ a professional Safety Monitor. The Safety Monitor, who is hired by the project owner but reports to the Chief Building Official and the Compliance Project Manager, will track compliance with OSHA/Cal-OSHA regulations and serve as an on-site OSHA expert. This professional will periodically audit safety compliance during construction, commissioning, and the transition to operational status, as well as ensure that safety procedures and practices are fully implemented. (Ex. 200, p. 4.14-11.) Condition **WORKER SAFETY-4** describes the role of the Safety Monitor.

The project owner will maintain an automatic, portable defibrillator on-site to provide immediate response in the event of a medical emergency.[25] Condition **WORKER SAFETY-5** requires the project owner to ensure this device is available during construction and operation, and that appropriate personnel are trained to use it. (Ex. 200, pp. 4.14-12 to 4.14-13.)

3. Fire Protection and Emergency Response

Project construction and operation pose the potential for both small fires and major structural fires. Electrical sparks, combustion of diesel fuel oil, natural gas, hydraulic fluid, mineral oil, insulating fluid or flammable liquids, explosions, and over-heated equipment may cause small fires. The project will rely upon both on-site and local fire protection services.

The on-site fire protection system provides the first line of defense for such occurrences. The Construction Fire Prevention and Protection Plan (Condition **WORKER SAFETY-1**) will address and detail measures to minimize the likelihood of fires during construction. These measures include the placement of

[25] Staff's testimony contends that the potential for both work-related and non work-related heart attacks exists at power plants. The quickest medical intervention can be achieved with the use of an on-site defibrillator. Many modern industrial and commercial enterprises maintain defibrillators for emergency use. Staff therefore endorses, and we have adopted, this as an appropriate safety and health precaution. (Ex.200, pp. 4.14-12 to 4.14-13.)

portable fire extinguishers, availability of a dust control water truck, and the use of the permanent fire water loop. (Ex. 200, p. 4.4-11.)

During operation, the project will meet the fire protection and suppression requirements of the California Fire Code, all applicable recommended National Fire Protection Association (NFPA) standards (including Standard 850 addressing fire protection at electric generating plants), and all Cal/OSHA requirements. (7/7/09 RT 377:20 to 378:11.) Fire suppression elements will include both fixed and portable fire extinguishing systems. The fire water will be provided on-site by a 750,000 gallon storage tank. Approximately 240,000 gallons of this water will be dedicated to fire suppression. An electric motor-driven pump, a diesel pump, and a jockey pump will be provided. These pumps can maintain a delivery rate of 2,000 gallons per minute to the fire protection loop. (Exs. 1, §§ 2.3.7.1, 2.3.11.5; 200, p. 4.14-12.)

A fixed sprinkler system will be installed in areas of risk and in the warehouse and administrative/control buildings in accordance with NFPA requirements. Fire hydrants supplied by the fire loop will be located at appropriate intervals throughout the facility and a deluge firewater system will protect oil-filled equipment (STG Lube/Hydraulic oil systems and the CTG and STG step-up transformers). A carbon dioxide (CO_2) fire protection system will be provided for the combustion turbine generators and accessory equipment. This system will have fire detection sensors that trigger alarms, shut down the CTGs, turn off ventilation, close ventilation openings, and automatically actuate the CO_2. In addition to the fixed fire protection system, the appropriate class of service portable extinguishers and fire hydrants will be located throughout the facility at code-approved intervals. These systems are a standard NFPA and Uniform Fire Code requirement, and the evidence shows that they will ensure adequate fire protection. (Ex. 200, p.4.14-12.) Conditions of Certification **WORKER SAFETY -1** and **-2** require the project owner, prior to construction and operation of the project, to provide the final Fire Protection and Prevention Program to the Compliance Project Manager and to the Kings County Fire Department (KCFD) to confirm the adequacy of the proposed fire protection measures.

Local fire support services are under jurisdiction of the KCFD. The closest station to the project is the City of Avenal Fire Station, located at 5th Street and Skyline Boulevard, approximately four miles away. Response time from the moment a call is received to arrival at the site is about 11 minutes. The next closest station is the Kettleman City Station, located about 10 miles away; the response time to the site is within 15 minutes. The KCFD has an automatic aid

agreement with the Avenal State Prison Fire Station located at Highway 33 and King Avenue. This station would respond in about 18 minutes. (Ex. 200, p. 4.14-3.)

The KCFD will also be the first responder for hazardous materials incidents. All KCFD firefighters are trained at the level of Emergency Medical Technician Level 1 (EMT-1) and as hazardous material specialists. In the event of a large spill, backup support will be provided by the City of Hanford Hazardous Materials Response Team. This is a Regional State Type II Hazmat team which can respond to the project site in about 30 minutes. In addition, two licensed contractors have been indentified and can be called upon for clean-up in the event of a hazardous materials spill. (*Id.*)

Finally, the evidence establishes that the Avenal Project has only minimal potential to increase the burden on KCFD services. While a large fire at the facility conceivably could require all the KCFD's resources – thus leaving Avenal, Huron, and Kettleman cities vulnerable – the chances of one occurring are remote. The evidence shows that the lack of unique fire hazards associated with a modern gas-fired power plant, the presence of multiple on-site manual and automated fire detection and suppression systems, and the measures contained in the Construction and the Operations Fire Protection and Prevention Plans reasonably assure that the project will not place any significant incremental burden upon local fire protection services. (Ex. 200, p. 4.14-13.)

FINDINGS OF FACT

Based on the uncontroverted evidence, the Commission makes the following findings.

1. Industrial workers are exposed to potential health and safety hazards on a daily basis.

2. To protect workers from job-related injuries and illnesses, the project owner will implement comprehensive Safety and Health Programs for both the construction and the operation phases of the project.

3. The project will employ an on-site professional Safety Monitor during construction and operation.

4. The Avenal Project will include on-site fire protection and suppression systems as the first line of defense in the event of a fire.

5. The Kings County Fire Department (KCFD) will provide fire protection and emergency response services to the project.

6. Existing fire and emergency service resources are adequate to meet project needs.

7. The Avenal Project will not create cumulative adverse impacts upon the fire and emergency response capabilities of the KCFD.

8. The project owner will maintain an automatic defibrillator on-site to provide immediate response in the event of a medical emergency.

9. Compliance with applicable LORS ensures that workers will be adequately protected from health and safety hazards.

10. No soil contamination from the use of agricultural chemicals has been detected on the site.

11. If soil contamination is discovered during construction, Conditions of Certification contained in the **WASTE MANAGEMENT** portion of this Decision assure adequate mitigation.

CONCLUSIONS OF LAW

1. Implementation of the Conditions of Certification, below, and the mitigation measures contained therein will ensure that the project conforms with all applicable laws, ordinances, regulations, and standards on industrial worker health and safety as identified in the pertinent portion of **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

WORKER SAFETY-1 The project owner shall submit to the Compliance Project Manager (CPM) a copy of the Project Construction Safety and Health Program containing the following:

1. a Construction Personal Protective Equipment Program;

2. a Construction Exposure Monitoring Program;

3. a Construction Injury and Illness Prevention Program;

4. a Construction Emergency Action Plan; and

5. a Construction Fire Prevention Plan.

The Personal Protective Equipment Program, the Exposure Monitoring Program, and the Injury and Illness Prevention Program shall be submitted to the CPM for review and approval concerning compliance of the programs with all applicable Safety Orders. The Construction Emergency Action Plan and the Fire Prevention Plan shall be submitted to the Kings County Fire Department for review and comment prior to submittal to the CPM for approval.

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 Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the Kings County Fire Department stating the Fire Department's comments on the Construction Fire Prevention Plan and Emergency Action Plan.

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:

1. an Operation Injury and Illness Prevention Plan;

2. an Emergency Action Plan;

3. a Hazardous Materials Management Program;

4. an Operation Fire Prevention Program (8 CCR § 3221); and

5. a Personal Protective Equipment Program (8 CCR §§ 3401-3411).

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the CPM for review and comment concerning compliance of the programs with all applicable Safety Orders. The Operation Fire Prevention Plan, the Hazardous Materials Management Program, and the Emergency Action Plan shall also be submitted to the Kings County Fire Department for review and comment.

Verification: At least 30 days prior to the start of first-fire or commissioning, the project owner shall submit to the CPM for approval a copy of the Project Operations and Maintenance Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the Kings County Fire Department stating the Fire Department's comments on the Operations Fire Prevention Plan and Emergency Action Plan.

WORKER SAFETY-3 The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards; is capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

1. have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;

2. assure that the safety program for the project complies with Cal/OSHA and federal regulations related to power plant projects;

3. assure that all construction and commissioning workers and supervisors receive adequate safety training;

4. complete accident and safety-related incident investigations and emergency response reports for injuries and inform the CPM of safety-related incidents; and

5. assure that all the plans identified in Conditions of Certification **WORKER SAFETY-1** and **-2** are implemented.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM the name and contact information for the Construction Safety Supervisor (CSS). The contact information of any replacement CSS shall be submitted to the CPM within one business day.

The CSS shall submit in the Monthly Compliance Report a monthly safety inspection report which includes:

1. a record of all employees trained for that month (all records shall be kept on site for the duration of the project);

2. a summary report of safety management actions and safety-related incidents that occurred during the month;

3. a report of any continuing or unresolved situations and incidents that may pose danger to life or health; and

4. a report of accidents and injuries that occurred during the month.

WORKER SAFETY-4 The project owner shall make payments to the Chief Building Official (CBO) for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. Those services shall be in addition to other work performed by the CBO. The Safety Monitor shall be selected by and

report directly to the CBO, and shall be responsible for verifying that the Construction Safety Supervisor, as required in Condition of Certification **WORKER SAFETY-3**, implements all appropriate Cal/OSHA and Energy Commission safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: Prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5 The project owner shall ensure that a portable automatic external defibrillator (AED) is located on-site during construction and operations, and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functioning at all times. During construction and commissioning, the following persons shall be trained in use of the AED and shall be on-site whenever the workers that they supervise are on-site: the Construction Project Manager or delegate; the Construction Safety Supervisor or delegate; and all shift foremen. During operations, all power plant employees shall be trained in use of the AED. The training program shall be submitted to the CPM for review and approval.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM proof that a portable automatic external defibrillator (AED) exists on-site and a copy of the training and maintenance program for review and approval.

E. HAZARDOUS MATERIALS MANAGEMENT

This analysis considers whether the construction and operation of the Avenal Project will create significant impacts to public health and safety resulting from the use, handling, transportation, or storage of hazardous materials.[26] Several locational factors affect the potential for project-related hazardous materials to cause adverse impacts. These include meteorological conditions, terrain characteristics, any special site factors, and the proximity of population centers and sensitive receptors. (Ex. 200, p. 4.4-5.) In addition, sensitive subgroups such as the young, elderly, and those with existing conditions may be at heightened risk from exposure to emitted pollutants.

The parties presented evidence on this topic as part of the public health discussion. (7/7/09 RT 347, 352-53, 370-71, 379-80; Exs. 1, § 6.15, Appen. 6.15-1; 7 (b); 25 (f); 200, § 4.4.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Potential Risks

The evidence of record chronicles the method used to assess risks posed by hazardous materials. This method included the following elements:

- A review of chemicals, the amounts proposed for on-site use, and a determination of the need and appropriateness of their use.

- Chemicals which would be used in small amounts, or whose physical state is such that there is virtually no chance that a spill would migrate off the site and impact the public, were removed from further consideration.

- Measures proposed to prevent spills were reviewed and evaluated. These included engineering controls such as automatic shut-off valves and different size transfer-hose couplings, as well as administrative controls such as worker training and safety management programs.

- Measures proposed to respond to accidents were reviewed and evaluated. These measures included engineering controls such as catchment basins and methods to keep vapors from spreading, as well as administrative controls such as training emergency response crews.

[26] The **WORKER SAFETY AND FIRE PROTECTION** portion of this Decision analyzes the protection of workers from such risks.

- An analysis of the theoretical impacts on the public of a worst-case spill of hazardous materials even with the mitigation measures in place. (Ex. 200, pp. 4.4-6 to 4.4-7.)

Hazardous materials used during construction will include gasoline, diesel fuel, motor oil, hydraulic fluid, welding gases, lubricants, solvents, paint, and paint thinner. No acutely toxic materials will be used on-site during construction. Hazardous materials will be used or stored during operation only in small quantities.

Attachment 1 (incorporated in Condition of Certification **HAZ-1** at the end of this section) lists the hazardous materials that will be used and stored on-site. Condition **HAZ-1** prohibits the project owner from using hazardous materials not listed in Attachment 1, or storing them in greater quantities than specified, without prior approval of the Energy Commission's Compliance Project Manager. None of these materials, except for natural gas and aqueous ammonia as discussed below, pose significant potential for off-site impacts as a result of the quantities on-site, their relative toxicity, their physical state, and/or their environmental mobility. (Ex. 200, pp. 4.4-2, 4.4-7.)

a. Natural Gas

Project operations will involve the handling – but not storage – of large quantities of natural gas. The evidence shows that, while natural gas poses some risk of both fire and explosion, this risk can be reduced to insignificant levels through adherence to applicable codes and the development and implementation of effective safety management practices. For example, National Fire Protection Association (NFPA) Code 85A requires both the use of double-block and bleed valves for gas shut-off and automated combustion controls. These measures will significantly reduce the likelihood of an explosion in gas-fired equipment. Additionally, air purging of the gas turbines will be required prior to start-up, thereby precluding the presence of an explosive mixture. The safety management plan will address the handling and use of natural gas, and the evidence establishes that it will significantly reduce the potential for equipment failure because of either improper maintenance or human error. (Ex. 200, pp. 4.4-2, 4.4-7 to 4.4-8.)

The project will connect, at the Kettleman compressor station, to PG&E's existing natural gas lines. A new 2.8 mile-long, 20 inch pipeline will be built which will travel through farmlands with no residences or public receptors along the route. (Ex. 200, pp. 4.4-7 to 4.4-8.) Various laws and codes govern the construction of

natural gas pipelines. These are intended to minimize the risk to public health and safety from pipeline accidents such as rupture and explosion. For example, current codes address: corrosion failures by requiring the use of corrosion resistant coatings and cathodic corrosion protection; damage from excavation activities by requiring clear marking of the pipeline route; seismic hazards by requiring design and construction in accord with up-to-date standards; and faulty welds by requiring the use of high quality arc welding techniques by certified welders as well as the inspection of such welds. (Ex. 200, p. 4.4-8.)

More specifically, these codes ensure that the following safety features will be incorporated into the design and operation of the natural gas pipeline (as required by current federal and state codes): (1) while the pipeline will be designed, constructed, and tested to carry natural gas at a certain pressure, the working pressure will be less than the design pressure; (2) butt welds will be X-rayed and the pipeline will be tested with water prior to the introduction of natural gas into the line; (3) the pipeline will be surveyed for leakage annually; (4) the pipeline will be marked to prevent rupture by heavy equipment excavating in the area; and (5) valves at the meter will be installed to isolate the line if a leak occurs.

The evidence establishes that conformance with existing codes will ensure minimal risks of pipeline failure. (Ex. 200, p. 4.4-10.)

b. Aqueous Ammonia

The use of aqueous ammonia is necessary to control oxides of nitrogen (NO_x) emissions resulting from natural gas combustion. The evidence of record is in accord that aqueous ammonia is the only hazardous material that could realistically, without proper mitigation, pose a significant risk of off-site impact. This could result from the release of ammonia vapor in the event of a spill. (7/7/09 RT 406; Ex. 200, p. 4.4-11.) The evidence contains a detailed analysis of both the potential impacts resulting from an ammonia spill and the adequacy of measures available to limit the severity of any impacts.

2. Risk Mitigation

The use of aqueous ammonia rather than anhydrous ammonia significantly reduces off-site risks. Anhydrous ammonia is stored as a liquefied gas at high pressure and could explode in an accidental release, resulting in high downwind concentrations. Aqueous ammonia spills are much easier to contain, and

emissions from such spills are limited by the slow mass transfer from the surface of the spilled material. (Ex. 200, pp. 4.4-1 to 4.4-2.)

Avenal will store aqueous ammonia (in a 19 percent solution) in two above-ground ammonia tanks with a maximum capacity of 27,000 gallons each.[27] A secondary containment basin containing floating plastic balls designed to reduce ammonia evaporation from the surface of a spill will surround each storage tank. Both secondary containment structures will be equipped with a 24-inch drain connected to a single underground tertiary containment vault capable of holding the full contents of one tank plus the rainfall associated with a 24-hour, 25-year storm. (7/7/09 RT 375:8-20; Ex. 200, p. 4.4-11.) The testimony establishes that these two types of engineering controls to limit any spills will result in a "state of the art" mitigation design. (7/7/09 RT 407: 1-2.)

To assess the potential impacts associated with an accidental release of aqueous ammonia, the evidence shows that Staff used several benchmark exposure levels of ammonia gas occurring off-site. (Exs. 200, pp. 4.4-11 to 4.4-12; 204.) These include:

a. the lowest concentration posing a risk of lethality, i.e. 2,000 parts per million (ppm);

b. the concentration immediately dangerous to life and health, a level of 300 ppm;

c. the emergency response planning guideline level 2 of 150 ppm; and

d. the level of 75 ppm, considered by the Energy Commission staff to be without serious adverse effects on the public for a one-time exposure.

If the exposure associated with a potential release exceeds 75 ppm at any public receptor, Staff also assesses the probability of occurrence of the release, the severity of the consequences, and the nature of the potentially exposed population in determining whether the likelihood and extent of exposure would be significant.[28] (Ex. 200, pp. 4.4-10 to 4.4-11.)

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[27] Seismic criteria governing storage tanks is addressed in the **FACILITY DESIGN** section of this Decision.

[28] Staff's Hazardous Materials Appendix A (Ex. 200, pp. 4.4-33 to 4.4-34) discusses the criteria for ammonia exposure guidelines, their applicability to sensitive populations, and exposure-specific conditions.

In addition, Applicant performed an off-site consequence analysis (OCA) for the worst-case release scenario. This involved the failure and complete discharge of one of the storage tanks, as well as an alternative release scenario involving a spill during truck unloading which would drain form the sloped truck unloading area through a 10-inch pipe into the underground containment vault beneath the storage tanks. Ammonia emissions from the two potential release scenarios were calculated following methods provided by USEPA guidance. (Exs.1 § 6.15.2.2; 200, pp. 4.4-11 to 4.4-12.)

The evidence indisputably establishes that no ammonia concentrations exceeding 200 ppm would occur off-site. Concentrations exceeding 75 ppm could extend approximately 200 feet beyond the facility's eastern fence line in either worst-case scenario. However, no residences or public receptors are located there, thus removing any threat to the public. (7/7/09 RT 373-76; Ex. 200, p. 4.4-12.)

a. Transportation Risk Reduction

The evidence shows that transport of aqueous ammonia poses the predominant risk to off-site receptors. Ammonia can be released during a transportation accident; the extent of impact would depend upon the location of the accident and the rate of dispersion of ammonia vapor from the surface of the aqueous ammonia pool. The actual likelihood of an accidental release during transport depends upon the tanker driver's skill, the type of transport vehicle, and accident rates. (Ex. 200, p. 4.4-14.)

Aqueous ammonia will be delivered to the facility in DOT-certified vehicles with design capacities of 8,000 gallons. These high-integrity vehicles are designed to DOT Code MC-307, and are suitable for hauling caustic materials such as ammonia. Condition of Certification **HAZ-5** ensures that only tankers which meet or exceed these specifications will be used for ammonia deliveries. (Ex. 200, p. 4.4-15.)

Trucks will travel approximately 2.0 miles from I-5 along the Avenal Cuttoff Road to the power plant.[29] The facility will require about four tanker truck deliveries of aqueous ammonia per month (i.e., 48 annually). This will result in about 96 miles of tanker truck delivery travel in the project area per year. (Ex. 200, p. 4.4-15.)

[29] Condition of Certification **HAZ-6** requires the use of this, the shortest route from the interstate to the project.

U.S. DOT data show that the actual risk of a release from hazardous material transportation is between 0.06 and 0.19 releases per 1,000,000 miles traveled. Staff's transportation risk assessment model shows that there is a total annual risk of 12.8 in 1,000,000 for an accident which results in the release of a hazardous material. Given the inherent conservatism of the assumptions used, the evidence supports the conclusion that the risk of a transportation accident resulting in the release of a hazardous material is insignificant. (7/7/09 RT 373:12-16, 385-86; Ex. 200, p. 4.4-15.)

b. Engineering and Administrative Controls

Engineering controls and administrative controls affect the significance of potential impacts from hazardous materials usage. Engineering controls are those physical or mechanical systems (such as storage tanks or automatic shut-off valves) which can prevent a hazardous material spill from occurring, which can limit the spill to a small amount, or which can confine it to a small area. Administrative controls are those rules and procedures that workers at the facility must follow. These are designed to help prevent accidents or keep them small if they do occur. Timely and adequate emergency spill response is also a crucial factor. (Ex. 200, pp. 4.4-12 to 14.)

The engineered safety features which will be used at the Avenal Project include:

- Storage of petroleum-containing materials in their original containers which are designed to resist impact and prevent releases;

- Construction of secondary containment areas surrounding each of the hazardous materials storage areas (such as the containment basin required by Condition of Certification **HAZ-4** for aqueous ammonia) designed to contain accidental releases that might happen during storage or delivery plus the volume of rainfall associated with a 24-hour, 25-year storm event;

- Physical separation of stored chemicals, in isolated containment areas, in order to prevent accidental mixing of incompatible materials which could result in the evolution and release of toxic gases or fumes;

- Installation of both an automatic sprinkler system and an exhaust system for indoor hazardous materials storage areas;

- Construction of secondary containment areas surrounding each of the aqueous ammonia storage tanks with 24-inch drains leading into an underground vault capable of holding the contents of one tank plus the volume of rainfall associated with a 24-hour, 25-year storm event;

- A sloped pad beneath the aqueous ammonia truck unloading area that drains into the underground vault beneath the storage tanks through a 10-inch opening;

- Use of floating high density polyethylene (HDPE) balls (about 1.5 to 3 inches in diameter) in the secondary containment areas surrounding each ammonia tank to reduce the surface area of evaporating liquid to a tenth of the total surface area; and

- Process protective systems including continuous tank level monitors, temperature and pressure monitors, alarms, excess flow and emergency isolation valves, and a concrete containment structure surrounding the ammonia tanks and piping system. (7/7/09 RT 406-07; Ex. 200, pp. 4.4-12 to 4.4-13.)

Administrative controls also help prevent accidents and releases (spills) from moving off-site and affecting neighboring communities. These include those required in Conditions of Certification **HAZ-1** (limitations on the use and storage of hazardous materials and their strength and volume), Condition **HAZ-2** (Risk Management Plan for aqueous ammonia), and Condition **HAZ-3** (development of a safety management plan). (Ex. 200, pp. 4.4-13 to 4.4-14.)

Worker training programs, process safety management programs, and compliance with all applicable health and safety laws, ordinances, and standards will also reduce risks. The worker health and safety program which will be prepared by the project owner will include (but not be limited to) the following elements:

- Worker training regarding chemical hazards, health and safety issues, and hazard communications;

- Procedures to ensure the proper use of personal protective equipment;

- Safety operating procedures for the operation and maintenance of systems utilizing hazardous materials;

- Fire safety and prevention; and

- Emergency response actions including facility evacuation, hazardous material spill clean-up, and fire prevention. (Ex. 200, p. 4.4-13.)

In order to address the issue of spill response, the project owner will prepare and implement an emergency response plan that includes information on hazardous materials contingency and emergency response procedures, spill containment and prevention systems, personnel training, spill notification and on-site containment, as well as other elements. Emergency procedures will include evacuation, spill cleanup, hazard prevention, and emergency response. (Ex. 1, § 6.15.2.2.11.)

The Kings County Fire Department (KCFD) will be the first responder for hazardous materials incidents. All firefighters at the KCFD are trained to the level of hazardous materials specialists and they are able to arrive on-site within 15 minutes. In the event of a large spill, backup support will be provided by the City of Hanford Hazardous Materials Response Team. This is a Regional State Type II Hazmat team and they are able to respond to the project site in about 30 minutes. In addition, the Applicant has identified two licensed contractors that can be called upon for clean-up in the event of a hazardous materials spill. The evidence indicates that these organizations are capable of handling any hazardous materials related incident posed by the Avenal Project. (Ex. 200, p. 4.4-14.)

Overall, the evidence conclusively establishes that the project's use and storage of hazardous materials, including natural gas and aqueous ammonia, poses a less than significant risk to public health and safety. This includes the theoretical instance of the nearby aqueduct receiving, and being adversely affected by, hazardous materials from the project.[30] (7/7/09 RT 373-75: 5-7; 407:6 to 408:19; see also, Applicant's Opening Brief at 42; Staff's Opening Brief at 8.)

3. Site Security

The hazardous materials used by the Avenal Project are listed by several federal agencies (USEPA, Homeland Security, DOE) in Vulnerability Assessments requiring special site security measures to prevent unauthorized access. (Ex. 200, p. 4.4-17.) The evidence categorizes the Avenal Project as "low

[30] At the evidentiary hearing, Staff's expert witness clarified that even intentionally dumping aqueous ammonia into the aqueduct would not likely cause adverse public health impacts. (Ex. 7/7/09 RT 408:8-18.)

vulnerability" due to its rural setting and absence of close sensitive receptors. Even though federal rules do not strictly apply to this project, the evidence shows that a minimum level of security measures are appropriate in order to protect California's electrical infrastructure from malicious mischief, vandalism, or terrorist attack. In the present instance these include perimeter fencing and breach detectors, alarms, site access procedures for employees and vendors, site personnel background checks, and law enforcement contacts in the event of a security breach. (Ex. 200, p. 4.4-18.)

Site access for vendors will be strictly controlled. Consistent with current state and federal regulations governing the transport of hazardous materials, hazardous materials vendors will have to maintain their transport vehicle fleet and employ only properly licensed and trained drivers. The project owner is required, through the use of contractual language with vendors, to ensure that vendors supplying hazardous materials strictly adhere to the U.S. DOT requirements for hazardous materials vendors to prepare and implement security plans and to ensure that all hazardous materials drivers are in compliance through personnel background security checks. The compliance project manager (CPM) may authorize modifications to these measures or may require additional measures in response to additional guidance provided by the U.S. Department of Homeland Security, the U.S. DOE, or the NERC, after consultation with both appropriate law enforcement agencies and the project owner. (Ex. 200, pp. 4.4-17 to 4.4-18.)

Conditions of Certification **HAZ-7** and **HAZ-8** embody these requirements.

4. Cumulative Risks

Finally, the evidence contains an analysis of potential cumulative impacts. For present purposes, a significant cumulative impact is basically the simultaneous uncontrolled release of hazardous materials from multiple locations in a form (gas or liquid) that could cause a significant impact. The evidence establishes that the Avenal facility poses a minimal risk of an accidental release which could result in off-site impacts. Moreover, it is unlikely that an accidental release, which has a very low probability of occurrence, would independently occur at the project and at another facility at the same time.

There are no facilities within a one-mile radius of the Avenal site that have the potential to cause cumulative hazardous materials impacts. The only facility located in the vicinity is the Avenal water treatment plant which is adjacent to the site but does not store or use ammonia or other materials with potential off-site

impacts. The Great Valley Ethanol Project would be located 27 miles away. At this distance there is no potential for a hazardous materials cumulative impact. The Chemical Waste Management Hazardous Waste Facility is also located a significant distance away (about 7 air miles), in the hills southwest of Kettleman City along SR-41. (Ex. 200, p. 4.4-18.)

The evidence establishes that the project owner will develop a hazardous materials handling program independent of other projects and that the project, as mitigated, poses only a minimal risk of an accidental release of hazardous materials. We therefore conclude that the Avenal facility will not cause, or contribute to, a significant adverse cumulative impact.[31]

FINDINGS OF FACT

Based on the persuasive weight of the evidence of record, the Commission makes the following findings of fact and conclusions of law:

1. The Avenal Project will use hazardous materials during construction and operation, including aqueous ammonia and natural gas.

2. The major public health and safety dangers associated with these hazardous materials include the accidental release of aqueous ammonia as well as fire and explosion from natural gas.

3. Staff's independent analysis indicated that appropriate design measures to contain spilled ammonia are necessary to ensure that no significant off-site public health consequences will result from an accidental ammonia release.

4. A concentration of 75 ppm or less of aqueous ammonia will not cause significant impacts. A worst-case catastrophic release of aqueous ammonia from the Avenal facility will not pose a hazard to the public, nor result in off-site concentrations of greater than 75 ppm in populated areas or in areas with sensitive receptors.

[31] We also note that the evidence of record considered the potential cumulative impacts upon the Cities of Huron and Kettleman City, as well as upon minority/low income populations and sensitive receptors such as a purported existing birth defect cluster in Kettleman City. (7/7/09 RT 371-73; 375:21 to 376:25; 383:12 to 384:14; 391; Ex. 200, 4.4-19 to 4.4-20.) No evidence supports the proposition that the Avenal Project's hazardous materials, as described in this section, would create or add to any impacts.

5. Compliance with appropriate engineering and regulatory requirements for safe transportation, delivery, handling, and storage of ammonia will reduce potential risks of accidental release to insignificant levels.

6. The risk of fire and explosion from natural gas will be reduced to insignificant levels through adherence to applicable codes and the implementation of effective safety management practices.

7. Potential impacts from the other hazardous substances used on-site are not considered significant since quantities will be limited and appropriate storage will be maintained in accordance with applicable law.

8. The project owner will submit an approved Safety Management Plan for handling aqueous ammonia, an approved Hazardous Materials Business Plan, and an approved Risk Management Plan prior to delivery of any hazardous materials to the site.

9. The project owner will ensure that truck deliveries of aqueous ammonia are restricted to the truck delivery route specified in Condition of Certification **HAZ-6**, below.

10. The likelihood of cumulative impacts originating from simultaneous releases of hazardous materials from the Avenal Project and nearby facilities is statistically remote and considered insignificant.

11. No other existing or planned projects are close enough to the Avenal Project to create a credible possibility of cumulative impacts from a simultaneous release of hazardous materials.

12. The analysis of record considered potential effects of a release of hazardous materials upon minority/low income populations and sensitive groups.

CONCLUSIONS OF LAW

1. Implementation of the mitigation measures described in the evidentiary record and contained in the Conditions of Certification, below, ensures that the project will not cause significant impacts to public health and safety as the result of handling, use, storage, or transportation of hazardous materials.

2. With implementation of the Conditions of Certification below, the Avenal Project will comply with all applicable laws, ordinances, regulations, and standards related to hazardous materials management as identified in the evidentiary record and in the pertinent portion of **Appendix A** of this Decision.

3. The Commission concludes that the storage, use, and transportation of hazardous materials associated with the Avenal Project will not result in any significant direct or cumulative adverse public health and safety impacts.

CONDITIONS OF CERTIFICATION

HAZ-1 The project owner shall not use any hazardous materials not listed in Attachment 1, below, or in greater quantities or strengths than those identified by chemical name in Attachment 1, below, unless approved in advance by the Compliance Project Manager (CPM).

Verification: The project owner shall provide to the CPM, in the Annual Compliance Report, a list of hazardous materials contained at the facility.

HAZ-2 The project owner shall concurrently provide a Business Plan and a Risk Management Plan (RMP) prepared pursuant to the California Accidental Release Program (CalARP) to the Kings County Environmental Health Department (KCEHD) and the CPM for review. After receiving comments from the KCEHD and the CPM, the project owner shall reflect all recommendations in the final documents. Copies of the final Business Plan and RMP shall then be provided to the KCEHD for information and to the CPM for approval.

Verification: At least 30 days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final Business Plan to the CPM for approval. At least 30 days prior to delivery of aqueous ammonia to the site, the project owner shall provide the final RMP to the Certified Unified Program Agency for information and to the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for delivery of aqueous ammonia and other liquid hazardous materials by tanker truck. The plan shall include procedures, protective equipment requirements, training, and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials including provisions to maintain lockout control by a power plant employee not involved in the delivery or transfer operation. This plan shall be applicable during construction, commissioning, and operation of the power plant.

Verification: At least 30 days prior to the delivery of any liquid hazardous material to the facility, the project owner shall provide a Safety Management Plan as described above to the CPM for review and approval.

HAZ-4 The aqueous ammonia storage facility shall be designed to either the ASME Pressure Vessel Code and ANSI K61.6 or to API 620. In either

case, the storage tank shall be protected by a secondary containment basin capable of holding 125 percent of the storage volume or the storage volume plus the volume associated with 24 hours of rain assuming the 25-year storm. The final design drawings and specifications for the ammonia storage tank and secondary containment basins shall be submitted to the CPM.

Verification: At least 60 days prior to delivery of aqueous ammonia to the facility, the project owner shall submit final design drawings and specifications for the ammonia storage tank and secondary containment basin to the CPM for review and approval.

HAZ-5 The project owner shall direct all vendors delivering aqueous ammonia to the site to use only tanker truck transport vehicles which meet or exceed the specifications of DOT Code MC-307.

Verification: At least 30 days prior to receipt of aqueous ammonia on-site, the project owner shall submit copies of the notification letter to supply vendors indicating the transport vehicle specifications to the CPM for review and approval.

HAZ-6 At least 30 days prior to receipt of any hazardous materials on-site, the project owner shall direct all vendors delivering any hazardous material to the site to use only the route approved by the CPM. Trucks will travel on I-5 to the Avenal Cutoff Road to the plant site. The project owner shall obtain approval of the CPM if an alternate route is desired.

Verification: At least 30 days prior to receipt of any hazardous materials on-site, the project owner shall submit to the CPM for review and approval copies of notices to hazardous materials vendors describing the required transportation route.

HAZ-7 Prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to the CPM for review and approval. The Construction Security Plan shall include the following:

1. perimeter security consisting of fencing enclosing the construction area;

2. security guards;

3. site access control consisting of a check-in procedure or tag system for construction personnel and visitors;

4. written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on-site or off-site;

5. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency; and

6. evacuation procedures.

Verification: At least 30 days prior to commencing construction, the project owner shall notify the CPM that a site-specific Construction Security Plan is available for review and approval.

HAZ-8 The project owner shall also prepare a site-specific security plan for the commissioning and operational phases that will be available to the CPM for review and approval. The project owner shall implement site security measures that address physical site security and hazardous materials storage. The level of security to be implemented shall not be less than that described below (as per NERC 2002).

The Operation Security Plan shall include the following:

1. permanent full perimeter fence or wall, at least eight feet high;

2. main entrance security gate, either hand operated or motorized;

3. evacuation procedures;

4. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;

5. written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on-site or off-site;

6. A. a statement (refer to sample, **Attachment A**), signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to determine the accuracy of employee identity and employment history and shall be conducted in accordance with state and federal laws regarding security and privacy;

   B. a statement(s) (refer to sample, **Attachment B**), signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by the CPM after consultation with the project owner) that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractors who visit the project site;

7. site access controls for employees, contractors, vendors, and visitors;

8. a statement(s) (refer to sample, **Attachment C**), signed by the owners or authorized representative of hazardous materials transport vendors, certifying that they have prepared and implemented security plans in compliance with 49 CFR 172.880, and that they have conducted employee background investigations in accordance with 49 CFR Part 1572, subparts A and B;

9. closed circuit TV (CCTV) monitoring system, recordable, and viewable in the power plant control room and security station (if separate from the control room) capable of viewing, at a minimum, the main entrance gate and the ammonia storage tank; and

10. additional measures to ensure adequate perimeter security consisting of either:

    A. security guard(s) present 24 hours per day, 7 days per week; **or**

    B. power plant personnel on-site 24 hours per day, 7 days per week, and **all** of the following:

        1. the CCTV monitoring system required in item 9, above, shall include cameras able to pan, tilt, and zoom; have low-light capability; are recordable; and are able to view 100 percent of the perimeter fence, the ammonia storage tank, the outside entrance to the control room, and the front gate from a monitor in the power plant control room; **and**

        2. perimeter breach detectors **or** on-site motion detectors.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to those security plans. The CPM may authorize modifications to these measures, or may require additional measures such as protective barriers for critical power plant components— transformers, gas lines, and compressors—depending upon circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Council, after consultation both with appropriate law enforcement agencies and the Applicant.

Verification: At least 30 days prior to the initial receipt of hazardous materials on-site, the project owner shall notify the CPM that a site-specific operations site security plan is available for review and approval. In the annual compliance report, the project owner shall include a statement that all current project

employee and appropriate contractor background investigations have been performed, and that updated certification statements have been appended to the operations security plan. In the annual compliance report, the project owner shall include a statement that the operations security plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

HAZARDOUS MATERIALS
ATTACHMENT 1

Hazardous Materials Proposed for Use at the Avenal Energy Project

Hazardous Materials Attachment 1
Hazardous Materials Proposed for Use at the Avenal Energy Project

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site	Federal RMP Threshold Quantity
Acetylene	47-86-2	Welding	Health: hazardous if inhaled Physical: combustible, flammable	25 pounds	10,000 pounds
Aqueous Ammonia 19% Solution	7664-41-7	NO_X emissions control in SCR	Health: irritation to permanent damage from inhalation, ingestion, and skin contact Physical: reactive, vapor is combustible	122,500 pounds (24,000 gallons)	20,000pounds (for <20% ammonia)
Carbon Dioxide	124-38-9	Generator Purging Dissolved	Health: asphyxiant Physical: pressure	2,920 pounds (25,200 scf)	NA
Carbon Dioxide	124-38-9	Fire Suppression	Health: asphyxiant Physical: pressure	24,000 pounds	NA
Carbon Dioxide	124-38-9	HRSG Cleaning	Health: asphyxiant Physical: pressure	Not stored on-site (cleaning performed by contractor)	NA
Carbonic Dihydrazide	497-18-7	Boiler Feed Water Dissolved Oxygen Control	Health: Irritant Physical: none	3,400 pounds (400 gallons)	NA
Cyclohexylamine	108-91-8	Boiler Feed Water Corrosion Control	Health: skin irritant, corrosive toxicity Physical: flammable	450 pounds (55 gallons)	NA
Diesel Fuel	68476-34-6	Firewater Pump Engine	Health: none Physical: flammable	1,060 pounds (150 gallons)	NA
Ethylene Glycol	107-21-1	Antifreeze for Closed Cooling Water System and in Inlet Air Chillers	Health: chronic toxicity Physical: moderate flammability, explosive	12,550 pounds (1,458 gallons)	NA
Hydrogen	1333-74-0	Generating Cooling Steam Turbine	Health: none Physical: flammable, pressure, explosive	75 pounds (14,200 scf)	10,000 pounds
Light Petroleum Distillers	8002-05-9	Solvent For Cleaning	Health: none Physical: flammable	310 pounds	
Lubrication Oil	None	Mechanical Equipment	Health: hazardous if ingested Physical: may be flammable/combustible	97,000 pounds (6,200 gallons)	42 gallons

Material	CAS No.	Application	Hazardous Characteristics	Maximum Quantity On Site	Federal RMP Threshold Quantity
Mineral Insulating Oil	None	Electrical Transformers	Health: hazardous if ingested Physical: may be flammable/combustible	412,830 pounds (15,000 gallons)	42 gallons
Morpholine	110-91-8	Boiler Feed Water pH Control	Health: acute toxicity, corrosive skin irritant Physical: flammable	450 pounds (55 gallons)	NA
Natural Gas	None	Gas Turbine Generator and Duct Cleaning Fuel	Health: none Physical: flammable, pressure	1,300 pounds	NA
Nitrogen	7727-37-9	Blanketing	Health: none Physical: pressure	200 scf	
Propane	74-98-6	Forklift Fuel	Health: none Physical: flammable, pressure, explosive	50 pounds	10,000 pounds
Sodium Sulfite	7757-83-7	Auxiliary Boiler Treatment, Oxygen Scavenging	Health: acute and chronic toxicity Physical: reactive irritant	570 pounds (55 gallons)	NA
Sulfuric Acid 29.5%	7664-93-9	Station and Gas Turbine Batteries	Health: acute and chronic toxicity Physical: reactive and corrosive	17,640 pounds (1,500 gallons)	NA

Source: Ex. 1, Table 6.15-1.

SAMPLE CERTIFICATIONS

(Attachments A, B, and C)

SAMPLE CERTIFICATION (Attachment A)

Affidavit of Compliance for Project Owners

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of:

_____

(Company name)

For employment at:

_____

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment B)

Affidavit of Compliance for Contractors

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of:

_____

(Company name)

for contract work at:

_____

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment C)

Affidavit of Compliance for Hazardous Materials Transport Vendors

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that the below-named company has prepared and implemented security plans in conformity with 49 CFR 172.880 and has conducted employee background investigations in conformity with 49 CFR 172, subparts A and B:

_____

(Company name)

for hazardous materials delivery to:

_____

(Project name and location)

as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

F. WASTE MANAGEMENT

The Avenal Energy Project will generate nonhazardous and hazardous wastes during construction and operation. This section reviews the project's waste management plans for reducing the risks and environmental impacts associated with handling, storage, and disposal of project-related nonhazardous and hazardous wastes. The evidence on this topic was undisputed. (Ex. 1, § 6.14; Exs. 7(h), 9, 14(c), 19(b), 21(k), 25(o); Ex. 200, p. 4.13-1 et seq., 7/07/09 RT 447-448.)

Nonhazardous wastes are degradable or inert materials, which do not contain concentrations of soluble pollutants that could degrade water quality and are therefore eligible for disposal at Class II or III disposal facilities. (Cal. Code Regs., tit. 14, § 17200 et seq.)

Hazardous waste consists of materials that exceed criteria for toxicity, corrosivity, ignitability, or reactivity as established by the California Department of Toxic Substances Control (DTSC).[32] State law requires hazardous waste generators to obtain U.S. EPA identification numbers and contract with registered hazardous waste transporters to transfer hazardous waste to appropriate Class I disposal facilities. (Cal. Code Regs., tit. 22, § 66262.10 et seq.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Site Excavation

The certification process requires a Phase I Environmental Site Assessment (ESA) to provide the history of how the site has been used and a list of hazardous waste releases on or near the site to document the presence of any actual or potential soil or water contamination. If there is reasonable potential that the site contains hazardous substances, a Phase II ESA must be conducted to analyze the contamination and to establish a remediation plan. Applicant submitted a Phase I ESA, which was completed October 30, 2007, in accordance with the American Society for Testing and Materials Standard Practice E 1527-05 for ESAs. (Ex. 9; Ex. 200, pp. 4.13-8 to 4.13-9.)

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[32] California Health and Safety Code, section 25100 et seq. (Hazardous Waste Control Act of 1972, as amended) and Title 22, California Code of Regulations, Section 66261.1 et seq.

The ESA found no evidence of any recognized environmental conditions (RECs) associated with the project site.[33] However, the ESA did not address the possible presence of persistent legacy agricultural chemicals remaining in site soils. (Ex. 9, p. 21; Ex. 200, p. 4.13-10.)

The site and surrounding area have been used by Kochergen Farms for agricultural purposes since the 1950s. Over the years, agricultural pesticides were applied to the property by airplane, truck, and/or hand held sprayer; however, state and local regulations have strictly limited use of pesticides to reduce exposure to farmworkers, consumers, and the environment. In August 2008, agricultural production at the project site was certified "organic" by the USDA National Organic Program, which means that no synthetic or prohibited substances (pesticides, herbicides, chemical fertilizers) had been applied to the site for a period of three years since August 2005. (Ex. 19(b), p. 8, "Exhibit C6".) According to the record, no storage or mixing of pesticides has occurred onsite so it is unlikely that construction workers will encounter contemporary agricultural pesticides in site soils during project construction. (Ex. 200, pp. 4.13-9 to 4.13-10; Ex. 19(b), p. 9; Ex. 9, pp. 16, 19 to 20.)

Despite the site's "organic" designation, Staff was concerned that persistent agricultural chemicals could be present at the site and recommended that an evaluation of harmful concentrations of residual chemicals be conducted to ensure there is no risk to public or worker health and safety. Applicant responded that several half-lives of the chemicals have passed, indicating a limited risk. (Ex. 200, p. 4.13-10; Ex. 19(b), pp. 8 to 9.)

We believe that Staff's recommendation represents the best health protective approach. We have therefore adopted Condition of Certification **WASTE-1** to require the Project Owner to conduct a soil sampling analysis for the presence of hazardous agricultural chemicals and to implement remediation measures if the chemical concentrations exceed the levels established by pertinent regulatory agencies. Conditions **WASTE 2** and **WASTE-3** require the Project Owner to further characterize and remediate the site if other hazardous soil conditions are found during site preparation.

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[33] An REC is considered to be the presence or likely presence of any hazardous substances or petroleum products on a property under the conditions that indicated an existing release, past release, or a material threat of a release of any hazardous substance or petroleum products into structures on the property or in the ground, groundwater, or surface water of the property.

The site is located northeast of and down gradient from PG&E's Kettleman Compressor Station, which has been used to compress natural gas since 1929. Wastewater from that facility was formerly contained in unlined surface impoundments but chromium-based corrosion inhibitor was added to the cooling tower make up water between 1959 and 1979. During that time, groundwater collected in monitoring wells located down gradient of the disposal ponds was impacted with chromium constituents. Subsequently, changes in operating procedures at the compressor facility reduced chromium inhibitors and chromium concentrations in groundwater began decreasing by 1988. As of April 1994, neither hexavalent chromium nor total chromium has been detected in groundwater collected from down gradient monitoring wells at concentrations above their respective method detection limits (MDL). According to the ESA, there is no indication that contaminated groundwater is presently found beneath the Avenal Energy site. (Ex. 9, pp. 12 to 15, 20; Ex. 200, p. 4.13-9.)

Based on Staff's request, Applicant submitted a second Phase I ESA, completed September 19, 2008, which evaluated the entire lengths of the project's linear alignments for potential RECs. The second ESA found no environmentally sensitive operations located near the natural gas or water pipeline corridors. (Ex. 14(c); Ex. 200, p. 4.13-11.)

However, the project's transmission line will cross a portion of the Carberry Farms property, which has been used for storage and dispensing of fuels, pesticides, and other hazardous substances that may have adversely impacted the soil. The ESA indicated that during reconnaissance, soil staining was observed while viewing the Carberry property from outside the perimeter fence. Considering the history of use at this property and the observation of stained surface soil, the ESA identified the Carberry Farms property as an REC and recommended that soil disturbance in this area be avoided. The ESA further recommended that additional investigation be conducted if one or more transmission line poles are installed on the Carberry Farms property. (Ex. 14(c), pp. 18 to 19, 21, 23-24; Ex. 200, p. 4.13-11.)

Conditions **WASTE-2** and **WASTE-3** are designed to mitigate any previously unrecognized contaminated soil or groundwater that may be encountered during construction and operation. The Conditions require a registered professional geologist or engineer with experience in remedial investigation to monitor soil excavation and grading activities and to determine whether soil sampling and remediation should be required. Implementation of these measures ensure that exposure to contaminated soils at the Carberry Farms property will be reduced to insignificant levels.

2. Construction

Site preparation and construction of the power plant and its associated facilities will generate both nonhazardous and hazardous wastes in solid and liquid forms. (Ex. 1, § 6.14.2.1; Ex. 200, p. 4.13-12.) Condition **WASTE-4** requires the Project Owner to develop and implement a Construction Waste Management Plan that must identify all waste streams and the methods of managing each waste.

a. Nonhazardous Wastes

Construction of the Avenal Energy Project will generate about 600 tons of nonhazardous solid waste products comprised of vegetation, scrap wood, concrete, steel/metal, paper, glass, and plastics. (Ex. 1, § 6.14.2.1, **TABLE 6.14-2**.) These wastes will be recycled where practical. Non-recyclable wastes will be collected and deposited pursuant to applicable LORS. (Ex. 200, p. 4.13-12.)

Non-hazardous liquid wastes will also be generated during construction, including sanitary wastes, dust suppression drainage, and equipment wash water. Sanitary wastes will be collected in portable, self-contained toilets and pumped periodically for disposal at an appropriate facility. Potentially contaminated equipment wash water will be contained at designated wash areas and transported to a sanitary wastewater treatment facility. See the **SOIL AND WATER RESOURCES** section of this Decision for further discussion of project wastewater. (Ex. 200, p. 4.13-12.)

b. Hazardous Wastes

The total volume of hazardous wastes generated during construction is estimated at 12.5 tons and includes solvents, waste paint, oil absorbents, used oil, oily rags, batteries, cleaning wastes, spent welding materials, and empty hazardous material containers. (Ex. 1, § 6.4.2.1, **TABLE 6.14-2**.) Approximately 6.75 tons of hazardous wastes, which cannot be recycled, will be transported to a Class I landfill. (Ex. 200, p. 6.14-12; Ex. 21(k), p. 47.)

The total volume of liquid hazardous wastes generated during construction is estimated at 6,100 gallons, including oils, paints, and solvents. (Ex. 1, § 6.14.2.1, **TABLE 6.14-2**.) All liquid hazardous waste will be considered for recycling and/or transported to a suitable treatment, storage, or disposal facility. (*Id*.) (Ex. 200, p. 4.13-13.)

Generally, hazardous wastes will be accumulated onsite for less than 90 days and then properly manifested, transported, and disposed at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies. The disposal methods described in the evidentiary record indicate that wastes will be handled in accordance with all applicable LORS. (Ex. 200, p. 4.13-13; Ex. 1 §§ 6.14.2.1, 6.14.2.2; Exs. 7(h), 21(k).)

Condition of Certification **WASTE-5** requires the Project Owner to obtain a unique hazardous waste generator identification number for the site prior to construction. Condition **WASTE-6** requires the Project Owner to notify the Energy Commission's Compliance Project Manager (CPM) whenever any waste management related enforcement action concerning the Avenal Energy Project or its waste disposal contractors is initiated by a regulatory agency. (Ex. 200, p. 4.13-10.)

3. Operation

Condition **WASTE-7** requires the Project Owner to develop and implement an Operation Waste Management Plan to identify all waste streams and the methods of managing each waste. (Ex. 200, p. 4.13-13.)

a. Nonhazardous Wastes

Nonhazardous solid wastes generated during project operation will include routine maintenance wastes (such as used air filters, scrap metal, and plastics) and concentrated process waste (salt cake from the Zero Liquid Discharge system (ZLD) and spent CO oxidation catalyst from the air emissions control equipment), as well as domestic/sanitary and office wastes (such as office paper, newsprint, aluminum cans, glass, and septic system sludge). All non-hazardous wastes will be recycled to the extent feasible, and non-recyclable wastes will be regularly transported offsite to a local solid waste disposal facility. Nonhazardous liquid wastes generated during project operation are discussed in the **SOIL AND WATER RESOURCES** section of this Decision. (Ex. 200, pp. 4.13-13 to 4.13-14.)

b. Hazardous Wastes

Condition **WASTE-5**, which requires the Project Owner to obtain a hazardous waste generator identification number, applies during project operation. Hazardous solid wastes that may be generated during routine project operation

include oil filters and oily rags, spent Selective Catalytic Reduction (SCR) and oxidation catalysts, waste paint and empty containers, as well as batteries, fluorescent light tubes, and similar items. Hazardous liquid wastes include used crankcase oil, used hydraulic oil, chemical cleaning solutions, spent solvents, Combustion Turbine Generator (CTG) wash water and hydrocarbon contaminated water reclaimed from the oil/water separator. (Ex. 1, § 6.14.2.2, **TABLE 6.14-3**.)

The amount of hazardous waste generated during project operation is considered low due to source reduction and recycling when feasible. Hazardous wastes will be temporarily stored onsite and transported by licensed hazardous waste haulers to authorized disposal facilities in accordance with LORS applicable to generators of hazardous waste. Condition **WASTE-6**, *supra*, applies to any waste management-related enforcement action during project operations. (Ex. 200, p. 4.13-14.)

Spills and unauthorized releases of hazardous materials or hazardous wastes may result in contaminated soils. To ensure proper cleanup and management of contamination due to spills, Condition **WASTE-8** requires the Project Owner/Operator to report, clean up, and remediate as necessary, any hazardous materials spills or releases in accordance with applicable law. See also, the **HAZARDOUS MATERIAL MANAGEMENT** section of this Decision. (Ex. 200, p. 4.13-14.)

1. Potential Impacts on Waste Disposal Facilities

Applicant's **WASTE TABLE 6.14-1** identifies three non-hazardous (Class III) waste disposal facilities within ten miles of the site that could potentially take the non-hazardous construction and operation wastes generated by the project.[34] (Ex. 1, § 6.14.1.2, **TABLE 6.14-1**.) The combined remaining capacity for the landfills is over 45 million cubic yards. The total amount of nonhazardous waste generated from project construction and operation will contribute less than 0.001 percent of the available landfill capacity. Thus, disposal of the solid wastes generated by the Avenal Energy Project will not significantly impact the capacity or remaining life of any of these facilities. (*Id*.) (Ex. 200, pp. 4.13 to 15.)

[34] The three landfills are identified as the City of Avenal on North Hydril Road, Coalinga Disposal Site near Hwy 198 and Alcade, and the Kettleman Hills Facility. (Ex. 1, § 6.14.1.2, **TABLE 6.14-1**.)

Hazardous wastes will be transported to one of California's three available Class I landfills: Clean Harbors Buttonwillow Landfill in Kern County, Clean Harbors Westmorland in Imperial County, and Chemical Waste Management Kettleman Hills Landfill in Kings County. The Kettleman Hills facility also accepts Class II, and III waste. In addition, there are several other certified hazardous waste disposal facilities throughout California. Evidence indicates there is sufficient capacity at these facilities to handle the project's hazardous wastes during its operating lifetime. (Ex. 1, § 6.14.1.2; Ex. 200, pp. 4.13 to 15-4.13-16.)

Regarding potential cumulative impacts, the quantities of solid and hazardous wastes generated by the Avenal Energy Project will add to the total quantities of waste generated by new residential and commercial development in California. However the Avenal Energy Project's waste stream is relatively low, recycling efforts will be prioritized, and sufficient disposal capacity is available. As a result, the project's cumulative impacts on disposal facilities will be insignificant for both nonhazardous and hazardous waste disposal. (Ex. 200, p. 4.13-16.)

PUBLIC COMMENT

No public comment was received regarding **WASTE MANAGEMENT**.

FINDINGS OF FACT

Based on the uncontroverted evidence, the Commission makes the following findings:

1. Applicant's Phase I Environmental Site Assessment (ESA) for the site did not identify any recognized environmental conditions (RECs); however, the ESA for the linear facilities corridors identified an REC at the Carberry Farms property along the transmission line corridor.

2. The project will generate nonhazardous and hazardous wastes during excavation, construction, and operation.

3. The Project Owner will implement appropriate characterization, disposal, and remediation measures to ensure that the risk of exposure to contaminated soils at the site or along the linear corridors is reduced to insignificant levels.

4. The project will recycle nonhazardous and hazardous wastes to the extent feasible and in compliance with applicable law.

5. Hazardous wastes that cannot be recycled will be transported by registered hazardous waste transporters to appropriate Class I landfills.

6. Solid nonhazardous wastes that cannot be recycled will be deposited at Class II and III landfills in the local area.

7. Liquid wastes will be classified for appropriate disposal and managed in accordance with the Conditions of Certification listed in the **SOIL AND WATER RESOURCES** section of this Decision.

8. Disposal of project wastes will not result in any significant direct, indirect, or cumulative impacts on existing waste disposal facilities.

CONCLUSIONS OF LAW

1. Implementation of the Conditions of Certification, below, and the waste management practices described in the evidentiary record will reduce potential impacts to insignificant levels and ensure that project wastes are handled in an environmentally safe manner.

2. The management of project wastes will comply with all applicable laws, ordinances, regulations, and standards related to waste management as identified in the pertinent portions of **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

WASTE-1 The Project Owner shall sample site soil to determine the presence of persistent agricultural chemicals and provide a plan to prevent worker exposure if such chemicals are found and shall submit the following reports to the CPM for review and approval:

1. Sampling and Analysis Plan: A soil sampling and analysis plan to determine the presence of agricultural chemicals. In preparing this plan, the Project Owner shall use the California Department of Toxic Substances Control (DTSC) “Interim Guidance for Sampling Agricultural Fields for School Sites (Third Revision August 07, 2008)” as guidance. Should contaminants be detected at levels below the risk-based industrial soil criteria, as defined first in the CalEPA California Human Health Screening Levels (CHHSLs), or if no CHHSL has been developed, then by the San Francisco Bay Regional Water Quality Environmental Screening Levels (ESLs), or if no ESL has been developed, then by the EPA Region 9 Preliminary Remediation Goals (PRGs), then no further sampling and mitigation is required.

2. Human Health Risk Assessment - If agricultural chemicals are detected at levels above the risk-based industrial soil criteria, then the Project Owner shall prepare a human health risk assessment (HRA) and submit this assessment to the CPM for review and approval.

3. Remedial Action Work Plan: If the results of the HRA show there is a significant risk to the off-site public or to site workers (defined as a total cancer risk via all relevant exposure pathways greater than one in one million for the off-site public, a total cancer risk via all relevant exposure pathways greater than 10 in one million for site worker, and a Hazard Index greater than 1.0 for both the off-site public and on-site workers), the Project Owner shall prepare and submit to the CPM a Remedial Action Workplan (RAW) that will ensure that all risks and hazards posed by all relevant exposure pathways are reduced to less than significant. The RAW shall identify remedial measures that include soil removal, refined or enhanced airborne dust mitigation measures (such as increased watering frequency, use of a chemical "wetting agent", continuously covering stockpiled soils), workers wearing personal protective equipment for short durations, or a combination of these measures.

Verification: At least 30 days prior to soil sampling and analysis for the presence of persistent agricultural chemicals, the Project Owner shall submit a sampling and analysis plan to the CPM for review and approval. Not later than 60 days after sampling, the Project Owner shall provide the CPM the results of the sampling and analysis. If the CPM deems it appropriate, the Project Owner shall prepare and submit to the CPM for review and approval, a human health risk assessment and a Remedial Action Workplan not later than 60 days after the CPMs direction to prepare such documents.

WASTE-2 The Project Owner shall provide the resume of an experienced and qualified Professional Engineer or Professional Geologist, who shall be available for consultation during site construction, excavation, and grading activities, to the CPM for review and approval. The resume shall show experience in remedial investigation and feasibility studies.

The Professional Engineer or Professional Geologist shall be given full authority by the Project Owner to oversee any earth moving activities that have the potential to disturb contaminated soil.

Verification: At least 30 days prior to the start of site mobilization, the Project Owner shall submit the resume to the CPM for review and approval.

WASTE-3 If potentially contaminated soil is identified during site construction, excavation, or grading at either the proposed site or along linear facilities, as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the Professional Engineer or Professional Geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the Project Owner, representatives of DTSC, and the CPM stating the recommended course of action.

Depending on the nature and extent of contamination, the Professional Engineer or Professional Geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. The Professional Engineer or Professional Geologist shall contact the Project Owner, the CPM, and representatives of the DTSC for guidance and oversight.

Verification: The Project Owner shall submit any final reports filed by the Professional Engineer or Professional Geologist to the CPM within five days of their receipt. The Project Owner shall notify the CPM within 24 hours of any orders issued to halt construction.

WASTE-4 The Project Owner shall prepare a Construction Waste Management Plan for all wastes generated during construction of the facility and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

- A description of all construction waste streams, including projections of frequency, amounts generated and hazard classifications; and

- Management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans.

Verification: The Project Owner shall submit the Construction Waste Management Plan to the CPM for approval no less than 30 days prior to the initiation of construction activities at the site.

WASTE-5 The Project Owner shall obtain a hazardous waste generator identification number from the United States Environmental

Protection Agency prior to generating any hazardous waste during construction and operations.

Verification: The Project Owner shall keep a copy of the identification number on file at the project site and provide the number to the CPM in the next Monthly Compliance Report.

WASTE-6 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 against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts, and describe how the violation will be corrected.

Verification: The Project Owner shall notify the CPM in writing within 10 days of becoming aware of an impending enforcement action and provide a description and timeline for correction of the violation. The CPM shall notify the Project Owner of any changes that will be required in the way project-related wastes are managed to ensure compliance with LORS.

WASTE-7 The Project Owner shall prepare an Operation Waste Management Plan for all wastes generated during operation of the facility and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

- A detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;

- Management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;

- Information and summary records of conversations with the local CUPA and DTSC regarding any waste management requirements necessary for project activities. Copies of all required waste management permits, notices, and/or authorizations shall be included in the plan and updated as necessary;

- A detailed description of how facility wastes will be managed, and any contingency plans to be employed, in the event of an unplanned closure or planned temporary facility closure; and

- A detailed description of how facility wastes will be managed and disposed of upon closure of the facility.

Verification: The Project Owner shall submit the Operation Waste Management Plan to the CPM for approval no less than 30 days prior to the start of project operation. The Project Owner shall submit any required revisions to the CPM within 20 days of notification from the CPM that revisions are necessary. The Project Owner shall also document in each Annual Compliance Report the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste Management Plan; and update the Operation Waste Management Plan as necessary to address current waste generation and management practices.

WASTE-8 The Project Owner shall ensure that all spills or releases of hazardous substances, hazardous materials, or hazardous waste are documented and cleaned up and that wastes generated from the release/spill are properly managed and disposed of, in accordance with all applicable federal, state, and local requirements.

Verification: The Project Owner shall document management of all unauthorized releases and spills of hazardous substances, hazardous materials, or hazardous wastes that occur on the project property or related linear facilities. The documentation shall include, at a minimum, the following information: location of release; date and time of release; reason for release; volume released; how release was managed and material cleaned up; amount of contaminated soil and/or cleanup wastes generated; if the release was reported; to whom the release was reported; any corrective action and/or cleanup requirements placed by regulating agencies; level of cleanup achieved and actions taken to prevent a similar release or spill; and disposition of any hazardous wastes and/or contaminated soils and materials that may have been generated by the release. A copy of the unauthorized release/spill documentation shall be provided to the CPM within 30 days of the date the release was discovered.

VI. ENVIRONMENTAL ASSESSMENT

A. BIOLOGICAL RESOURCES

The Commission must consider the potential impacts of project-related activities on biological resources, including state and federally listed species, species of special concern, wetlands, and other resources of critical biological interest such as unique habitats. The evidence contained in the record is undisputed (7/7/09 RT 293-334; 327-336; Exs. 1, § 6.6, 3(b), 7(b), 11, 15, 16, 17(g), 17(h), 19(g), 21(b), 25(d), 52, 55, 57, 200 pp. 4.2-1 to 4.2-36, and 204 [draft biological opinion]) and describes the biological resources in the vicinity of the project site and linear alignments, assesses the potential for adverse impacts, and determines whether mitigation measures are necessary to ensure compliance with applicable laws, ordinances, regulations, and standards (LORS).

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Setting

The Applicant's testimony described lands within a 10-mile radius of the proposed site as the "region." (Ex. 1, p. 6.6-2) The region includes agricultural production on the San Joaquin Valley floor, open spaces, and petroleum production in the Guijarral and Kettleman Hills. The portion of the region generally east of Interstate 5 is comprised primarily of agricultural lands with the predominant vegetation communities made up of crop land and orchards/vineyards. Open space and a habitat conservation bank exists in the Kreyenhagen Hills. The Kettleman and Kreyenhagen Hills, in addition to areas farther north and west, support large expanses of grasslands consisting of mostly non-native annual grasses, which are successful at colonizing disturbed soils.[35]

A United States Bureau of Reclamation (USBR) right-of-way dissects the agricultural lands in this region and consists of the man-made concrete-lined San Luis Canal and adjacent maintained grassland swaths that occur between the canal and the edge of the right-of-way. (Ex. 1, p. 6.6-3.) The Department of Water Resources (DWR) manages the San Luis Canal and adjacent grassland areas by mowing and applying occasional pesticide applications. The USBR

[35] Historic native grasses have been replaced over the last 50 years by nonnative vegetative communities. (Ex. 1, p. 6.6-3.)

right-of-way width varies from 20 to 400 feet, with an average of 80 feet in most places The USBR right-of-way provides some habitat, foraging opportunities, and acts as a wildlife corridor. (*Id*.)

The closest natural habitat communities are located within the Kettlemen Hills on the west side of Interstate 5, approximately 2 miles west and southwest of the project. These are noted in **Biological Resources Table 1**. Also listed in the table are the many wildlife species that inhabit the region. While the agricultural lands east of Interstate 5 have low wildlife habitat values due to farming disturbance, natural communities exist west of Interstate 5. These natural communities provide habitat for vegetation and wildlife, including several special status species such as the San Joaquin kit fox, the blunt-nosed leopard lizard, San Joaquin pocket mouse, and the San Joaquin antelope squirrel. The Avenal Energy Project will not directly impact these species and Interstate 5 limits movement of terrestrial wildlife between the Kettlemen Hills and the agricultural lands to the east of where the project lies. (Ex. 1, p. 6.6-5.)

Within the project region, a federal protected species recovery plan has been established to address the loss and fragmentation of habitat in the valley. By connecting large areas of isolated natural land, there should be a reduction in the harmful effects of habitat loss and fragmentation. The Plan[36] lists three core San Joaquin kit fox populations, and the Kettleman Hills provide linkages between these core populations, and also most likely the smaller, more isolated populations in adjacent valleys (USFWS 1998, p. 132). The plan seeks to maintain and enhance connecting corridors so San Joaquin kit fox and other species can move between the Kettleman Hills and the San Joaquin Valley's edge through the farmed gap between the Kettleman and Guijarral Hills, and the Guijarral Hills and the Anticline Ridge, approximately 23 miles northwest of the project site. (Ex. 200, p. 4.2-5.) All of these areas referenced as important in the plan are west of Interstate 5 and would not be affected by the project. However, the San Luis Canal right-of-way, which lies on the east side of Interstate 5 and adjacent to the project site, has been identified by the USFWS as a kit fox movement route through the agricultural region on the San Joaquin Valley floor.

At the local level, City of Avenal designated the project area as an industrial area in 1992 due to the proximity of the natural gas supply pipeline, transmission line, Pacific Gas and Electric's (PG&E) Gates Substation, and Interstate 5. Special

[36] *Recovery Plan for Upland Species of the San Joaquin Valley, USFWS, 1998.*

plant or animal species once associated with the natural habitats historically found in the project area are now only found in the few remaining natural areas in the hills to the west that have not been disturbed by agriculture or development.

The proposed Avenal Energy facilities would be permanently located on a 34.8-acre portion of a 148-acre parcel of agricultural land. The project site and land surrounding has been in agricultural production as croplands, orchards, and vineyards for more than 50 years. The site as has recently been used as an irrigated grain field.

During this proceeding, Applicant and participating wildlife agencies worked together and proposed a 300-foot setback from the edge of the USBR right-of-way along the San Luis Canal of the California Aqueduct to the project security fence onsite. The proposed 300-foot setback will result in a wider open space setback to be used as a wildlife corridor and habitat for state and federally listed species. The Applicant has agreed to redesign the project's original storm water holding basin and project layout to accommodate the setback. (Ex. 200, p. 4.2-5).

2. Potential Impacts and Mitigation

Sensitive wildlife species are found in the project area that could potentially be affected by the Avenal Energy Project. The state Species of Special Concern western burrowing owl (*Athene cunicularia*) is known to occupy areas similar to the soil berms adjacent to the site and within the USBR right-of-way. It is likely that the burrowing owl and other wildlife species use the habitat within the USBR right-of-way, along the San Luis Canal, and the soil berms to the south and east of the site. (Ex. 200, p. 4.2-9.) In addition, the waters of the San Luis Canal support a variety of fish and aquatic insect species which provide foraging opportunities for several birds, including the state Species of Special Concern, double-crested cormorant (*Phalacrocorax auritus*). These have been observed using the canal during the field surveys. (Ex. 1.)

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Biological Resources Table 1
Special Status Species Potentially Occurring in Avenal Energy Area

Plants	**Scientific Name**	**Status**
Round-leaved filaree	*California macrophylla*	__/__/1B.1
California jewel-flower	*Caulanthus californicus*	FE/SE/1B.1
Lemmon's jewel-flower	*Caulanthus coulteri* var. *lemmonii*	__/__/1B.2
Recurved larkspur	*Delphinium recurvatum*	__/__/1B.2
Pale-yellow layia	*Layia herterotricha*	__/__/1B.1
Showy madia	*Madia radiata*	__/__/1B.1
San Joaquin woollythreads	*Monolopia congdonii*	FE/__/1B.2
Invertebrates		
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT/__
Doyen's trigonoscuta dune weevil	*Trigonoscuta* sp.	__/CSC
Amphibians		
California tiger salamander	*Ambystoma californiense*	FT/CSC
Western spadefoot	*Spea hammondii*	__/CSC
Reptiles		
Blunt-nosed leopard lizard	*Gambelia sila*	FE/SE
San Joaquin whipsnake	*Masticophis flagellum ruddocki*	__/CSC
Birds		
Cooper's hawk	*Accipiter cooperi*	__/CSC
Tricolored blackbird	*Agelaius tricolor*	__/CSC
Long-eared owl	*Asio otus*	__CSC
Burrowing owl	*Athene cunicularia*	__/CSC
Swainson's hawk	*Buteo swainsoni*	__/ST
Merlin	*Falco columbarius*	__/CSC
Prairie falcon	*Falco mexicanus*	__/CSC
Loggerhead shrike	*Lanius ludovicanus*	__/CSC
Double-crested cormorant	*Phalacrocorax auritus*	__/CSC
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	__/CSC
Mammals		
Nelson's or San Joaquin antelope squirrel	*Ammospermophilus nelsoni*	__/ST
Short-nosed kangaroo rat	*Dipodomys nitratoides brevinasus*	__/CSC
Tipton kangaroo rat	*Dipodomys nitratoides nitratoides*	FE/SE

Mammals (Continued)	Scientific Name	Status
Western mastiff bat	*Eumopos perotis californicus*	__/CSC
Tulare grasshopper mouse	*Onychomys torridus tularensis*	FE/CSC
San Joaquin pocket mouse	*Perognathus inornatus inornatus*	__/CSC
American badger	*Taxidea taxus*	__/CSC
San Joaquin kit fox	*Vulpes macrotis mutica*	FE/ST

***Status Legend** (Federal/State/California Native Plant Society (CNPS) lists, CNPS list is for plants only):
FE = Federally listed Endangered; **FT** = Federally listed Threatened; **FC** = Candidate Species for Listing; **SE** = State-listed Endangered; **ST** = State-listed Threatened; **CSC** = California Species of Concern; **List 1B** = Rare or Endangered in California and elsewhere; **.1** = Very endangered in California; **.2** = Rare, threatened, or endangered in California, more common elsewhere __ = not listed in that category. (Sources: Avenal Power 2008a; CNDDB 2008).

The evidence of record establishes that the power plant site facilities would permanently occupy approximately 34.8 acres of the 148-acre parcel (Ex. 21(b), Attachment 1). In addition to the facilities inside the security fencing, primary and secondary site access roads will permanently occupy approximately 2.9 acres. There will also be temporary impacts incurred from the heavy equipment staging area, two parking areas, an emergency staging area, and temporary construction disturbance for access roads and pipelines. As shown in Biological Resources Table 2, the temporary disturbances total 39.3 acres of the 148-acre parcel. To reduce construction impacts to biological resources, Applicant has committed to remove the roadbed gravel from temporary disturbance areas in less than 24 months after project construction. Condition of Certification **BIO-14** will determine the actual area impacted both temporarily and permanently and make adjustments in habitat compensation as needed.

Biological Resources Table 2
Avenal Energy Permanent and Temporary
Acreage Impacts on the 148-Acre Parcel

Facility Structure	Permanent Acres	Temporary Acres	Total Acres
Area Inside Security Fencing	31.9 acres	0 acre	31.9 acres
Heavy Equipment Staging Area	0 acres	3.1 acres	3.1 acres
Staff Parking	0 acres	1.5 acres	1.5 acres
Craft Parking	0 acres	4.5 acres	4.5 acres
Construction Laydown	0 acres	23.5 acres	23.5 acres
Emergency Staging Area	0 acres	0.9 acres	0.9 acres
Access Roads	2.9 acres	2.4 acres	5.3 acres
Water pipelines onsite	0 acres	2.03 acres	2.03 acres
Natural gas pipelines onsite	0 acres	1.3 acres	1.3 acres
Total acres	34.8 acres	39.3 acres	74.1 acres

Source: Ex. 200, p. 4.2-10.

Impacts to wildlife species during construction would be minimized through Conditions of Certification. **BIO-1** to **BIO-4.** These Conditions would require the project owner to hire a Designated Biologist and Biological Monitor(s) to ensure that the Avenal Energy Project would be in compliance with the applicable wildlife protection LORS. The Applicant would also need to create and implement a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) as prescribed by Condition of Certification **BIO-6**. The project owner must also prepare a Worker Environmental Awareness Program (WEAP) to train workers for protection of sensitive biological species and to avoid impacts during facility construction and operation (Condition of Certification **BIO-5**). Pre-construction surveys must be carried out according to the *USFWS Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 1999) and the California Burrowing Owl Consortium (CBOC) Survey Protocol and Mitigation Guidelines. (Condition of Certification **BIO-11**). Protection for burrowing owls is contained in Conditions of Certification **BIO-7, BIO-8,** and **BIO-12**). In addition, we require fencing of the USBR right-of-way and soil berms in areas near construction activities to keep workers and equipment from entering habitat and movement corridor areas (Conditions of Certification **BIO-7** and **BIO-8**).

a. Transmission Line Impacts

The project proposes to build an onsite 230 kilovolt (kV) switchyard to connect new transmission lines traveling 6.4 miles off-site to the PG&E Gates Substation. The planned transmission lines would include 43 steel tubular towers at a height of 120 feet each and set 800 feet apart. New transmission line poles will be within areas that are currently orchards and row crops. Temporary disturbance for the transmission line installation would be 2,400 square feet per pole installation site and an additional 1,200 square feet would be permanently impacted for each pole. For the estimated 43 poles, there would be a total of 1.2 acres of permanent surface disturbance and 2.4 acres of temporary disturbance. (Ex. 200, p. 4.2-11.)

Transmission lines can be a collision threat to birds in certain situations. However, the proposed transmission line is not on a major flight corridor adjacent to the San Luis Canal where birds of special-status species such as California condors or double crested cormorants could be affected. As a result, no significant impacts from collisions with new transmission lines are expected. To reduce the risk of bird electrocution at substations, we have included Condition of

Certification **BIO-10**. As a result, any transmission line impacts are expected to be less than significant.

b. Pipeline Impacts

Avenal Energy Project's natural gas pipeline would be 2.5 miles long and consist of a 20-inch diameter pipe connecting with the PG&E Kettleman Compressor Station east of the site. It would be buried beneath dirt roads at the edge of agricultural fields located along Avenal Cutoff Road and Plymouth Avenue after exiting a nearby orchard. The total temporary offsite habitat impacts from the natural gas pipeline would be 1.2 acres. (Ex. 200, p. 4.2-12.)

The sewer and water supply pipelines would be relatively short and located underground at the edge of agricultural fields. The water supply pipeline to the Avenal Water Plant (AWP) would be approximately 0.3 miles long and entirely on-site. A 1.1 mile water pipeline from agricultural wells #18-1 and #18-4 to the project site would be at least 30 feet from the USBR right-of-way within the middle of the agricultural well right-of-way. The total temporary impact of the water pipelines would be 5.4 acres. (*Id*.)

Typically, pipelines are installed with a width of 50 to 75 feet area of disturbance. However the Applicant has committed to maintain pipeline construction within a 25-foot wide area of disturbance. The installation of pipelines will not result in permanent surface disturbance since the pipelines will be underground. The temporary construction impact of 5.4 acres is included in the disturbance acreage impact that will require habitat compensation at a ratio of 0.3 acres of compensation for every acre impacted. The pipelines would have a less than significant effect on biological resources. (*Id.*)

Biological Resources Table 3
Avenal Energy Off-site Linear Facility Permanent and Temporary Acreage Impacts

Facility Structure	Permanent Acres	Temporary Acres	Total Acres
Transmission Line	1.2 acres	2.4 acre	3.6 acres
Water Pipelines	0 acre	5.4 acres	5.4 acres
Natural Gas Pipeline	0 acre	1.2 acre	1.2 acres
Total acres	1.2 acres	9.0 acres	10.2 acres

Source: Exhibit 22, p. 4.2-13

c. Lighting Impacts

Since there would be no nighttime construction on the project, construction lighting would have a less than significant effect on biological resources. The lighting to be used during operations is designed to shield light downward to eliminate escape of light off site. (Ex. 1). Due to the nocturnal habits of the burrowing owl and San Joaquin kit fox, the nighttime lighting on-site should be shielded to light only the power plant site, and not the adjacent areas that serve as sensitive species habitat. Condition of Certification **BIO-7** (Impact Avoidance Mitigation Features) requires appropriate lighting be installed to limit effects to biological resources to less than significant levels.

d. Noise Impacts

Sensitive species such as San Joaquin kit fox and burrowing owls could be within several hundred feet of the construction activities. Studies have shown that animal behavior can change as a result of exposure to noise. The sound levels that can result in behavioral changes range from 60 dBA to 85 dBA, depending on the study and the species. The evidence established that the loudest construction equipment used for construction of the project is expected to be the 250 to 700 horsepower bulldozer and the 6 to 15 cubic yard front end loader, which will range from 68 dBA at 500 feet to 58 dBA at 1,500 feet. (Ex. 200, p. 4.2-13.)

The change in the ambient noise measurement from construction of the proposed project could result in behavioral changes in nearby wildlife. Some sensitive species like the burrowing owl and San Joaquin kit fox could be disturbed by increases in noise, and could abandon burrows or dens due to the increase in noise expected during construction. This disruption from noise due to construction would be expected to last 27 months and occur with different equipment at different times on and off-site.

Construction activities during the nesting season of the state Species of Special Concern tricolored and yellow-headed blackbirds, mid-April to late July, could result in site or nest abandonment if construction and noise occur too close to the colony's nests. To avoid site or nest abandonment, Applicant will install a temporary barrier fence 250 feet from the nearest active nest to establish a construction buffer zone until the nesting season is complete. (Condition of Certification **BIO-8**.) We conclude that implementing these impact avoidance and minimization measures would result in less than significant effects to sensitive species that may nest or occupy the project site and adjacent areas.

Concerning noise levels once the Avenal Energy Project is operational, the evidence established that the predicted operational noise at the eastern property line will be 63 dBA[37]. Staff testified that this level of operational noise is on the low end of the range of 60 to 85dBA which can cause behavioral change in animals and thus has the potential to disturb some sensitive species like the burrowing owl and San Joaquin kit fox. Staff analysis included consultations with CDFG and USFWS biologists who concluded they do not expect any major negative impacts to animals using the adjacent USBR right-of-way as a wildlife corridor and that the impacts of the project would be less than significant for operational noise impacts to biological resources. (Ex. 200, p. 4.2-17.)

Since the Avenal Energy Project would be constructed on an agricultural site, the site provides limited habitat and foraging opportunities for two sensitive species, the Swainson's hawk (state listed threatened) and San Joaquin kit fox (state listed threatened and federally listed endangered). These impacts to sensitive species would require habitat compensation and other mitigation as shown in Table 4 and discussed above. Avenal Energy Project would permanently impact 34.8 acres on-site and 1.2 acres off-site, and temporarily impact 39.3 acres on-site and 9.0 acres off-site, requiring a total of 54.1 acres of compensation habitat. (Ex. 200, p. 4.2-14.)

For the loss of Swainson's hawk habitat, CDFG would require one acre for every acre permanently impacted by Avenal Energy. CDFG has agreed that impacts to Swainson's hawk can be covered by land purchased for San Joaquin kit fox as long as the land is suitable for both species. For the loss of San Joaquin kit fox habitat, CDFG and USFWS would require 1.1 acres for every acre permanently impacted by Avenal Energy and 0.3 acre for every acre temporarily impacted.
Preconstruction survey results will determine if any additional mitigation would be required to address impacts to active burrowing owl burrows. Condition of Certification **BIO-12** (Burrowing Owl Impact Avoidance and Minimization Measures) will address mitigation in the event that burrowing owls are found within 500 feet of the project site or linear facilities.

[37] Ex. 1, Table 6.12-7, p. 6.12-24.

Biological Resources Table 4
Habitat Compensation Acreage Required for the Avenal Energy Project

	Total Impacts (acres)	Compensation Ratio	Compensation Acres Required
Permanent • Power plant • Transmission line towers Total:	 34.8 1.2 36.0	1.1 to 1	39.6
Temporary Onsite Offsite Total:	 39.3 9.0 48.3	0.3 to 1	14.5
TOTAL	84.3 acres		54.1 acres

Source: Exhibit 83-2 from Avenal Power 2008f, Gilliland 2008

The regulatory wildlife biologists involved in this case have agreed upon appropriate mitigation ratios. The Kern Water Bank (KWB) and the Kreyenhagen Hills Conservation Bank (KHCB) have both been deemed acceptable locations to secure the compensatory habitate of 54.1 acres as mitigation. Purchasing habitate at either of these banks would mitigate habitat impacts to a level that is less than significant. (7/7/09 RT 299.)

The region's protected species currently use the area along the San Luis Canal for a wildlife corridor. Therefore, providing open space through a wildlife corridor or setback from the canal is important to allow for wildlife movement. The Applicant has come to an agreement with Energy Commission, CDFG, and USFWS staff that project facilities will be set back 300 feet to maintain the existing wildlife corridor along the canal. Based on the evidence of record we have included Condition of Certification **BIO-7** to implement the establishment and maintenance of the setback. With the establishment of the 300-foot setback and the habitat compensation, we conclude that the Avenal Energy Project will not have a significant impact on any sensitive biological resources. (7/7/09 RT 332.)

e. Storm Water and Wastewater Impacts

Storm water drainage from the proposed project could contain pollutants that would affect the local water quality if not handled appropriately. Storm water that comes in contact with plant facilities that could have oil or other chemicals in the storm water would be routed through an oil/water separator and then collected to be recycled for plant operations. Clean storm water runoff would be collected on-site and drained into a retention basin where water would be allowed to

evaporate or percolate. Wastewater would be routed to a sanitary system connecting to an on-site septic tank and leach field. (Ex. 1)[38]. The Commission concludes that there would be no significant impacts to biological resources associated with the discharge of storm water and wastewater during operations.

f. Cumulative impacts

The other energy projects closest to Avenal Energy that could be considered to create a cumulative habitat loss with Avenal Energy would be the Panoche Energy Center (PEC) Project, Starwood Power-Midway Peaking (Starwood Midway) Project, and Great Valley Ethanol (GVE) Project. The PEC and Starwood Midway Projects are adjacent to each other and are both approximately 55 miles northwest of Avenal Energy. Both projects have compensated for their habitat losses by purchasing land credits in the Kreyenhagen Hills Mitigation Bank as required by the wildlife agencies and Energy Commission. The GVE Project is approximately 27 miles northwest and located within the Kings Industrial Park on property zoned for industrial use.

The Avenal Energy Project site is located in the City of Avenal industrial zone on land currently farmed in field crops. The record establishes that the foraging opportunities for wildlife species are limited on row crop land and that the removal of this land from agriculture would not significantly affect the local common and special status species in the vicinity. (7/7/09 RT 299.) Due to the significant distances PEC, Starwood Midway, and GVE are from the Avenal Energy site, the lack of other new development in the City of Avenal industrial zone, the low urbanization pressures in the area, and the habitat compensation we have required for the Avenal Energy Project, its construction and operation would not significantly affect biological resources and therefore would not contribute to any significant cumulative impact concerns for habitat loss. (Ex. 200, p. 4-2.18.)

Intervenor Rob Simpson introduced no evidence regarding project impacts to biological resources. However, he did question the Staff's witness as to the adequacy of the proposed mitigation measures. (7/7/09 RT 326-331.) The witness explained that the mitigation for project impacts to biological resources, including noise-related impacts, is based on a comprehensive evaluation of the project's direct, indirect, and cumulative impacts to biological resources. The

[38] The **SOIL AND WATER RESOURCES** section of this Decision contains more detailed information on storm water discharge, wastewater treatment, and permitting.

Commisson staff, in consultation with CDFG and USFWS biologists, agreed to apply mitigation ratios to the acreage disturbed. (7/7/089 RT 328.) The ratios are reflected in Condition of Certification **BIO-9** and require the project owner to provide a total of 54.1 acres of habitat compensation to mitigate temporary and permanent project impacts to sensitive species. (Ex. 200, p. 4.2-30.)

3. LORS Compliance

The proposed Avenal Energy would not be located adjacent to any riparian habitat or sensitive natural communities, nor are there federally protected wetlands, including vernal pools or marsh habitats nearby. While there are possible vernal pools within the adjacent USBR right-of-way, these pools would not be impacted by Avenal Energy Project. The proposed project does not conflict with provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan because there are no applicable HCP's or NCCP's for this area.

Avenal Energy would not require a state Incidental Take Permit (ITP), but would require a federal Section 7 of the Endangered Species Act (ESA) take authorization. The Applicant would obtain the Biological Opinion (BO) from the Environmental Protection Agency (EPA) under the Section 7 consultation process with USFWS. If granted, the BO would include a Section 7 take authorization to address the impacts to the federally listed species associated with this project. (See Condition of Certification **BIO-13.**)

The Staff biologist testified that the Commission staff biological analysis was closely coordinated with staff from both CDFG and USFWS. As a result, the record established that the Conditions of Certification reflected below are consistent with the requirements of the USFWS Draft Biological Opinion dated July 1, 2009. (7/7/09 RT 300; Ex. 204.)

FINDINGS OF FACT

Based on the uncontroverted record of evidence, we find the following:

1. The proposed Avenal Energy facilities would be permanently located on a 34.8-acre portion of a 148-acre parcel of disturbed agricultural land.

2. The proposed Avenal Energy Project will temporarily impact 39.3 acres on-site and 9.0 acres off-site.

3. Avenal Energy Project impacts require habitat compensation of 39.6 acres for permanent impacts and 14.5 acres for temporary impacts or a total habitat compensation of 54.1 acres.

4. The Avenal Energy Project power plant site is located in a portion of the City of Avenal which, since 1992, has been zoned for industrial uses.

5. Direct impacts to biological resources onsite would be largely avoided because the proposed Avenal Energy site and laydown areas are currently being used for agriculture.

6. The site provides limited habitat for protected wildlife species such as the state threatened and federal endangered San Joaquin kit fox (Vulpes macrotis mutica) and state threatened Swainson's hawk (Buteo swainsoni). In addition, there are wildlife movement corridors and foraging opportunities immediately adjacent to the site.

7. The evidence contains an analysis of potential adverse impacts of the Avenal Energy Project upon biological resources, including special-status species, which may potentially be affected by project construction and operation.

8. Potential direct impacts to special-status species in the surrounding area can be mitigated with implementation of the 300-foot setback from the USBR right-of-way, habitat compensation, Best Management Practices, and other impact minimization and avoidance measures set forth in the Conditions of Certification.

9. The project owner will implement a construction mitigation management plan by educating workers on habitat protection, and designating a qualified biologist and biological monitors with authority to halt activities to avoid impacts to sensitive resources.

10. The project owner will submit a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) incorporating all biological mitigation and compliance measures required by applicable local, state, and federal LORS.

11. Transmission lines will be designed to reduce the risk of avian collisions and electrocutions. Nighttime lighting will be designed to avoid disruption to wildlife.

CONCLUSIONS OF LAW

1. The project owner will implement appropriate avoidance and mitigation measures to prevent significant adverse impacts to all sensitive species.

2. With implementation of the mitigation measures described in the evidentiary record and incorporated into the Conditions of Certification below, as well as those in other portions of this Decision, the Avenal Energy Project will not result in significant direct, indirect, or cumulative impacts to biological resources.

3. With implementation of the mitigation measures described in the evidentiary record and incorporated into the Conditions of Certification, the Avenal Energy Project will conform to all applicable laws, ordinances, regulations, and standards related to biological resources as identified in the pertinent portion of Appendix A of this Decision.

CONDITIONS OF CERTIFICATION

Designated Biologist Selection

BIO-1 The project owner shall assign a Designated Biologist to the project. The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information to the Energy Commission Compliance Monitor (CPM) for approval.

The Designated Biologist must at least meet the following minimum qualifications:

1. 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; and

3. At least one year of field experience with biological resources found in or near the project area.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the conditions of certification.

Verification: The project owner shall submit the specified information at least 90 days prior to the start of any site (or related facilities) mobilization. No site or site related facility activities shall commence until an approved Designated Biologist is available to be on site.

If a Designated Biologist needs to be replaced, the specified information of the proposed replacement must be submitted to the CPM at least ten working days prior to the termination or release of the preceding Designated Biologist. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM for consideration.

Designated Biologist Duties

BIO-2 The project owner shall ensure that the Designated Biologist performs the following during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, and closure activities. The Designated Biologist may be assisted by the approved Biological Monitor(s), but remains the contact for the project owner and CPM.

1. Advise the project owner's Construction and Operation Managers on the implementation of biological resources Conditions of Certification;

2. Consult on the preparation of the Biological Resource Mitigation Implementation and Monitoring Plan (BRMIMP), to be submitted by the project owner;

3. Be available to supervise, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources such as special status species or their habitat;

4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;

5. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (i.e. parking lots) for animals in harm's way;

6. Notify project owner and CPM of any non-compliance with any biological resources Condition of Certification;

7. Respond directly to inquires of the CPM regarding biological resource issues;

8. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Report and the Annual Report; and

9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training and all permits.

Verification: The Designated Biologist shall submit in the Monthly Compliance Report to the CPM copies of all written reports and summaries that document biological resources activities. If actions may affect biological resources during operation a Designated Biologist shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless their duties are ceased as approved by the CPM.

Biological Monitor Selection

BIO-3 The project owner's CPM-approved Designated Biologist shall submit the resume, at least three references and contact information for the proposed Biological Monitors to the CPM for approval. The resume shall demonstrate to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resources tasks.

Biological Monitor(s) training by the Designated Biologist shall include familiarity with the Conditions of Certification and the BRMIMP, WEAP, and all permits.

Verification: The project owner shall submit the specified information to the CPM for approval at least 30 days prior to the start of any site (or related facilities) mobilization. The Designated Biologist shall submit a written statement to the CPM confirming that individual Biological Monitor(s) have been trained including the date when training was completed. If additional Biological Monitors are needed during construction, the specified information shall be submitted to the CPM for approval 10 days prior to their first day of monitoring activities.

Designated Biologist and Biological Monitor Authority

BIO-4 The project owner's Construction/Operation Manager(s) shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources Conditions of Certification. If required by the Designated Biologist and Biological Monitor(s), the project owner's Construction/ Operation Manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist.

The Designated Biologist shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;

2. Inform the project owner and the Construction/Operation Manager when to resume activities; and

3. Notify the CPM if there is a halt of any activities, and advise the CPM of any corrective actions that have been taken, or will be instituted, as a result of the work stoppage.

If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.

Verification: The project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM immediately (and no later than the morning following the incident, or Monday morning in the case of a Friday or weekend incident) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem.

Whenever corrective action is taken by the project owner, a determination of success or failure will be made by the CPM within five 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.

Worker Environmental Awareness Program

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

The WEAP shall:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media 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;

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

6. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines.

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

Verification: At least 60 days prior to the start of any site (or related facilities) mobilization, the project owner shall provide to the CPM two (2) copies of the proposed WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program.

The project owner shall provide 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. At least 10 days prior to site and related facilities mobilization submit two copies of the CPM approved materials.

The signed training acknowledgement forms from construction shall be kept on file by the project owner for a period of at least six months after the start of commercial operation.

During project operation, signed statements for active project operational personnel shall be kept on file for six months following the termination of an individual's employment.

Biological Resources Mitigation Implementation and Monitoring Plan

BIO-6 The project owner shall submit two copies of the proposed Biological Resources Mitigation Implementation and monitoring Plan (BRMIMP) to the CPM (for review and approval) and to USFWS (for review and comment) and shall implement the measures identified in the approved BRMIMP. The BRMIMP shall be prepared in consultation with the Designated Biologist and shall identify:

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;

2. All biological resources Conditions of Certification identified as necessary to avoid or mitigate impacts;

3. All biological resources mitigation, monitoring, and compliance measures required in federal agency terms and conditions, such as those provided in the USFWS Biological Opinion;

4. All biological resources mitigation, monitoring, and compliance measures required in local agency permits, such as site grading and landscaping requirements;

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

8. A detailed description of measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;

9. All locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;

10. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities - one set prior to any site or related facilities mobilization disturbance and one set taken at the start of commercial operation (see **BIO-14** for more detailed information regarding the aerial photographs taken at time of commercial operation);

11. 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. A plan to return the site to agricultural production after construction;

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

16. A copy of all biological resources-related permits obtained.

Verification: The project owner shall provide the specified document at least 60 days prior to start of any site (or related facilities) mobilization.

The CPM, in consultation with the USFWS and any other appropriate agencies, will determine the BRMIMP's acceptability within 45 days of receipt. If there are any permits that have not yet been received when the BRMIMP is first submitted, these permits shall be submitted to the CPM and the USFWS within five days of their receipt and the BRMIMP shall be revised or supplemented to reflect the permit condition within 10 days of their receipt by the project owner. Ten days prior to site and related facilities mobilization the revised BRMIMP shall be resubmitted to the CPM.

The project owner shall notify the CPM no less than five working days before implementing any modifications to the approved BRMIMP to obtain CPM approval. Any changes to the approved BRMIMP must also be approved by the CPM and submitted to the USFWS to ensure no conflicts exist.

Implementation of BRMIMP measures will be reported in the Monthly Compliance Reports by the Designated Biologist (i.e. survey results, construction activities that were monitored, species observed). Within thirty (30) days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction closure report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases, and which mitigation and monitoring items are still outstanding.

Impact Avoidance Mitigation measures

BIO-7 Any time the project owner modifies or finalizes the project design they shall incorporate all feasible measures that avoid or minimize impacts to the local biological resources, including:

1. Design, install, and maintain transmission line poles, access roads, pulling sites, and storage and parking areas to avoid identified sensitive resources;

2. Eliminate any California Exotic Pest Plants of Concern (CalEPPC) List A species from landscaping plans;

3. Establish a plan to return the site to agricultural production after construction;

4. Prescribe a road sealant that is non-toxic to wildlife and plants that will limit dust on dirt roads;

5. Design, install, and maintain facility lighting to prevent side casting of light towards wildlife habitat;

6. Establish the 300-foot setback zone between the proposed project security fence and the Bureau of Reclamation's San Luis Canal right-of-way. This is intended to minimize effects of the proposed project on San Joaquin kit fox use of the Canal. The applicant has proposed to manage the area between the security fence and the canal as follows:

   A. Mow one to four times each spring, March to May during the grasses peak growing season, to maintain the height of the grass between four and ten inches.

   B. Monitor once every two weeks from March 1 to May 31 to determine if mowing is needed to meet the grassland height criteria.

   C. If the grassland vegetation is succeeded by a native San Joaquin Valley vegetation community, such as valley saltbrush scrub, no mowing will occur.

   D. Ground or vegetation disturbing activities outside of mowing would be prohibited within the buffer zone.

   E. Trash removal would be conducted every three months in the buffer zone.

   F. Human activities not associated with maintaining suitable habitat for San Joaquin kit fox would be prohibited within the buffer zone.

   G. Night lighting within the buffer zone would be prohibited or minimized to the necessary level for security purposes.

   H. The perimeter fence would be constructed to be wildlife compatible, which would allow for unobstructed and unhampered movement through the fence. The internal security fencing would not be a wildlife compatible fence since it would be constructed to preclude human access to the plant;

7. Install a wildlife compatible perimeter fence to allow for unobstructed and unhampered wildlife movement through the fence; and

8. Do not exceed a 25-foot wide disturbance corridor for water and natural gas pipeline installation and 3,600 square foot area of temporary disturbance for transmission tower installation as stated in Exhibit 83-2 (Avenal Power 2008f).

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP. Implementation of the measures shall be reported in

the Monthly Compliance Reports by the Designated Biologist. Within thirty (30) days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report describing how measures for the setback have been completed.

Mitigation Management to avoid Harassment or Harm

BIO-8 The project owner shall implement the following measures (Some of the following measures were adopted from *USFWS Standardized Recommendations for Protection of SJKF Prior to or During Ground Disturbance,* 1999) to manage their construction site, and related facilities, in a manner to avoid or minimize impacts to the local biological resources.

1. Install temporary fencing and provide wildlife escape ramps for construction areas that contain steep walled holes or trenches if outside of an approved, permanent exclusionary fence. The temporary fence shall be hardware cloth or similar materials that are approved by USFWS. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals by the Designated Biologist or Biological Monitor;

2. Make certain all food-related trash is disposed of in closed containers and removed at least once a week from the project site;

3. Prohibit feeding of wildlife by staff and subcontractors;

4. Prohibit non-security related firearms or weapons from being brought to the site;

5. Prohibit pets from being brought to the site;

6. Report all inadvertent deaths of special-status species to the appropriate project representative. Injured animals shall be reported to CDFG and the project owner shall follow instructions that are provided by CDFG. The Sacramento USFWS Office shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during project related activities. Contact USFWS and CDFG for specific notification procedures;

7. Use of rodenticides and pesticides in the project areas will be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which it depends. All uses of such compounds should observe label and other restrictions mandated by the EPA, California Department of Food and Agriculture, and other State and Federal

legislation, as well as additional project-related restrictions deemed necessary by the USF WS.

8. Project-related vehicles shall observe a 20-mph speed limit in all project areas, except on county roads and State and Federal highways; this is particularly important at night when kit foxes are most active. Off-road traffic outside of designated project areas is prohibited.

9. Fence areas with sensitive species and habitat such as the USBR right-of-way, the soil berms to the south of the site, and areas of nesting tricolored and yellow-headed blackbirds to 250 feet from nearest active nest between mid-March through August;

10. Design transmission line poles, access roads, pulling sites, and storage and parking areas to avoid identified sensitive resources;

11. Establish a 300-foot minimum buffer/avoidance zone measured from the edge of the USBR right-of-way to any project related buildings, other structures, impervious surfaces, outdoor activity areas and ornamental landscaped areas to minimize potential disturbance to the San Joaquin kit fox and other sensitive species;

12. Design and construct transmission lines and all electrical components to reduce the likelihood of electrocutions of large birds; and

13. Use hooded lights on the project facilities and face lights downward and away from the San Luis Canal.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist. Within thirty (30) days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report describing how all biological resource-related mitigation measures have been completed.

Habitat Compensation

BIO-9 The project owner shall provide 54.1 acres of habitat compensation for temporary and permanent impacts to San Joaquin kit fox and Swainson's hawk habitat. The compensation ratios agreed upon are 1.1:1 ratio for permanent impacts and 0.3:1 ratio for temporary impacts. The same mitigation lands may be used for both species provided that it is suitable habitat for both species.

Verification: No less than 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall submit written verification

to the CPM, USFWS, and CDFG that the transaction for habitat compensation has occurred.

Compliance With Avian Power Line Interaction Committee Guidelines

BIO-10 The project owner shall design, install, and maintain transmission lines and all electrical components in accordance with the Avian Power Line Interaction Committee, *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006*, to reduce the likelihood of electrocutions of large birds.

Verification: Within 30 days of transmission line construction, the project owner shall submit written and photographic verification to the CPM that the transmission line has been constructed to APLIC guideline specifications.

Pre-construction Surveys

BIO-11 The Designated Biologist shall survey for the presence of sensitive species and nesting birds on the 148-acre proposed project site and within 500 feet of the site and project linear facilities. Preconstruction surveys shall follow *USFWS Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or* During *Ground Disturbance* (USFWS1999) and California Burrowing Owl Consortium Survey Protocol and Mitigation Guidelines.

Verification: At least 14 days prior to the expected start of any project-related site or related facilities mobilization, the project owner shall provide the CPM, USFWS, and CDFG with the survey results and identify any mitigation measures to be employed in consultation with the CPM, USFWS, and CDFG.

Burrowing Owl Impact Avoidance and Minimization Measures

BIO-12 If burrowing owls are found during preconstruction surveys within 500 feet of the project site or linear facilities, then the CDFG burrowing owl guidelines (1995) shall be implemented as follows:

1. Monitor burrowing owl pairs within 500 feet of any activities that exceed ambient noise and/or vibration levels;

2. Establish a 500-foot setback from any active burrow and construct additional noise/visual barriers (e.g., haystacks or plywood fencing) to shield the active burrow from construction activities. Post signs (in both English and Spanish) designating presence of sensitive area;

3. Passively relocate all owls occupying burrows that will be temporarily or permanently impacted by the project and implement the following CDFG take avoidance measures:

   A. Occupied burrows shall not be disturbed during the nesting season (February 1 – August 31) unless a qualified biologist can verify through non-invasive methods that egg laying/incubation

has not begun or juveniles are foraging independently and able to fly;

B. A qualified biologist must relocate owls, confirm that owls have left burrows prior to ground-disturbing activities, and monitor the burrows. Once evacuation is confirmed, the biologist should hand excavate burrows and then fill burrows to prevent reoccupation; and

C. Relocation of owls shall be approved by and conducted in consultation with CDFG.

4. Submit a Burrowing Owl Mitigation and Monitoring Plan to CDFG for review and approval prior to relocation of owls (and incorporate it into the project's BRMIMP) to CDFG and CPM for approval no less than 10 days prior to completing owl relocation and monitoring.

Verification: The project owner shall submit a report to CDFG and the CPM at least 14 days prior to the start of site mobilization that describes when surveys were completed, observations, mitigation measures, and the results of the measures. If owls are to be relocated, the project owner shall coordinate with CDFG on the number of new burrows, their locations, and how any created burrows and compensation land will be protected for the life of the project in a Burrowing Owl Mitigation and Monitoring Plan. Within 30 days after completion of owl relocation and monitoring, and the start of ground disturbance, the project owner shall provide written verification to the CDFG and CPM that burrowing owl mitigation measures have been completed.

Federal Biological Opinion

BIO-13 The project owner shall provide a copy of the Biological Opinion per Section 7 of the federal Endangered Species Act written by the U. S. Fish and Wildlife Service in consultation with U.S. Environmental Protection Agency. The terms and conditions contained in the Biological Opinion shall be incorporated into the project's BRMIMP and implemented by the project owner.

Verification: At least 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall submit to the CPM a copy of the U. S. Fish and Wildlife Service's Biological Opinion and verification that the terms and conditions contained in the Biological Opinion are included in the BRMIMP.

Aerial Photographs

BIO-14 The project owner shall provide aerial photographs of the Avenal Energy site and out 1000 feet surrounding the site, taken at the start of the Avenal Energy power plant operation at a scale of one inch equals 100 feet. The aerial photographs will be used to determine the actual area impacted by the project and can be used to determine if any additional habitat compensation is appropriate.

Verification: Within 30 days following the start of power plant commercial operation, the project owner shall submit to the CPM a copy of the aerial photographs and actual area impacted calculations. Also, the project owner will provide an analysis of whether or not additional habitat compensation is necessary to compensate for additional temporary and permanent impacts and, if additional habitat compensation is necessary, how the additional impacts will be mitigated.

B. SOIL AND WATER RESOURCES

This section focuses on the soil and water resources associated with the Avenal Energy Project, including the project's potential to induce erosion and sedimentation, adversely affect water supplies, and degrade water quality. The analysis also considers site contamination and any potential cumulative impacts to water quality in the vicinity of the project. Mitigation measures are included in the Conditions of Certification to ensure that the project will have no significant impacts on the environment and that it will comply with all LORS. (Exs. 1, 3, 6, 7, 14, 17, 19, 21, 25, 56, 59, 200; 07/07/09 RT 446:7-25.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Soil Resources

The Avenal Energy Project is a 600 megawatt (MW) natural gas-fired, combined cycle electric generating facility. The project will incorporate technologies such as dry cooling, Zero Liquid Discharge (ZLD), dry NO_x reduction and closed loop inlet air chillers to minimize water use. The proposed site location is within the Westside Groundwater Basin on the western edge of the San Joaquin Valley in Kings County, California, about six miles northeast of the City of Avenal. The site lies approximately two miles east of Interstate 5 and adjacent to the right bank of the State Water Project's San Luis Canal. All lands adjacent to the power plant site are currently open farmland except for the water treatment facility which is owned and operated by the City of Avenal. The water treatment facility is located at the northeast corner of the site and the U.S. Bureau of Reclamation (USBR) right of way for the San Luis Canal located along the eastern side of the site. (Ex. 200, p. 4.9-4.)

Currently, the project site is a wheat field. The site has been extensively graded, tilled, planted and farmed for over 40 years. Power plant site development will include construction of the power block, office buildings, parking areas and a stormwater retention basin. The soil at the power plant site consists of Wasco sandy loam. Wasco sandy loam is very deep, well-drained soil formed on alluvial fans and derived primarily from sandstone. The soil has moderately rapid permeability and good drainage. (Ex. 200, p. 4.9-4.)

The transmission line corridor will traverse areas designated as Prime Farmland and Williamson Act contract lands near and north of Avenal Cutoff Road. The transmission line will follow an existing PG&E regional transmission line corridor, thereby minimizing conflict with ongoing agricultural operations. (Ex. 1, p. 6.4-8.)

Three soils (Westhaven Loam, Kimberlina Sandy Loam, and Wasco Sandy Loam), occupy the area traversed by the transmission line corridor. The southern portion of the transmission line corridor near the Avenal Energy Project site is underlain by Wasco Sandy Loam soils. The Westhaven Loam is located at the northern end of the transmission corridor near the Gates Substation. The Westhaven Loam is a very deep, well drained soil found on alluvial fans, formed in alluvium derived predominantly from calcareous sedimentary rock. The Kimberlina Sandy Loam is located along the transmission line corridor between the Westhaven Sandy Loam and the Wasco Sandy Loam. The Kimberlina Sandy Loam is a very deep, well drained soil with moderately rapid permeability found on floodplains and recent alluvial fans. The characteristics of the Wasco Sandy Loam are discussed above. (Ex. 200, p. 4.9-4.)

The water line routes traverse Milham Sandy Loam and Wasco Sandy Loam soils. The Milham Sandy Loam is restricted to a small area adjacent to the San Luis canal. The remaining water line routes traverse areas underlain by Wasco Sandy Loam. Additional soil characteristic data can be found in Table 6.2-3 of the Application for Certification (AFC). (Ex. 200, pp. 4.9-4 to 4.9-5.)

Construction activities can lead to adverse impacts to soil resources including increased soil erosion, soil compaction, loss of soil productivity, and disturbance of soils crucial for supporting vegetation or wetlands. Activities that expose and disturb the soil leave soil particles vulnerable to detachment by wind and water. Soil erosion results in the loss of topsoil and increased sediment loading to nearby receiving waters or sewer systems. (Ex. 200, p. 4.9-10.)

Construction of the Avenal Energy Project will permanently disturb approximately 34.8 acres on-site and 1.2 acres off-site. During construction, there will be additional temporary disturbance of approximately 39.3 acres on-site and nine acres off-site. According to the AFC, it will take a 27-month period to complete project construction. (Ex. 1, p. 2-46.) The earth work will consist of primarily cut and fill grading with excavation for foundations and underground systems. (Ex. 1, p. 2-48.) The record indicates that temporary construction disturbance at any specific location will last no more than 24 months. (Ex. 200, pp. 4.9-10 to 4.9-11.)

The waterline interconnections to the existing groundwater wells that will be used for power plant back up water supply will traverse Prime Farmlands and Williamson Act contract lands. The water line routes generally follow the edges of fields outside of the areas typically planted for agriculture; therefore, their affect on farm land or farming operations will be negligible. Similarly, the natural gas

pipeline that will supply fuel to the power plant will be buried along existing roads and only cross Prime Farmland and Williamson Act lands for a short distance near the northwest corner of the site. (Ex. 200, p. 4.9-11.)

In general, soils of the project site are highly permeable and have low to moderate water erosion potential. However, the coarse texture of the soils causes them to be highly vulnerable to wind erosion, during construction and operation. The implementation of appropriate erosion control measures will help conserve soil resources, maintain water quality, prevent accelerated soil loss, and protect air quality. (Ex. 200, p. 4.9-11.)

The erosion and sedimentation control measures for the construction phase of project development include but are not limited to: wetting the roads in active construction and laydown areas; controlling speed on unpaved surfaces; placing gravel in entrance ways; use of straw bales, silt fences, and earthen berms to control runoff. (Ex. 200, p. 4.9-11.)

During operations, the Power Block area will be covered predominantly with gravel (about 70 percent) and landscaping, serving to prevent wind and water erosion while maintaining a high degree of the pre-project water infiltration capacity into the soil. The balance of the Power Block area (30 percent) will be covered by foundations and paving. The Sediment/Storm Water Retention Facility will offset the loss of permeable surface area by attenuating storm water discharges and promoting water infiltration into the soil. Condition of Certification **SOIL & WATER-3** (which requires implementation of an operation Stormwater Pollution Prevention Plan (SWPPP) fully mitigates any impacts to soil resources that may arise during operation of the Avenal Energy Project. (Ex. 200, p. 4.9-14.)

2. Surface Hydrology, Erosion, Storm Water Management, and Flooding

Several ephemeral streams descend the Kettleman Hills to the west of the site and one terminates in the site vicinity. The stream closest to the site is Arroyo Largo which terminates approximately 1.5 miles west of the site. There is no visible evidence of its channel to the east of its terminus. However, a 100-year flood zone has been mapped along its reach, extending approximately 1.5 miles to the northeast of its visible terminus. (Ex. 200, p. 4.9-7.)

The other surface water body in the site vicinity is the San Luis Canal. The San Luis Canal is located approximately 200 feet northeast of the project site and supplies water to the City of Avenal and to other central and southern California

users. A 100- year flood zone has been mapped along both sides of the canal. The western edge of the mapped zone encroaches upon the northeastern corner of the project site. (Ex. 200, p. 4.9-7.)

Potentially significant water quality impacts could occur during construction, excavation, and grading activities if contaminated or hazardous soil or other materials used during construction were to contact storm water runoff and drain off-site. Water quality could also be potentially diminished if the storm water drainage pattern concentrates runoff in areas that are not properly protected with Best Management Practices (BMPs), causing erosion of soils and sediment discharge off-site and possibly into surface waters. (Ex. 200, p. 4.9-12.)

During construction, the laydown and parking/staging areas will be graded to generally drain from southwest to northeast by means of sheet flow to intercept trenches that will convey collected storm water to the storm water holding basin. The Power Block area will be graded to create a ridgeline through the center of the Block causing sheet flow to be directed to the northwest and southeast where it will be intercepted by perimeter intercept trenches. Following settlement of suspended sediments and attenuation of peak flows, storm water will discharge into an existing depression immediately east of the storm water holding basin.

Several factors contribute to the significant potential for water erosion effects, including the high volume of earth displacement, a long duration for construction, and soil properties that have a low to moderate potential for water erosion. The Applicant recognizes that construction of the Avenal Energy Project will add impervious areas to the site causing an increase in storm water runoff, and has proposed drainage and erosion control measures. (Ex. 200, p. 4.9-12.)

Storm water falling within the plant boundary, outside of potentially contaminated areas, will be collected in a gravity drainage system and routed to the storm water evaporation/percolation basin. The evaporation/percolation basin is designed to capture runoff generated at the site following two back to back 100-year, 24-hour storms. Percolation rates are expected to range between two to six inches per hour. On the basis of two inches per hour, the water surface in the basin will recede approximately 48 inches in a 24 hour period. The basin will be constructed with a spillway on the eastern (down slope) side. The spillway will allow collected water in excess of the design storm to escape the basin and flow into a naturally occurring depression adjacent to the west levee of the San Luis Canal. (Ex. 200, p. 4.9-12.)

Storm water falling onto the relatively small areas containing equipment items that could be a source of contamination will be collected in a segregated drainage system and routed to an oily water sump. The oily water collected in the sump will be treated in an oil/water separator. Clear water will be returned to the plant clear water sump for recycling and the separated oil will be collected and sent to an offsite treatment facility. During grading work, soil will be stabilized by maintaining sufficient water content to make it resistant to erosion by wind and water. (Ex. 200, p. 4.9-12.)

Condition of Certification **SOIL & WATER-1** ensures compliance with State and Federal LORS. The State Water Resources Control Board (SWRCB), in implementing federal law, will require the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) for construction activity for the Avenal Energy Project. Condition of Certification **SOIL & WATER-2** requires Avenal Energy to prepare a Final Drainage, Erosion and Sediment Control Plan (DESCP) for construction to assure BMPs are implemented. The DESCP must include measures for properly storing and containing hazardous materials used, and hazardous waste generated, during the course of construction. Through the proper application of BMPs, the impact to soil and water resources from storm water drainage during construction will be reduced to a level that is less than significant. (Ex. 200, pp. 4.9-12 to 4.9-13.)

During operations, runoff from the Avenal Energy Project site will, in the absence of mitigation, exceed pre-development runoff due to the increase of impervious areas in proportion to the overall site. As a result, Avenal Energy will design the drainage features for the site in accordance with the SWRCB National Pollutant Discharge Elimination System (NPDES) General Permits for management of storm water during both the construction and operations phases of the project. Condition of Certification **SOIL & WATER-1, 2, and 3** will ensure compliance with State and Federal LORS. (Ex. 200, pp. 4.9-13 to 4.9-14.)

The 25-acre Power Block will be gently sloped and surfaced with equipment and foundations, paving, gravel and landscaping. Non-contact areas of the Power Block (where there is no potential for contamination from hazardous materials) will be graded to drain to the northwest and southeast by means of sheet flow away from equipment foundations and into swales, inlets and/or storm sewer pipes along the perimeter of the Power Block. At the north and south sides of the Power Block, the runoff will be conveyed eastward by ditches and culverts into the Sediment/Stormwater Retention Facility. Following settlement of suspended sediments and attenuation of peak flows, storm water will either infiltrate into the

ground, evaporate, or in the case of runoff exceeding design flow, discharge into an existing depression immediately east of the site. During operation, the capacity of the Sediment/Stormwater Retention Facility will be maintained by performing sediment removal as needed. Contact areas (in the vicinity of oil-filled transformers and hazardous materials storage) will drain into a separate collection system and be conveyed through an oil-water separator before it is conveyed to the cooling tower for reuse. Secondary containment structures will be built around the oil-filled equipment and hazardous materials to prevent dispersion in case of a spill. Solid wastes and small amounts of hazardous waste that are generated will be properly accounted for, tracked, handled, and disposed of off-site using licensed transporters and disposal facilities. (Ex. 200, p. 4.9-15.)

A 100-year flood zone has been mapped along both sides of the San Luis Canal. The western edge of the mapped zone encroaches upon the northeastern corner of the project property, however, no structures or other project facilities are planned for this area. Therefore, construction of the project will neither be impacted nor cause impacts resulting from the occurrence of the 100 year flood. (Ex. 200, p. 4.9-13.)

3. Water Resources and Supply

During operation, the Avenal Energy Project is estimated to require a maximum annual supply of 104 acre-feet per year (AFY) of water for process use (101 AFY), domestic use (1 AFY), and landscape irrigation (2 AFY). This water will be supplied to the project from the City of Avenal's water treatment facility which obtains untreated surface water from the adjacent San Luis Canal. The San Luis Canal is operated as part of the Central Valley Project (CVP) by the Bureau of Reclamation and delivers water from the Sacramento-San Joaquin Delta. (Ex. 200, pgs. 4.9-7 to 4.9-8)

The City of Avenal has a contract with the USBR that allocates 3,500 AFY to the City of Avenal. The City of Avenal's water use is roughly split between the Avenal State Prison and the City. While the City's use is relatively predictable, the prison's use is highly variable. (Ex. 200, pp. 4.9-7 to 4.9-8.) Historically, the City of Avenal has not drawn their full contracted allocation from the canal. Over the past 10 years, it has drawn an average of 75 percent of their 3,500 AFY allocation. (Ex. 200, pp. 4.9-16.)

The project will rely on three sources of water for project operations. Untreated raw surface water obtained from the City of Avenal's water treatment plant will be

the primary water supply for all of the project's process water demands. Water for domestic use will be provided from the City of Avenal's potable water supply. The project will also rely on pumped groundwater for the process backup water supply. The project's potential effects on these three water supplies are evaluated below. (Ex. 200, p. 4.9-15.)

Daily water demand during construction will average approximately 8,000 gallons per day for dust control, soil compaction, and other needs. The estimated volume of water needed for construction is approximately 20 acre feet. A sufficient supply of untreated surface water is available to meet the construction water demand, and has been approved for delivery to the project from the City of Avenal. The construction period will last an estimated 27 months. There will not be significant adverse environmental impacts associated with water use during project construction. (Ex. 200, p. 4.9-13.)

Potable water demands during construction will be minimal. The Avenal Energy Project proposes to use bottled water to supply drinking water for the construction workforce. Portable facilities will be used for sanitary needs and operate without water. Therefore, there will not be significant adverse environmental impacts associated with potable water use during project construction. (Ex. 200, p. 4.9-13.)

Groundwater is not expected to be encountered during plant or linear feature excavation activities. If any groundwater is encountered during construction, the water will be collected and discharged to the on-site storm water evaporation/percolation basin. The evidence shows that the likelihood of encountering useable groundwater during construction is remote, and based on the project's dewatering operations, no impacts to groundwater resources will occur during construction of the Avenal Energy Project. (Ex. 200, p. 4.9-13.)

a. Surface Water

The City of Avenal obtains fresh, untreated surface water through a turn out on the CVP's San Luis Canal. The surface water is pumped to the treatment plant located adjacent to the canal for treatment by filtration and chlorination prior to delivery to the City of Avenal and Avenal State Prison. (Ex. 200, p. 4.9-16.)

The maximum monthly consumptive water use for the Avenal Energy Project operation is estimated to be less than 8.7 AF. Surface water storage at the site is sufficient for several days of power plant operation, thereby increasing the

likelihood that even during periods when canal deliveries to the City of Avenal are reduced; there will be an adequate supply of water available for power plant operation. (Ex. 200, p. 4.9-16.)

The City of Avenal has the ability and has agreed to provide untreated surface water to Avenal Energy for power plant process needs (Ex. 1, App. 6.5-3.). The Avenal Energy Project will treat (filter) the surface water on-site to a quality necessary for process needs. The Applicant estimates its maximum water use for plant operations will be 104 AFY which will increase the City of Avenal's draw from the San Luis Canal by 3.9 percent. The increase in the City of Avenal's current draw from the San Luis Canal due to power plant operation is minor and the power plant's contribution to reduction in available surface water for other users will also be minor. Even with the increased draw from the canal, based on historic draws by the City of Avenal, the City would still draw less than their 3,500 AFY allocation. The record does not identify any potential for the degradation of surface water or groundwater caused by project use of untreated surface water. Therefore, the project use of CVP water will not cause significant impacts to either surface water or groundwater resources. (Ex. 200, pp. 4.9-16 to 4.9-17.)

The record also shows that the project's use of surface water will cause no impact to the regional water supply. Nevertheless, to ensure that water use will not exceed the amount evaluated and permitted by the Energy Commission, Conditions of Certification **SOIL & WATER-4** and **-5**, establish the project's annual water-use limits and specify requirements for the metering and reporting of water use. (Ex. 200, p. 4.9-17.)

b. Domestic Water

The Avenal Energy Project will be plumbed to distribute potable water obtained from the City of Avenal's potable water supply. The City of Avenal's potable water supply comes from the San Luis Canal and is treated at the City of Avenal's Water Treatment Plant to be distributed to the City of Avenal's water supply system. The City of Avenal has the ability and has agreed to provide up to 10 acre-feet per year of potable water to Avenal Energy for domestic use. The project's use of surface water for domestic needs is minimal (1 AFY maximum) and will cause no impact to the local or regional water supply. Again, to ensure that water use will not exceed the amount evaluated and permitted by the Energy Commission, Conditions of Certification **SOIL & WATER-4** and **-5** establish the project's annual water-use limit and specifies requirements for the metering and reporting of water use. (Ex. 200, p. 4.9-17.)

c. Groundwater

The maximum monthly consumptive water use for the Avenal Energy power plant operation is estimated to be less than 8.7 AF/month. Avenal Energy expects that, if the backup water supply is ever needed, it will be for a relatively short duration (less than a month). Groundwater will be pumped from neighboring agricultural wells and piped to the facility if a backup water supply is needed. (Ex. 200, p. 4.9-17.)

The record contains analyses of groundwater withdrawal vs. groundwater surface elevation changes within the Westside Sub-basin over the last 30 years. The increasing water levels and related estimated increase in storage indicate the use of 8.7 AF/month will not have a substantial effect on groundwater supplies and recharge in the basin. (Ex. 200, pp. 4.9-17 to 4.9-20.)

The record reflects that Kochergen Farms installed drip irrigation systems and microsprinklers on almond orchards in the immediate vicinity of the Avenal Energy Project site shortly after Kochergen Farms received payment of option agreement funds from the Applicant in association with the Water Supply Agreement between the Applicant and Kochergen Farms. The record shows that this water conservation method is saving approximately 0.50 acre-foot per acre annually over approximately 280 acres of Kochergen Farms property, or 140 acre-feet of water per year. In addition, the project will permanently remove approximately 34.8 acres of land from irrigation at the site. Taken together, these measures save more water each year than the project will use, even when compared to a maximum use scenario (104 AFY), and will result in a net reduction in groundwater pumping from the specified wells. (Ex. 200, p. 4.9-20.)

We find that the limited use of groundwater for emergency backup of process needs will not result in substantial depletion or degradation of groundwater resources or substantially interfere with groundwater recharge. To ensure that groundwater use is consistent with the amount evaluated, Condition of Certification **SOIL & WATER-4** requires metering and reporting of water use. Condition of Certification **SOIL & WATER-5** ensures that use of the water will be secured and imposes caps on water use so there will be no significant impacts to water resources during operation of the Avenal Energy Project. (Ex. 200, p. 4.9-20.)

Summaries of the Avenal Energy Project water use are provided below in **Soil and Water Table 1**.

Soil and Water Table 1
Avenal's Annual Water Demands

Water Use	Maximum Annual Use (AFY) (1)	Average Annual Use (AFY) (2, 3)	Maximum Daily Use (gpm) (4)	Average Daily Use (gpm) (3,5)
Process Water	101	15	66	9.6
Operational Workforce	1	1	1	0.9
Landscape Irrigation	2	2	1	0.9
Contingency (10%)	-----	2	------	1.2
Total Power Plant Use	104	20	68	12.4

(1) The basis for Maximum Annual Use is the Maximum Daily Use flow rate (67.9 gpm) for 8,322 hours.
(2) Annual Use requirements are estimated from weighted daily requirements and plant operations at expected load conditions based on continuous plant consumption at average annual operating conditions of 63°F and 53 percent relative humidity unfired, using a capacity factor of 80 percent, 8,000 hours per year of plant availability, 2,000 hours per year of duct firing, and the ZLDF plant in operation. Both CTG inlet air mechanical chillers are in service.
(3) Includes credit for recycled high purity distillate from ZLDF, lowering raw water makeup and providing demineralized water makeup demand as outlined in the water balance diagram and water balances. Water usage for high ambient cases is also offset by water condensed by the inlet air chillers.
(4) Maximum Daily Use requirements are based on water consumption at average ambient operating conditions of 63°F and 53 percent relative humidity. Both CTG inlet air mechanical chillers are in service with supplemental duct firing in the HRSGs. The ZLDF plant is down for this case.
(5) Average Daily Use requirements are the Annual Use requirements converted to an average daily value.
(Ex. 1, p. 2-17.)

At the evidentiary hearing, Intervenor, CPRE, raised the issue of whether an analysis of the Avenal Energy Project pursuant to Water Code section 10910 was necessary [7/7/09 RT 439:15 through 445:23]. Water Code section 10910 requires a city or county reviewing a project, as defined by Water Code section 10912, to perform a water supply and demand assessment. However, the Avenal Energy Project does not meet any of the parameters for a qualifying project.

Specifically, Water Code section 10912 defines project as a "proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area." [Water Code §10912(a)(5).] The evidence indicates that the Avenal Energy project will have only 25 full-time employees,

occupy only 34 acres, and have only 98,400 square feet of floor space. (Ex. 200, p. 4.8-2, 3-2; Ex. 1, Figure 2.3-3 and Appendix 2-2, Figure B-13.)

Further, Water Code section 10912 also defines project as a "project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project." [Water Code §10912(a)(7).]

The guidelines developed by the Department of Water Resources to aid agencies in interpreting the requirements of this Water Code provision state that "one dwelling unit typically consumes 0.3 to 0.5 acre-feet of water per year." (Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001 to assist water suppliers, cities, and counties in integrating water and land use planning, Department of Water Resources, October 8, 2003, p. 3.) Taking the smallest predicted use of 0.3 acre feet per dwelling, a water use equivalent to a 500 unit dwelling would be 150 acre feet of water per year. The evidence established that Avenal Energy will only use 104 acre feet of water per year at maximum. (Ex. 200, p. 4.9-7.) Therefore, Avenal Energy will not trigger the water supply and demand assessment described in Water Code § 10910.

4. Wastewater

During project construction, hydrostatic testing of pipelines and pressure vessels will require up to 85,000 gallons of water per day. It is estimated that a total of 300,000 gallons of water will be used for testing purposes. After use, this water will be stored in portable tanks and tested. Once the testing confirms that the water is not impacted, it will be released to the storm water basin for disposal through evaporation. If the testing indicates that the water is not suitable for evaporation/infiltration in the storm water collection basin, it will be disposed of at an appropriate facility. (Ex. 200, p. 4.9-14.)

During operations, Avenal Energy proposes two separate wastewater-collection systems. The first is the process wastewater system, which collects all wastewater generated from operation of the plant and delivers it to the zero liquid discharge (ZLD) system. The ZLD system will recover about 90 percent of the wastewater for reuse by the Avenal Energy Project, and will concentrate the solids into a salt cake for disposal at a local Class III landfill. Power plant discharges consisting of leakage and drainage from facility containment areas will be collected in a system of floor drains, sumps, and pipes within the Avenal Energy Project and discharged to an oil/water separator. The oil-free water will be reused in the power production cycle. Condition of Certification **SOIL & WATER-6** will

ensure the ZLD system operates efficiently and the production of wastewater is minimal (Ex. 200, pp. 4.9-20 to 4.9-21.)

The second wastewater-collection system is the sanitary system. The sanitary system will collect wastewater from sinks, toilets, and other sanitary facilities for discharge to an on-site wastewater disposal system consisting of septic tank and associated leach lines. Condition of certification **SOIL & WATER-7** will ensure no significant water or soil related impacts will result from sanitary wastewater disposal. (Ex. 200, p. 4.9-21.)

The record indicates that there is no evidence of past or present hazardous substance use, storage, or disposal on the property. There is also no indication that contaminated groundwater is present beneath the Avenal Energy Project site. Nevertheless, a soil sampling program will be required in the **WASTE MANAGEMENT** section of this Decision to address any potential for impacts to workers from any possible residual agricultural chemicals that may remain at the site. (Ex. 200, p. 4.9-21.)

5. Cumulative Impacts and Mitigation

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. [14 Cal. Code Regs., § 15065(A)(3).] Cumulative impacts can result from actions taking place over time in the same area that are minor when taken individually, but are collectively significant. (Ex. 200, p. 4.9-22.)

The Avenal Energy Project is situated in an extensive agricultural area. Agricultural production is highly variable based on weather and market trends. Agriculture consumes large volumes of water which, in this area, is supplied mainly by deep groundwater wells. Deliveries of surface water for agricultural production are extremely variable and dependent upon climatic conditions. During periods of low precipitation (drought), the USBR severely restricts deliveries of surface water for agriculture. As a result, agriculture relies on groundwater pumped from wells. During these drought conditions, deliveries for industrial and municipal uses have priority over other uses and sufficient surface water supply will be available from the canal. Therefore, the record concludes

that agriculture demand will not have an impact on availability of surface water deliveries necessary for power plant needs. (Ex. 200, p. 4.9-22.)

The record identifies four other projects in the vicinity of the Avenal Energy Project. These projects include the Panoche Energy Center (located approximately 55 miles to the northwest), the Starwood Power-Midway Peaking Project (located adjacent to the Panoche Energy Center), the Great Valley Ethanol Project (located approximately 27 miles to the northwest), and the San Joaquin Solar 1 & 2 Project (located approximately five miles northwest). (Ex. 200, p. 4.9-22.)

The evidence shows that Panoche Energy Center uses groundwater obtained from deep groundwater wells and will not affect surface water supplies. The Starwood Power-Midway Peaking Project will use either Baker Farms backwash water or groundwater obtained from the underlying semi-confined aquifer and likewise will not affect surface water supplies. (Ex. 200, p. 4.9-22.)

The Great Valley Ethanol Plant will use water from the City of Hanford's municipal water supply system. The City of Hanford obtains its water from the groundwater aquifer beneath the city. All process water from the Great Valley Ethanol Plant will be reused in the process. While water is apparently available as stipulated in the Urban Water Management Plan, the project may require improvements to the water system. A supplemental water well, tanks or booster pumps may be required to provide the required fire flow. The evidence indicates that the Great Valley Ethanol Project will not affect surface water supplies for the Avenal Energy Project facility. (Ex. 200, pp. 4.9-22 to 4.9-23.)

The proposed San Joaquin Solar 1 & 2 Power Plant Project would use groundwater from the Pleasant Valley sub-basin on a temporary basis until recycled water from the city of Coalinga can be delivered. The evidence establishes that use of these supplies will not affect the proposed surface water supply. The backup supply for the Avenal Energy Project will be obtained from the Westside groundwater sub-basin. The Westside sub-basin and Pleasant Valley sub-basin are part of the San Joaquin Valley groundwater basin. Water levels in the Pleasant Valley sub-basin are in decline, while water levels and groundwater storage have increased over time in the Westside sub-basin. The evidence of record establishes that limited use of groundwater from the Westside sub-basin will have no cumulative impacts on the Pleasant Valley sub-basin. (Ex. 200, p. 4.9-23.)

The Applicant has executed a service agreement with the City of Avenal for annual delivery of 200 acre-feet of surface water. The Committee believes this is an acceptable amount of water provided that the project complies with Condition of Certification **SOIL & WATER-5**. The Avenal Energy Project will have to justify any increase in water use above 104 AFY. Avenal Energy will have to obtain prior approval from the Compliance Project Manager (CPM) for any additional volume. Based upon the evidence received and Conditions imposed, we find that there are no significant cumulative impacts in the site vicinity that will result from operation of the Avenal Energy Project. (Ex. 200, p. 4.9-23.)

6. Compliance with LORS

a. CLEAN WATER ACT

Avenal Energy will satisfy the requirements of the General NPDES Storm Water Permits under Conditions of Certification **SOIL & WATER-1** and **-3** which, in addition to the requirements of the NPDES permits, requires the development and implementation of a SWPPP for both construction and industrial activities. (Ex. 200, p. 4.9-23.)

b. PORTER-COLOGNE WATER QUALITY CONTROL ACT

Avenal Energy will satisfy the applicable requirements of the Porter-Cologne Water Quality Control Act through implementation of the DESCP and SWPPPs, as well adherence with the discharge requirements of the county's Municipal Storm Water NPDES Permit. (Ex. 200, p. 4.9-24.)

c. STATE WATER POLICY: SWRCB POLICY 75-58 AND ENERGY COMMISSION—*INTEGRATED ENERGY POLICY REPORT (IEPR)* - POWER PLANT WATER USE AND WASTEWATER DISCHARGE POLICY

Article 10, Section 2, of the California Constitution requires that state water resources be put to beneficial use to the fullest extent possible and prohibits waste, unreasonable water use or unreasonable method of water use. In order to better define what "unreasonable use" means in relation to power plant cooling, the SWRCB issued Resolution 75-58, "Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling" (Resolution 75-58). It sets forth a list of preferable water sources for power plant cooling in order of priority as follows: (1) wastewater being discharged to the ocean, (2) ocean, (3)

brackish water from natural sources or irrigation return flow, (4) inland wastewaters of low TDS, and (5) other inland waters. (Ex. 200, p. 4.9-24.)

In the ***2003 IEPR***, consistent with State Water Resources Control Board Policy 75-58 and the Warren-Alquist Act, the Energy Commission reiterated State Water Policy, stating it will approve the use of fresh water for cooling purposes by power plants only where alternative water supply sources and alternative cooling technologies are shown to be "environmentally undesirable" or "economically unsound." Due to the project's design incorporating dry cooling, ZLD, and dry NO_x reduction technologies, the Avenal Energy Project is in compliance with the State Water Policy and its intent to discourage the use of fresh water for power plant cooling. (Ex. 200, p. 4.9-24.)

7. Agency and Public Comments

Gloria Preciado commented that she opposed the project. She mentioned that, in the past, PG&E "put the chemicals in the aqueduct [a]nd the residents contracted illness that they are still suffering with" (07/07/09 RT 317:17-20.)

The record indicates that there is no evidence of past or present hazardous substance use, storage, or disposal on the site. There is also no indication that contaminated groundwater is present beneath the Avenal Energy Project site. We are satisfied that the analysis of the wastewater management, zero liquid discharge system, septic system, and all of the stormwater drainage and pollution discharge safeguards contained in Conditions of Certification **SOIL & WATER-1 and -2** fully mitigate any potential impacts to soil and water resources that the project may cause. We find that the Avenal Energy Project will not result in any unmitigated, significant project-specific or cumulative adverse impacts to Soil or Water Resources.

FINDINGS OF FACT

1. Construction of the Avenal Energy Project will permanently disturb approximately 34.8 acres on-site and 1.2 acres off-site.

2. During construction, there will be additional temporary disturbance of approximately 39.3 acres on-site and nine acres off-site.

3. It will take 27 months to complete construction of the project.

4. The Sediment/Storm Water Retention Facility will offset the loss of permeable surface area by attenuating storm water discharges and promoting water infiltration into the soil.

5. Avenal Energy must prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) for construction activity as required by the State Water Resources Control Board (SWRCB) in implementing federal law.

6. Condition of Certification **SOIL & WATER-2** requires Avenal Energy to prepare a Final Drainage, Erosion and Sediment Control Plan (DESCP) for construction to assure BMPs are implemented.

7. Through the proper application of BMPs, the impact to soil and water resources from storm water drainage during construction will be reduced to a level that is less than significant.

8. Avenal Energy will design the drainage features for the site in accordance with the State Water Resources Control Board NPDES General Permits for management of storm water during both the construction and operations phases of the project.

9. Construction of the Avenal Energy Project will have no impact nor be impacted by the occurrence of the 100-year flood.

10. The Avenal Energy facility is estimated to require a maximum annual supply of 104 acre-feet per year (AFY) of water for process use, domestic use, and landscape irrigation.

11. The Avenal Energy facility will use untreated surface water and potable water supplied by the City of Avenal.

12. The estimated annual water requirement for operational workforce needs is one AFY.

13. The estimated total volume of water needed for construction is approximately 20-acre feet.

14. A sufficient supply of untreated surface water is available meet the construction water demand and has been approved for delivery to the project from the City of Avenal.

15. The Avenal Energy Project is not a qualifying project under Water Code section 10910.

16. There will be no significant adverse environmental impacts associated with water use during project construction.

17. Avenal Energy will use bottled water to supply drinking water for the construction workforce and portable facilities that operate without water, for sanitary needs.

18. The project's use of CVP water will not cause significant impacts to either surface water or groundwater resources.

19. The project's use of surface water will cause no significant impact to the regional water supply.

20. Condition of Certification **SOIL & WATER-4** identifies requirements for the metering and reporting of water use by the project.

21. The limited use of groundwater for emergency backup of process needs will not result in a substantial depletion or degradation of groundwater resources or substantially interfere with groundwater recharge.

22. Backup water supply will adequately suffice during short-term interruptions in water deliveries and will have less than a significant impact on water resources.

23. Condition of Certification **SOIL & WATER-5** ensures that use of the water will be secured and imposes caps on water use so there will be no significant impacts to water resources during operation of the Avenal Energy Project facility.

24. The likelihood of encountering useable groundwater during construction is remote such that no impacts to groundwater resources will occur during construction of the Avenal Energy Project.

25. Condition of Certification **SOIL & WATER-6** will ensure the ZLD operates efficiently and the production of waste water is minimal.

26. **SOIL & WATER-7** will ensure no significant water or soil related impacts will result from sanitary waste water disposal.

27. There is no evidence of past or present hazardous substance use, storage, or disposal on the property.

28. There is also no indication that contaminated groundwater is present beneath the Avenal Energy Project site.

29. There are no significant cumulative impacts in the site vicinity that will result from operation of the Avenal Energy Project.

The Avenal Energy Project will not use fresh water for cooling and is therefore consistent with the SWRCB Policy 75-58 and the Energy Commission's policy of discouraging the use of fresh water for power plant cooling.

CONCLUSIONS OF LAW

1. The Avenal Energy Project will not result in any unmitigated, significant project-specific or cumulative adverse impacts to Soil or Water Resources.

2. The Avenal Energy Project will comply with all applicable LORS with implementation of the Conditions of Certification set forth herein.

CONDITIONS OF CERTIFICATION

SOIL & WATER-1: The Project Owner shall comply with the requirements of the general National Pollutant Discharge Elimination System (NPDES) permit for discharge of stormwater associated with construction activity. The Project Owner shall develop and implement a construction stormwater pollution prevention plan (construction SWPPP) for the construction of the Avenal Energy site, laydown area, and all linear facilities.

Verification: The Project Owner shall submit to the CPM a copy of the construction SWPPP prior to site mobilization and retain a copy on site. The Project Owner shall submit copies to the compliance Project Manager (CPM) of all correspondence between the Project Owner and the Central Valley Regional Water Quality Control Board regarding the NPDES permit for the discharge of stormwater associated with construction activity within 10 days of its receipt or submittal. Copies of correspondence shall include the notice of intent sent to the State Water Resources Control Board, and the Board's confirmation letter indicating receipt and acceptance of the notice of intent.

SOIL & WATER-2: Prior to site mobilization, the Project Owner shall obtain CPM approval for a site-specific drainage, erosion, and sediment control plan (DESCP). The DESCP must ensure proper protection of water quality and soil resources, demonstrate no increase in off-site flooding potential, include provisions for sediment and storm water retention, and identify all monitoring and maintenance activities. The DESCP shall contain elements 1 through 9 below outlining site management activities and erosion- and sediment-control BMPs to be implemented during site

mobilization, excavation, construction, and post construction (operating) activities.

A. **Vicinity Map** – A map(s) at a minimum scale 1”=100’ shall be provided indicating the location of all project elements (construction site, laydown area, pipelines) with depictions of all significant geographic features including swales, storm drains, and sensitive areas.

B. **Site Delineation** – All areas subject to soil disturbance for the Avenal Energy Project (project site, laydown area, all linear facilities, landscaping areas, and any other project elements) shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, pipelines, roads, and drainage facilities.

C. **Watercourses and Critical Areas** – The DESCP shall show the location of all nearby watercourses including swales, storm drains, and drainage ditches. It shall indicate the proximity of those features to the Avenal Energy power plant construction, laydown, and landscape areas and all transmission and pipeline construction corridors.

D. **Drainage Map** – The DESCP shall provide a topographic site map(s) at a minimum scale 1”=100’ showing existing, interim, and proposed drainage swales and drainage systems and drainage-area boundaries. On the map, spot elevations are required where relatively flat conditions exist. The spot elevations and contours shall be extended off site for a minimum distance of 100 feet.

E. **Drainage of Project Site Narrative** – The DESCP shall include a narrative of the drainage measures to be taken to protect the site and downstream facilities. The narrative shall include the summary pages from the hydraulic analysis prepared by a professional engineer and erosion control specialist. The narrative shall state the watershed size(s) in acres that was used in the calculation of drainage features. The hydraulic analysis shall be used to support the selection of BMPs and structural controls to divert off-site and on-site drainage around or through the Avenal Energy site and laydown and linear areas.

F. **Clearing and Grading Plans** – The DESCP shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections, or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and proposed

topography shall be illustrated tying in proposed contours with existing topography.

G. **Clearing and Grading Narrative** – The DESCP shall include a table with the quantities of material excavated or filled for the site and all project elements (project site, laydown area, transmission and pipeline corridors, roadways, and bridges) whether such excavation or fill is temporary or permanent, and the amount of such material to be imported or exported.

H. **Best Management Practices Plan** – The DESCP shall identify on the topographic site map(s) the location of the site specific BMPs to be employed during each phase of construction (initial grading, project element excavation and construction, and final grading/stabilization). BMPs shall include measures designed to prevent wind and water erosion.

I. **Best Management Practices Narrative** – The DESCP shall show the location (as identified in H above), timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during all project element (site, pipelines) excavations and construction, final grading/stabilization, and post-construction. Separate BMP implementation schedules shall be provided for each project element for each phase of construction. The maintenance schedule shall include post-construction maintenance of structural-control BMPs, or a statement provided about when such information will be available.

Verification: No later than 90 days prior to start of site mobilization, the Project Owner shall submit a copy of the DESCP to Kings County and the Central Valley Regional Water Quality Control Board (CVRWQCB) for review and comment. No later than 60 days prior to start of site mobilization, the Project Owner shall submit the DESCP with the county's and CVRWQCB's comments to the CPM for review and approval. The CPM shall consider comments by the county and CVRWQCB before approval of the DESCP. The DESCP shall be consistent with the grading and drainage plan as required by Condition of Certification **CIVIL-1**, and relevant portions of the DESCP shall clearly show approval by the chief building official. The DESCP shall be a separate plan from the SWPPP developed in conjunction with any NPDES permit for Construction Activity. The Project Owner shall provide in the monthly compliance report a narrative on the effectiveness of the drainage, erosion, and sediment-control measures and the results of monitoring and maintenance activities. Once operational, the Project Owner shall update and maintain the DESCP for the life of the project and shall provide in the annual compliance report information on the results of monitoring and maintenance activities.

SOIL & WATER-3: The Project Owner shall comply with all of the requirements of the General NPDES Permit for Discharges of Storm Water

Associated with Industrial Activity. The Project Owner shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP) for the operation of the power plant (operation SWPPP). The Project Owner shall keep the CPM informed of any modifications to the permit.

Verification: The Project Owner shall submit to the CPM a copy of the operation SWPPP prior to commercial operation and retain a copy on-site. The Project Owner shall submit to the CPM copies of all correspondence between the Project Owner and the CVRWQCB about the General NPDES permit for the Discharge of Storm Water Associated with Industrial Activity within 10 days of its receipt or submittal. This information shall include copies of the Notice of Intent and Notice of Termination for the project.

SOIL & WATER-4: The Project Owner shall use untreated surface water supplied from the city of Avenal Water Treatment Plant as its water supply for process water, landscape irrigation and for other approved non-potable uses. The Project Owner shall use untreated groundwater supplied from Kochergen Farms' agriculture wells as its backup water supply for process water, landscape irrigation and for other approved non-potable uses. Potable water will be provided to the site from the city of Avenal municipal water supply.

Prior to the use of these water sources for process needs and for domestic use during commercial operation, the Project Owner shall install and maintain metering devices as part of the water supply and distribution systems to monitor and record, in gallons per day, the total volume(s) of water supplied to Avenal Energy from the water sources. Those metering devices shall be operational for the life of the project.

For the first year of operation, the Project Owner shall prepare an annual Water Use Summary, which will include the monthly range and monthly average of daily non-potable water usage in gallons per day, and total water used by the project on a monthly and annual basis in acre-feet. Potable water for domestic use on-site shall be recorded on a monthly basis. For subsequent years, the annual Water Use Summary shall also include the yearly range and yearly average water use by the project. The annual Water Use Summary shall be submitted to the CPM as part of the annual compliance report.

Verification: At least sixty (60) days prior to commercial operation of Avenal Energy, the Project Owner shall submit to the CPM evidence that metering devices have been installed and are operational on the water supply and distribution systems.

The Project Owner shall submit a Water Use Summary to the CPM in the annual compliance report. The report shall distinguish the recorded water use from City of Avenal water supply and the Kochergen Farms' agriculture wells. The Project

Owner shall provide a report on the servicing, testing and calibration of the metering devices in the annual compliance report.

SOIL & WATER-5: Prior to site mobilization, the Project Owner shall provide the CPM with two (2) copies of the executed and final Service Agreements for connecting the project's water supply lines (potable for domestic use and untreated for process use) to the city of Avenal's Water Treatment Plant and to the Kochergen Farms' agriculture wells. The Service Agreements shall detail any requirements, conditions, or restrictions on the Project Owner for the use of the water from the source(s). The Project Owner shall not connect to the City of Avenal's water system or to the Kochergen Farm's wells without final approval from the local agency. The Project Owner shall provide the CPM copies of the final approval from the local agency and all monitoring or other reports required by the Service Agreements. The CPM shall be notified of any violations of the Service Agreements terms and conditions, the actions taken or planned to bring the project back into compliance with the Service Agreements, and the date compliance was reestablished.

The existing will-serve letter from the City of Avenal (Avenal Energy 2008), allocates 200 AFY of combined untreated surface water to Avenal Energy for power plant use and potable water for domestic use. As described in the AFC and restricted here, the project's process water use shall average 20 AFY and not exceed 104 AFY in any single year. If, for any reason, Avenal Energy requires more than 104 AFY, Avenal Energy shall estimate the additional volume needed, explain why additional volume is needed, and acquire approval from the CPM prior to increased use. Similarly, as described in the AFC and restricted here, the project's potable water use shall average one AFY and not exceed 2 AF in any single year. If, for any reason, Avenal Energy requires more than 2 AFY, Avenal Energy shall estimate the additional volume needed, explain why additional volume is needed, and acquire approval from the CPM prior to increased use.

Verification: No later than sixty (60) days prior to site mobilization, the Project Owner shall submit the executed and final Service Agreement(s) for supplying both the primary and backup process water supplies and the potable water supply to the project. The Project Owner shall submit any water quality monitoring required by the City of Avenal to the CPM in the annual compliance report. The Project Owner shall submit any notice of violation of the Service Agreement terms and conditions to the CPM within ten (10) days of receipt, and shall fully explain the corrective actions taken in the next monthly compliance report or annual compliance report, as appropriate. For calculating the total water use, the term "year" will correspond to the date established for the annual compliance report submittal.

No later than sixty (60) days prior to any excess water use, the Project Owner shall submit a request to the CPM for approval for use of process water in excess of 104 AFY.

No later than sixty (60) days prior to use, the Project Owner shall submit a request to the CPM for approval for use of potable water in excess of 2 AFY.

SOIL & WATER-6: The Project Owner shall treat all routine process waste water streams with a zero liquid discharge (ZLD) system that results in a residual solid waste. The solid waste shall be disposed of in the appropriate class of landfill suitable for the constituent concentrations in the waste. Surface or subsurface discharge of process waste water from the Avenal Energy power plant is prohibited. The Project Owner shall operate the ZLD system in accordance with a ZLD management plan approved by the CPM. The ZLD management plan shall include the following elements:

A. a flow diagram showing all water sources and waste water disposal methods at the power plant;

B. a narrative of expected operation and maintenance of the ZLD system;

C. a narrative of the redundant or back-up waste water disposal method to be implemented during periods of ZLD system shutdown or maintenance;

D. a maintenance schedule;

E. a description of on-site storage facilities and containment measures;

F. a table identifying influent water quality; and

G. a table characterizing the constituent concentrations of the solid waste or brine and specifying the permit limits of the selected landfill.

The Avenal Energy operation and wastewater production shall not exceed the treatment capacity of the ZLD system or result in an industrial waste water discharge.

Verification: At least 60 days prior to the start of commercial operation, the Project Owner shall submit to the CPM evidence that the final design of the ZLD system has the approval of the CBO. At least 60 days prior to the start of commercial operation, the Project Owner shall prepare a ZLD management plan for review and approval by the CPM. The ZLD management plan shall be updated by the Project Owner and submitted to the CPM for review and approval if a change in water source or infrastructure is needed.

In the annual compliance report, the Project Owner shall submit a status report on operation of the ZLD system, including dates and length of disruptions, maintenance activities performed, volumes of interim wastewater streams stored on site, monthly volumes of residual salt cake or brine generated, and results of at least one annual sampling of the waste solids or brine comparing the constituent concentrations to the permit limits of the landfill. The annual compliance report shall contain an evaluation of whether the ZLD is being operated within the parameters described in the ZLD management plan. The ZLD management plan shall be updated by the Project Owner if the CPM has determined it is necessary based on the Project Owner's annual compliance report(s).

SOIL & WATER-7: The Project Owner shall install an on-site wastewater system (septic system) designed for site-specific soils and percolation conditions by a qualified professional. The septic system design shall comply with Chapter 5, Article VI, Sec. 5-83 of the Kings County Code. The Project Owner shall operate the septic system in accordance with an operations and maintenance manual prepared by a qualified professional.

Verification: No later than ninety (90) days prior to commercial operation, the Project Owner shall submit to the CPM a copy of the septic system design, construction, and operations plan that has been reviewed and commented on by the Kings County Health Officer.

No later than sixty (60) days prior to commercial operation, the Project Owner shall submit the operations and maintenance manual to Kings County for review and comment. No later than thirty (30) days prior to commercial operation, the Project Owner shall submit the operations and maintenance manual to the CPM for review and approval. The submittal shall include copies of any agency comments the Project owner has received.

The wastewater system shall be monitored following either the general standards adopted in State Water Resources Control Board's On-Site Wastewater Treatment System Regulations or the procedures outlined in the CPM-approved operations and maintenance manual. Any testing results or correspondence exchanged between Project Owner and the California Department of Health Services, the CVRWQCB, or Kings County during operations shall be provided to the CPM in the annual compliance report.

C. CULTURAL RESOURCES

The potential for impacts to cultural resources depends upon whether such resources are present and whether they would actually be encountered during project development and construction activities. Cultural resource materials such as artifacts, structures, or land modifications reflect the history of human development. Certain places that are important to Native Americans or local national/ethnic groups are also considered valuable cultural resources. Analysis in this topic area pertains to the structural and cultural evidence of human development in the project vicinity, as well as appropriate mitigation measures should cultural resources be disturbed by project excavation and construction.

The term "cultural resource" is used broadly to include the following categories of resources: buildings, sites, structures, objects, and historic districts. When a cultural resource is determined to be significant, it is eligible for inclusion in the California Register of Historic Resources (CRHR). (Pub. Res. Code, § 5024.1; Cal. Code Regs., tit. 14 § 4850 et seq.) An archaeological resource that does not qualify as an historic resource may be considered a "unique" archaeological resource under California Environmental Quality (CEQA). (*See* Pub. Res. Code, § 21083.2.) In addition, structures older than 50 years (or less if the resource is deemed exceptional) can be considered for listing as significant historic structures..[39]

The CEQA Guidelines provide a definition of a historical resource as a "resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR", or "a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code," or "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency's determination is supported by substantial evidence in light of the whole record." [Cal. Code Regs., tit. 14, § 15064.5(a).] Historical resources that are automatically listed in the CRHR include California historical resources listed in or formally determined eligible for the National Register of Historic Places

[39] The Office of Historic Preservation's Instructions for Recording Historical Resources (1995) endorses recording and evaluating resources over 45 years of age to accommodate a five-year lag in the planning process.

(NRHP) and California Registered Historical Landmarks from No. 770 onward. [Pub. Res. Code, § 5024.1(d).]

Under the CEQA Guidelines, a resource is generally considered to be historically significant if it meets the criteria for listing in the CRHR. These criteria are essentially the same as the eligibility criteria for the NRHP. In addition to being at least 50 years old, a resource must meet at least one of the following four criteria: it is associated with events that have made a significant contribution to the broad patterns of our history (Criterion 1); or, it is associated with the lives of persons significant in our past (Criterion 2); or, that the resource embodies the distinctive characteristics of a type, period, or method of construction, or that it represents the work of a master, or possesses high artistic values (Criterion 3); or, that it has yielded, or may be likely to yield, information important to history or prehistory (Criterion 4). (Pub. Res. Code § 5024.1.) In addition, historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association. (Cal. Code Regs., tit. 14, § 4852(c); Pub. Res. Code § 5020.1 (j) or 5024.1). Even if a resource is not listed or determined to be eligible for listing in the CRHR, CEQA allows the lead agency to make a determination as to whether the resource is a historical resource.

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Setting

The project is located in the southwestern portion of the San Joaquin Valley. The valley is a vast trough filled with sedimentary deposits, the oldest of marine origin and the youngest resulting from the erosion of the surrounding mountains and deposition of the eroded material as alluvium up to 2,800 feet deep beneath the site. (Ex. 200, pp. 4.3-3 to 4.3-4.)

The vicinity of the Avenal Energy site is relatively flat. The land use historically has been almost exclusively for agriculture—mostly orchards—but the site has been annexed by the City of Avenal and zoned for industrial use. The 148-acre Avenal Energy site, with an elevation range of 320 to 360 feet above mean sea level, is on the west side of the San Joaquin Valley, about two miles east of the Kettleman Hills and Interstate 5 and about six miles northeast of the City of Avenal. The California Aqueduct's San Luis Canal is located approximately 200 feet northeast of the Avenal Energy site, but there are no natural perennial streams in the project vicinity. The routes of the linear facilities pass across

privately owned farmland by means of easements acquired by Avenal Power Center (APC). (Ex. 200, p. 4.3-4.)

Within the 148-acre Avenal Energy parcel, the area permanently required for the power plant is about 34 acres. The area will temporarily use an additional 34 acres. The temporarily used part of APC's parcel will be returned to agricultural use after the plant is constructed. (Ex. 200, p. 4.3-4.)

The earliest documented human occupation in the Tulare Lake area, 50 miles north of the site, dates to about 9,000 BC. Archaeological evidence indicates two eras of significant occupation, one between 2,000 BC and 500 AD, and another between 1500 and 1850 AD. Sites occupied during this time period in the lower San Joaquin Valley contain higher numbers of groundstone milling artifacts used to process hard seeds into meal, suggesting an increased use of vegetal food sources. There is evidence that populations expanded and villages increased in numbers after about 1500 AD in the southern and western parts of the San Joaquin Valley. The archaeological evidence includes groundstone artifacts associated with acorn processing, bow-and-arrow technology, and large occupation sites representing permanent villages with large, semi-subterranean communal structures. The project area is located within the vast traditional territory claimed by the California Native American group known as Yokuts. The Southern Valley Yokuts, in whose former territory the Avenal Energy site is probably located, lived most of the year in their villages, but starting in the spring and for most of the summer, migrated to camp out in various parts of their territories to gather various wild plant foods, shifting locations as each crop became mature. (Ex. 200, pp. 4.3-6 to 4.3-9.)

The Spanish settlement of Alta California began in 1769, but it was not until the early nineteenth century that the Spanish governor and the missionaries of the Catholic Church began systematically to explore the great interior valley, hopeful of making fresh converts and expanding the mission system. The missionaries recruited and settled a few Southern Valley Yokuts at Missions San Luis Obispo, San Juan Bautista, Soledad, and San Antonio, but the Spanish had little impact on the great majority of the Southern Valley Yokuts, who began raiding mission and rancho herds and were so successful at taking horses that the Spanish referred to them as the "Horsethief Indians." (Ex. 200, p. 4.3-10.)

After 1821, the succeeding Mexican administration made no greater inroads into settling the San Joaquin Valley than the Spanish had, but increased interaction with rancheros exposed the Southern Valley Yokuts to European diseases.

In the summer of 1833, a particularly severe malaria epidemic devastated them, resulting in a mortality rate estimated at 75 percent. After several relocations to temporary reservations, the remaining Southern Valley Yokuts, along with other Native American groups, were settled on two reservations, the Tule River Reservation, in the Sierra Nevada foothills near Porterville, and the Santa Rosa Reservation, in the valley near Lemoore. (Ex. 200, p. 4.3-10.)

Following the conclusion of the Mexican War in 1848, the Avenal Energy Project area came under the control of the United States. After the first frenzy of the Gold Rush, farmers began to settle the Upper Kings River area, but the area where the Avenal Energy Project is located was seen as only suitable for grazing cattle and sheep. The earliest American use of the Avenal area was the cattle-raising enterprise of Dave Kettleman, Jim McClure, and John Fisher, which supplied beef to the miners in the gold fields. Kettleman received the first patent for land in central California from the United States in 1852. Stock-raising was the primary economic activity in the area until the late nineteenth century, with Basque shepherds among the last arrivals. (Ex. 200, p. 4.3-11.)

At the time of California's statehood, in 1850, what would eventually become Kings County was part of a vast Mariposa County. Kings County became a separate entity, splitting off from Tulare County in 1893. The town of Avenal and the town of Kettleman City are the most recently founded towns in Kings County. Both came into being in 1929 as a result of a major oil strike in the Kettleman Hills. Needing to establish a permanent work force to develop the new field, in 1929 Standard Oil surveyed a new company town to house workers and called it Avenal. Water and sewer lines were laid and tents were soon replaced with houses. Avenal was a boomtown, and before the year was out, nearly 20 businesses had sprung up along Kings Street and Skyline Boulevard. (Ex. 200, pp. 4.3-11 to 4.3-12).

Production from the Kettleman Hills North Dome oil field, as in all of California at that time, was unrestricted, causing friction with oil producers in Oklahoma and Texas, whose marketing strategy kept prices high by limiting production. North Dome production peaked in 1936, and by the post-World War II era, the reservoir was greatly reduced. In 1953, the various oil companies with holdings in the area fields consolidated and made Standard Oil the sole operator of the field. Production continued to dwindle, and so did Avenal's economy and population. During the 1960s an influx of agricultural workers boosted the town's population but it was the construction of the Avenal State Prison in 1987 that finally provided the town's economy a stable basis. (Ex. 200, p. 4.3-12.)

2. Cultural Resources

Applicant's records search included all known cultural resources within a one-half-mile radius of the plant site, laydown area, and appurtenant linear facilities. Sources checked included:

- Previous archaeological studies within one-half mile of the components of the Avenal Energy site;
- Previously documented cultural resources or archaeological studies in the project area;
- Resources listed on the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR) within the project area;
- Kings and Fresno County history at the Avenal Museum, in the Kings County Library's history collection;
- Southern San Joaquin Valley Information Center site and study base maps;
- National Register of Historic Places (NRHP) directory;
- Office of Historic Preservation database of historical resources;
- California Historic Resources Inventory;
- California Historical Landmarks;
- California Points of Historical Interest

(Ex. 200, pp. 4.3-14 to 4.3-15.)

On March 21, 2001, consultants for APC requested the Native American Heritage Commission (NAHC) to search its Sacred Lands File for any Native American traditional cultural properties. The NAHC responded on March 29, 2001, indicating a negative return from the search of their Sacred Lands File and providing contact information for nine Native Americans. The NAHC responded again on September 6, 2006, indicating that no sites of concern to Native Americans had been found in the Sacred Lands database. On May 13, 2008, Energy Commission staff requested from the NAHC a list of Native Americans interested in development in Kings and Fresno Counties and on May 15, Staff received a list of seven contacts from the NAHC. Staff sent letters informing the seven Native American individuals or groups about the Avenal Energy Project on June 18, 2008, and requested them to contact Staff if they had any concerns regarding cultural resources. The evidence indicates that no Native Americans communicated any interest in the site; therefore, no resources of ethnographic concern were identified. (Ex. 200, pp. 4.3-14 to 4.3-16.)

Between April 2, 2001 and March 12, 2008, the plant site, related linear facilities, and surrounding area within a one-mile radius were physically surveyed for archaeological resources. All of APC's efforts to identify potentially significant archaeological resources through existing records, databases, and informed persons, and by conducting new field surveys, yielded no results for the Avenal Energy site, the linear facilities, and the surrounding area. (Ex. 200, pp. 4.3-16 to 4.3-21.)

The evidence indicates that there are no historic districts or cultural landscapes in the vicinity of the Avenal Energy Project. With respect to individual built-environment resources, no potentially significant built-environment resources were identified on the Avenal Energy site or within the impact areas of the project's underground linear facilities, so such resources need not be considered when assessing the direct physical impacts of the project. The only individual built-environment resources identified as being old enough to be potentially significant and also possibly subject to an impact (from the project's transmission line) are:

- Kochergen Farms Agricultural Complex residence and outbuildings (approximately 80 years old);
- Gates Substation (approximately 53 years old); and
- PG&E's 230-kV transmission line—originally Tesla–Midway, now known as Gates–Arco–Midway (portions approximately 60 years old).
- Avenal Cut-Off Road (approximately 80 years old). (Ex. 200, pp. 4.3-24 to 4.3-29)

The evidence establishes that none of these resources are likely to be eligible for the CRHR. Nevertheless, Condition of Certification **CUL-8** requires recordation and documentation should there be any modifications to the existing Tesla-Midway 230-kV transmission line towers.

3. Potential Impacts

Direct impacts to cultural resources are those associated with project development, construction, and co-existence. Construction usually entails surface and subsurface disturbance of the ground, and direct impacts to archaeological resources may result from the immediate disturbance of the deposits, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, excavation, or demolition of overlying structures. Construction can have direct impacts on historic resources when those structures must be

removed to make way for new structures or when the vibrations of construction impair the stability of historic structures nearby. New structures can have direct impacts on historic structures when the new structures are stylistically incompatible with their neighbors and the setting, and when the new structures produce something harmful to the materials or structural integrity of the historic structures, such as emissions or vibrations. (Ex. 200, pp. 4.3-29 to 4.3-30.)

Generally speaking, indirect impacts to archaeological resources are those which may result from increased erosion due to site clearance and preparation, or from inadvertent damage or outright vandalism to exposed resource components due to improved accessibility. Similarly, historic structures can suffer indirect impacts when project construction creates improved accessibility and vandalism or greater weather exposure becomes possible. (Ex. 200, p. 4.3-30.)

The evidence is uncontradicted in that no significant known archaeological resources have been identified in any of the areas affected by project construction. Subsurface disturbance, during construction, however, has the potential to disturb as yet unknown archaeological resources. We include Conditions of Certification **CUL-1** through **CUL-7** to ensure that all impacts to cultural resources discovered during construction are mitigated below the level of significance. Mitigation measures for identifying, evaluating, and possibly mitigating impacts to previously unknown archaeological resources discovered during construction include having an archaeologist monitor all excavation activities in excess of five feet on the project site, at the laydown areas, and along the pipeline and transmission line routes; and having a Native American monitor construction activities if prehistoric cultural resources are found. (Ex. 200, p. 4.3-33.)

The parties differed on the question of whether the Tesla–Midway 230-kV transmission line may be historically significant (that is, eligible for the CRHR). Nonetheless, they agreed to have a qualified architectural historian document, to a modified Level III Historic American Engineering Record (HAER) standard, any of the Tesla–Midway 230-kV transmission line's towers that would have to be modified, as mitigation for the new transmission line's potential impact on the old line, should modification prove unavoidable. Condition of Certification **CUL-8** enforces that agreement and will provide mitigation in the form of recordation and documentation in the event that these modifications must be made. (Ex. 200, pp. 4.3-34 to 4.3-35.)

During operation of the Avenal Power Plant, if a leak should develop in the gas or water pipelines supplying the plant, repair of the buried utility could require the excavation of a large hole. Such repairs could impact previously unknown subsurface archaeological resources in areas unaffected by the original trench excavation. The measures for mitigating impacts to previously unknown archaeological resources during the construction of the plant and linear facilities (**CUL-1** through **CUL-7**) will also serve to mitigate impacts from repairs occurring during operation of the plant. (Ex. 200, p. 4.3-35.)

4. Cumulative Impacts

A cumulative impact refers to a project's incremental effects considered over time and together with those of other nearby, past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the project. (Pub. Res. Code § 21083; Cal. Code Regs., tit. 14, § 15064(h), 15065(a)(3), 15130, and 15355.) The construction of other projects in the same area as the project could affect unknown subsurface archaeological deposits, both prehistoric and historic.

Four projects have been identified near the Avenal Project: Panoche Energy Center, Starwood Power-Midway Peaking Project, San Joaquin Solar 1&2 Hybrid Project, and The Great Valley Ethanol Project. Any impacts to significant cultural resources from the Panoche and the Starwood Power Plant projects have been evaluated and mitigated by Conditions of Certification imposed by the Energy Commission on their construction and operation. Impacts to as-yet-undiscovered subsurface archaeological sites or cultural resources from the remaining projects can be mitigated to less-than-significant levels by requiring construction monitoring, evaluation of resources discovered during monitoring, avoidance or data recovery for resources evaluated as significant (eligible for the CRHR or NRHP). Impacts to human remains can be mitigated by following the protocols established by state law in Public Resources Code, Section 5097.98. Since the impacts from the Avenal Energy Project will be mitigated to a less-than-significant level by the project’s compliance with Conditions of Certification **CUL-1** through **CUL-7**, and since similar protocols can be applied to other projects in the area, we find that any incremental effects of the Avenal Energy Project will not be cumulatively considerable when viewed in conjunction with other projects.

5. Agency and Public comments

No public or agency comments were received concerning Cultural Resources.

FINDINGS OF FACT

Based on the uncontroverted evidence, the Commission makes the following findings and reaches the following conclusions:

1. No significant known archaeological resources have been identified in any of the areas affected by project construction in the Avenal Energy site, the linear facilities, or the surrounding area.
2. There are no historic districts or cultural landscapes in the vicinity of the Avenal Energy Project.
3. No potentially significant built-environment resources were identified on the Avenal Energy site or within the impact areas of the project's underground linear facilities.
4. None of the individual built-environment resources identified as being old enough to be potentially significant (Kochergen Farms Agricultural Complex residence and outbuildings, Gates Substation, PG&E's Gates–Arco–Midway 230-kV transmission line and the Avenal Cut-Off Road) are likely to be eligible for the CRHR.
5. Conditions of Certification **CUL-1** through **CUL-7** ensure that all impacts to cultural resources discovered during construction and operation are mitigated below the level of significance.
6. Condition of Certification **CUL-8** provides mitigation in the form of recordation and documentation in the event that modifications must be made to the Gates–Arco–Midway 230-kV transmission line.
7. Any incremental effects of the Avenal Energy Project will not be cumulatively considerable when viewed in conjunction with other projects so there will be no significant cumulative impacts to cultural resources.

CONCLUSIONS OF LAW

1. With implementation of the Conditions of Certification below, the project will conform to all applicable laws, ordinances, regulations, and standards relating to cultural resources as set forth in the pertinent portion of **Appendix A** of this Decision.

2. Through implementation of the Conditions of Certification below, the project will have no significant environmental impacts.

CONDITIONS OF CERTIFICATION

CUL-1 Prior to the start of ground disturbance (includes "preconstruction site mobilization"; "construction ground disturbance"; and "construction grading, boring and trenching," as defined in the General Conditions for this project), the project owner shall obtain the services of a Cultural Resources Specialist (CRS), and one or more alternate CRSs, if alternates are needed. The CRS shall manage all monitoring, mitigation, curation and reporting activities required in accordance with the Conditions of Certification (Conditions). The CRS may elect to obtain the services of Cultural Resources Monitors (CRMs) and other technical specialists, if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the eligibility for listing in the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be affected in an unanticipated manner. No ground disturbance shall occur prior to CPM approval of the CRS and alternates, unless such activities are specifically approved by the CPM. Approval of a CRS may be denied or revoked for non-compliance on this or other projects.

CULTURAL RESOURCES SPECIALIST

The resumes for the CRS and alternate(s) shall include information demonstrating to the satisfaction of the CPM that their training and backgrounds conform to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61 (36 C.F.R., part 61). In addition, the CRS shall have the following qualifications:

1. The CRS's qualifications shall be appropriate to the needs of the project and shall include a background in anthropology, archaeology, history, architectural history, or a related field;

2. At least three years of archaeological or historical, as appropriate (per nature of predominate cultural resources on the project site), resource mitigation and field experience in California; and

3. At least one year of experience in a decision-making capacity on cultural resources projects in California and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

The resumes of the CRS and alternate CRS shall include the names and telephone numbers of contacts familiar with the work of the CRS/alternate CRS on referenced projects and demonstrate to the satisfaction of the CPM that the CRS/alternate CRS has the appropriate training and experience to implement effectively the Conditions.

CULTURAL RESOURCES MONITORS

CRMs shall have the following qualifications:

1. A B.S. or B.A. degree in anthropology, archaeology, historical archaeology or a related field and one year experience monitoring in California; or

2. An AS or AA degree in anthropology, archaeology, historical archaeology or a related field, and four years experience monitoring in California; or

3. Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology or a related field, and two years of monitoring experience in California.

CULTURAL RESOURCES TECHNICAL SPECIALISTS

The resume(s) of any additional technical specialist(s), e.g., historical archaeologist, historian, architectural historian, and/or physical anthropologist, shall be submitted to the CPM for approval.

Verification: At least 45 days prior to the start of ground disturbance, the project owner shall submit the resume for the CRS, and alternate(s) if desired, to the CPM for review and approval.

At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval. At the same time, the project owner shall also provide to the proposed new CRS the AFC and all cultural resources documents, field notes, photographs, and other cultural resources materials generated by the project. If there is no alternate CRS in place to conduct the duties of the CRS, a previously approved monitor may serve in place of a CRS so that project-related ground disturbance may continue up to a maximum of three days without a CRS. If cultural resources are discovered then ground disturbance will remain halted until there is a CRS or alternate CRS to make a recommendation regarding significance.

At least 20 days prior to ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and stating that the identified CRMs meet the minimum qualifications for cultural resources monitoring required by this Condition. If additional CRMs are obtained during the project, the CRS shall

provide additional letters to the CPM identifying the CRMs and attesting to the qualifications of the CRMs, at least five days prior to the CRMs beginning on-site duties.
At least 10 days prior to any technical specialists beginning tasks, the resume(s) of the specialists shall be provided to the CPM for review and approval.

At least 10 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.

CUL-2 Prior to the start of ground disturbance, if the CRS has not previously worked on the project, the project owner shall provide the CRS with copies of the AFC, data responses, and confidential cultural resources reports for the project. The project owner shall also provide the CRS and the CPM with maps and drawings showing the footprints of the power plant, all linear facilities, all access roads, and all laydown areas. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless such activities are specifically approved by the CPM.

If construction of the project would proceed in phases, maps and drawings not previously provided shall be submitted prior to the start of each phase. Written notification identifying the proposed schedule of each project phase shall be provided to the CRS and CPM.

At a minimum, the CRS shall consult weekly with the project construction manager to confirm area(s) to be worked during the next week, until ground disturbance is completed.
The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases.

Verification: At least 40 days prior to the start of ground disturbance, the project owner shall provide the AFC, data responses, and confidential cultural resources documents to the CRS, if needed, and the subject maps and drawings to the CRS and CPM. The CPM will review submittals in consultation with the CRS and approve maps and drawings suitable for cultural resources planning activities.

1. If there are changes to any project-related footprint, revised maps and drawings shall be provided at least 15 days prior to start of ground disturbance for those changes.

2. If project construction is phased, if not previously provided, the project owner shall submit the subject maps and drawings 15 days prior to each phase.
3. On a weekly basis during ground disturbance, a current schedule of anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.
4. Within five days of identifying changes, the project owner shall provide written notice of any changes to scheduling of construction phase.

CUL-3 Prior to the start of ground disturbance, the project owner shall submit the Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by or under the direction of the CRS, to the CPM for review and approval. The CRMMP shall follow the content and organization of the model CRMMP, provided by the CPM, and the author's name shall appear on the title page of the CRMMP. The CRMMP shall identify general and specific measures to minimize potential impacts to sensitive cultural resources. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, each CRM, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless such activities are specifically approved by the CPM.

The CRMMP shall include, but not be limited to, the following elements and measures:

1. A proposed general research design that includes a discussion of archaeological research questions and testable hypotheses specifically applicable to the project area, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design. The research design will specify that the preferred treatment strategy for any buried archaeological deposits is avoidance. A mitigation plan will be prepared for any CRHR-eligible resource (as determined by the CPM), impacts to which cannot be avoided. A prescriptive treatment plan may be included in the CRMMP for limited data types.

2. The following statement included in the Introduction: "Any discussion, summary, or paraphrasing of the Conditions of Certification in this CRMMP is intended as general guidance and as an aid to the user in understanding the Conditions and their implementation. The Conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the CRMMP. The Cultural

Resources Conditions of Certification from the Commission Decision are contained in **Appendix A**."

3. Specification of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground disturbance and post-ground–disturbance analysis phases of the project.

4. Identification of the person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team.

5. A description of the manner in which Native American observers or monitors will be included, the procedures to be used to select them, and their role and responsibilities.

6. A description of all impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during project-related ground disturbance, construction, and/or operation, and identification of areas where these measures are to be implemented. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related effects.

7. A statement that all encountered cultural resources over 50 years old shall be recorded on Department of Parks and Recreation (DPR) 523 forms and mapped and photographed. In addition, all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery) shall be curated in accordance with the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, into a retrievable storage collection in a public repository or museum.

8. A statement that the project owner will pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the project. The project owner shall identify three possible curation facilities that could accept cultural resources materials resulting from project activities.

9. A statement that the CRS has access to equipment and supplies necessary for site mapping, photography, and recovery of any

cultural resource materials that are encountered during ground disturbance and cannot be treated prescriptively.

10. A description of the contents and format of the final Cultural Resource Report (CRR), which shall be prepared according to ARMR guidelines.

Verification: Upon approval of the CRS proposed by the project owner, the CPM will provide to the CRS an electronic copy of the model CRMMP.

At least 30 days prior to the start of ground disturbance, the project owner shall submit the subject CRMMP to the CPM for review and approval. The CPM will provide the project owner with a model CRMMP to adapt for project use.

At least 30 days prior to the start of ground disturbance, a letter shall be provided to the CPM indicating that the project owner agrees to pay curation fees for any materials collected as a result of the archaeological investigations (survey, testing, data recovery).

CUL-4 The project owner shall submit the final Cultural Resources Report (CRR) to the CPM for approval. The final CRR shall be written by or under the direction of the CRS and shall be provided in the ARMR format. The final CRR shall report on all field activities including dates, times and locations, findings, samplings, and analyses. All survey reports, DPR 523 forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as appendices to the final CRR.

If the project owner requests a suspension of ground disturbance and/or construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM for review and approval on the same day as the suspension/extension request. The draft CRR shall be retained at the project site in a secure facility until ground disturbance and/or construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification: Within 90 days after completion of ground disturbance (including landscaping), the project owner shall submit the final CRR to the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.

Within 90 days after completion of ground disturbance (including landscaping), the project owner shall provide to the CPM a copy of an agreement with, or other written commitment from, a curation facility that meets the standards stated in the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, to accept cultural materials, if any, from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.

Within 10 days after CPM approval, the project owner shall provide documentation to the CPM confirming that copies of the final CRR have been provided to the SHPO, the CHRIS, the curating institution, if archaeological materials were collected, and to any Native American groups requesting copies of project-related reports.

Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the CPM for review and approval.

CUL-5 Prior to and for the duration of ground disturbance, the project owner shall provide Worker Environmental Awareness Program (WEAP) training to all new workers within their first week of employment at the project site, laydown area, and along the linear facilities routes. The training shall be prepared by the CRS, may be conducted by any member of the archaeological team, and may be presented in the form of a video. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes. The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. Samples or visuals of artifacts that might be found in the project vicinity;
3. Instruction that the CRS, alternate CRS, and CRMs have the authority to halt project-related ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;
4. Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;
5. An informational brochure that identifies reporting procedures in the event of a discovery;
6. An acknowledgement form signed by each worker indicating that they have received the training; and

7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the CPM.

Verification: At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the training program draft text and graphics and the informational brochure to the CPM for review and approval, and the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.

On a monthly basis, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of workers at the project site and on the linear facilities who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-6 The project owner shall ensure that the CRS, alternate CRS, or CRMs monitor full time all ground disturbance exceeding five feet in depth at the project site, at laydown areas, along linear facilities routes, at pull sites, and in any other ancillary project-related impact areas, and all ground disturbance at any depth along existing paved roads, to ensure there are no impacts to undiscovered resources and to ensure that known resources are not impacted in an unanticipated manner.

Full-time archaeological monitoring for this project shall be the archaeological monitoring of all earth-removing activities on the project site, at the laydown area, along the linear facility routes, and at roads or other ancillary areas for as long as the activities are ongoing. Full-time archaeological monitoring shall require at least one monitor per excavation area where machines are actively removing earth. If an excavation area is too large for one monitor to effectively observe the earth removal, one or more additional monitors shall be retained to observe the area.

In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

The research design in the CRMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of non-compliance with the Conditions and/or applicable LORS. Copies of

the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended. The CRS or alternate CRS shall report daily to the CPM on the status of cultural resources-related activities at the project site, unless reducing or ending daily reporting is requested by the CRS and approved by the CPM.

The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resources monitoring and mitigation activities with Energy Commission technical staff.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

A Native American monitor shall be obtained to monitor ground disturbance in areas where Native American artifacts are discovered. Contact lists of interested 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 shall be monitored. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

Verification: At least 30 days prior to the start of ground disturbance, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log. While monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS.

Daily, as long as no cultural resources are found, the CRS shall provide a statement that “no cultural resources over 50 years of age were discovered” to the CPM as an e-mail, or in some other form acceptable to the CPM. If the CRS concludes that daily reporting is no longer necessary, a letter or e-mail providing a detailed justification for the decision to reduce or end daily reporting shall be

provided to the CPM for review and approval at least 24 hours prior to reducing or ending daily reporting.

At least 24 hours prior to implementing a proposed change in monitoring level, documentation justifying the change shall be submitted to the CPM for review and approval.

No later than 30 days following the discovery of any Native American cultural materials, the project owner shall submit to the CPM copies of the information transmittal letters sent to the Chairperson of the Native American tribes or groups who requested the information. Additionally, the project owner shall submit to the CPM copies of letters of transmittal for all subsequent responses to Native American requests for notification, consultation, and reports and records, and any comments or information provided in response by the Native Americans.

CUL-7 The project owner shall grant authority to halt project-related ground disturbance to the CRS, alternate CRS, and the CRMs in the event of a discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

In the event cultural resources over 50 years of age or, if younger, determined exceptionally significant by the CPM, are found, or impacts to such resources can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and daily reporting as provided in **CUL-6** shall continue during all ground-disturbing activities elsewhere on the project site. The halting or redirection of ground disturbance shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner, and the CPM has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery (or changes in character or attributes), informed of the action taken (i.e., work stoppage or redirection), provided a recommendation of CRHR eligibility, and provided recommendations for mitigation of any cultural resources discoveries, whether or not a determination of CRHR eligibility has been made.
2. If the discovery is prehistoric or ethnographic, the CRS has notified all Native American groups that expressed a desire to be notified in the event of such a discovery.
3. The CRS has completed field notes, measurements, and photography for a DPR 523 “Primary” form. The “Description” entry of the DPR 523 “Primary” form shall include a recommendation on

the CRHR eligibility of the discovery. The project owner shall submit completed forms to the CPM.

4. The CRS, the project owner, and the CPM have conferred, and the CPM has concurred with the recommended eligibility of the discovery and approved the CRS's proposed data recovery, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, and CRMs have the authority to halt project-related ground disturbance in the vicinity of a cultural resources discovery, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.

Within 48 hours of the discovery of an archaeological or ethnographic resource, the project owner shall ensure that the CRS notifies all Native American groups that expressed a desire to be notified in the event of such a discovery.

Completed DPR 523 forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.

CUL-8 The project owner shall suggest to PG&E in writing that, if feasible, the Avenal Energy transmission line interconnection to the Gates Substation be designed to avoid changes to the existing Tesla-Midway 230-kV transmission line towers.

If the Facilities Study, or other equivalent study as provided for in the CAISO's Open Access Transmission Tariff, completed by CAISO/PG&E for the project, indicates the need for modifications to any existing Tesla-Midway 230-kV transmission line towers to accommodate AE's new transmission line, then the project owner shall document any towers subject to modification.

The documentation shall be prepared by a qualified architectural historian whose resume demonstrates training and background conforming to the U.S. Secretary of the Interior's Professional Qualifications Standards (36 C.F.R., part 61) and three years' experience in recording twentieth-century industrial structures.

The documentation shall include:

1. Representative photography of the transmission line and of the individual affected towers (all elevations) to be submitted in 5" x 7" or 8" x 10" prints on archival-quality paper;

2. Preparation of a site plan or linear location map of the affected segment(s) and of individual affected towers within the alignment;
3. Technical descriptions of the Tesla-Midway 230-kV transmission line, as available from public and non-confidential sources, including descriptions of each tower type installed; and
4. A narrative history of the Tesla-Midway 230-kV transmission line, drawn from public and non-confidential sources, from the time of its construction to the present, placing it in the context of the development of California's electrical grid in the 1950s.

Once approved by the CPM, this documentation shall be submitted to the Avenal Public Library and the Southern San Joaquin Valley Information Center at California State University, Bakersfield, for inclusion in their respective archives.

Verification: At least 90 days prior to any work on the Tesla-Midway 230-kV transmission line, the project owner shall provide to the CPM copies of written correspondence between the project owner and PG&E documenting the project owner's efforts to persuade PG&E to design the project interconnection to avoid impacts to the Tesla-Midway 230-kV transmission line towers and providing a copy of any design agreement reached between the project owner and PG&E.

At least 60 days prior to any work on the Tesla-Midway 230-kV transmission line, if there will be project impacts to the Tesla-Midway 230-kV transmission line towers, the project owner shall submit the resume of the proposed architectural historian to the CPM for review and approval.

At least 30 days prior to any work on the Tesla-Midway 230-kV transmission line, the project owner shall provide a copy of the completed documentation to the CPM for review and approval.

Within 90 days after the CPM approves the completed documentation, the project owner shall submit copies of transmittal letters for the submission of copies of the CPM-approved documentation to the Avenal Public Library and the Southern San Joaquin Valley Information Center, California State University, Bakersfield.

D. GEOLOGY AND PALEONTOLOGY

This section summarizes the record concerning the project's potential impacts on significant geological and paleontological resources. The evidence evaluates whether project-related activities could result in exposure to geological hazards, as well as whether the facility can be designed and constructed to avoid any such hazard which could impair its proper functioning. These include faulting and seismicity, liquefaction, dynamic compaction, hydrocompaction, subsidence, expansive soils, landslides, tsunamis, and seiches. Next, the evidence of record assesses whether the project will impact any geologic or mineralogic resources. Finally, the analysis of record examines whether fossilized remains or trace remnants of prehistoric plants or animals are present at the site and, if so, whether the project's potential impacts to these resources are adequately mitigated. The parties did not dispute any matters in this discipline. (7/7/09 RT 446-48; Exs. 1; 25 (n); 200, § 5.2.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Geologic Hazards

The project site is located in the southwestern San Joaquin Valley, which is part of the Great Valley geomorphic province of California. The Great Valley is approximately 400 miles long and 60 miles wide, bounded on the north by low-lying hills; on the northeast by the volcanic plateau of the Cascade Range; on the west by the Coast Ranges; on the east by the Sierra Nevada; and on the south by the Coast Ranges and the Tehachapi Mountains. Much of the valley fill alluvium is underlain by marine and non-marine sedimentary rocks and crystalline basement which have undergone anticlinal and synclinal folding and faulting related to regional tectonism. This tectonism has been uplifting the Coast Ranges since the middle Jurassic period. Major oil fields have been developed in the southern portion of the valley, primarily to the east of the site. (Ex. 200, p. 5.2-3.)

Site surface soils are comprised of a permeable sandy loam. The depth to ground water can vary from 200 to 250 feet below existing grade. Site near-surface geology consists of alluvial fan deposits of Holocene age underlain by Pliocene-Pleistocene aged non-marine clastic sediments of the Tulare Formation. These units together extend to depths of 2,000 to 2,800 feet below the surface. (*Id*.)

The site parcel is not crossed by any known active faults and does not lie within a designated special studies zone. A number of major, active faults lie within 70 miles of the site. (Ex. 200, p. 5.2-4.) Thus, the project is within an active geologic area.

The record contains specific subsurface information, as well as Staff's independent research and review of geologic information from sources such as the California Geological Survey and the U. S. Geological Survey, concerning the location, recency, and the type of faulting in the project area. (Ex. 200, p. 5.2-6.) This evidence shows that eighteen Type A and B faults and fault segments are within 70 miles of the site.[40]

At the site, the ramp thrust fault is approximately 4.5 miles below the surface. Three earthquakes with a Richter magnitude range of 5.6 to 6.7 occurred along this fault zone between 1983 and 1985. Numerous smaller earthquakes continue to occur throughout the site area, most commonly with epicenters at or below the thrust ramp (4.5 miles down) and with magnitudes of less than 4.0. The Parkfield segment of the San Andreas Fault is about 25.3 miles away, and is capable of a moment magnitude earthquake of 6.5. (Ex. 200, p. 5.2-7.)

The evidence also shows that:

- Since the depth to ground water is 200-250 feet below existing grade, the potential for liquefaction is negligible. Consequently, the potential for lateral spreading of the site surface during seismic events is also negligible.

- Alluvial deposits underlying the site are generally too dense to allow significant dynamic compaction. The potential for significant hydrocompaction is remote because the site has been extensively irrigated and cultivated.

- Subsidence, landslides, flooding, tsunamis, and seiches similarly pose insignificant risks.

- Soils in the project area consist of a sandy loam which would likely not pose any significant expansive soil hazard. (Ex. 200, pp. 5.2-9 to 5.2-11.)

[40] These are indentified in **Table-2**, Ex. 200, p. 5.2-8. The closest are segments 14 and 13 of the Great Valley Blind Thrust Fault System which are 1.1 and 6.1 miles away, respectively. Three other segments of the Great Valley System (12, 11, and 10) are also within 70 miles of the site. The Great Valley Blind Thrust is a blind ramp thrust fault system that occurs at depth throughout the site vicinity. (Ex. 200, p. 5.2-6.)

Overall, the evidence shows that, because blind thrust faults do not intersect the surface, there is no known hazard due to surface rupture. Although strong ground shaking may occur, seismic concerns are adequately addressed by following proper design criteria as required in **FACILITY DESIGN** Condition of Certification **GEN-1**. The evidence similarly establishes that adverse impacts for the potential geologic hazards mentioned above are adequately mitigated by other **FACILITY DESIGN** Conditions of Certification such as **GEN-5** and **CIVIL-1**. (Ex. 200, pp. 5.2-10, 5.2-12.)

2. Mineralogic and Paleontologic Impacts

The evidence further shows there are no known viable geologic or mineralogical resources at the site. The site is not located within an established Mineral Resource Zone. (Ex. 200, p. 5.2-5.) Although the site is close to producing oil and gas fields, these are located beneath the structural anticlines of the Kettleman and Gurjaral Hills to the west and northwest; the potential for production from beneath the site is low. (Ex. 200, pp. 5.2-1, 5.2-11.)

Similarly, no paleontological resources have been identified at the site. Quaternary alluvial and lakebed deposits like those which underlie the project site can potentially contain a wide variety of vertebrate fossils. Accordingly, the evidentiary record contains site specific information, including field examinations, as well as information gleaned from records searches from the San Bernardino County Museum and the Natural History Museum of Los Angeles County. (Ex. 200, p. 5.2-5.) None of this evidence indicates the presence of paleontological resources at the project site. Moreover, even if on-site construction, including that for the associated natural gas line, includes significant earth disturbance, the likelihood of encountering paleontological resources remains low. (Ex. 200, pp. 5.2-5, 5.2-12.) The evidence establishes that Conditions of Certification **PAL-1** to **PAL-7**, below, provide protection to any resources present as the Conditions will mitigate any construction impacts to less than significant levels. This mitigation will occur through a worker education program in conjunction with the monitoring of earthworks activities by a professional paleontologist. (Ex. 200, p. 5.2-12.)

FINDINGS OF FACT

Based on the uncontroverted evidence, we make the following findings.

1. The project is located in an active geologic area.

2. Ground shaking is the main geologic hazard to the Avenal Project.

3. Potential geologic hazards to the project are effectively mitigated by standard engineering design measures as specified in Conditions **GEN-1, GEN-5,** and **CIVIL-1** of the **Facility Design** section of this Decision.

4. Liquefaction, lateral spreading, dynamic compaction, hydrocompaction, ground subsidence, landslides, flooding, tsunamis, and seiches pose low or negligible project risks.

5. There is no evidence of existing or potential geological or mineralogical resources at the project site or along the linear alignments.

6. The project owner will implement several mitigation measures to avoid impacts to paleontological resources including worker education, preparing a Paleontological Monitoring and Mitigation Plan, and having a Paleontologic Resource Specialist on-site.

CONCLUSIONS OF LAW

1. The Conditions listed below ensure that project activities will not cause significant adverse impacts to geological, mineralogical, or paleontological resources.

2. Compliance with the Conditions of Certification specified below will ensure that the Avenal Project conforms to all applicable laws, ordinances, regulations, and standards related to geological, mineralogical, and paleontological resources as indentified in **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

General Conditions of Certification with respect to engineering geology are under Conditions of Certification **GEN-1, GEN-5, and CIVIL-1** in the **FACILITY DESIGN** section. Paleontological Conditions of Certification follow.

PAL-1 The project owner shall provide the compliance project manager (CPM) with the resume and qualifications of its paleontological resource specialist (PRS) for review and approval. If the approved PRS is replaced prior to completion of project mitigation and submittal of the Paleontological Resources Report, the project owner shall obtain

CPM approval of the replacement PRS. The project owner shall keep resumes on file for qualified paleontological resource monitors (PRMs). If a PRM is replaced, the resume of the replacement PRM shall also be provided to the CPM.

The PRS resume shall include the names and phone numbers of references. The resume shall also demonstrate to the satisfaction of the CPM the appropriate education and experience to accomplish the required paleontological resource tasks.

As determined by the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the Society of Vertebrate Paleontology (SVP) guidelines of 1995. The experience of the PRS shall include the following:

1. Institutional affiliations, appropriate credentials, and college degree;

2. Ability to recognize and collect fossils in the field;

3. Local geological and biostratigraphic expertise;

4. Proficiency in identifying vertebrate and invertebrate fossils; and

5. At least three years of paleontological resource mitigation and field experience in California and at least one year of experience leading paleontological resource mitigation and field activities.

The project owner shall ensure that the PRS obtains qualified paleontological resource monitors to monitor as he or she deems necessary on the project. Paleontologic resource monitors (PRMs) shall have the equivalent of the following qualifications:

- BS or BA degree in geology or paleontology and one year of experience monitoring in California; or
- AS or AA in geology, paleontology, or biology and four years' experience monitoring in California; or
- Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

Verification: At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work.

At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated monitors for the project. The letter shall state that the identified monitors meet the minimum qualifications for paleontological resource monitoring required by the condition. If additional monitors are obtained during the project, the PRS shall provide additional letters

and resumes to the CPM. The letter shall be provided to the CPM no later than one week prior to the monitor's beginning on-site duties.

Prior to the termination or release of a PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

PAL-2 The project owner shall provide to the PRS and the CPM, for approval, maps and drawings showing the footprint of the power plant, construction lay-down areas, and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS and CPM. The site grading plan and plan and profile drawings for the utility lines shall be acceptable for this purpose. The plan drawings shall show the location, depth, and extent of all ground disturbances and be at a scale between 1 inch = 40 feet and 1 inch = 100 feet. If the footprint of the project or its linear facilities changes, the project owner shall provide maps and drawings reflecting those changes to the PRS and CPM.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Before work commences on affected phases, the project owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked the following week and until ground disturbance is completed.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall provide the maps and drawings to the PRS and CPM.

If there are changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.

If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within five days of identifying the changes.

PAL-3 The project owner shall ensure that the PRS prepares, and the project owner submits to the CPM for review and approval, a paleontological resources monitoring and mitigation plan (PRMMP) to identify general and specific measures to minimize potential impacts to significant paleontological resources. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall function as

the formal guide for monitoring, collecting, and sampling activities and may be modified with CPM approval. This document shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall reside with the PRS, each monitor, the project owner's on-site manager, and the CPM.

The PRMMP shall be developed in accordance with the guidelines of the SVP (1995) and shall include, but not be limited to, the following:

1. Assurance that the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, fieldwork, flagging or staking, construction monitoring, mapping and data recovery, fossil preparation and collection, identification and inventory, preparation of final reports, and transmittal of materials for curation will be performed according to PRMMP procedures;

2. Identification of the person(s) expected to assist with each of the tasks identified within the PRMMP and the Conditions of Certification;

3. A thorough discussion of the anticipated geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units;

4. An explanation of why, how, and how much sampling is expected to take place and in what units. Include descriptions of different sampling procedures that shall be used for fine-grained and coarse-grained units;

5. A discussion of the locations of where the monitoring of project construction activities is deemed necessary, and a proposed plan for monitoring and sampling;

6. A discussion of procedures to be followed in the event of a significant fossil discovery, halting construction, resuming construction, and how notifications will be performed;

7. A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;

8. Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum which meets the Society of Vertebrate Paleontology's

standards and requirements for the curation of paleontological resources;

9. Identification of the institution that has agreed to receive data and fossil materials collected, 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; and

10. A copy of the paleontological Conditions of Certification.

Verification: At least 30 days prior to ground disturbance, the project owner shall provide a copy of the PRMMP to the CPM. The PRMMP shall include an affidavit of authorship by the PRS and acceptance of the PRMMP by the project owner evidenced by a signature.

PAL-4 Prior to ground disturbance and for the duration of construction activities involving ground disturbance, the project owner and the PRS shall prepare and conduct weekly CPM-approved training for the following workers: project managers, construction supervisors, foremen and general workers involved with or who operate ground-disturbing equipment or tools. Workers shall not excavate in sensitive units prior to receiving CPM-approved worker training. Worker training shall consist of a CPM-approved video or in-person presentation. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. No ground disturbance shall occur prior to CPM approval of the Worker Environmental Awareness Program (WEAP) unless specifically approved by the CPM.

The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources.

The training shall include:

1. A discussion of applicable laws and penalties under the law;

2. Good quality photographs or physical examples of vertebrate fossils for project sites containing units of high paleontologic sensitivity;

3. Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;

4. Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM;

5. An informational brochure that identifies reporting procedures in the event of a discovery;

6. A WEAP certification of completion form signed by each worker indicating that he/she has received the training; and

7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

Verification: At least 30 days prior to ground disturbance the project owner shall submit the proposed WEAP, including the brochure, with the set of reporting procedures for workers to follow.

At least 30 days prior to ground disturbance, the project owner shall submit the script and final video to the CPM for approval if the project owner is planning to use a video for interim training.

If the owner requests an alternate paleontological trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct training prior to CPM authorization.

In the monthly compliance report (MCR), the project owner shall provide copies of the WEAP certification of completion forms with the names of those trained and the trainer or type of training (in-person or video) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

PAL-5 The project owner shall ensure that the PRS and PRM(s) monitor, consistent with the PRMMP, all construction-related grading, excavation, trenching, and augering in areas where potential fossil-bearing materials have been identified, both at the site and along any linear facilities constructed in association with the project. In the event that the PRS determines full-time monitoring is not necessary in locations that were identified as potentially fossil bearing in the PRMMP, the project owner shall notify and seek the concurrence of the CPM.

The project owner shall ensure that the PRS and PRM(s) have the authority to halt or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

1. Any change of monitoring from the accepted schedule in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to the CPM prior to the change in monitoring and will be included in the monthly compliance report. The letter or

email shall include the justification for the change in monitoring and be submitted to the CPM for review and approval.

2. The project owner shall ensure that the PRM(s) keeps a daily monitoring log of paleontological resource activities. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.

3. The project owner shall ensure that the PRS notifies the CPM within 24 hours of the occurrence of any incidents of non-compliance with any paleontological resources Conditions of Certification. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the Conditions of Certification.

4. For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM within 24 hours, or Monday morning in the case of a weekend event, where construction has been halted because of a paleontological find.

The project owner shall ensure that the PRS prepares a summary of monitoring and other paleontological activities to be placed in the monthly compliance reports. The summary shall include the name(s) of PRS or PRM(s) active during the month; general descriptions of training and monitored construction activities; and general locations of excavations, grading, and other activities. A section of the report shall include the geologic units or subunits encountered, descriptions of samplings within each unit, and a list of identified fossils. A final section of the report will address any issues or concerns about the project relating to paleontologic monitoring, including any incidents of non-compliance or any changes to the monitoring plan that have been approved by the CPM. If no monitoring took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

Verification: The project owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 10 days in advance of any proposed changes in monitoring different from the plan identified in the PRMMP. If there is any unforeseen change in monitoring, the notice shall be given as soon as possible prior to implementation of the change.

PAL-6 The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed including collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, the preparation of fossils for curation, and the delivery for curation of all

significant paleontological resource materials encountered and collected during project construction.

Verification: The project owner shall maintain in his/her compliance file copies of signed contracts or agreements with the designated PRS and other qualified research specialists. The project owner shall maintain these files for a period of three years after project completion and approval of the CPM-approved paleontological resource report (see Condition of Certification **PAL-7**). The project owner shall be responsible for paying any curation fees charged by the museum for fossils collected and curated as a result of paleontological mitigation. A copy of the letter of transmittal submitting the fossils to the curating institution shall be provided to the CPM.

PAL-7 The project owner shall ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of the ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information and submit it to the CPM for review and approval.

The report shall include, but is not limited to, a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the PRS that project impacts to paleontological resources have been mitigated below the level of significance.

Verification: Within 90 days after completion of ground-disturbing activities, including landscaping, the project owner shall submit the PRR under confidential cover to the CPM.

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Certification of Completion
Worker Environmental Awareness Program
Avenal Energy Project (08-AFC-1)

This is to certify these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on cultural, paleontological, and biological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.			
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3.			
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Cultural Trainer: _____ Signature: _____ Date: ___/___/_____

PaleoTrainer: _____ Signature: _____ Date: ___/___/_____

Biological Trainer: _____ Signature: _____
Date:___/___/_____

VII. LOCAL IMPACT ASSESSMENT

In general, a power plant may be incompatible with existing or planned land uses resulting in significant impacts such as unmitigated noise, dust, public health or safety hazards, adverse traffic or visual effects, or an excessive burden on local community services. The following sections of this Decision discuss local impacts under the technical topics of land use, traffic and transportation, visual resources, noise, and socioeconomics.

A. LAND USE

To determine whether the Avenal Energy Project will result in a significant impact on land use, the analysis focuses on two main issues (1) whether the project is consistent with local land use plans, ordinances, and policies; and (2) whether the project is compatible with existing and planned land uses. The evidence on this topic was undisputed. (Ex. 1, § 6.9; Ex. 200, p. 4.5-1 et seq.)

Summary and Discussion of the Evidence

According to CEQA Guidelines[41] a project results in significant land use impacts if it would:

- 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.
- Conflict with existing zoning for agricultural use or a Williamson Act contract.
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural uses.
- Physically disrupt or divide an established community.
- Conflict with any applicable habitat conservation plan or natural community conservation plan.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction, or that would normally have jurisdiction, over the project. This includes, but is not limited to, a General Plan, community or specific plan, local coastal program, airport land use compatibility plan, or zoning ordinance.

[41] Title 14, Cal. Code Regs., § 15000 et seq., Appendix G, Sections II, IX, XVI.

- Create individual environmental effects which, when considered with other impacts from the same project or in conjunction with impacts from other closely related past, present, and reasonably foreseeable future projects, are considerable, compound, or increase other environmental impacts.

Local ordinances and policies applicable to the Avenal Energy Project include the City of Avenal General Plan (1992 and 2005 Updates), the Avenal Zoning Ordinance, the Kings County and Fresno County General Plans. (Ex. 1, § 6.9.2.2, et seq.)

1. The Site

The project site is located in a predominantly rural area within Avenal city limits, about two miles east of Interstate 5 (I-5). Agriculture is the primary land use east of I-5. The Kettleman Hills and other uplands to the west of I-5 are characterized by extensively disturbed areas due to grazing and oil/gas development. The entire region has a low population density. See Land Use Figure 1 (Regional Map) at the end of this section. (Ex. 200, p. 4.5-3.)

The site is part of the city's industrial zone, which is physically separated from the residential and business districts of the city by a distance of six miles. The terrain between the industrial zone and the city's population center includes I-5 and the intervening topography of the Kettleman Hills. The industrial zone extends from the Kettleman compressor station near I-5 to the city's water treatment plant at the northeast corner of the city. According to Staff, the city zoned these lands "Industrial" to take advantage of the bulk natural gas supply available from the compressor station, the adjacent electrical transmission corridor, and the transportation corridor along I-5. (Ex. 200, p. 4.5-3.)

The project site, construction laydown area, and linear facilities are designated Industrial ("I") under the Avenal General Plan and zoned Heavy Industrial ("M-2") under the Avenal Zoning Ordinance. (Ex. 200, p. 4.5-3.)

Staff's **Land Use** Tables 2 and 3, below, show the general plan and zoning designations within a one-mile radius of the project site, excluding the transmission line corridor.

Land Use Table 2
General Plan Land Use Designations within the One-Mile Radius Project Study Area

Direction	Jurisdiction	Designation
North	Kings County	General Agricultural
South	City of Avenal	Industrial
East	Kings County	General Agricultural
West	City of Avenal	Industrial

Source: Ex. 200, p. 4.5-4; Ex. 1, p. 6.9.3.

Land Use Table 3
Zoning Designations within the One-Mile Radius Project Study Area

Direction	Jurisdiction	Designation
North	Kings County	General Agricultural
South	City of Avenal	Heavy Industrial
East	Kings County	General Agriculture
West	City of Avenal	Heavy Industrial

Source: Ex. 200, p. 4.5-4; Ex. 1, p. 6.9.3.

The project's new 6.4-mile transmission line from the on-site switchyard to the Gates Substation will be constructed within a 120-foot wide right-of-way partially within the City of Avenal on lands zoned Industrial and partially in Fresno County on lands zoned Agricultural. Under Fresno County's Zoning regulations, electric transmission lines and substations are permitted uses in agricultural lands. (Ex. 200, pp. 4.5-4 and 4.5-5.)

2. Potential Impacts

Conversion of Farmland. The project will occupy 36 acres of land currently used for agricultural production and designated Prime Farmland by the California Department of Conservation (CDC). The CDC requested that Staff perform a Land Evaluation and Site Assessment (LESA) to determine the environmental significance of project-specific impacts on farmland. Staff's LESA evaluation found that the project's potential conversion score exceeded the significance threshold and would result in the physical conversion of 34.8 acres of Prime Farmland. Applicant agreed to offset this impact by preserving other Prime Farmland in the vicinity at a 1:1 ratio for the project's permanent disturbed acreage. We have adopted Condition of Certification **LAND-2** to ensure that the

project owner will implement this mitigation measure prior to the start of construction.[42] (Ex. 200, pp. 4.5-8 to 4.5-10, 4.5-16.)

The project's linear facilities will traverse properties adjacent to the site that are also designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The record establishes, however, that construction of the project's off-site linear facilities will only result in the permanent conversion of 1.2 acres of farmland to nonagricultural use, and otherwise will not conflict with existing agricultural zoning, or interfere with Williamson Act contracts. (Ex. 200, p. 4.5-8, 4.2-11, 4.9-10.) We have added these 1.2 acres of permanently converted prime farmland to the mitigation required in Condition of Certification **LAND-2**.[43]

Division of Existing Community. There is no evidence that the project will physically divide or disrupt an established community. Given its location, the project will not alter existing residential, recreational, commercial, institutional, or other industrial land use patterns in the area. (Ex. 200, pp. 4.5-6 to 4.5-7, 4.5-13.)

Conflict with Habitat or Conservation Plan. There is no regulatory Habitat or Natural Community Conservation Plan specifically applicable to the Avenal Energy Project. (Ex. 200, p. 4.5-10.)

3. Consistency with Land Use LORS.

Use of the site for power plant development is consistent with the city's General Plan Industrial Land Use element. The Heavy Industrial "M-2" zone within the Industrial "I" district is intended to accommodate a broad range of industrial activities and development. Although power plants are not specifically listed as a permitted use in the "M-2" District, "public utility" uses are allowed. The City has

[42] In the "Verification" timeline for Condition of Certification **LAND-2**, Applicant and Staff proposed that proof of the farmland conversion mitigation plan could be provided prior to the start of project operation. We changed the deadline to require proof of mitigation prior the start of construction because the impacts to farmland will occur when project construction begins.

[43] Staff's Land Use testimony (Ex. 200, p 4.5-8) states that project off-site linear facilities would not result in permanent farmland conversion. However, Staff's Biological Resources testimony identifies 1.2 acres of permanent farmland conversion resulting from the construction of 43 transmission poles. (Ex. 200, p. 4.2-11). We have added the 1.2 acres to the 34.8 acres Staff established as the area for project site impacts to Prime Farmland (Ex. 200, p. 4.5-9.)

determined that power plants are included in "public utility" uses.[44] (Ex. 200, pp. 4.5-11 to 4.5-12.)

To ensure that the project is consistent local LORS, Staff reviewed the use permit findings that the City would have made but for the Energy Commission's exclusive jurisdiction and found that the project would be eligible for a use permit, as follows:

1. *The proposed use is desirable for public convenience or welfare.* According to Staff, the project is consistent with the General Plan to promote orderly development with a functional mix of land uses. The project will provide fiscal benefits and new energy capacity to the City of Avenal and surrounding communities. (Ex. 200, p. 4.5-13.)

2. *The proposed use will not impair the character and integrity of the zoning district and surrounding area.* The site is located in an industrial setting and does not adjoin any existing residential, recreational, office, or commercial zones. The record shows that the project complies with the city's development standards (lot requirements and height limitations) for the "M-2" District. (Ex. 200, pp. 4.5-7, 4.5-11 to 4.5-12.)

   Additional development standards in Chapter 9.31 of the city's Zoning Ordinance also apply to the project, including setback requirements, signage, landscaping, loading; fencing; and parking requirements. Condition of Certification **LAND-1** ensures that the project will comply with all applicable development standards in Chapter 9.31 of the Zoning Ordinance. (Ex. 200, p. 4.5-13.)

3. *The proposed use will not be detrimental to the public health, safety or general welfare of the citizens of the City of Avenal.* Each technical topic discussed in this Decision was analyzed according to well-established scientific methodology and applicable law designed to protect the most sensitive receptors. The mitigation measures contained in the Conditions of Certification for each topic ensure that development of the project will not be detrimental to the public health, safety, or general welfare of the local population. (Ex. 200, p. 4.5-14.)

4. *The size and shape of the site is adequate to allow the full development of the proposed use.* The record establishes that the parcel size and shape of the site are adequate to allow full development of the project components and

[44] The Commission's regulations direct Staff to give due deference to a local agency's recommendations regarding matters within that agency's jurisdiction. [Cal. Code Regs., tit. 20, §§ 1714.5(b) and 1744(e).]

provide agricultural buffers to protect surrounding agricultural uses. (Ex. 200, p. 4.5-14.)

The project's water pipe from existing groundwater wells located north of the site will traverse unincorporated land in Kings County. This use is consistent with the Kings County General Agriculture land use designation because it will not harm long-term agricultural uses surrounding the site. (Ex. 200, p. 4.5-12.)

Approximately 200 feet of underground water pipeline from an existing well to the site for the standby water supply will cross into Fresno County. This short pipeline will not detrimentally affect agricultural uses surrounding the site and is therefore consistent with the Fresno County General Plan. (Ex. 200, p. 4.5-13.)

4 Land Use Compatibility

When a jurisdictional authority, such as the City of Avenal, establishes zoning districts, it is that agency's responsibility to ensure the compatibility of adjacent zoning districts and uses, and to ensure that those uses will not result in adverse impacts to surrounding properties. The record shows that the city has effectively isolated the industrial area six miles from Avenal's population center to minimize impacts on residents. Beyond Avenal city limits, the next closest population centers from the site include Huron eight miles to the north and Kettleman City about 10 miles to the south. (Ex. 200, p. 4.5-15.)

The Conditions of Certification ensure that the project will not result in unmitigated project-related impacts to surrounding properties. Under CEQA, a project site may be considered unacceptable if it presents a new source of pollution or creates a hazard in close proximity to a sensitive receptor. Sensitive receptors include schools, day-care centers, hospitals, nursing homes, and residential areas. Close proximity is defined as "within 1,000 feet" of a school (California Health & Safety Code § 42301.6 et seq.) or within 0.25 mile of a sensitive receptor under CEQA. Proximity is not necessarily the deciding factor for a potentially significant impact but it is the threshold generally used to require further evaluation. Since there are no schools, childcare, hospitals, medical facilities, or residential areas within a one-mile radius of the site, there is no evidence that the project will pose a significant public health hazard to sensitive receptors in the general vicinity of the site. (Ex. 200, p. 4.5-15.)

Since the primary purpose of the city's Industrial "I" District is to encourage industrial development in an area suitable for this use, we find that the project is compatible with surrounding uses and zoning districts.

5. Cumulative Impacts

There is no evidence of potential cumulative land use impacts resulting from development of the Avenal Energy Project because there are no anticipated zoning changes or proposals for future development near the project site. (Ex. 200, p. 4.5-16.)

CRPE asserted that CEQA requires an analysis of whether the addition of the project's 600 MW into the electric grid will induce population growth throughout the State of California. (CRPE Opening Brief, p. 15, citing § 15126.2(d) of the CEQA Guidelines.) In response, Applicant noted that power plants do not create a demand for electricity but rather new power plants are built in response to changes in demand. (07/07/09 RT 83:13-21; Ex. 26, p. A10.) The economic reality of developing a power plant ensures that natural gas plants will not be built unless there is existing demand for the new power to be produced by the plant. (Applicant's Opening Brief, at 17; Applicant's Reply Brief, at 17.) Where such demand for electricity exists, public utilities are required to serve that demand, or load, and this Commission must ensure the reliability of generating resources. The record indicates there is sufficient demand for the Avenal Energy Project's output and no basis to examine whether development of this project will induce population growth in the state. Staff analysis of potential cumulative land use impacts revealed no trends in zoning changes or future development proposals in the area of the project site. (Ex. 200, p. 4.5-16.)

FINDINGS OF FACT

Based on the uncontroverted evidence, the Commission makes the following findings:

1. The Avenal Energy Project will result in the permanent physical conversion of Prime Farmland to non-agricultural use of 36 acres, made up of 34.8 acres at the project site plus 1.2 acres for transmission poles.

2. The project owner will provide mitigation by preserving other Prime Farmland in the vicinity at a 1.1 ratio to compensate for the loss of 34.8 acres of Prime Farmland at the project site plus 1.2 acres for transmission poles.

3. The mitigation set forth in Condition of Certification **LAND-2** below, will mitigate project-related impacts to Prime Farmland to an insignificant level.

4. Construction of the project's off-site linear facilities will not result in a conflict with existing agricultural zoning, or interfere with Williamson Act contracts.

5. There is no evidence that the Avenal Energy Project will physically divide or disrupt an established community.

6. There is no regulatory Habitat or Natural Community Conservation Plan specifically applicable to the Avenal Energy Project.

7. Local ordinances and policies applicable to the Avenal Energy Project include the City of Avenal General Plan, City of Avenal Zoning Ordinance, the Kings County General Plan and the Fresno County General Plan.

8. The project site is designated Industrial "I" under the Avenal General Plan and zoned Heavy Industrial "M-2", which allows a broad range of industrial activities and development including "public utilities."

9. The City of Avenal has determined that power plants are a permitted use in the Heavy Industrial "M-2" zone under the "public utilities" category.

10. The Avenal Energy Project complies with the four required findings for a Use Permit under the Avenal Zoning Ordinance and is consistent with applicable LORS.

11. The project will be designed and constructed in accordance with all applicable development standards identified in the Avenal Zoning Ordinance.

12. The City of Avenal has effectively isolated the industrial area, where the project site is located, by a distance of six miles from areas zoned for residential, public, and retail commercial use to minimize impacts on sensitive receptors.

13. The project is compatible with surrounding uses and zoning districts since the primary purpose of the city's Industrial "I" District is to encourage industrial development in an area suitable for this use.

14. There is no evidence of direct, indirect, or cumulative land use impacts resulting from development of the Avenal Energy Project.

15. There is no evidence that the project will induce significant population growth either near the site or throughout the State of California.

CONCLUSIONS OF LAW

1. With implementation of the mitigation measures specified in this Decision, and the Conditions of Certification below, we conclude that construction and operation of the Avenal Energy Project will not result in significant adverse direct, indirect, and cumulative land use impacts.

2. The evidence of record contains an adequate analysis of the land use laws, ordinances, regulations, and standards that are relevant to the project and establishes that the project will create no unmitigated, significantly adverse land use effects as defined under the California Environmental Quality Act.

3. The Conditions of Certification, below, ensure that the Avenal Energy Project will be designed, constructed, and operated in conformance with the applicable land use laws, ordinances, regulations, and standards (LORS) identified in the evidentiary record and listed in the pertinent portion of **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

LAND-1 The project owner shall design and construct the project in accordance with the standards listed in the I Zone ("Industrial") of the Avenal Municipal Code (Chapter 9.31) which includes the following:

- Meet the setback requirements;
- Off-street parking and loading spaces shall be provided as stipulated;
- Signage requirements;
- Loading requirements;
- Landscaping requirements;
- Lighting requirements; and
- Fencing requirements.

Verification: At least 90 calendar days prior to the start of construction, including any grading or site remediation on the power plant project site or its associated easements, the project owner shall submit the proposed development plan to the City of Avenal Planning Department for review and comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to the City of Avenal.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from the City of Avenal, along with any changes to the proposed development plan, to the CPM for review and approval.

LAND-2 The project owner shall mitigate at a one-to-one (1:1) ratio for the conversion of 36 acres of prime farmland as classified by the California Department of Conservation, to a non-agricultural use, for the construction of the power generation facility, switchyard, and the storm water evaporative/percolation basin. The mitigation shall consist of one of the following:

1. Pay a mitigation fee to a City of Avenal or Kings County agricultural land trust or the American Farmland Trust consistent with a prepared Farmlands Mitigation Agreement. The payment amount shall be determined by consulting with the local assessor's office to determine the assessed value for 36 acres of prime agricultural land; or by a real estate appraiser selected by the project owner and approved by the CPM; or

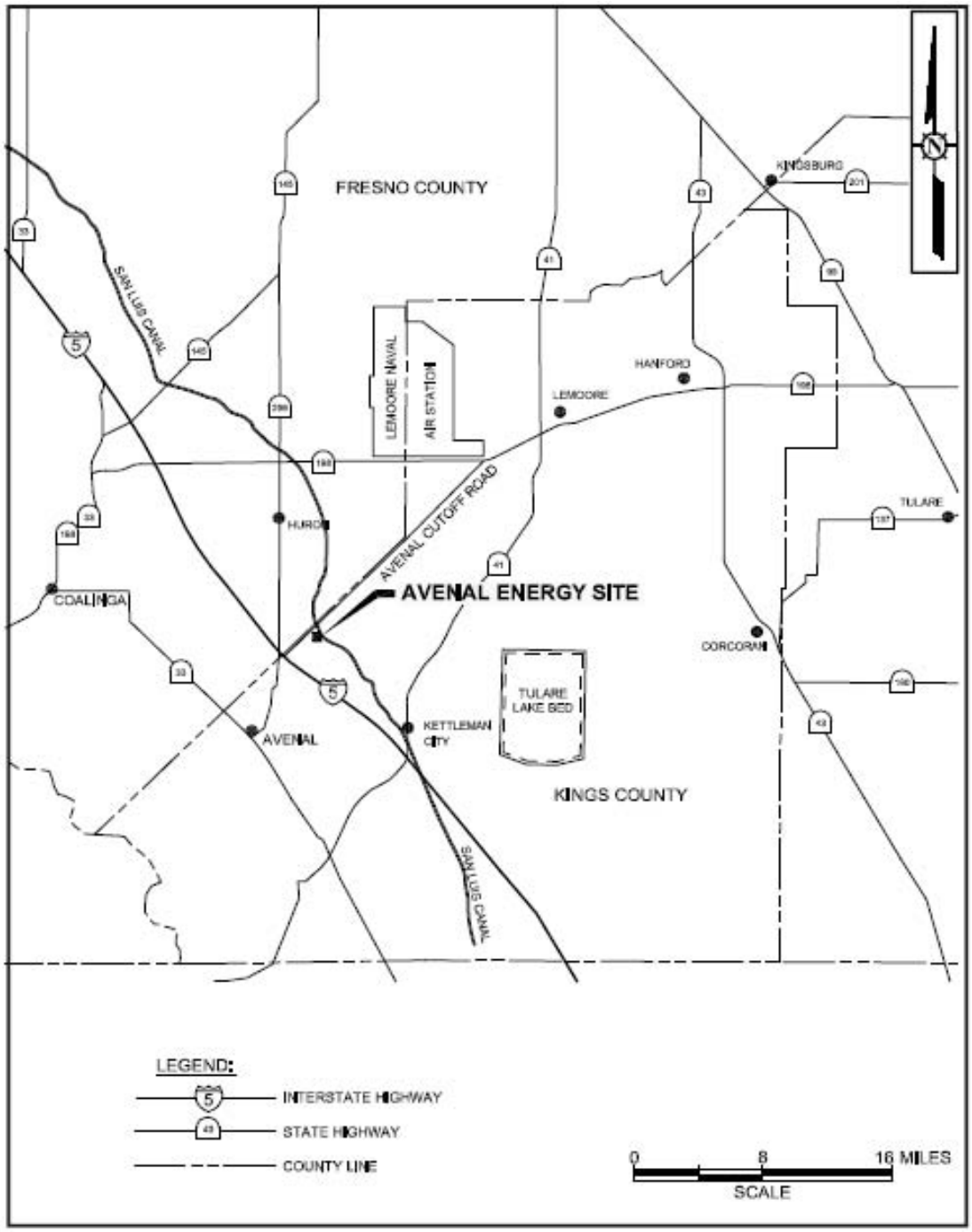
2. Secure the acquisition of an agricultural easement or otherwise ensure the creation of an agricultural easement for other farmland in the vicinity. Easements for prime farmland would be acquired based on the California Department of Conservation's Important Farmland Classification Map, but in no case shall be less than a 1:1 ratio.

Verification: At least 60 calendar days prior to the start of construction, the project owner shall provide documentation to the CPM demonstrating compliance with one of these options. For option 1, documentation shall consist of proof of mitigation fee payment and a discussion of any land and/or easements purchased to date by the trust with the mitigation fee money provided, and the provisions to guarantee that the land managed by the trust will be preserved for farming in perpetuity. If the total required acreage has not been purchased by this time, then this discussion shall include the schedule for purchasing any additional required acres of prime farmland and/or easements within one year of the start of commercial operations.

For option 2, the project owner shall provide to the CPM a copy of the deed restriction or other documentation at least 60 calendar days prior to the start of construction demonstrating to the satisfaction of the CPM that the project owner has secured the creation of an in-perpetuity agricultural easement for the total required acreage.

LAND USE - FIGURE 1

Avenal Energy Regional Map



Source: Ex. 200

B. TRAFFIC AND TRANSPORTATION

This section addresses the extent to which the proposed project will affect the local area's transportation network. The evidence includes an analysis of: (1) the roads and routings that are proposed to be used for construction and operation; (2) potential traffic-related problems associated with the use of those routes; (3) the frequency of trips and probable routes associated with the delivery of hazardous materials; and (4) the possible effect of project operations on local airport flight traffic.

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Location

The Avenal Energy site is located on Avenal Cutoff Road about two miles east of Interstate 5 (I-5) in western Kings County. The facility would be located adjacent to the San Luis Canal. **Traffic and Transportation Figure 1**, below, Regional Transportation System shows the region surrounding the project site.

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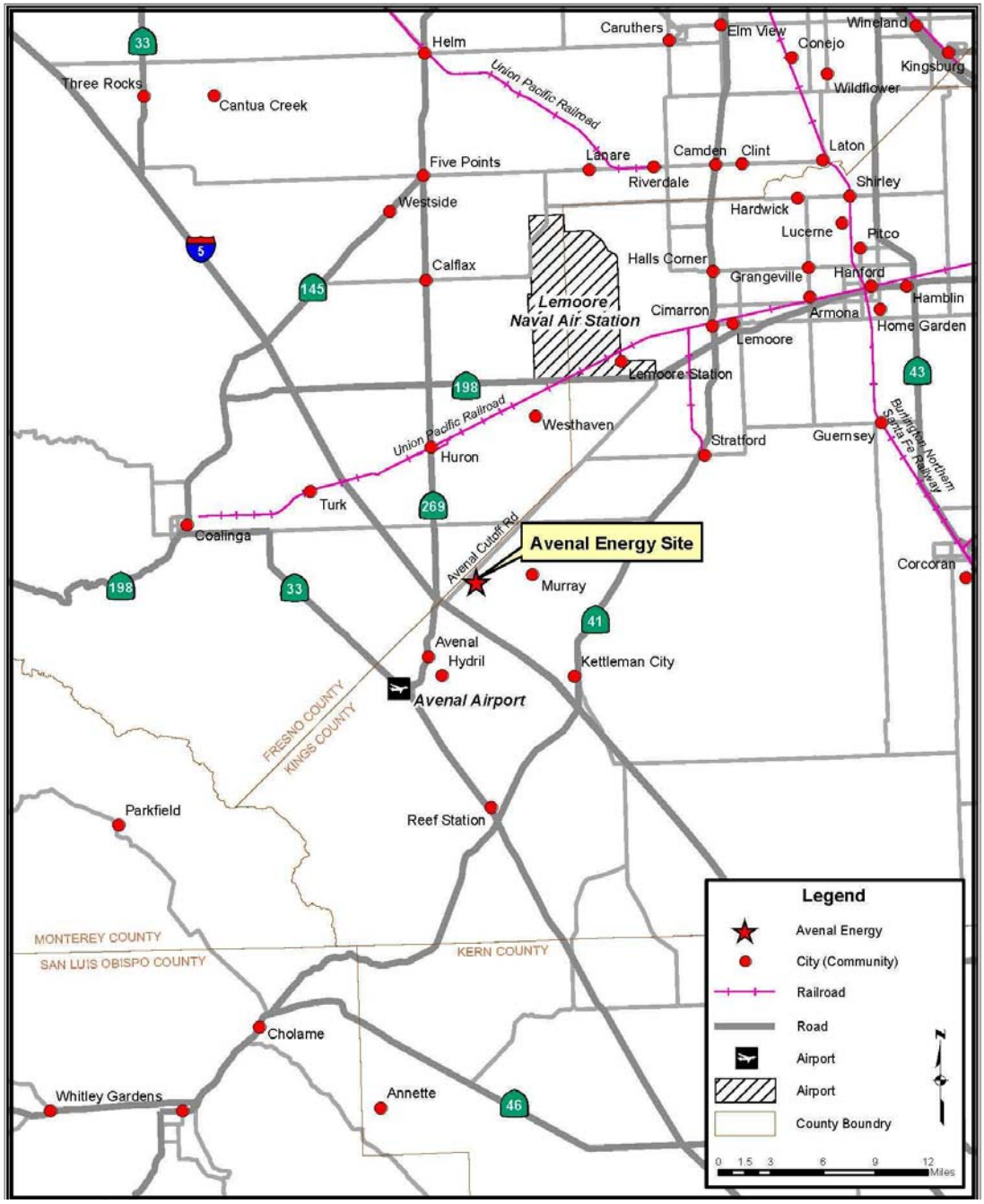
Traffic and Transportation – Figure 1

Avenal Energy – Regional Transportation System



Source: Ex. 200.

2. Access Roads

Access to the Avenal site would be via the following highways and roads:

Interstate 5: I-5 is a north-south four-lane freeway that connects the Central Valley with northern and southern California. Caltrans reports traffic volume on I-5 in the project area as averaging 35,400 vehicles per day, 30 percent of which is truck traffic.

Avenal Cutoff Road: Avenal Cutoff Road is a two-lane northeast-southwest road that provides access to the project site from I-5 and the highways described below. East of I-5, it has unimproved shoulders 15-20 feet wide which contain telephone poles. Further east the road shoulders adjoin agricultural fields. Avenal Cutoff Road carries about 5,000 vehicles per day with 16 percent truck traffic. It also connects with the local circulation network to the east and north accessing communities such as Huron (north), Kettleman City (east), and Fresno (north) via SR-41.

State Route (SR)-198: SR-198 is a two lane east-west highway approximately 10 miles to the north of the project site. It connects I-5 to Highway 99 and communities to the east of the project site. Traffic volumes are 18,500 vehicles per day (8 percent trucks).

SR-296: SR-296 is a two lane highway to the west of the project site. It intersects I-5 and heads south to the City of Avenal and north to SR-198 and beyond. Reported traffic volumes in the project area are 3,984 vehicles per day (26 percent trucks).

SR-41: SR-41 is a two lane highway to the east of the project site, heading in a north/north-easterly direction from I-5. Traffic volumes on SR-41 in the project vicinity are 14,200 vehicles per day (13 percent trucks). (7/709 RT 447 - 448; Ex. 200, pp. 4.10-3, 4.10-15 to 4.10-16.)

a. Airports

The Avenal Airport, a private facility, is located about seven miles southwest of the Avenal Energy site. Additional aviation facilities include Harris Ranch Airport (fifteen miles northwest at Interstate 5 and State route 198), and Lemoore Naval Air Station (fifteen miles northeast). The project site is not in the landing or take-off pattern of any of these facilities.

However, the project would be located beneath the Military Operational Airspace of the Lemoore facility. There are no agricultural airstrips in the project area. (7/709 RT 447-448; Ex. 200, p. 4.10-4.)

b. Public Transportation

The Kings Area Rural Transit provides bus service from Avenal to Hanford six times per day and uses Avenal Cutoff Road. The Reef-Sunset School District provides school bus service from the City of Avenal to Kettleman City three times per day; 7 a.m., 3:15 p.m., and 3:30 p.m. Schools are let out early on Wednesdays; the bus would pass by the site at 1:20 p.m. and 2:20 p.m. The school bus route uses Avenal Cutoff Road between Orange Avenue and I-5. (7/709 RT 447-448; Ex. 200, p. 4.10-4.)

c. Railroads

The major rail lines in the vicinity of Avenal Energy site are the Union Pacific (UP) line (leased by the San Joaquin Valley Railroad) which connects the communities of Huron and Exeter, and the Burlington Northern and Santa Fe (BNSF) line spur to the community of Corcoran. The UP line is about eight miles north of the project site and the BNSF line is about 35 miles east of the project site. (7/709 RT 447-448; Ex. 200, p. 4.10-4.)

d. Traffic Congestion

“Level of service” (LOS) is a qualitative measure describing operational conditions within a traffic stream. LOS is a term used to describe and quantify the congestion level on a particular roadway or intersection and generally describes these conditions in terms of such factors as speed, travel time, and delay. The Highway Capacity Manual defines six levels of service for roadways or intersections ranging from LOS A, which represents free flow conditions and the best operating conditions, to LOS F, which represents the worst and overcapacity conditions. According to the Kings and Fresno County’s Circulation Element of the respective General Plans, LOS D is the lowest acceptable level.

Traffic and Transportation Table 1 below summarizes the existing LOS for intersections that may be affected in the project area.

Traffic and Transportation Table 1
Roadway Segment Average Daily Traffic Volume and LOS

Roadway Segment	Volume	LOS
I-5 – Intersection with SR-269	34,000	B
SR-198	18,850	A*
SR-41	14,200	A
SR-269	3,984	A
Avenal Cutoff Road	5,031	C

*SR-198 is currently LOS D during afternoon peak period at the ramp from Avenal Cutoff Road

(Ex. 200, pp. 4.10-3 to 4.10-4.)

3. Direct/Indirect Impacts on Traffic

a. Construction

Facility construction is projected to take place over 27 months. Parking for construction workers would be provided on the project site. To determine the amount of vehicle trips to the project site during average and peak construction periods, the Applicant assumed that workers would commute during the morning and afternoon peak intervals (7 to 9 a.m. and 4 to 6 p.m.). Workers would operate in two shifts; 6:30 a.m. to 3:00 p.m. and 7:30 a.m. to 4:00 p.m. The average number of construction workers would be approximately 320, while the peak workforce would consist of 550 workers during a two month period (months 19 and 20). The Applicant used a 15 percent carpool rate for the construction worker traffic analysis. Staff found the Applicant's assumptions and estimates to be reasonable.

Based on regional demographics and availability of skilled laborers, the bulk of construction workers would probably come from Fresno County, with some from Kern and Kings counties. Those coming from Kings and Fresno counties would use SR-41, SR-198 and SR-269 and turn onto Avenal Cutoff Road. They would then go west until reaching the Avenal Energy access road. A left turn (heading south) would lead onto the project site. Workers from the Bakersfield area could travel on I-5 via SR-41. Construction traffic is not expected to degrade the LOS on these roads. However, potentially significant traffic impacts are identified at two different locations.

Construction of the generating plant would require the use and installation of heavy equipment and associated systems and structures. Heavy equipment would be used throughout the construction period, including trenching and earthmoving equipment, forklifts, cranes, cement mixers and drilling equipment. A passenger car equivalent (PCE) factor of three cars per truck was used to determine the traffic impacts of trucks and heavy equipment deliveries. Project construction is expected to require 10 trucks per day on average and 110 trucks on two days during peak construction (PCE of 30 and 330, respectively per day). In-bound and out-bound truck traffic would arrive and depart the project site using the same routes as construction workers.

Given the 320-person average construction workforce and the 15 percent carpool rate estimated by the Applicant, total average construction traffic impact (workforce and trucks) would be 302 vehicle round trips (272 workers plus 30 PCE for trucks and deliveries), or 604 one-way vehicle trips. Total peak construction traffic impact with 15 percent carpooling would be 798 vehicle round trips (468 workers plus 330 PCE for trucks and deliveries), or 1596 one-way vehicle trips. The average construction total is about a 12 percent increase in traffic when compared to 2007 Avenal Cutoff Road average daily traffic counts (5,000). Peak construction total is about a 35 percent increase. Staff and the Applicant believe the LOS C on Avenal Cutoff Road would not degrade during construction. To mitigate any damage to the roadway, we adopt Condition of Certification **TRANS-2** requiring repair of any damage to Avenal Cutoff Road from construction traffic, particularly heavy trucks.

Two potentially significant impacts to local roads from project construction were identified during analysis of the AFC. The first involves the SR-198 eastbound ramp at Avenal Cutoff Road. Currently, the afternoon peak is LOS D which is at the threshold for unacceptable congestion according to Caltrans' Guide to Traffic Impact Studies. During peak construction (in 2011) the congestion during the afternoon peak would increase to an unacceptable level (LOS F). To mitigate this potential impact the Applicant has proposed hiring an off-duty traffic officer to direct traffic or installing a trailer-mounted camera activated temporary signal. We adopt that requirement in Condition of Certification **TRANS-1**.

The second potential impact involves the intersection of Jayne Avenue and Avenal Cutoff Road. Existing eastbound semi-truck and trailer traffic on Jayne Avenue must cross over the centerline to enter Avenal Cutoff Road and could cause a delay, depending on traffic flow on Avenal Cutoff Road. Though the current situation is less than ideal, the Applicant and Staff agree that it is unlikely

that Avenal Energy construction truck traffic would use this intersection. However, given the possibility of a significant impact, Condition of Certification **TRANS-1** prohibits project truck traffic from using the Jayne Avenue/Avenal Cutoff Road intersection.

Traffic impacts from the construction of the project's linear facilities (natural gas and water supply lines, electric transmission lines) would be short term in nature, mitigated by cones and flagmen when necessary, and would not significantly impact traffic flow. Condition of Certification **TRANS-1** requires that the project owner work with the city of Avenal to mitigate any significant adverse impact on traffic flows on Avenal Cutoff Road during construction of the linear facilities.

The Reef-Sunset Unified School District provides school bus service between the city of Avenal and Kettleman City. The bus route includes Avenal Cutoff Road at 7 a.m., 3:15 p.m., and 3:30 p.m., and at 1:20 and 2:20 p.m. on Wednesdays. Staff expressed a concern that construction worker and truck traffic could interfere with the school bus service or compromise the safety of the bus or school children. It discussed the issue with the bus driver for the School District who expressed similar concerns and supported of Staff's proposed Condition of Certification **TRANS-1** requiring that project construction contractors and subcontractors not arrive or depart the site within one half-hour of the times that school buses use Avenal Cutoff Road. We adopt Staff's proposal but note that the requirement appears to conflict with the shift times (6:30 a.m. to 3:00 p.m. and 7:30 a.m. to 4:00 p.m.). The workers on the earlier shift cannot arrive one minute late, nor can the workers on the later shift arrive one minute early. In the afternoon, no one may leave the site between 2:45 and 4:00, which would seriously impact the earlier shift. We invite the parties to comment on this apparent conflict in their comments on this PMPD.

Deliveries to the Avenal Energy site would include small quantities of hazardous materials to be used during project construction. The Applicant estimates that there would be delivery/disposal of hazardous materials of about two truck trips per month to and from the site. Materials handling on site would be conducted in accordance with all applicable federal and state statutes (see the **HAZARDOUS MATERIALS MANAGEMENT** section of this Decision for more information). The preferred transportation route for hazardous materials would use I-5 and Avenal Cutoff Road. (7/709 RT 447 - 448; Ex. 200, pp. 4.10-5 to 4.10.8.)

b. Operation

Plant operations will require 25 full time workers generating 50 one-way trips per day. Plant operations would also generate approximately 5 delivery truck trips per day. The workers are expected to use the same routes as those used by construction workers. The LOS of those roads would not be significantly affected. (7/709 RT 447-448; Ex. 200, p. 4.10-13.)

c. Airports

The Avenal Airport, a private facility, is located about seven miles southwest of the Avenal Energy site, the Harris Ranch Airport is located about 15 miles northwest, and the Lemoore Naval Air Station is located 15 miles northeast. The project site is not in the landing or take-off pattern of any of these facilities. However, the project would be located within the Military Operational Airspace of the Lemoore facility. There are no agricultural airstrips in the project area.

The two heat recovery steam generator (HRSG) stacks would be 145 feet high, the air cooled condenser 139 feet high, and the transmission line towers would be 100 feet high. These structures would not penetrate navigable airspace for any airport.

Plume velocities from the HRSGs and other project components have the potential to destabilize low flying aircraft. A threshold velocity of 4.3 meters per second (m/s) or greater can cause moderate to severe turbulence. Staff estimates that the 4.3 m/s average thermal plume velocity would rise up to almost 1,000 above ground level (AGL) during certain meteorological conditions (calm wind, cool temperatures). The diameter of the thermal plume at this elevation would be 265 feet (80 meters). The peak velocity in the center of the plume could be considerably higher. Staff believes that the Avenal Energy HRSG would have thermal plume velocities resulting in turbulence that could affect low-flying aircraft maneuverability. The thermal plume velocities from the air condenser could be considerably higher and could achieve the 4.3 m/s threshold at 2,250 feet AGL. In addition, the diameter of the condenser plume is very large (900 feet (287 meters)) compared to the HRSG plume.

The existing flight pattern for the Avenal Airport and the Lemoore Naval Air Station does not bring aircraft at 1,500 feet or lower over the project site. Representatives from the military have reviewed the project and have concluded that it would not have any impact on the military mission in the area.

The agricultural fields near the project area are sprayed by crop-dusting aircraft. The Applicant controls the 148-acre parcel that surrounds the project site and will implement requirements that would preclude aerial spraying without prior notice and permission from the Applicant. To help avoid potential impacts on aircraft encountering plumes from the HSRGs and the air cooled condenser, we adopt Condition of Certification **TRANS-3** requiring the project owner to advise the Kings and Fresno County Agricultural Commissioners that crop-dusting aircraft should avoid direct overflight of the project site.

Visible HRSG plumes rise vertically and would not create ground hugging plumes that could impact vehicle traffic on Avenal Cutoff Road. The project air condenser would not emit visible plumes. (7/709 RT 447 - 448; Ex. 200, pp. 4.10-8 to 4.10-9.)

d. Hazardous Materials Transport

In operation the project would use hazardous substances including sulfuric acid and cleaning and water treatment chemicals. It is estimated that there would be an average of approximately seven truck trips per month including four deliveries per month of aqueous ammonia. In addition, there would be 27 additional truck trips of various hazardous materials every year. A licensed hazardous waste transporter would haul any hazardous waste from the project site to one of three Class 1 hazardous waste landfills in western Kern County near the communities of Buttonwillow and Kettleman City, and in Imperial County near the community of Westmoreland. The handling and disposal of hazardous substances are also addressed in the **WASTE MANAGEMENT, WORKER SAFETY** and **FIRE PROTECTION** and **HAZARDOUS MATERIALS** sections of this Decision.

If conducted in compliance with existing federal and state standards, deliveries of hazardous materials such as aqueous ammonia and water treatment chemicals will not cause a significant impact. (7/709 RT 447-448; Ex. 200, p. 4.10-8.)

4. Cumulative Impacts and Mitigation

The Committee is unaware of any other construction project that would affect the surrounding roadways and therefore finds that no cumulative impacts on traffic or transportation are expected from construction or operation of the Avenal Energy project. (7/709 RT 447 - 448; Ex. 200, pp. 4.10-9 to 4.10-10.)

FINDINGS OF FACT

Based on the evidence, and the implementation of the Conditions of Certifications below, we find as follows:

1. The evidence of record contains an analysis of the project's likely ability to comply with all applicable LORS related to Traffic and Transportation.

2. The evidence includes an analysis of the project's potential impacts to aviation safety in the area.

3. The project will not pose significant risk to aviation safety.

4. Condition of Certification **TRANS-2** requires a mitigation plan to repair area roads that are damaged by project construction-related traffic.

5. There would be no significant direct or cumulative traffic and transportation impacts related to the project.

CONCLUSIONS OF LAW

1. Construction and operation of the project, as mitigated herein, will not result in any significant direct, indirect, or cumulative impacts to the local or regional traffic and transportation system.

2. The project as proposed would comply with all applicable LORS related to Traffic and Transportation, which are set forth in Appendix A of this Decision.

CONDITIONS OF CERTIFICATION

TRANS-1 The project owner shall, in coordination with the city of Avenal and Kings County, and in consultation with the Reef-Sunset Unified School District, develop and implement a construction traffic control plan prior to construction site mobilization. Specifically, the traffic control plan shall include the following:

- The use of an off-duty traffic officer or the installation of a trailer-mounted camera activated temporary signal to maintain the existing LOS D during the afternoon peak on the SR-198 eastbound ramp on Avenal Cutoff Road.

- The project owner shall advise project construction contractors and subcontractors that they should not arrive or depart the site within

one-half hour of the times when school buses use Avenal Cutoff Road between Orange Avenue and I-5 (at the time of analysis those time were: weekdays at 7 a.m., Monday, Tuesday, Thursday and Friday at 3:15 p.m. and 3:30 p.m., and Wednesdays at 1:20 p.m. and 2:20 p.m.).

- Project truck traffic shall avoid using the Jayne Road/Avenal Cutoff Road intersection.
- Traffic safety measures for ingress/egress from the project site to Avenal Cutoff Road shall include at a minimum a full time stop sign, and a flag person during shift changes and heavy equipment ingress/egress.
- Ensure that the construction of the linears uses appropriate mitigation such as cones, signs, trailer-mounted camera, and flagmen/traffic officer to avoid unnecessary disruption of traffic flows on Avenal Cutoff Road;

Verification: At least 90 days prior to the start of site mobilization activities, the project owner shall submit a construction traffic control plan to the city of Avenal, the Kings County Public Works Department, and the Reef-Sunset Unified School District for review and comment, and to the CPM for review and approval, to ensure that the construction of the linears and the increase in construction traffic would not adversely affect traffic flow on Avenal Cutoff Road, and would not degrade existing LOS on the SR-198 eastbound ramp at Avenal Cutoff Road. The plan shall also describe how workers will be advised to avoid arriving and departing the Avenal Energy site within one-half hour of the time when the school bus uses Avenal Cutoff Road. The project owner shall provide the CPM with a copy of any comments received regarding the construction traffic control plan within 15 days of receipt.

TRANS-2 Prior to site mobilization activities, the project owner shall prepare a mitigation plan for Avenal Cutoff Road should it be damaged by project construction. The plan shall ensure that if Avenal Cutoff Road is damaged by project construction it will be repaired and reconstructed to original or as near original condition as possible. This plan shall include:

- Documentation of the pre-construction condition of Avenal Cutoff Road from I-5 to the access road to the site. Prior to the start of site mobilization, the project owner shall provide to the CPM photographs or videotape of Avenal Cutoff Road.
- Documentation of any portions of Avenal Cutoff Road that may be inadequate to accommodate oversize or large construction vehicles, and identify necessary remediation measures;

- Provide for appropriate bonding or other assurances to ensure that any damage to Avenal Cutoff Road due to construction activity will be remedied by the project owner; and
- Reconstruction of portions of Avenal Cutoff Road that are damaged by project construction due to oversize or overweight construction vehicles.

Verification: At least 90 days prior to the start of site mobilization, the project owner shall submit a mitigation plan for restoring Avenal Cutoff Road to its pre-project condition to the city of Avenal for review and comment, and to the CPM for review and approval.

Within 90 days following the completion of construction, the project owner shall provide photo/videotape documentation to the Kings County Planning Department, and the CPM that the damaged sections of Avenal Cutoff Road have been restored to their pre-project condition.

TRANS-3 Prior to start-up and testing activities, the project owner shall notify the Kings and Fresno County Agricultural Commissioners that due to the potential presence of project thermal plumes with significant size and velocities, crop-dusting aircraft should avoid direct overflight of the Avenal Energy site.

Verification: At least 60 days prior to start-up and testing activities, the project owner shall provide the CPM with a copy of letters advising the Kings and Fresno County Agricultural Commissioners that crop dusting aircraft should avoid direct overflight of the Avenal Energy site.

C. SOCIOECONOMICS

This topic reviews pertinent demographic information concerning population centers near the project site and evaluates the potential impacts of project-related population changes on housing, local schools, medical and fire protection services, public utilities, and other public services, as well as the fiscal and physical capacities of local government to meet those needs. The public benefits of the project are also reviewed, including the effects on local finances from property and sales taxes and school impact fees. In addition, an environmental justice screening analysis is performed to determine whether project-related activities would result in disproportionate impacts on low income and/or minority populations.

The evidence for this topic regarding impacts on public services was undisputed but the evidence regarding environmental justice was contested. (Ex. 1, § 6.10, Exs. 3(d), 25(j); Ex. 200, p. 4.8-1 et seq.; 07/07/09 RT 59 et seq.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

The analysis is focused on the construction phase of project development due to the potential influx of workers to the site. Socioeconomic impacts are considered significant if a large influx of non-resident workers and dependents move to the project area, increasing demand for community resources that are not readily available. (Ex. 200, p. 4.8-3.)

The study area for the Avenal Energy Project includes communities in the City of Avenal and Kings County that would most likely be affected by an influx of workers. The nearest population center in Avenal is about six miles southwest of the site. (Ex. 200, pp. 4.8-2, 4.8-4; Ex. 1, §§ 6.10.1, 6.10.1.1.)

1. Potential Impacts

The construction period will take about 27 months with a peak workforce of 550 workers in the 19th and 20th months of construction and an overall average workforce of about 326 workers per month, including skilled workers and contractor staff. (Ex. 200, p. 4.8-4; Ex. 1, § 6.10.2.1, **Table 6.10-11**.)

The evidentiary record indicates that approximately 80 percent of the construction workforce will be drawn from the large labor pool residing in Kings County and neighboring Tulare, Fresno, and Kern Counties. The majority of

workers are expected to commute from the population centers of Fresno and Bakersfield about one hour from the site. According to Staff, workers typically commute from their homes on a daily basis within a two-hour commute. An estimated 20 percent of the workforce with longer commutes may stay in local hotels, motels, mobile homes, or other rental properties on a weekly basis and return to their homes on the weekends. The evidentiary record indicates there is an adequate supply of hotels/motels, rental properties, and permanent housing to accommodate weekly commuters. (Ex. 200, pp. 4.8-4, 4.8-7; Ex. 1, pp. 6.10-9, 6.10-19.)

Socioeconomics **Table 1**, below, shows that local labor would be adequate to meet project construction needs based on data from the year 2005.

Socioeconomics Table 1
Total Labor in Fresno, King, Tulare, and Kern Counties
By Skill for Construction in 2005

Occupational Title	Annual Average 2005	Maximum Needed Per Month By Avenal Energy
Insulation Workers	430	33
Boilermakers	150*	65
Brick Masons/Block Masons	5,240	10
Carpenters	5,490	53
Electricians	2,870	90
Structural Iron and Steel Workers	130	47
Construction Workers	19,510	33
Millwrights	970	60
Operating Engineers and other Construction Equipment Operators	1,560	33
Painters	2,330	33
Plumbers, Pipefitters, and Steamfitters	2,660	176
Surveyors	190	6
Teamsters	15,477	5
Staff	Not Available	46

Source: Ex. 200, p. 4.8-5; Ex. 1, p. 6.10-20, **Table 6.10-12**.

Applicant expects to hire about 25 permanent, full-time employees for project operation from Kings County and neighboring counties within commuting distance of the project site. A minimal number of employees may relocate to the area and require permanent housing but any resulting effects on public services are considered *de minimis*. (Ex. 200, pp. 4.8-4, 4.8-8; Ex. 1, § 6.10.2.2, **Table 6.10-13**.)

It is therefore unlikely that a large influx of workers will seek housing accommodations in the study area due to relatively short commuting distances to the site. Impacts on housing and related services will be negligible in relation to the supply of available housing and services available. No replacement or displacement of residential housing will be necessary as a result of the project because project construction and operation will not increase demand for housing. (Ex. 200, pp. 4.8-4, 4.8-7; Ex. 1, § 6.10.1.3.)

Since project-induced potential population increases will be minimal or non-existent, construction and operation of the project will not result in significant adverse impacts on schools, parks and recreation, public utilities, law enforcement, or emergency services in the local communities. (Ex. 1, § 6.10.1.3 et seq; Ex. 200, p. 4.8-7 et seq.) Regarding potential impacts on law enforcement and emergency services at the site, the project owner will implement appropriate site security measures and medical emergency training to reduce the need for assistance to insignificant levels. (Ex. 200, p. 4.8-9.)

Section 17620 of the California Education Code allows a school district to levy a school development fee against new commercial or industrial construction within its boundaries. State and local agencies are precluded from imposing additional fees or other required payments on development projects for the purpose of mitigating possible enrollment impacts to schools. (Gov. Code, § 65996 et seq.)

The Avenal Energy Project is located within the Reef-Sunset Unified School District. The school development fee is calculated at $0.33 per square footage of the covered and enclosed space of commercial or industrial projects. [Ed. Code, § 17620 (a)(1)(A).] Based on the total area of the project's covered and enclosed structures, the project owner will pay a one-time fee estimated at $3,000. (Ex. 1, p. 6.10-26; Ex. 200, p. 4.8-8.) Condition of Certification **SOCIO-1** ensures payment of this one-time school development fee to comply with applicable LORS. There is no evidence of any significant project-related adverse socioeconomic impacts on educational resources. (*Id.*)

2. Section 25523(h) Public Benefit Findings

Public Resources Code section 25523(h) requires discussion of the project's public benefits. Applicant used an IMPLAN input-output model of the study area to estimate the project's multiplier effect associated with construction and operation. Project construction will provide local economic benefits by creating direct, indirect, and induced short-term employment. Property tax revenues from the project will be allocated to local schools and for city and county infrastructure, and redevelopment. (Ex. 200, pp. 4.8-5, 4.8-6, 4.8-7; Ex. 1, §§ 6.10.2.1.8, 6.10.2.2.5, 6.10.2.2.8.)

A summary of the project's economic benefits is shown in 2 **Socioeconomics Table 2**, below.

Socioeconomics Table 2 Data and Information**	
Estimated Project Costs without linear facilities	$530 million
Estimate of Locally Purchased Materials	
Construction	$2.5 million
Operation (Operation and Maintenance)	$2 million annually
Estimated Annual Property Taxes (Kings County and the city of Avenal)	$5.3 million per year
Estimated School Impact Fees	$3,000 to the Reef-Sunset Unified School District
Estimated Direct Employment	
Construction (average)	326 jobs (average per month)
Operation	25 jobs
Estimated Construction Secondary Impacts (Fresno, Kings, and Kern Counties)	
Personal Income	$124 million
Value Added	$731 million
Estimated Operation Secondary Impacts (Fresno, Kings, and Kern Counties)	
Personal Income	$1.5 million
Value Added	$153 million
Estimated Payroll	
Construction	$126 million total
Operation	$2.1 million annually

Socioeconomics Table 2 Data and Information**	
Estimated Sales Taxes (to the State of California with amounts flowing to Kings County and the city of Avenal as well as the cities of Hanford, Lemoore, and Corcoran)	
Construction	$181,000
Operation	$145,000 annually
Natural gas transportation franchise fee surcharge (city of Avenal)	May vary but could be as high as $2.5 million annually
Preliminary Existing Unemployment Rates	12.9% in December 2008, for Kings County (Not Seasonally Adjusted) and 9.1% in December 2008 for California (Not Seasonally Adjusted)
Percent Minority Population (6-mile radius)	92.44%
Percent Poverty Population (6-mile radius and beyond)	30.89%

** **Table 2** uses 3rd quarter 2007 dollars with no escalation for capital costs. Construction would be for 27 months and the project's life is planned for 30 years. Unemployment information is for Kings County. The results of the IMPLAN input-output modeling are for Fresno, Kings, and Kern Counties and show secondary impacts (indirect and induced). Population is for a six-mile radius from the power plant, except as noted.

Source: Ex. 200, p. 4.8-12.

3. Environmental Justice Screening Analysis

Applicant provided a screening analysis to determine whether environmental justice concerns are present in this case. (Ex. 1, § 6.10.2.2.10.) According to Applicant, since the mitigated project will not result in high and adverse impacts to any population, there are no disproportionate impacts on the environmental justice population and no further environmental justice analysis is required. (*Id.*) Staff's screening analysis reflects the same conclusion. (Ex. 200, pp. 1-3, 1-4, 4.8-2, 4.8-3; Staff's Opening Brief, pp. 12 through 15, Staff's Reply Brief, p. 17.)

The Center on Race, Poverty and the Environment (CRPE) and Rob Simpson claim that the environmental justice analysis failed to consider the *localized* air quality and public health effects on the minority/low-income populations who reside near the site. CRPE also asserts that nearby Spanish-speaking residents were denied access to information about the project because the Final Staff Assessment was not translated into Spanish. (CRPE's Opening Reply Brief, p. 24 et seq; Rob Simpson's Opening Brief, last page.)

California law defines environmental justice as "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies." (Govt. Code § 65040.12(e); Pub. Res. Code, § 71116(j).)

The Resources Agency directs entities under its jurisdiction, including the Energy Commission, to consider environmental justice in their decision-making processes if their actions have an impact on the environment. (Govt. Code, § 65040.12(b)(1).) The Resources Agency's guidance includes demographic screening, public outreach, and impact analysis as important factors in implementing its environmental justice policy. In conjunction with the Resources Agency's mandate, the California Environmental Protection Agency (Cal-EPA) has established an action plan to address environmental justice in its programs, policies, and standards.[45] (Pub. Res. Code, §§ 71110-71116.)

Two federal directives also provide guidance on incorporating environmental justice concerns in the environmental analyses conducted by state agencies. Federal Executive Order 12898, "*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*," requires the U.S. Environmental Protection Agency ("USEPA") and all other federal agencies and state agencies receiving federal aid to address disproportionately high and adverse human health or environmental effects of their programs on minority and low-income populations. The USEPA's *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses 3.2.1* (1998) calls for a two-step analysis: (1) does the potentially affected community include minority and/or low-income populations and, if it does, (2) are the environmental impacts likely to fall disproportionately on minority and/or low-income members of the community. [See also, *Title VI Public Involvement Guidance for EPA Assistance Recipients Administering Environmental Permitting Programs*, 71 Fed. Reg. 14207 et seq. (March 21, 2006).]

According to USEPA's guidance, an environmental justice population exists if the low-income and/or minority populations of the affected area constitute 50 percent or more of the general population or if the minority population percentage in the area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. (Ex. 1, § 6.10.2.2.10; Ex. 200, p. 4.8-2.)

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[45] October 2004, Cal-EPA Action Plan at: http://www.calepa.ca.gov/EnvJustice/ActionPlan/ and Phase 2 updates at: http://www.calepa.ca.gov/EnvJustice/ActionPlan/Phase2/default.htm and en español at: http://www.calepa.ca.gov/EnvJustice/

Staff typically uses a one-mile and a six-mile radius to determine the presence of environmental justice populations because the same distances are used to assess air quality and public health effects. In this case, Census 2000 data indicate that the minority population by census block (the smallest geographic unit for which the Census Bureau collects and tabulates data) is at least 92.44 percent within a six-mile radius of the project site. The Census Block group (combination of census blocks and subdivision of a census tract) shows that the below-poverty population is 30.89 percent within the six mile radius.[46] Staff's **Socioeconomics Figure 1** at the end of this chapter shows the communities included in the analysis. (Ex. 200, pp. 1-4, 4.8-3.)

An environmental justice screening analysis was triggered because minority populations within the six mile radius exceed the 50 percent threshold. The Commission's screening analysis incorporates the guidance from both the Resources Agency and the federal government and includes (1) specific public outreach to notify, inform, and involve community members, including non-English speaking individuals; (2) assessing potential environmental and health impacts of the proposed project; and (3) determining whether any potential impacts disproportionately burden the minority populations. [47] (Ex. 200, pp. 1-3, 1-4.)

The Commission's public outreach program is an integral part of the Commission's siting process. The Public Adviser's Office facilitates the public outreach program by sending letters and notices to city and county officials, as well as "sensitive receptors" (including schools, community, cultural and health facilities, daycare and senior-care centers, and environmental and ethnic organizations) within a six-mile radius of the site. (Ex. 200, p. 1-3.) The Public Adviser testified that such notification was implemented in this case. (07/07/09 RT 59 - 61.)

The Commission's regulations require Staff to send notices to property owners within 1,000 feet of a project and 500 feet of linear facilities. The notification letters include project website information, Staff contact information, and information on how to access project-related documents. These letters request

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[46] Several census block groups extend beyond the six-mile radius and may have affected this population statistic. (Ex. 200, p. 4.8-3.)

[47] California Energy Commission Staff Approach to Environmental Justice, which is available at: http://www.energy.ca.gov/public_adviser/staff_env_justice_approach.html

public and agency review, comment, and continued participation in the public workshops and hearings. (Ex. 200, p. 1-3.)

Staff provided testimony that notices and letters were sent as required to a comprehensive list of libraries, agencies, organizations, residents, and property owners within a six-mile radius of the project site. The Public Adviser arranged for the City of Avenal to distribute 1,200 copies of a bilingual notice to local facilities frequented by the public, such as City Hall, the community/recreation center, grocery stores, and gas stations within the Avenal area to publicize the public hearings on the project. Notice was also published in the Community News Section of the May 14, 2008, issue of the Avenal Chimes, a weekly newspaper with the highest circulation in the Avenal area. In addition, notice of the July 7, 2009, evidentiary hearing was sent to the Native American Heritage Commission, the Sierra Club and Audubon Society, as well as the Kings County Economic Development Corporation. (Ex. 200, p. 1-3.)

CRPE did not provide evidence of significant errors in the conduct of public outreach efforts in this proceeding. Although the Final Staff Assessment was not translated into Spanish, the Spanish-speaking population received sufficient notice of the proceedings in Spanish, including information on how to participate. Moreover, CRPE represented the interests of the environmental justice populations and had the opportunity to raise concerns specific to their communities. Furthermore, a Spanish translator was available at most Staff workshops and at the evidentiary hearing. (Applicant's Opening Brief, p. 52.) An informational sheet describing the project was provided in Spanish and the Public Adviser, who speaks Spanish, offered to help members of the public to participate more actively in the proceeding. (07/07/09 RT, pp. 58-59.) Therefore, we find the public outreach was adequate and that due process was served.

The evidentiary record indicates that the fully mitigated project will not result in any significant adverse environmental or public health impacts to any population, including farm workers in the region, regarding the following technical topics: **AIR QUALITY, HAZARDOUS MATERIALS MANAGEMENT, LAND USE, NOISE, PUBLIC HEALTH, SOCIOECONOMICS, SOILS AND WATER RESOURCES, TRAFFIC AND TRANSPORTATION, TRANSMISSION LINE SAFETY AND NUISANCE, VISUAL RESOURCES, AND WASTE MANAGEMENT**. The analyses for each topic were based on well-established scientific protocols and regulatory standards, which account for sensitive receptors that are presumed to be most susceptible to adverse environmental or public health impacts. Since the project will not result in significant impacts for any sensitive receptor

population, we conclude that the project will not result in a disproportionate impact on the environmental justice populations. (Ex. 200, pp. 1-4; see also the sections of this Decision concerning the topics identified above.)

4. Cumulative Impacts

Since the project will not result in any significant adverse socioeconomic impacts on housing, schools, or public services, it is not expected to contribute to significant cumulative socioeconomic impacts in the project vicinity. Construction of the Avenal Energy Project may coincide with construction of two other power plants in Kings County and one power plant in Fresno County. In addition, several other projects in the area could begin construction during the same period, including a new landfill and expansion of an existing landfill in Kettleman City. Staff reviewed the potential construction workforce overlap during the project's anticipated 27-month construction period beginning April 2010, and determined that the workforce in the four-county area is large enough to accommodate construction of the power plant projects as well as the other projects scheduled within the same timeframe. (Ex. 200, p. 4.8-10.)

According to Staff, construction of the four power projects and other development projects will provide economic benefits to the four-county area because currently there is a high unemployment rate. (Ex. 200, p. 4-11.) Thus, we find no evidence that the project will have a cumulatively considerable impact on the labor force causing an influx of non-local workers to migrate to the study area.

FINDINGS OF FACT

Based on the evidence of record, we make the following findings:

1. A large skilled labor pool in Kings County and neighboring Tulare, Fresno and Kern Counties is available for construction and operation of the project.
2. The project will not cause an influx of a significant number of construction or operation workers to relocate in the local area.
3. The project will not result in significant adverse effects on local employment, housing, schools, public utilities, parks and recreation, law enforcement, or emergency services.
4. The project owner will pay the one-time statutory school development fee estimated at $3,000.

5. The project will provide a construction payroll of about $126 million (2007 dollars).

6. The project will spend an estimated $2.5 million (2007 dollars) on local purchases of materials and equipment during construction.

7. The project will generate property tax revenues of approximately $5.3 million (2007 dollars) per year to Kings County, of which $1 million will be distributed to the City of Avenal.

8. The local operations payroll of approximately $2.1 million (2007 dollars) and local purchases of supplies during operation will yield an estimated $145,000 (2007 dollars) per year in sales tax revenues.

9. Total capital cost of the project including payroll is estimated at $530 million (2007 dollars), without linear facilities.

10. The combined public outreach efforts of the Public Adviser's Office and the Staff were consistent with Commission requirements.

11. The minority population within a six-mile radius of the project site exceeds the 50 percent threshold for a screening level environmental justice analysis.

12. The screening level environmental justice analysis indicates that there are no disproportionate impacts on low-income and/or minority populations. The project affects all local residents equally regardless of ethnicity or income level.

13. The project will provide direct, indirect and induced economic benefits to Kings County and surrounding communities.

14. Construction and operation of the project will not result in any direct, indirect, or cumulative significant adverse socioeconomic impacts.

15. Implementation of the Condition of Certification, below, and the mitigation measures described in the evidentiary record, ensures that the project will not result in adverse socioeconomic impacts.

CONCLUSIONS OF LAW

1. We therefore conclude that implementation of all Conditions of Certification in this Decision, including the Condition of Certification below, ensures the project will comply with all applicable laws, ordinances, regulations, and

standards relating to socioeconomic factors as identified in the pertinent portions of **Appendix A**.

2. The evidence of record contains an adequate analysis of socioeconomic effects related to the project and establishes that the project will create no significant adverse socioeconomic effects as defined under the California Environmental Quality Act.

3. The evidence of record contains an adequate analysis of potential socioeconomic effects related to the project pursuant to Federal and state guidelines concerning environmental justice and establishes that the project will create no disproportionate adverse effects on minority or low-income populations.

CONDITION OF CERTIFICATION

SOCIO-1 The project owner shall pay the one-time statutory school development fee to the Reef-Sunset Unified School District as required by Education Code Section 17620.

Verification: At least 30 days prior to start of project construction, the project owner shall provide the Compliance Project Manager (CPM) proof of payment of the statutory development fee.

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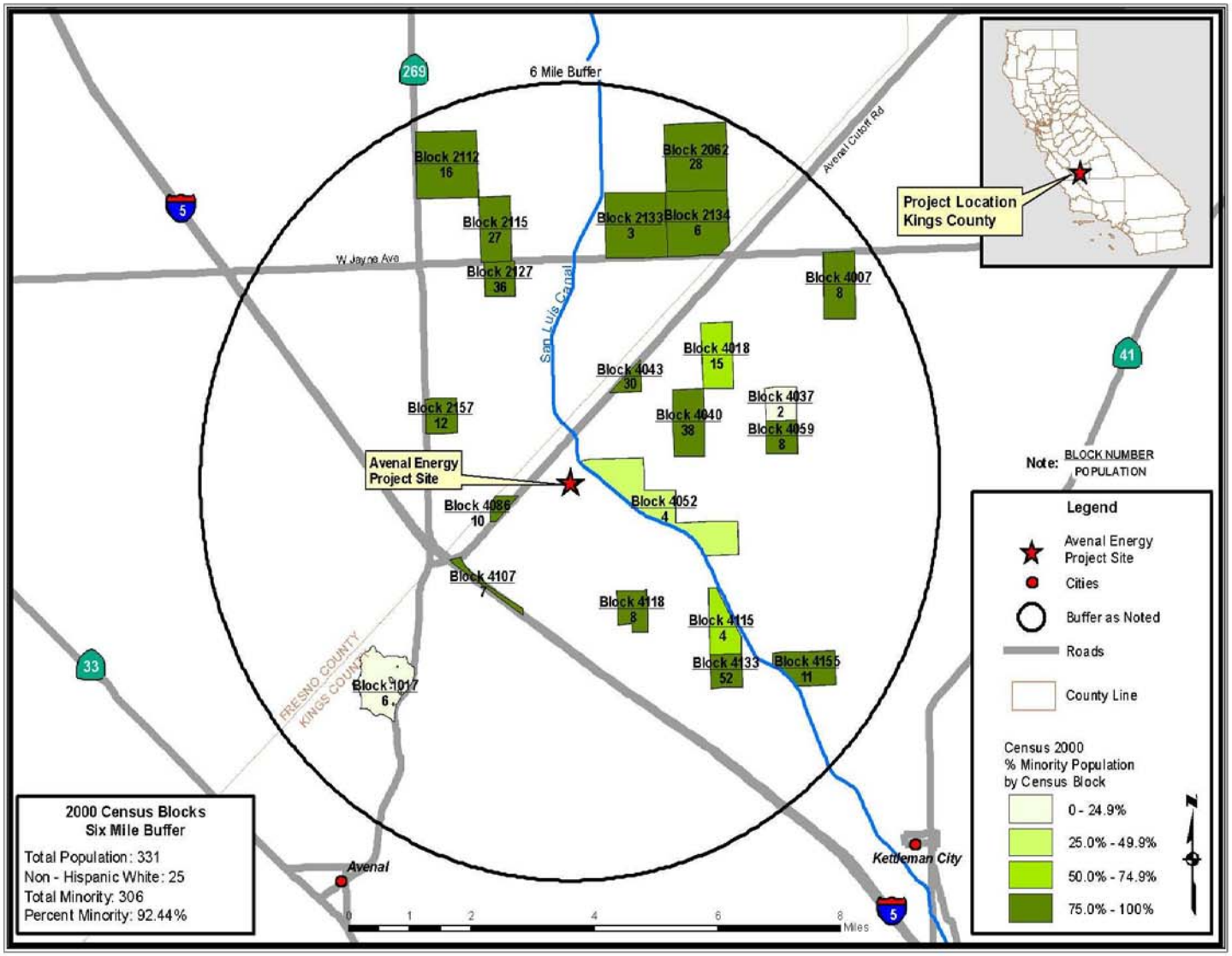
SOCIOECONOMICS - FIGURE 1

Avenal Energy - Census 2000 Minority Population by Census Block - Six Mile Buffer



SOURCE: Ex. 200

D. NOISE AND VIBRATION

The construction and operation of any power plant will create noise. The character and loudness of this noise, the times of day or night during which it is produced, and the proximity of the project to sensitive receptors combine to determine whether project noise will cause significant adverse impacts. In some cases, vibration may be produced as a result of construction activities such as blasting or pile driving; these activities have the potential to cause structural damage and annoyance. The analysis of record summarized below was uncontested and evaluates whether noise and vibration produced during project construction and operation will be sufficiently mitigated to comply with applicable law and avoid the creation of significant adverse impacts.[48] (7/7/09 RT 446-48; Exs. 1, § 6.12.4.2; 25 (h); 200 pp. 4.6-1 to 4.6-19.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

The project site is located on about 34 acres of a 148 acre parcel in an area designated for industrial uses. (Ex. 200, p. 3-2.) Primarily agricultural uses exist in the immediate vicinity. Sources of ambient noise in the project area include vehicle traffic, farm operations, the City of Avenal Water Treatment Plant, occasional aircraft over-flights, and natural sounds such as birds and insects. The nearest sensitive noise receptors are a farmhouse located approximately 1.3 miles to the northeast, and another farmhouse about 1.8 miles southwest of the project site. (Ex. 200, p. 4.6-4.)

Although the site is within the City of Avenal, the City – Kings County boundary is adjacent to the northern and eastern site boundaries. Therefore, both the noise element of the City of Avenal's General Plan and that of the Kings County General Plan apply. (Ex. 200, pp. 4.6-3 to 4.6-4.) Under the City's criteria, noise generating land uses should be discouraged if resulting noise levels will exceed 65 dBA CNEL at the boundaries of planned or existing noise sensitive land uses. (Ex. 200, p. 4.6-3.) For residential land uses, the County designates noise levels below 65 dBA as "acceptable", those between 65-70 dBA as "conditionally acceptable", and noise levels above 70 dBA as "unacceptable." (Ex. 200, p.4.6-4.)

CEQA Guidelines also set forth characteristics of noise impacts that may indicate potentially significant effects from project-related noise, such as "a substantial

[48] The evidence also considered whether the project would cause disproportionate impacts to minority and low income populations. (Staff's Opening Brief, at 12.)

permanent increase in ambient noise levels in the project vicinity above levels existing without the project." (Cal. Code Regs., tit. 14 § 15000 et seq., Appen. G, Section XI.) In accordance with this standard, the Commission uses the significance threshold of 5 dBA when project-related noise emissions exceed existing ambient noise levels at the nearest sensitive receptor. We believe that an increase in background noise levels of up to 5 dBA in a residential setting is insignificant and that an increase of more than 10 dBA is clearly significant. An increase of between 5 dBA and 10 dBA may be considered adverse, but could be either significant or insignificant depending upon the particular circumstances of a given case. (Ex. 200, p. 4.6-5.)

Factors to be considered in determining the significance of an adverse impact as defined above include: (1) the resulting noise level; (2) the duration and frequency of the noise; (3) the number of people affected; and (4) the land use designation of the affected receptor sites. Noise due to construction activities is usually considered insignificant in terms of CEQA compliance if the construction activity is temporary and the use of heavy equipment and noisy activities is limited to day-time hours. (Ex. 200, pp. 4.6-5 to 4.6-6.)

The evidence consists, in part, of a noise survey performed by the Applicant on April 19-20, 2001. (Ex. 1, § 6.12.4.2, Table 6.12-4, Figures 6.12-2, 6.12-3, 6.12-4.) The evidence establishes that this 2001 noise survey remains valid since there has been no known change in the project area which would affect the ambient noise level. (Ex. 200, p. 4.6-6.) Although the ambient noise level was measured at five locations (*Id*.), only the nearest sensitive receptors are pertinent for present purposes:

- Location 4 (ML4): Nearest residence (farmhouse) to the northeast of the project site. This residence is located approximately 1.3 miles from the project site, at the intersection of Avenal Cutoff Road and Orange Avenue. Short-term monitoring was conducted several times during the day-time and night-time periods at the front yard of this residence.

- Location 5 (ML5): Nearest residence (farmhouse) to the southwest of the project site. This residence is located approximately 1.8 miles from the project site, at the intersection of Avenal Cutoff Road and Plymouth Avenue, near Interstate 5. Short-term monitoring was conducted several times during the day-time and night-time periods at the front yard of this residence.

The existing measured ambient noise levels are shown on **Table 1** below:

Noise Table 1
Summary of Noise Levels

Measurement Site	Measured Noise Levels, dBA	
	Night-time Hours L_{90}	Average During Day-time Hours L_{eq}
ML4, Residence 1.3 Miles Northeast of the Site	35	42-46
ML5, Residence 1.8 Miles Southwest of the Site, Near Interstate 5	60	≥60

Source: Ex. 1, §6.12.4.2, Table 6.12-4, Figures 6.12-2, 6.12-3, 6.12-4.

The evidence further shows the effects the project's short-term construction activities and its long-term operation will have upon the ambient levels.

1. Construction

Construction noise is a temporary event, in this case expected to last about 27 months. (Ex. 200, p. 3-4.) The evidence shows that the predicted noise levels would not exceed 40 dBA at ML4 or 37 dBA at ML5. (Ex. 200, p. 4.6-7.) These are summarized in **Table 2**, below:

Noise Table 2
Predicted Construction Noise Levels

Receptor	Highest Construction Noise Level (dBA)	Existing Ambient, Average Day-time L_{eq} (dBA)	Cumulative, Using Lowest Ambient Noise Level	Change in Ambient
ML4	40	42	44	+2
ML5	37	60	60	0

Source: Ex. 1, §6.12.5.3.

Neither the City's nor the County's Noise Element limits the loudness of construction noise. Moreover, the greatest increase – i.e. 2 dBA at ML4 – is barely noticeable. Thus, the evidence convincingly establishes that project construction will comply with applicable LORS. To further insure construction noise levels will not be disruptive at the nearest residences, we have adopted

Conditions of Certification **NOISE-1**, **NOISE-2**, and **NOISE-6**. The first two Conditions establish a complaint process to resolve issues arising from any excessive construction noise; Condition **NOISE-6** limits construction to day-time hours on weekdays and Saturdays, with no construction allowed on Sundays. This is consistent with the applicable local noise ordinances. (Ex. 200, p. 4.6-8.)

High pressure steam blows, typically the loudest noise encountered during construction, if not silenced, could create noise levels of roughly 60 dBA at ML4 and 63 dBA at ML5. With the temporary silencer installed as required by Condition **NOISE-7**, these levels will be attenuated by 20 to 30 dBA. (Ex. 200, pp. 4.6-8 to 4.6-9.) We have modified Staff's recommendation to limit steam blows to the day and time restrictions identified in Condition **NOISE-6**.

Next, construction of the linear facilities progresses rapidly, thus not subjecting any one receptor to noise impacts for more than a few days. To protect construction workers from injury due to excessive noise, Condition **NOISE-3** requires the project owner to implement a noise control program consistent with OSHA and Cal/OSHA requirements. (Ex. 200, p. 4.6-9.) Finally, there is no indication in the evidence of record that vibration from construction activities would be perceptible at any appreciable distance from the project site, or that it would cause any impact. (*Id.*)

2. Operations

The noise emanating from a power plant is unique. It is generally broadband, steady state in nature. When it is operating, the Avenal Energy Project will essentially be a continuous noise source. This noise contributes to, and becomes part of, the background noise level when most intermittent noises cease. (Ex. 200, p. 4.6-11.) The primary noise sources of this project include the gas turbine generators and their exhaust stacks, combustion air inlets, electrical transformers, and various pumps and fans. (Ex. 200, p. 4.6-10.)

The evidence identifies various mitigation measures which will be used to reduce operational noise, including balancing the noise emissions of various power plant features during the design stage to avoid creating annoying tonal (pure-tone) noises. Other measures include stack, generator exhaust, and air inlet silencing, as well as turbine and auxiliary skid enclosures. (*Id.*) As a result of mitigation efforts, the evidence indicates project operational noise levels of 33 dBA at ML4 and 28 dBA at ML5. These levels are substantially below the 65 dBA noise

standards contained in the City's and the County's LORS. (Ex. 200, pp. 4.6-10 to 4.6-11.)

Increases in ambient noise level can be especially annoying at night, during normal sleeping hours. **Table 3** shows the effect of project operations upon night time noise levels:

Noise Table 3
Predicted Operational Night-Time Noise Levels

Receptor	Project Alone Operational Noise Level (dBA)	Measured Existing Ambient, Average Night-time L_{90} (dBA)	Project Plus Ambient L_{90} (dBA)	Change in Ambient Level
ML4	33	35	37	+2
ML5	28	60	60	0

Source: Ex. 1, Table 6.12-7.

As with day-time levels, the 2 dBA increase at ML4 will be essentially imperceptible. Condition of Certification **NOISE-4** ensures compliance with the foregoing noise levels. (Ex. 200, p. 4.6-12.)

As with construction activities, operational and maintenance activities will meet OSHA and Cal/OSHA standards to protect workers. (Ex. 200, pp. 4.6-12 to 4.6-13; Condition of Certification **NOISE-5**.) The evidence also establishes that operational vibration – whether ground borne or air borne – will be undetectable by likely receptors. (Ex. 200, p. 4.6-13.) Finally, the evidence shows that the noise from the Avenal Energy Project, even when coupled with noise from expansion and operation of the Chemways facility in Kettleman Hills, will not create a significant cumulative impact to the existing receptors due to the several miles distance between them. (Ex. 200, p. 4.6-13.)

FINDINGS OF FACT

Based on the evidence of record, the Commission makes the following findings.

1. Construction and operation of the Avenal Energy Project will not significantly increase noise levels above existing ambient levels in the surrounding community.

2. Construction noise levels are temporary and transitory in nature and will be mitigated to the extent feasible by sound reduction devices, limiting construction to day-time hours in accordance with local noise control LORS, and providing a notice and complaint process to the public.

3. Traditional high pressure steam blows would result in excessive levels of noise.

4. Additional mitigation, such as that identified in the evidence of record and adherence to Condition of Certification **NOISE-7**, will assure that noise from steam blow activities is reduced to below a level of significance.

5. Project construction will increase day-time ambient noise levels by 2 dBA at the nearest residential receptor. The evidence establishes that this will not be a significant increase.

6. Project operations will increase night-time ambient noise levels by 2 dBA at the nearest residential receptor. The evidence establishes that this will not be a significant increase.

7. The project owner will implement measures to protect workers from injury due to excessive noise levels during both construction and operation.

8. The Avenal Project will not create ground or air borne vibrations which will cause significant off-site impacts.

9. Implementation of the Conditions of Certification, below, ensure that project-related noise emissions will not cause significant adverse impacts to sensitive noise receptors.

CONCLUSIONS OF LAW

1. The Commission concludes that implementation of the following Conditions of Certification ensure that the Avenal Energy Project will comply with the applicable laws, ordinances, regulations, and standards on noise and vibration as set forth in the pertinent portion of **Appendix A** of this Decision.

2. The project will not cause indirect, direct, or cumulative significant adverse noise impacts.

CONDITIONS OF CERTIFICATION

NOISE-1 At least 15 days prior to the start of ground disturbance, the project owner shall notify all residents within two miles of the project site and one-half mile of the linear facilities, by mail or by other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project. If the telephone is not staffed 24 hours a day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction where it is visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: Prior to ground disturbance, the project owner shall transmit to the compliance project manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed and describing the method of that notification, and that the telephone number has been established and posted at the site, as well as providing that telephone number.

NOISE COMPLAINT PROCESS

NOISE-2 Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent shall:

- use the Noise Complaint Resolution Form (below), or a 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, or by 5:00 p.m. Monday if the complaint is received on the preceding Friday, Saturday, or Sunday;
- conduct an investigation to determine the source of noise mentioned in the complaint;
- if the noise is project related, take all feasible measures to reduce the source of the noise; and
- submit a report documenting the complaint and actions taken. The report shall include: a complaint summary, including the final results of noise reduction efforts and, if obtainable, a signed statement by the complainant stating that the noise problem has been resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file a Noise Complaint Resolution Form, shown below, with both the local jurisdiction and the CPM. This form shall document the resolution of the complaint. If mitigation is required to resolve the complaint, and the complaint is not resolved within a three-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is performed and complete.

NOISE-3 The project owner shall submit to the CPM for review and approval a noise control program. The noise control program shall be used to reduce employee exposure to high (above permissible) noise levels during construction in accordance with the applicable OSHA and Cal-OSHA standards.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit the noise control program to the CPM. The project owner shall make the program available to Cal-OSHA upon request.

NOISE RESTRICTIONS

NOISE-4 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the noise levels due to operation of the project alone will not exceed: an hourly average of 33 dBA during the four quietest consecutive hours of the nighttime, measured at or near monitoring location ML4 (approximately 1.3 miles northeast of the project site boundary); and an hourly average of 28 dBA, during the four quietest consecutive hours of the nighttime, measured at or near monitoring location ML5 (approximately 1.8 miles southwest of the project site boundary).

No new pure-tone components shall be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

A. When the project first achieves a sustained output of 85% or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at monitoring location ML4, or at a closer location acceptable to the CPM. This survey during the power plant's full-load operation shall also include measurement of one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been caused by the project.

   During the period of this survey, the project owner shall conduct a short-term survey of noise at monitoring location ML5, or at a closer location acceptable to the CPM. The short-term noise measurements at this location shall be conducted during the nighttime hours of 10:00 p.m. to 7:00 a.m.

The measurement of power plant noise for the purposes of demonstrating compliance with this Condition of Certification may alternatively be made at a location, acceptable to the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence. The character of the plant noise shall be evaluated at the affected receptor locations to determine the presence of pure tones or other dominant sources of plant noise.

B. If the results from the noise survey indicate that the power plant noise at the affected receptor sites exceeds the above values during the four quietest consecutive hours of the nighttime, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits.

C. If the results from the noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

Verification: The survey shall take place within 60 days of the project first achieving a sustained output of 85% or greater of rated capacity. Within 30 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the survey report shall be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limit and a schedule, subject to CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.

Within 30 days of completion of the new survey, the project owner shall submit to the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.

NOISE-5 Following the project's attainment of a sustained output of 85% or greater of its rated capacity, the project owner shall conduct an occupational noise survey to identify any 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 to be employed in order 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.

CONSTRUCTION RESTRICTIONS

NOISE-6 Heavy equipment operation and noisy construction work relating to any project features shall be restricted to the following times:

Mondays through Fridays:	7:00 a.m. to 7:00 p.m.
Saturdays:	9:00 a.m. to 6:00 p.m.
Sundays:	No Noisy Construction Allowed

Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

STEAM BLOW RESTRICTIONS

NOISE-7 The project owner shall equip the steam blow piping with a temporary silencer. The project owner shall conduct steam blows only during the days and hours identified for noisy construction in Condition **NOISE-6**.

Verification: At least 15 days prior to the first high pressure steam blow, the project owner shall submit to the CPM drawings or other information describing the temporary steam blow silencer and a description of the steam blow schedule.

NOISE COMPLAINT RESOLUTION FORM

Avenal Energy Project (08-AFC-1)
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 three feet from noise source _____dBA Date: _____ Initial noise levels at complainant's property: _____ dBA Date: _____ Final noise levels at three 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.

E. VISUAL RESOURCES

Visual resources are the features of the landscape that contribute to the visual character or quality of the environment. CEQA requires an examination of a project's visual impacts in order to determine whether the project has the potential to cause substantial degradation to the existing visual character of the site and its surroundings, substantially affect a scenic vista or damage scenic resources, or create a new source of substantial light or glare affecting day or nighttime views in the area. (Cal. Code Regs., tit. 14 § 15382, Appendix G.)

Key Observation Points (KOPs) represent the most critical locations from which the project would be seen. These reflect, in particular, those key sensitive viewer groups most likely to be affected by the project. Assessments of project impact are determined from these KOPs.

KOPs are rated for their level of visual sensitivity to impact. Visual simulations of the project as seen from KOPs, along with field observations, are used to evaluate the projected levels of project contrast, dominance, and view blockage. In addition, the project is evaluated for conformance with applicable LORS. Local public policy pertaining to visual resources is also taken into account in determining levels of viewer concern.

As needed, Conditions of Certification are imposed to mitigate potentially significant impacts, and to ensure LORS conformance.

SUMMARY AND DISCUSSION OF THE EVIDENCE

The proposed Avenal Energy Project would be built in the City of Avenal in Kings County, California. The project site is in the northeastern portion of the City on the east side of the Kettleman Hills (elevation 1,200 feet), two miles east of U.S. Interstate 5 (I-5) on undeveloped property zoned for industrial use that is surrounded by irrigated farmlands, orchards, and open space. (7/7/09 RT 447 - 448; Ex. 200, p. 4.12-3.)

The most prominent visual features of the Avenal Energy Project are summarized in **Visual Resources Table 1**, below.

Visual Resources Table 1
Summary of Proposed Avenal Project
Major Publicly Visible Structures

Project Component	Number of Units	Length, Width, Diameter (approximately)	Height (approximately)	Materials
Heat Recovery Steam Generator Stacks	2	19-foot diameter	145 feet	steel
Air Cooled Condenser	1	278-foot x 258-foot	139 feet	composite
230-kV Transmission Pole	43	6-foot diameter	120 feet	steel
Heat Recovery Steam Generator Enclosure	2	125-foot x 35-foot	80 feet	steel
Combustion Turbine Generator Air Inlet	2	60-foot x 45-foot	55 feet	steel

(Ex. 200, p. 4.12-4).

1. Direct/Indirect Impacts and Mitigation

a. Construction Impacts

Approximately 35 acres of construction laydown and parking area would be on the 148-acre parcel containing the projects site. They will be removed after completion of project construction and the area replanted in row crops.

Construction activities would occur over approximately 27-months. Activities include installation of the gas turbine generators and power train foundations; erecting of the heat recovery steam generators; installation of pipe supports, liner plates and baffles and aboveground electrical equipment; exhaust stack fabrication and condenser work; and installation of the air cooled condenser, aboveground tanks and prefabricated buildings. As project structures are erected that exceed the height of the orchards, they would become visible to the public. Construction materials, heavy equipment, trucks, modular offices, and parked vehicles on the construction site and the laydown area would have limited public visibility due to the adjacent orchard.

Project construction activities would take place primarily during daylight hours. Lighting that may be required to facilitate night time construction activities would, to the extent feasible and consistent with worker safety codes, be directed toward the center of the construction site and shielded to prevent light from straying offsite. Task-specific construction lighting would be used where feasible. The use of shielded directional exterior lights and fixtures of a non-glare type on the

construction site and laydown area would minimize offsite light and glare impacts. We adopt Condition of Certification **VIS-2** to formalize appropriate construction lighting measures.

The project's proposed construction activities, though noticeable from I-5 (KOP 1) and Avenal Cutoff Road (KOPs 2, 3, and 4), with the implementation of mitigation measures proposed by the Applicant and Conditions of Certification **VIS-1** and **VIS-2**, will cause less than significant visual effects. (7/7/09 RT 447 - 448; Ex. 200, p. 4.12-13.)

b. Operation Impacts

Before considering individual KOPs, we consider generally whether the proposed project would substantially affect a scenic vista or damage scenic resources, or create a new source of substantial light or glare affecting day or night time views in the area. There are no publicly designated national, state, or county scenic vistas in the project's vicinity and therefore no impacts in that regard. Similarly, there are no scenic resources identified by a federal, state, or local agency and thus no potential for damage to such a resource. (7/7/09 RT 447-448; Ex. 200, pp. 4.12-3 to 4.12-4.)

Operation of the proposed project has the potential to introduce light offsite to surrounding properties, and up-lighting to the night time sky. If bright exterior lights were not hooded, and lights not directed onsite, they could introduce significant light or glare to the vicinity.

The Applicant proposes that operational lighting be directed onsite and shielded from public view. Non-glare fixtures and use of switches, sensors, and timers to minimize the time that lights would be needed for safety and security will be specified. We adopt Condition of Certification **VIS-5** requiring submittal and approval of a light management plan. With the effective implementation of the proposed light mitigation measures, the project will not become a substantial new source of light that could adversely affect existing night time views.

The photographic simulations of the completed power plant provided by the Applicant show the use of a surface treatment on major project structures and buildings consisting of a light color and a flat finish. The Applicant proposes to treat or paint all new structures including permanent equipment and fencing with a non-reflective finish so as to reduce potential glare effects. Condition of Certification **VIS-3** requires submittal of a surface treatment plan for publicly visible power plant structures and the electric transmission line poles to assure that the proper treatments are applied. With that mitigation, project structures

would not be a source of substantial glare that could adversely affect day time views. (7/7/09 RT 447 - 448; Ex. 200, pp. 4.12-13 to 4.12-14.)

The following KOPs were selected for this project:

- ***KOP 1*** – Avenal Cutoff Road Bridge Over U.S. Interstate 5 Looking East;
- ***KOP 2*** – Avenal Cutoff Road Looking East;
- ***KOP 3*** – Entrance To Project Site From Avenal Cutoff Road Looking Southeast; and
- ***KOP 4*** – Avenal Cutoff Road Bridge Over San Luis Canal Looking South.

(7/7/09 RT 447-448; Ex. 200, pp. 4.12-5.)

The location of the **KOPs** in relation to the project site are shown on **Visual Resources Figure 1**, which includes a fifth **KOP 5.** We do not discuss **KOP 5** further because the project would not be visible at that location due to intervening landscaping trees and orchards. (7/7/09 RT 447- 448; Ex. 200, pp. 4.12-5 to 4.12-6.)

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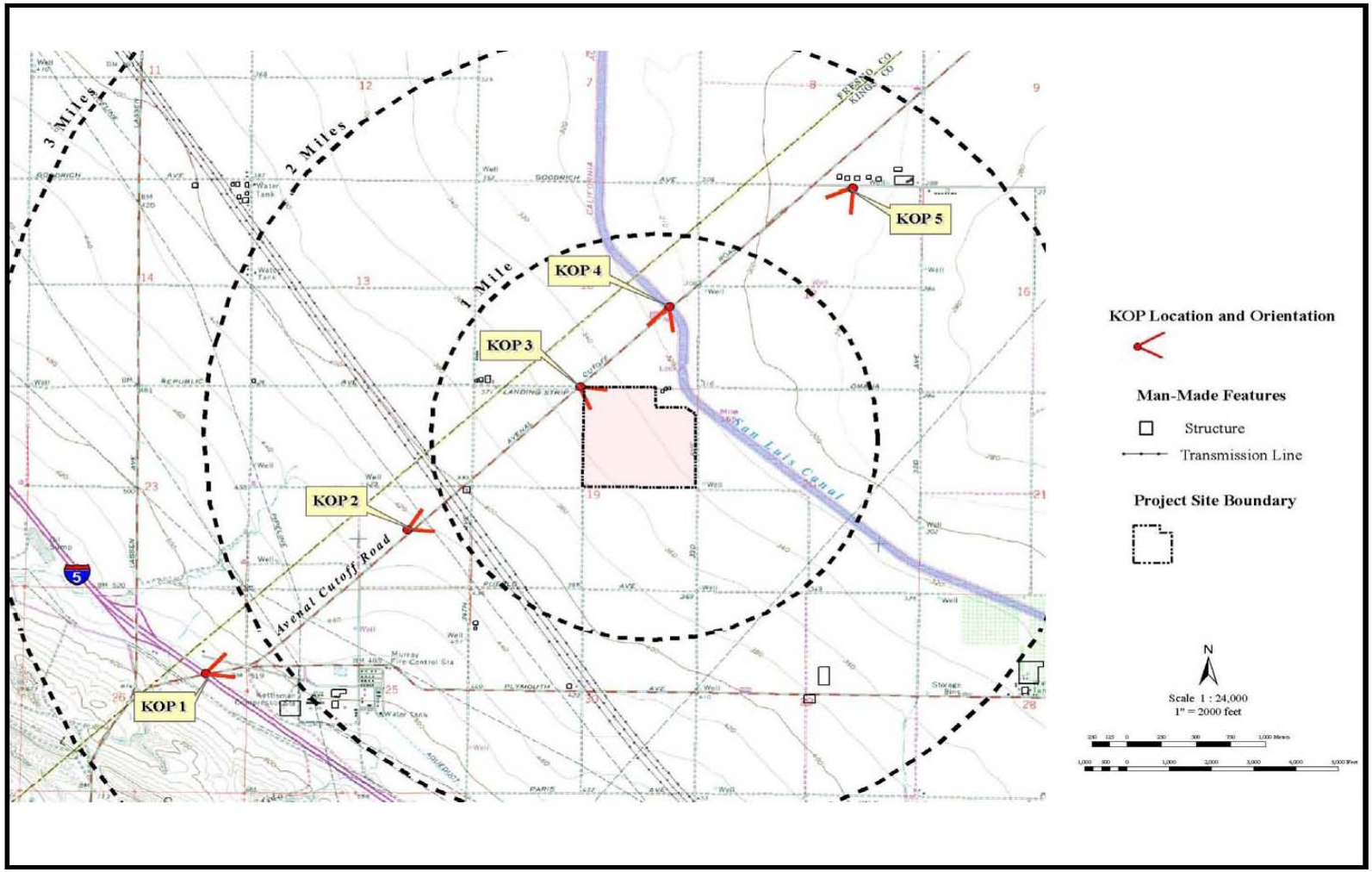
VISUAL RESOURCES - FIGURE 1
KOP Locations



SOURCE: EX. 200

KOP 1 − View from Avenal Cutoff Road Bridge Over U.S. Interstate 5 Looking East

Visual Resources Figure 2 is a photo simulation of the project structures that would be visible from **KOP 1** after completion of project construction. **KOP 1** is located on the Avenal Cutoff Road overpass for I-5, chosen to approximate the view of a motorist on I-5 at its closest point to the project site. This point is approximately 25 feet higher than the I-5 road surface.

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VISUAL RESOURCES - FIGURE 2

KOP 1: Simulation of Proposed Project After Completion of Construction

SOURCE: EX. 200

Visual Sensitivity

The most prominent features in the existing view are the Avenal Cutoff Road, orchard, row crops, overhead utility poles and lines in the foreground and middleground, PG&E overhead electric transmission lattice towers in the middleground, and orchard in the background. The estimated public appeal of the visual quality of the **KOP 1** view is moderately low.

Motorists on the freeway would have a moderate to low sensitivity to the visual environment due to their concentration on driving and their focus on their destination. The brief view of the project site for a motorist traveling along I-5 in this area would be partially obstructed by the earthen support for the elevated overpass and young orchard. The posted speed limit is 70 miles per hour.

The view towards the project site from the Avenal Cutoff Road Bridge is a flat checkerboard mosaic of irrigated farmland (row crops such as tomatoes, cotton, and barley) and young orchard (almond and orange trees). From this elevated vantage point, a motorist would have a relatively unobstructed view of the project's structures. The visibility of proposed power plant structures at this KOP would be moderately high. Viewers at this KOP would consist largely of travelers to the cities of Lemoore and Hanford. The estimated level of viewer concern towards preserving the existing **KOP 1** view is moderately low.

The Average Daily Traffic (ADT) count of vehicle trips along this segment of Avenal Cutoff Road is approximately 5,030. The estimated number of potential motorist exposures is considered moderately high. The legal speed limit along this rural county road is 55 miles per hour. A motorist would have an extended view (longer than two minutes) of the project site from this KOP. The overall viewer exposure is considered to be moderately high.

Considering moderately low visual quality, moderately low viewer concern, and a moderately high overall viewer exposure, the overall visual sensitivity is moderate from KOP 1.

Visual Change

The project would introduce to the view geometric forms with vertical and horizontal lines of an industrial character, specifically the two 145-foot tall exhaust stacks, the 40-foot tall raw water/firewater storage tank, the 32-foot tall demineralized water storage tank, and the 139-foot tall ACC unit. The surrounding orchards as they grow to maturity would help soften the industrial character of the facility in the view. The degree of contrast (form, line, color, and

texture) introduced by the project's publicly visible structures is moderate. The contrast would begin to attract attention and begin to dominate the characteristic landscape from this KOP. The project structures are shown in a light color which makes them more visible within the dark color of surrounding orchards. The potential contrast of the structures is moderate.

The visible project structures would occupy a small portion of the total field-of-view of KOP 1 and appear subordinate to other elements in the view. The relative visual dominance of the structures is low.

The degree of view blockage introduced by project structures is low. Project structures would block a small amount of the sky and a small amount of the view of the valley floor.

Impact Significance

The overall visual change (moderate visual contrast, low visual dominance, low view blockage) caused by the introduction of the proposed project's structures into the view is moderately low.

The moderate overall visual sensitivity and the moderately low overall visual change, indicate a less than significant visual impact at **KOP 1**. (7/7/09 RT 447 - 448; Ex. 200, pp. 4.12-6 to 4.12-7.)

KOP 2 – Avenal Cutoff Road Looking East

Visual Resources Figure 3 is a photo simulation of the project structures that would be visible from **KOP 2** after completion of project construction. **KOP 2** is located along Avenal Cutoff Road approximately one-mile southwest of the project site. It is also the approximate location of a span of the project's overhead transmission line.

VISUAL RESOURCES - FIGURE 3

KOP 2: Simulation of Proposed Project After Completion of Construction

SOURCE: EX.200

Visual Sensitivity

Avenal Cutoff Road, a young orchard, and open space are in the foreground and middleground. A north-south line of overhead transmission towers are also in the middleground. The estimated public appeal of the visual quality of the **KOP 2** view is moderately low.

Avenal Cutoff Road provides access from I-5 to the cities of Lemoore and Hanford. It is a two-lane paved and striped arterial carrying approximately 5,030 vehicles per day. There are no lights or stop signs along this segment of the road. It is not a designated state or county scenic highway. The level of viewer concern towards preserving the existing **KOP 2** view is moderately low.

From this KOP, a motorist would have a relatively unobstructed view of power plant structures on the project site. The visibility of proposed structures at this KOP would be considered high. The legal speed limit along this rural county road is 55 miles per hour. A motorist would have a mid-length duration view (20 seconds to 1 minute) of the project site from this KOP. The overall viewer exposure is moderately high.

The overall visual sensitivity is moderate from **KOP 2** a result of a moderately low visual quality, moderately low viewer concern, and a moderately high overall viewer exposure.

Visual Change

The project would have a high visibility from this KOP and be seen with minimal filtering by existing vegetation. The exhaust stacks, the HRSGs (heat recovery steam generators) and ACC would be visible above the existing trees. The project would introduce contrasting elements of form, line, and color, particularly in relation to the darker colored surrounding orchards in the foreground and middle ground.

The simulations show the use of a light color surface treatment on major publicly visible project structures. The exhaust stacks and tanks appear to be lighter in color than other structures. The light color structures are noticeable in the view. The degree of contrast introduced by the project's publicly visible structures is moderate. The contrast begins to attract attention and begins to dominate the characteristic landscape from this KOP.

The visible project structures would occupy a small portion of the total field-of-view of **KOP 2**. Project structures would appear co-dominate when compared to other elements in the KOP view. The dominance of the structures is moderately low.

The project structures would block a very small portion of valley floor and sky. The view blockage therefore low.

The overall visual change caused by the introduction of the project's structures into the view is moderately low as a result of a moderate visual contrast, moderately low visual dominance, and low view blockage.

Impact Significance

The introduction of project structures would not substantially degrade the existing view at **KOP 2**. When considering the moderate overall visual sensitivity and the moderately low visual change, we conclude that the introduction of the proposed project's publicly visible structures to the existing physical environment would create a less than significant visual impact from this KOP. (7/7/09 RT 447 - 448; Ex. 200, pp. 4.12-7 to 4.12-9.)

KOP 3 – Entrance to Project Site From Avenal Cutoff Road Looking Southeast

Visual Resources Figure 4 is a photo simulation of the project structures that would be visible from **KOP 3** after completion of project construction. **KOP 3** is located approximately 2,000 feet northwest of the proposed power plant foot print.

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VISUAL RESOURCES - FIGURE 4

KOP 3: Simulation of the Proposed Project After Completion

SOURCE: EX. 200

Visual Sensitivity

The view largely includes unimproved (dirt) roadway and grassland. A portion of the City of Avenal's water treatment plant is visible to the east at the end of the roadway. An orchard is in the background view. There is no visually interesting or engaging feature in the view. The estimated public appeal of the visual quality of the view is moderately low.

From this KOP, a viewer would have an unobstructed view of project structures. Visibility is high. As the young orchard that borders the project on three sides grows to maturity, the view from the road will be softened. The primary viewer would be a motorist traveling along Avenal Cutoff Road. The level of viewer concern towards preserving the existing **KOP 3** view is moderately low.

As previously noted, approximately 5,030 vehicles per day travel along the Avenal Cutoff Road, making potential viewer exposures to the project structures moderately high. A motorist traveling at 55 miles per hour would have an approximately 10 second view duration. The overall viewer exposure is moderately high.

The overall visual sensitivity is moderate at **KOP 3**.

Visual Change

The proposed project would introduce prominent industrial features to the view. The degree of contrast introduced by the project's publicly visible structures would demand attention, would not be overlooked, and would be dominant in the view. The Applicant proposes a light gray color surface treatment on major project structures and buildings.

The Applicant proposes to landscape undeveloped portions of the 148-acre project site. **Visual Resources Figure 5** is a photo simulation depicting the landscaping after five years of growth viewed from **KOP 3**. As the landscaping matures, it would reduce the project's visibility while improving the appearance of the project site. Approximately one-third of project facilities would be obscured by project-related landscaping when the almond trees lining the access road are approximately four to five years old.

VISUAL RESOURCES - FIGURE 5

KOP 3: Simulation of Project With Landscaping After 5 Years

SOURCE: EX. 200

The visible project structures would occupy a large portion of the total field-of-view of **KOP 3** and appear dominant when compared to other elements in the view. Dominance of the structures is therefore high.

The 139-foot tall air cooled condenser and the 145-foot tall HRSG stacks would intrude into the horizon, but do not interfere or block a view of any designated scenic vista or identified scenic resource. The view blockage created by project structures is moderately low at this KOP. The overall visual change created by project structures into the **KOP 3** view is high.

The moderate overall visual sensitivity and the high overall visual change, absent mitigation, could be a significant visual impact at this KOP. Condition of Certification **VIS-3**, requires surface treatments that "minimize visual intrusion and contrast by blending with the landscape," and **VIS-4**, requires a landscaping plan and landscaping that will reduce the project's potential impacts.

Impact Significance

The Implementation of Conditions **VIS-3** and **VIS-4** will reduce the potentially significant visual impact to an insignificant level. (7/7/09 RT 447 - 448; Ex. 200, pp. 4.12-9 to 4.12-10.)

KOP 4 – Avenal Cutoff Road Bridge Over San Luis Canal Looking South

Visual Resources Figure 6 is a photograph of the view from **KOP 4. KOP 4** is located at the Avenal Cutoff Road Bridge over the San Luis Canal approximately 1/3-mile north north-east of the project site. This KOP was chosen to represent the view for westbound motorists on the Avenal Cutoff Road.

VISUAL RESOURCES - FIGURE 6

KOP 4: Simulation of the Proposed Project After Completion

SOURCE: EX. 200

Visual Sensitivity

The **KOP 4** view includes the San Luis Canal, dense, evenly planted orchards, the tops of structures and tanks at the City of Avenal's water treatment plant in the foreground. Grassland and orchard are in the middleground. In the background is the rolling form silhouette of the Kettleman Hills. The public appeal of the visual quality of the view is moderate. From this location, a motorist would have a relatively unobstructed view of project structures. The visibility of structures is therefore high.

Approximately 5,030 vehicles per day travel Avenal Cutoff Road. This number of potential motorist exposures is moderately high. The level of viewer concern in preserving the existing is moderately low. A motorist would have a low to moderate duration of view (10 seconds to 20 seconds) of the project site at this location. The overall viewer exposure is moderate, as is the overall visual sensitivity.

Visual Change

The proposed project would introduce unobscured prominent industrial features to the view. The degree of contrast introduced by the project's publicly visible structures would be high. Structures would be dominant when compared to other elements in the view. View dominance is moderately high.

The 145-foot tall HRSG stacks and the 139-foot tall ACC would extend to the ridgeline of the Kettleman Hills in this KOP view. The amount of view blockage created by project structures is moderately low.

The overall visual change caused by the project's structures is moderately high. As the project's landscaping matures, the project's visual impact would be reduced.

Impact Significance

The introduction of the project's publicly visible structures would not substantially degrade the existing view at **KOP 4**. The project structures would create a less than significant visual impact at this KOP. (7/7/09 RT 447 - 448; Ex. 200, pp. 4.12-11 to 4.12-12.)

2. Visible Vapor Plumes

The project will be using an air cooled condenser. The air cooled condenser would not emit visible water vapor plumes.

A small auxiliary boiler is proposed for the project. It could occasionally emit visible water vapor plumes; however, the plumes would be small due to the small size of the boiler. The potential boiler-emitted plumes will not cause significant impacts. (7/7/09 RT 447 - 448; Ex. 200, pp. 4.12-12 to 4.12-13.)

3. Project Linears

An approximately 6.4-mile long, 230-kV transmission line with approximately forty-three 120-foot tall tubular steel poles would connect the project to the PG&E Gates substation. New transmission poles would be located within a new 120-foot wide transmission line easement that would parallel three existing lines of transmission lattice towers. New project transmission lines at road crossings would be noticeable to motorists. See **Visual Resources Figure 7.**

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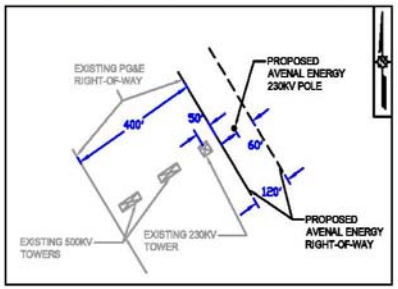
VISUAL RESOURCES - FIGURE 7

Simulation of Transmission Line Tower



SOURCE: EX. 200

Natural gas would be supplied to the project from the Kettleman Compressor Station by means of a 2.5-mile underground pipeline.

A backup water supply would be provided from Well 24-5 located approximately 2,700 feet west of the site, and Well 18-1 and Well 18-4 approximately 1,000 feet and 3,000 feet north of the project site. The water pipelines would be underground.

The new transmission poles would introduce contrast along the horizon. Proposed transmission poles would be non-reflective gray colored tubular steel. View blockage created by the transmission poles and overhead wires is low.

We adopt Condition of Certification **VIS-1** to ensure the restoration of ground surfaces affected by temporary construction activities and laydown areas, so that these disturbed areas do not become a source of long-term impacts to visual character and quality of the site and its surroundings. We also adopt Condition of Certification **VIS-3** which requires submittal of a surface treatment plan for project structures. (7/7/09 RT 447 - 448; Ex. 200, p. 4.12-12.)

With these mitigation measures, the installation of the overhead transmission lines would not cause significant visual impacts.

4. Cumulative Impacts and Mitigation

No planned or foreseeable projects have been identified in the vicinity of the project. Therefore no cumulative impacts are expected. (7/7/09 RT 447 - 448; Ex. 200, pp. 4.12-14 to 4.12-15.)

5. LORS compliance

As is discussed in the LORS section of this Decision, the project will conform with all applicable laws, ordinances, regulations and standards relating to **Visual Resources**.

FINDINGS OF FACT

Based on the evidence of record, we find and conclude as follows:

1. The project's potential impacts on visual resources were analyzed from four defined key observation points (KOP) at different locations surrounding the project site.

2. The project owner will provide landscaping to screen some project features from view.

3. The project owner will treat project surfaces with colors that minimize visual intrusion and contrast.

4. The project owner will implement appropriate mitigation measures to reduce or eliminate visual impacts from night time lighting and day time glare.

5. The project will comply with all applicable laws, ordinances, regulations and standards regarding project design, architecture, landscaping, signage, and other requirements related to Visual Resources.

6. The introduction of proposed project structures and associated linear facilities would have a less than significant visual impact with implementation of the Conditions of Certification adopted herein.

CONCLUSIONS OF LAW

1. Implementation of the following Conditions of Certification, will result in the project causing no significant direct, indirect, or cumulative impacts to visual resources.

2. The project will comply with all applicable laws, ordinances, regulations and standards regarding project design, architecture, landscaping, signage, and other requirements related to Visual Resources and listed in **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

SURFACE RESTORATION

VIS-1 The project owner shall remove all evidence of temporary construction activities, and shall restore the ground surface to the original condition or better condition, including the replacement of any vegetation or paving removed during construction where project development does not preclude it. The project owner shall submit to the Compliance Project Manager (CPM) for review and approval a surface restoration plan, the proper implementation of which will satisfy these requirements. The project owner shall complete surface restoration within 60 days after the start of commercial operation.

Verification: At least 60 days prior to the start of commercial operation, the project owner shall submit the surface restoration plan to the CPM for review and approval.

If the CPM notifies the project owner that any revisions of the surface restoration plan are needed, within 30 days of receiving that notification the project owner shall submit to the CPM a plan with the specified revisions.

The project owner shall complete surface restoration within 60 days after the start of commercial operation. The project owner shall notify the CPM within seven days after completion of surface restoration that the restoration is ready for inspection.

CONSTRUCTION ACTIVITY LIGHTING

VIS-2 The project owner shall ensure that lighting for construction of the power plant is used in a manner that minimizes potential night lighting impacts, as follows:

A. All lighting shall be of minimum necessary brightness consistent with worker safety and security;

B. All fixed position lighting shall be shielded/hooded, to direct light downward and toward the area to be illuminated to prevent direct illumination of the night sky and direct light trespass (direct light extending outside the boundaries of the power plant site or the site of construction of ancillary facilities, including any security related boundaries);

C. Wherever feasible and safe and not needed for security, lighting shall be kept off when not in use; and

D. If the project owner receives a complaint about construction lighting, the project owner shall notify the CPM and shall use the complaint resolution form included in the General Conditions section of the Compliance Plan to record each lighting complaint and to document the resolution of that complaint. The project owner shall provide a copy of each complaint form to the CPM.

Verification: Within seven days after the first use of construction lighting, the project owner shall notify the CPM that the lighting is ready for inspection.

If the CPM notifies the project owner that modifications to the lighting are needed to minimize impacts, within 15 days of receiving that notification the project owner shall implement the necessary modifications and notify the CPM that the modifications have been completed.

Within 48 hours of receiving a lighting complaint, the project owner shall provide to the CPM; a) a report of the complaint, b) a proposal to resolve the complaint,

and c) a schedule for implementation of the proposal. The project owner shall notify the CPM within 48 hours after completing implementation of the proposal. The project owner shall provide a copy of the completed complaint resolution form to the CPM in the next Monthly Compliance Report.

SURFACE TREATMENT OF PROJECT STRUCTURES AND BUILDINGS

VIS-3 The project owner shall color and finish the surfaces of all project structures and buildings visible to the public to ensure that they: (1) minimize visual intrusion and contrast by blending with the landscape; (2) minimize glare; and (3) comply with local design policies and ordinances. The transmission line conductors and insulators shall be non-specular with low reflectance.

The project owner shall submit a surface treatment plan to the CPM for review and approval. The surface treatment plan shall include:

A. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes;

B. A list of each major project structure and building (e.g., building, tank, pipe, and wall; transmission line towers and/or poles; and fencing), specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and number; or according to a universal designation system;

C. One set of color brochures or color chips showing each proposed color and finish;

D. A specific schedule for completing the treatment; and

E. A procedure to ensure proper treatment maintenance for the life of the project.

The project owner shall not request vendor surface treatment of any buildings or structures during their manufacture, or perform final field treatment on any buildings or structures, until the project owner has received treatment plan approval by the CPM.

The project owner shall notify the CPM that surface treatment of all listed structures and buildings has been completed and is ready for inspection; and shall submit one set of electronic color photographs from the selected KOP 3 location showing the “as built” surface treated structures and buildings.

Verification: At least 45 days prior to applying vendor color(s) and finish(es) for structures or buildings to be surface treated during manufacture, the project

owner shall submit the proposed treatment plan to the CPM for review and approval, and simultaneously to the Director of the City of Avenal Planning and Community Development for review. The project owner shall allow the Director of the City of Avenal Planning and Community Development at least 30 days to provide comment on the submitted surface treatment plan. The project owner shall provide a copy of the Director of the City of Avenal Planning and Community Development comments to the CPM.

The project owner shall provide to the CPM a copy of the transmittal letter submitted to the Director of the City of Avenal Planning and Community Development requesting their review of the submitted surface treatment plan.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) for review and approval by the CPM before any treatment is applied. Any modifications to the treatment plan must be submitted to the CPM for review and approval.

If the CPM determines that the plan requires revision, the project owner shall provide to the Director of the City of Avenal Planning and Community Development a plan with the specified revision(s) for review before the plan is implemented.

Within ninety (90) days after the start of commercial operation, the project owner shall notify the CPM that surface treatment of all listed structures and buildings has been completed and is ready for inspection; and shall submit one set of electronic color photographs from KOP 3, at the least, showing the “as built” surface treated structures and buildings.

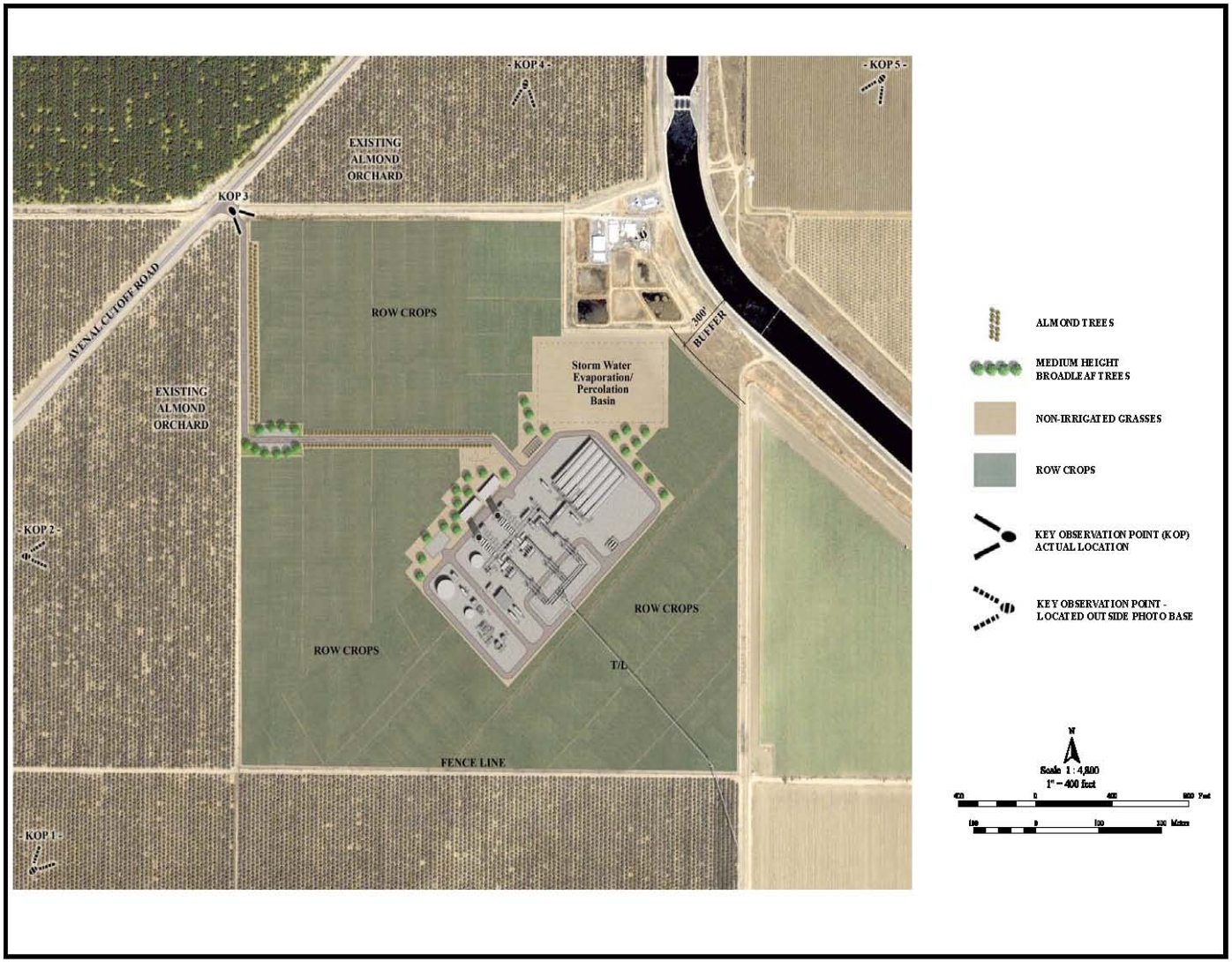
The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report. The report shall specify a): the condition of the surfaces of all structures and buildings at the end of the reporting year; b) major maintenance activities that occurred during the reporting year; and c) the schedule of major maintenance activities for the next year.

PROJECT LANDSCAPING

VIS-4 The project owner shall provide project site landscaping consistent with the policies and ordinances of the City of Avenal, specifically municipal code sections 9.60 and 9.63, and **Visual Resources Figure 8** - Conceptual Landscape Plan Aerial Photo.

VISUAL RESOURCES - FIGURE 8

Conceptual Landscape Plan Aerial Photo



SOURCE: EX. 200

Landscaping shall consist of plant materials consistent with Climate Zones 8 and 9 as identified in the Sunset Western Garden Book. Landscaping plans shall emphasize the use of drought-tolerant species, grouped by similar water usage.

Landscaping in parking lots shall have one 15-gallon shade tree planted every three (3) parking spaces along parking rows. Fifty percent of the paved parking lot's surface shall be shaded by tree canopies within 10 years of planting.

For parking lots containing six or more parking spaces, at least 5 percent of the total ground area of the parking lot shall be landscaped.

The project owner shall submit to the CPM for approval, and simultaneously to the Director of the City of Avenal Planning and Community Development for review, a landscaping plan whose proper implementation will satisfy these requirements.

An irrigation plan shall be submitted along with the landscaping plan. The irrigation plan shall show an irrigation conformance calculation with a 10 percent safety margin.

The project owner shall not implement the landscaping plan until the project owner receives approval of the landscape plan from the CPM. The planting shall be completed by the start of commercial operation, and the planting shall occur during the optimal planting season.

Verification: Prior to commercial operation and at least 45 days prior to installing the landscaping, the project owner shall submit the landscaping plan to the CPM for approval and simultaneously to the Director of the City of Avenal Planning and Community Development for comment. The project owner shall provide a copy of the Director of the City of Avenal Planning and Community Development comments to the CPM prior to the installation of the landscaping.

The project owner shall allow the Director of the City of Avenal Planning and Community Development 30 days to provide comment on the submitted surface treatment plan. The project owner shall provide a copy of the Director of the City of Avenal Planning and Community Development comments to the CPM.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM and the Director of the City of Avenal Planning and Community Development a plan with the specified revision(s) for review and approval by the CPM before the plan is implemented.

The project owner shall simultaneously notify the CPM and the Director of the City of Avenal Planning and Community Development that the landscaping is ready for inspection within seven days after completing installation of the landscaping.

PERMANENT EXTERIOR LIGHTING

VIS-5 To the extent feasible, consistent with safety and security considerations and commercial availability, the project owner shall design and install all permanent exterior lighting such that:

A. light fixtures do not cause obtrusive spill light beyond the project site;

B. lighting does not cause excessive reflected glare;

C. direct lighting does not illuminate the nighttime sky,

D. illumination of the project and its immediate vicinity is minimized; and

E. lighting conforms to the lighting requirements of the City of Avenal M-2 zone district, where applicable.

In addition, the project owner shall submit to the CPM for approval a lighting management plan that includes the following:

A. a process for addressing and mitigating lighting related complaints;

B. lighting shall incorporate commercially available fixture hoods/shielding, with light directed downward or toward the area to be illuminated;

C. all lighting shall be of minimum necessary brightness consistent with operational safety and security; and

D. lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied.

Verification: At least 60[49] days prior to ordering any permanent exterior lighting, the project owner shall contact the CPM to determine the required documentation for the lighting management plan.

At least 45 days prior to ordering any permanent exterior lighting, the project owner shall submit to the CPM for approval a lighting management plan. If the CPM determines that the lighting management plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) for approval.

[49] This deadline as proposed by Staff, was 45 days and the deadline in the following paragraph was 60 days. It does not seem logical that the project owner should submit the plans before learning of the requirements. We've therefore swapped the deadlines but invite the parties to comment if there is a logical reason for the original formulation that we've overlooked.

The project owner shall not order any exterior lighting until receiving CPM approval of the lighting management plan.

Prior to commercial operation, the project owner shall notify the CPM that the lighting has been installed and is ready for inspection. If after inspection the CPM notifies the project owner that modifications to the lighting are needed, within 30 days of receiving notification the project owner shall implement the modifications and notify the CPM that the modifications have been completed and are ready for inspection.

Within 10 days of receiving a lighting complaint, the project owner shall provide the CPM with a complaint resolution form report as specified in the Compliance General Conditions including a proposal to resolve the complaint, and a schedule for implementation. The project owner shall notify the CPM within 10 days after completing implementation of the proposal. A copy of the complaint resolution form report shall be submitted to the CPM within 30 days of complaint resolution.

SIGNAGE

VIS-6 The project owner shall install minimal signage visible to the public, which shall a) have unobtrusive colors and finishes that prevent excessive glare; and b) be consistent with the sign policies and ordinances of the City of Avenal. The design of any signs required by safety regulations shall conform to the criteria established by those regulations. The project owner shall submit a signage plan for the project to the CPM for approval and simultaneously to the Director of the City of Avenal Planning and Community Development for comment. The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM.

Verification: Prior to the start of commercial operation and at least 60 days prior to installing signage, the project owner shall submit the signage plan to the CPM for approval and simultaneously to the Director of the City of Avenal Planning and Community Development for comment. The project owner shall provide a copy of the Director of the City of Avenal Planning and Community Development comments to the CPM.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) for review and approval by the CPM before any signage visible to the public is installed.

The project owner shall provide the CPM with electronic color photographs after completing installation of signage.

SCREENING OF COMMERCIAL TRASH DISPOSAL CONTAINERS

VIS-7 In accordance to the City of Avenal Municipal Code section 9.79.08 N, commercial trash disposal containers (e.g., trash bins or dumpsters) shall be visually screened from public view to the maximum extent feasible or stored within an enclosed building or structure.

Verification: Prior to the start of commercial operation, the project owner shall provide to the CPM a site plan showing the permanent location of the commercial disposal container(s) on the project site.

Forty-five days after the start of commercial operation, the project owner shall notify the CPM that the commercial disposal containers have been screened or enclosed from public view and are ready for inspection. If after inspection the CPM notifies the project owner that modifications to the screening or enclosure are needed, within 30 days of receiving notification the project owner shall implement the modifications and notify the CPM that the modifications have been completed and are ready for inspection.

FRESNO COUNTY REVIEW OF TRANSMISSION LINE TOWERS

VIS-8 Prior to the start of the construction of the transmission line in Fresno County, the project owner shall provide to the Director of the Fresno County Department of Public Works and Planning elevation drawings of the transmission towers and/or poles, a discussion of the surface treatment to be used on the towers or poles, and any landscaping for the individual transmission tower or pole sites for comment, and to the CPM for approval.

Verification: The project owner shall allow the Director of the Fresno County Department of Public Works and Planning 30 days to provide comment. The project owner shall provide a copy of the Fresno County Department of Public Works and Planning comments to the CPM prior to the start of construction of the transmission line.

The project owner shall provide a copy of the submitted transmittal letter to the Director of the Fresno County Department of Public Works and Planning requesting their review.

If the CPM determines that the drawings and/or plans require revision, the project owner shall provide to the CPM drawings and/or plans with the specified revision(s) for review and approval by the CPM.

The project owner shall notify the CPM within 10 days after completing installation of the of the transmission line towers/poles and planting landscaping, if any.

Appendix A: *Laws, Ordinances, Regulations, and Standards*

Appendix B: *Exhibit List*

Appendix C: *Proof of Service List*

APPENDICES

AIR QUALITY

Applicable LORS	*Description*
Federal	**U.S. Environmental Protection Agency**
CAAA of 1990, 40 CFR 50	National Ambient Air Quality Standards (NAAQS).
CAA Sec. 171-193, 42 USC 7501	New Source Review (NSR) – Requires NSR permit for new stationary sources. This requirement is addressed through SJVAPCD Rule 2201.
40 CFR 52.21	Prevention of Significant Deterioration (PSD) – Requires dispersion modeling to demonstrate no violation of NAAQS or PSD increments, for pollutants that attain the NAAQS. A PSD permit is required for Avenal Energy because the emissions would exceed the applicable PSD thresholds for NO_2 and CO from sources in the fossil fuel-fired steam-electric plant category. The PSD program is within the jurisdiction of the U.S. EPA.
40 CFR 60, Subpart KKKK	Standards of Performance for Stationary Combustion Turbines, New Source Performance Standard (NSPS). Replaces NSPS Subpart Da and Subpart GG for the proposed combustion turbines and duct burners with heat recovery steam generators. Requires the proposed combined cycle units to achieve 15 ppm NOx and achieve fuel sulfur standards.
40 CFR 60, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. Requires monitoring of the natural gas fuel source for the proposed auxiliary boiler.
40 CFR 60, Subpart IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Requires the emergency fire water pump engine to achieve: 3.0 grams per horsepower-hour (g/bhp-hr) of non-methane hydrocarbons and NOx (NMHC+NOx) and 0.15 g/bhp-hr PM, which are levels equivalent to U.S. EPA Tier 3 standards.
40 CFR 60 (Proposed Subpart JJJJ)	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. Proposed standard would require the natural gas-fired emergency generator engine to achieve: 1.0 g/bhp-hr NMHC.
40 CFR 70, CAA Sec 401, 42 USC 7651	Federal Title V Operating Permit Program. Consolidates the federally-enforceable operating limits. Application required within one year following start of operation. This program is within the jurisdiction of the SJVAPCD with U.S. EPA oversight [SJVAPCD Rule 2520].

Applicable LORS	*Description*
40 CFR 72, CAA Sec 401 42 USC 7651	Title IV Acid Rain – Applicable to electrical generating units greater than 25 MW. Requires Title IV permit and compliance with acid rain provisions, implemented through the Title V program. This program is within the jurisdiction of the SJVAPCD with U.S. EPA oversight [SJVAPCD Rule 2540].
State	**California Air Resources Board and Energy Commission**
Health and Safety Code (HSC) Section 40910-40930	Permitting of source needs to be consistent with approved clean air plan. The SJVAPCD New Source Review (NSR) program is consistent with regional air quality management plans.
California Health & Safety Code Section 41700	Public Nuisance Provisions – Outlaws the discharge of air contaminants that cause nuisance, injury, detriment, or annoyance.
California Code of Regulations for Off-Road Diesel-Fueled Fleets (13 CCR §2449, et seq.)	General Requirements for In-Use Off-Road Diesel-Fueled Fleets – Requires owners and operators of in-use (existing) off-road diesel equipment and vehicles to begin reporting fleet characteristics to CARB in 2009 and meet fleet emissions targets for diesel particulate matter and NOx in 2010.
Airborne Toxic Control Measure for Idling (ATCM, 13 CCR §2485)	ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling – Generally prohibits idling longer than five minutes for diesel-fueled commercial motor vehicles.
Local	**San Joaquin Valley Air Pollution Control District**
Regulation I, General Provisions	Establishes the requirements and standards for stack monitoring, source sampling, and breakdown events and identifies penalties.
Regulation II, Permits	Establishes the regulatory framework for permitting new and modified sources. Included in these requirements are the federally-delegated requirements for NSR, the Title V Operating Permit Program, and the Title IV Acid Rain Program.
Rule 2201, New and Modified Stationary Sources	Establishes the pre-construction review requirements for new, modified or relocated emission sources, in conformance with NSR to ensure that these facilities do not interfere with progress in attainment of the ambient air quality standards and that future economic growth in the San Joaquin Valley is not unnecessarily restricted. Establishes the requirement to prepare a Preliminary Determination of Compliance (PDOC) and Final Determination of Compliance (FDOC) during District

Applicable LORS	***Description***
	review of an application for a power plant. This regulation establishes Best Available Control Technology (BACT) and emission offset requirements.
Rule 2520, Federally Mandated Operating Permits	Establishes the permit application and compliance requirements for the federal Title V federal permit program. Avenal Energy qualifies as a Title V facility and must submit the Title V application within twelve months after starting operation.
Rule 2540, Acid Rain Program	Implements the federal Title IV Acid Rain Program, which requires subject facilities to obtain emission allowances for SOx emissions and requires fuel sampling and/or continuous monitoring to determine SOx and NOx emissions.
Regulation IV, Prohibitions	Sets forth the restrictions for visible emissions, odor nuisance, various air emissions, and fuel contaminants. Regulation IV incorporates the NSPS provisions of 40 CFR 60, including standards for stationary combustion turbines (Subpart KKKK). These rules limit emissions of NOx, VOC, CO, particulate matter, and sulfur compounds.
Rule 4306, Boilers, Steam Generators, and Process Heaters	Limits NOx and CO from boilers and steam generators. The proposed auxiliary boiler is subject to NOx limit of 9 parts per million by volume (ppmv) and CO limit of 400 ppmv.
Rule 4702, Internal Combustion Engines	Limits emissions of NOx, CO, and VOC from internal combustion engines. However, as emergency units, the proposed emergency engine-generator set and emergency fire water pump engine are exempt from emission limits, subject to monitoring and recordkeeping.
Rule 4703, Stationary Gas Turbines	Limits the proposed stationary gas turbine emissions of NOx to 3 ppmv and CO to 25 ppmv over a 3-hour averaging period. Provided certain demonstrations are made, the emission limits do not apply during startup, shutdown, or reduced load periods (defined as “transitional operation periods”).
Regulation V, Procedure before the Hearing Board	Establishes the procedures for reporting emergencies and emergency variances.
Regulation VIII, Fugitive PM10 Prohibition	Sets forth the requirements and performance standards for the control of emissions from fugitive dust causing activities.

ALTERNATIVES

California Environmental Quality Act (CEQA)

Energy Commission staff is required by agency regulations to examine the "feasibility of available site and facility alternatives to the Applicant's proposal which substantially lessen the significant adverse impacts of the proposal on the environment." (Cal. Code Regs., tit. 20, § 1765.)

The "Guidelines for Implementation of the California Environmental Quality Act," Title 14, California Code of Regulations, Section 15126.6(a), requires an evaluation of the comparative merits of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project."

In addition, the analysis must address the No Project Alternative. (Cal. Code Regs., tit. 14, § 15126.6[e].) The analysis should identify and compare the impacts of the various alternatives, but analysis of alternatives need not be in as much detail as the analysis of the proposed project.

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 if its effect cannot be reasonably ascertained and if its implementation is remote and speculative. (Cal. Code Regs., tit. 14, §15126.6[f][3].) However, if the range of alternatives is defined too narrowly, the analysis may be inadequate (*City of Santee v. County of San Diego* [4th District, 1989] 214 Cal. App. 3d 1438).

BIOLOGICAL RESOURCES

Applicable LORS	*Description*
Federal	
Clean Water Act (CWA) of 1977	Title 33, United States Code, sections 1251 through 1376, and Code of Federal Regulations, part 30, section 330.5(a) (26), requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the U.S. Army Corps of Engineers (USACE) for a discharge from dredged or fill materials into waters of the U.S., including wetlands. Section 401 requires a permit from a Regional Water Quality Control Board (RWQCB) for the discharge of pollutants. By federal law, every applicant for a federal permit or license for an activity which may result in a discharge into a California water body, including wetlands, must request state certification that the proposed activity will not violate state and federal water quality standards.
Endangered Species Act (ESA) 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 the protection of threatened and endangered plant and animal species and their critical habitat. The administering agency is the U.S. Fish and Wildlife Service (USFWS).
Migratory Bird Treaty Act	Title 16, United States Code, Sections 703 through 711, prohibit the taking of migratory birds, including nests with viable eggs. The administering agency is the USFWS.
Fish and Game Coordination Act	Title 16, United States Code, section 661 et seq. requires federal agencies to coordinate federal actions with the U.S. Fish and Wildlife Service (USFWS) to conserve fish and wildlife resources.

Applicable LORS	***Description***
Fish and Wildlife Conservation Act	Title 16, United States Code, section 2901 et seq.; Title 50 Code of Federal Regulations part 83, requires states to develop conservation plans for fish and wildlife.
State	
	The administering agency for the following state LORS is the California Department of Fish and Game (CDFG), except for the CWA Section 401 certification, which is administered by the Regional Water Quality Control Board.
California Endangered Species Act (CESA) of 1984	Fish and Game Code Sections 2050 through 2098 protect California's rare, threatened, and endangered species.
California Code of Regulations	California Code of Regulations Title 14, Division 1, Subdivision 3, Chapter 3, Sections 670.2 and 670.5, list plants and animals of California that are designated as rare, threatened, or endangered.
Fully Protected Species	Fish and Game Code, sections 3511, 4700, 5050, and 5515, designates certain species as fully protected and prohibits the take of such species or their habitat unless for scientific purposes (see also California Code of Regulations Title 14, section 670.7).
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.
Migratory Birds – Take or Possession	Fish and Game Code Section 3513 protects California's migratory non-game birds by making it unlawful to take or possess any migratory non-game bird as designated in the Migratory Bird Treaty Act, or any part of such migratory non-game bird.

Applicable LORS	***Description***
California Environmental Quality Act (CEQA) Public Resources Code section 15380	CEQA defines rare species more broadly than the definitions for species listed under the state and federal Endangered Species Acts. Under section 15830, rare species that meet the criteria for listing but are not otherwise protected receive additional consideration. Included in this category are many plants considered rare by the California Native Plant Society and some animals on CDFG's Special Animals list.
Native Plant Protection Act of 1977	Fish and Game Code Sections 1900 et seq. designate rare, threatened, and endangered plants in the State of California.
California Species Preservation Act of 1970 California Native Species Conservation and Enhancement Act	California Fish and Game Code section 900-903, requires the protection and enhancement of birds, mammals, fish, amphibians, and reptiles of California. Fish and Game Code section 1750 et seq., mandates maintenance of sufficient populations of native species to ensure continued existence.
California Pesticide Regulations	3 California Code of Regulations (CCR), Division 6, requires the minimal use of rodenticides and herbicides.
Regional Water Quality Control Board	By federal law, every applicant for a federal permit or license for an activity which may result in a discharge into a California water body, including wetlands, must request state certification that the proposed activity will not violate state and federal water quality standards.
Local	
City of Avenal General Plan. Open Space, Conservation and Recreation Element.	Contains open space and conservation area protection policies and standards and requires preservation of natural resources and the promotion of biological diversity (Avenal Power 2008a). Objectives of the Open Space, Conservation and Recreation Element include "protection of natural resources, including groundwater, soils, and air quality, to meet the needs of present and future generations; ensure that environmental hazards, including potential flooding and impacts from agricultural practices, are adequately addressed in the development process within the City and Planning Area; and create and preserve open space in the Avenal area to meet the needs of the community now and in the future to include the protection of natural and biological resources" (City of Avenal General Plan 2005).

CULTURAL RESOURCES

Applicable LORS	***Description***
State	
Public Resources Code 5097.98 (b) and (e)	Requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the NAHC-identified Most Likely Descendents (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reinter the remains elsewhere on the property in a location not subject to further disturbance.
California Health and Safety Code, Section 7050.5	This code makes it a misdemeanor to disturb or remove human remains found outside a cemetery. This code also requires a project owner to halt construction if human remains are discovered and to contact the county coroner.
Local	
Kings County General Plan (Pacific Legacy 2001, p. 5)	Goal 26: Preserve significant historical and archaeological sites relevant to Kings County history. Objective 26.1: Establishes Kings County Museum Advisory Committee as keeper of list of designated county landmarks, and as review board for landmark designations and for projects potentially affecting county landmarks.
City of Avenal General Plan Policies, 2005	The Open Space, Conservation, and Recreation Element (3.0) identifies cultural resources among the resources addressed in this element, but no specific objectives, policies, or standards are set forth.

FACILITY DESIGN

Applicable LORS	*Description*
Federal	
	Title 29, Code of Federal Regulations, Part 1910, Occupational Safety and Health Standards
State	
	California Building Standards Code (CBSC) (also known as Title 24, California Code of Regulations)
Local	
	Kings County regulations and ordinances; City of Avenal regulations and ordinances
General	
	American National Standards Institute American Society of Mechanical Engineers American Welding Society American Society for Testing and Materials

GEOLOGY AND PALEONTOLOGY

Applicable LORS	*Description*
Federal	
	The proposed project is not located on federal land. There are no federal LORS for geologic hazards and resources for this site.
State	
California Building Code (CBC), 2007	The CBC (2007) includes a series of standards that are used in project investigation, design, and construction (including grading and erosion control).
Alquist-Priolo Earthquake Fault Zoning Act, Public Resources Code (PRC), section 2621–2630	Mitigates against surface fault rupture of known active faults beneath occupied structures. Requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings. No portions of the site and proposed ancillary facilities are located within designated Alquist-Priolo Fault Zones.
The Seismic Hazards Mapping Act, PRC Section 2690–2699	Areas are identified that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches.
PRC, Chapter 1.7, sections 5097.5 and 30244	Regulates removal of paleontological resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites.
Society for Vertebrate Paleontology (SVP), 1995	The “Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources: Standard Procedures” is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. The measures were adopted in October 1995 by the SVP, a national organization of professional scientists.
Local	None

HAZARDOUS MATERIALS MANAGEMENT

Applicable LORS	***Description***
Federal	
The Superfund Amendments and Reauthorization Act of 1986 (42 USC §9601 et seq.)	Contains the Emergency Planning and Community Right To Know Act (also known as SARA Title III).
The Clean Air Act (CAA) of 1990 (42 USC 7401 et seq. as amended)	Established a nationwide emergency planning and response program and imposed reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials.
The CAA section on risk management plans (42 USC §112(r)	Requires states to implement a comprehensive system informing local agencies and the public when a significant quantity of such materials is stored or handled at a facility. The requirements of both SARA Title III and the CAA are reflected in the California Health and Safety Code, section 25531, et seq.
49 CFR 172.800	The U.S. Department of Transportation (DOT) requirement that suppliers of hazardous materials prepare and implement security plans.
49 CFR Part 1572, Subparts A and B	Requires suppliers of hazardous materials to ensure that all their hazardous materials drivers are in compliance with personnel background security checks.
The Clean Water Act (CWA) (40 CFR 112)	Aims to prevent the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Requires a written spill prevention, control, and countermeasures (SPCC) plan to be prepared for facilities that store oil that could leak into navigable waters.
Title 49, Code of Federal Regulations, Part 190	Outlines gas pipeline safety program procedures.
Title 49, Code of Federal Regulations, Part 191	Addresses transportation of natural and other gas by pipeline: annual reports, incident reports, and safety-related condition reports. Requires operators of pipeline systems to notify the DOT of any reportable incident by telephone and then submit a written report within 30 days.
Title 49, Code of Federal Regulations, Part 192	Addresses transportation of natural and other gas by pipeline and minimum federal safety standards, specifies minimum safety requirements for pipelines including material selection, design requirements, and corrosion protection. The safety requirements for pipeline construction vary according to the population density and land use that characterize the surrounding land. This part also contains regulations governing pipeline construction (which must be followed for Class 2 and Class 3 pipelines) and the requirements for preparing a pipeline integrity management program.

Applicable LORS	***Description***
Federal Register (6 CFR Part 27) interim final rule	A regulation of the U.S. Department of Homeland Security that requires facilities that use or store certain hazardous materials to submit information to the department so that a vulnerability assessment can be conducted to determine what certain specified security measures shall be implemented.
State	
Title 8, California Code of Regulations, section 5189	Requires facility owners to develop and implement effective safety management plans that ensure 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 Risk Management Plan (RMP) process.
Title 8, California Code of Regulations, section 458 and sections 500 to 515	Sets forth requirements for the design, construction, and operation of vessels and equipment used to store and transfer ammonia. These sections generally codify the requirements of several industry codes, including the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, the American National Standards Institute (ANSI) K61.1 and the National Boiler and Pressure Vessel Inspection Code. These codes apply to anhydrous ammonia but are also used to design storage facilities for aqueous ammonia.
California Health and Safety Code, section 25531 to 25543.4	The California Accidental Release Program (CalARP) requires the preparation of a Risk Management Plan (RMP) and off-site consequence analysis (OCA) and submittal to the local Certified Unified Program Agency for approval.
California Health and Safety Code, section 41700	Requires that “No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.”
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)	Prevents certain chemicals that cause cancer and reproductive toxicity from being discharged into sources of drinking water.
California Public Utilities Commission General Order 112-E and 58-A	Contains standards for gas piping construction and service.
Local	None Applicable

Applicable LORS	***Description***
	The Certified Unified Program Authority (CUPA) with responsibility to review RMPs and Hazardous Materials Business Plans (HMBPs) is the Kings County Environmental Health Department (Ex. 1, Table 6.15-4). In regards to seismic safety issues, the site is located in Seismic Risk Zone 4. Construction and design of buildings and vessels storing hazardous materials will meet the seismic requirements of the California Building Code for Seismic Zone 4 (Ex. 1, Section 6.3.2.4).

LAND USE

Applicable LORS	*Description*
Federal	**None**
State	**None**
Local	
City of Avenal	
General Plan	The California Government Code (Section 65302a) mandates a land use element designating the proposed general distribution, general location and extent of uses of the land. State requirements are implemented through the Avenal General Plan and Avenal Municipal Zoning Ordinance. The Avenal Energy project site is designated Industrial by the General Plan.
Municipal Code	The 148-acre site is zoned Heavy Industrial (M-2) by the Avenal Municipal Code (AMC). Zoning Ordinance Section 9.31 specifies uses permitted in an industrial district, subject to the approval of a conditional use permit (CUP). A Site Plan Review is required of all CUP applications, following Zoning Ordinance Chapter 27 procedures. The Project would require a CUP and Site Plan Review under the Zoning Ordinance, except that state law provides for certification of power plant sites by the Energy Commission in lieu of any local requirements. City of Avenal property development standards are defined in Chapter 17 of the Zoning Ordinance. Standards for street improvements, off-street parking, trash enclosures, utilities, landscaping, fencing, and sign standards for industrial areas are identified Zoning Ordinance Sections 17.02, 17.03, 17.04, 17.05, 17.06, 17.07, 17.08 and 17.09.
Fresno County	
Land Use Policies	The Fresno County General Plan policies, guidelines and standards apply to land use development within unincorporated areas of Fresno County. The Project would include approximately 200 feet of water pipeline in Fresno County that would connect an existing well to the site for standby water supply. Under the Fresno County General Plan, non-agricultural uses in areas zoned for agricultural uses are permitted so long as those uses do not diminish agricultural production capacity, economic viability, or detrimentally impact surrounding agricultural operations to the extent that further losses in production may occur. (Fresno County General Plan, 1988, Sec. 204-02.).

Applicable LORS	***Description***
King County	
Land Use Policies	The Kings County General Plan policies, guidelines and standards apply only to land use and development within the unincorporated territory of the County. They do not apply to development within the City of Avenal. The City and the County work together to develop complementary planning documents. However, the County does not have land use authority in the City. The only project land use that would occur on unincorporated lands is the 1.6-mile water pipeline from the existing ground water wells located north of the site along the San Luis canal.

NOISE AND VIBRATION

Applicable LORS	*Description*
Federal	
Occupational Safety & Health Act (OSHA): 29 U.S.C. § 651 et seq.	Protects workers from the effects of occupational noise exposure. Department of Labor, Occupational Safety and Health Administration, (OSHA) adopted regulations (29 C.F.R. § 1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed (see **Noise Appendix A, Table A4**, immediately following this section). The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.
U.S. Environmental Protection Agency (USEPA)	Assists state and local government entities in development of state and local LORS for noise. Under the Occupational Safety and Health Act of 1970 (OSHA) (29 U.S.C. § 651 et seq.), the Guidelines are available from the U.S. Environmental Protection Agency (USEPA) to assist state and local government entities in developing state and local LORS for noise. Because there are existing local LORS that apply to this project, the USEPA guidelines are not applicable. There are no federal laws governing off-site (community) noise. 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 vibrational decibel (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.

Applicable LORS	*Description*
State	
California Occupational Safety & Health Act (Cal-OSHA): 29 U.S.C. § 651 et seq., Cal. Code Regs., tit. 8, §§ 5095-5099	Protects workers from the effects of occupational noise exposure. California Government Code Section 65302(f) encourages each local governmental 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 the Model Community Noise Control Ordinance, which provides guidance for acceptable noise levels in the absence of local noise standards. This model also defines a simple tone, or "pure tone," as one-third octave band sound pressure levels that can be used to determine whether a noise source contains 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 five A-weighted decibels (dBA). The California Occupational Safety and Health Administration (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 federal OSHA standards.
Local	
City of Avenal General Plan, Noise Element	Discourages creation of noise levels above 65 dBA CNEL (Community Noise Equivalent Level) at the property line of noise-sensitive land uses. The project is located within the City of Avenal. The "City of Avenal General Plan," Noise Element (City of Avenal 2005) applies to this project. Community noise controls are specifically addressed in the Noise Element. Noise Standard 3 of the Noise Element states that industrial, commercial or other noise generating land uses should be discouraged if resulting noise levels will exceed 65 dBA CNEL at the boundaries of planned or existing noise-sensitive land uses.

Applicable LORS	***Description***
Kings County General Plan, Noise Element	Limits noise levels to 65 dBA L_{dn} at the property line of noise-sensitive land uses. Although the Avenal Energy site is within the City of Avenal, the City–County boundary is adjacent to the northern and eastern site boundaries. Therefore, the Kings County General Plan, Noise element (Kings County 1993) also applies to the project. The Kings County Noise Element establishes compatibility for various land use categories with respect to exterior community noise levels. The noise level ranges are described as *acceptable*, *conditionally acceptable*, and *unacceptable*, for each land use category. The land use category that applies to the Avenal Energy's nearest residential receptors is residential.

The exterior noise exposure allowances for residential land uses, as specified in the Kings County Noise Element, Appendix 8, Table 18, are summarized below:

Kings County Exterior Noise Exposure Allowances (L_{dn})

Land Use Category	<65 dBA	65-70 dBA	>70
Residential	Acceptable	Conditionally Acceptable	Unacceptable

Source: Kings County 1993, Appendix 8, Table 18; AFC §6.12.3.4, Table 6.12-3

POWER PLANT EFFICIENCY

No federal, state, local, or county laws, ordinances, regulations and standards (LORS) apply to the efficiency of this project.

POWER PLANT RELIABILITY

No federal, state, local, or county laws, ordinances, regulations and standards (LORS) pertain to the reliability of this project.

PUBLIC HEALTH

Applicable LORS	*Description*
Federal	
Clean Air Act section 112 (42 U.S. Code section 7412)	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 mandated the California Air Resources Board (CARB) and the Department of Health Services to establish safe exposure limits for toxic air pollutants and identify pertinent best available control technologies. They also required 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."
California Code of Regulations, Title 22, section 60306	Requires that whenever a cooling system uses recycled water in conjunction with an air conditioning facility and a cooling tower that creates a mist that could come into contact with employees or members of the public, a drift eliminator shall be used and chlorine, or other, biocides shall be used to treat the cooling system re-circulating water to minimize the growth of Legionella and other micro-organisms.
Local	
San Joaquin Valley Unified Air Pollution Control District Rule 2201	Requires safe exposure limits for Toxic Air Pollutants (TACs), use of best Available Control Technology (BACT) and New Sources Review (NSR).

SOCIOECONOMICS

Applicable LORS	***Description***
State	
California Education Code, Section 1762	The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.
California Government Code, Sections 65996-65997	These sections include provisions for school district levies against development projects. As amended by Senate Bill (SB) 50 (stats. 1998, ch. 407, sec. 23), these sections state that, except for fees established under Education Code 17620, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost of school facilities.

SOIL & WATER RESOURCES

Applicable LORS	*Description*
Federal	
Clean Water Act (33 U.S.C. Section 1251 et seq.)	The Clean Water Act (33 USC § 1257 et seq.) requires states to set standards to protect water quality, which includes regulation of storm water discharges during construction and operation of a facility.
Resource Conservation and Recovery Act	The Resource Conservation Recovery Act (RCRA) of 1976 (40 CFR Part 260 et seq.) seeks to prevent surface and groundwater contamination, sets guidelines for determining hazardous wastes, and identifies proper methods for handling and disposing of those wastes.
State	
California Water Code Section 13260	Requires filing with the appropriate Regional Board a report of waste discharge that could affect the water quality of the state, unless the requirement is waived pursuant to Water Code section 13269.
California Water Code Section 13551	Requires the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.
Local	
Kings County Article VI, Sec. 5-81, Uniform Plumbing Code	601.1 Except where not deemed necessary for safety or sanitation by the Administrative Authority, each plumbing fixture shall be provided with an adequate supply of potable running water piped thereto in an approved manner, so arranged as to flush and keep it in a clean and sanitary condition without danger of backflow or cross-connection.
Chapter 5, Article VI, Sec. 5-83, Kings County Code	Sewage disposal systems for commercial, industrial, and multifamily units are subject to review by the health officer. Deviation from any guidelines regulating the location of private sewage disposal systems shall be granted only with the concurrence of the health officer. (Ord. No. 375, § 10, 1-4-77; Ord. No. 480, § 5, 12-12-89; Ord. No. 513, § 5, 6-16-92; Ord. No. 545, § 3, 12-19-95)
State Policies and Guidance	
California Constitution, Article X, Section 2	This section requires that the water resources of the State be put to beneficial use to the fullest extent possible and states that the waste, unreasonable use or unreasonable method of use of water is prohibited.

Applicable LORS	***Description***
The Porter-Cologne Water Quality Control Act of 1967, Water Code Sec 13000 et seq.	Requires the State Water Resources Control Board (SWRCB) and the nine RWQCBs to adopt water quality criteria to protect state waters. Those regulations require that the RWQCBs issue Waste Discharge Requirements specifying conditions for protection of water quality as applicable.
SWRCB Resolutions 75-58 and 88-63	The principal policy of the SWRCB that addresses the specific siting of energy facilities is 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). This policy states that use of fresh inland waters should only be used for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. Resolution 75-58 defines brackish waters as “all waters with a salinity range of 1,000 to 30,000 mg/l” and fresh inland waters as those “which are suitable for use as a source of domestic, municipal, or agricultural water supply and which provide habitat for fish and wildlife”. Resolution 88-63 defines suitability of sources of drinking water. The total dissolved solids must exceed 3,000 mg/L for it to not be considered suitable, or potentially suitable, for municipal or domestic water supply.
SWRCB WQO 99-08	The SWRCB regulates storm water discharges associated with construction projects affecting areas greater than or equal to one acre to protect state waters. Under Order 99-08, the SWRCB has issued a National Pollutant Discharge Elimination System (NPDES) General Permit for storm water discharges associated with construction activity for which applicants can qualify if they meet the criteria and upon preparing and implementing an acceptable Storm Water Pollution Prevention Plan (SWPPP) and notifying the SWRCB with a Notice of Intent.
California Code of Regulations, Title 17	Title 17, Division 1, Chapter 5, addresses the requirements for backflow prevention and cross connections of potable and non-potable water lines.
California Code of Regulations, Title 23	Title 23, Division 3, Chapter 15, requires the Regional Board issue Waste Discharge Requirements specifying conditions for protection of water quality as applicable.
2003 Integrated Energy Policy Report	In the 2003 IEPR, consistent with State Water Resources Control Board Policy 75-58 and the Warren-Alquist Act, the Energy Commission reiterated the State Water Policy, stating the Commission will approve the use of fresh water for cooling purposes by power plants only where alternative water supply sources and alternative cooling technologies are shown to be “environmentally undesirable” or “economically unsound.

TRANSMISSION LINE SAFETY AND NUISANCE

Applicable LORS	*Description*
Aviation Safety	
Federal	
Title 14, Part 77 of the Code of Federal Regulations (CFR),"Objects Affecting the Navigable Air Space"	Describes the criteria used to determine the need for a Federal Aviation Administration (FAA) "Notice of Proposed Construction or Alteration" in cases of potential obstruction hazards.
FAA Advisory Circular No. 70/7460-1G, " Proposed Construction and/or Alteration of Objects that May Affect the Navigation Space"	Addresses the need to file the "Notice of Proposed Construction or Alteration" (Form 7640) with the FAA in cases of potential for an obstruction hazard.
FAA Advisory Circular 70/460-1G, "Obstruction Marking and Lighting"	Describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.
Interference with Radio Frequency Communication	
Federal	
Title 47, CFR, Section 15.2524, Federal Communications Commission (FCC)	Prohibits operation of devices that can interfere with radio-frequency communication.
State	
California Public Utilities Commission (CPUC) General Order 52 (GO-52)	Governs the construction and operation of power and communications lines to prevent or mitigate interference.
Audible Noise	
Local	
Kings County Noise Element	Sets noise limits for specific land uses.
Fresno County Noise Element	Sets sound level limits at residences and outdoor activity areas.
City of Avenal Noise Element.	Sets noise limits for sensitive land uses.
Hazardous and Nuisance Shocks	
State	
CPUC GO-95, "Rules for Overhead Electric Line Construction"	Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.

Applicable LORS	*Description*
Title 8, California Code of Regulations (CCR) Section 2700 et seq. “High Voltage Safety Orders”	Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.
National Electrical Safety Code	Specifies grounding procedures to limit nuisance shocks. Also specifies minimum conductor ground clearances.
Industry Standards	
Institute of Electrical and Electronics Engineers (IEEE) 1119, “IEEE Guide for Fence Safety Clearances in Electric-Supply Stations”	Specifies the guidelines for grounding-related practices within the right-of-way and substations.
Electric and Magnetic Fields	
State	
GO-131-D, CPUC ”Rules for Planning and Construction of Electric Generation Line and Substation Facilities in California”	Specifies application and noticing requirements for new line construction including EMF reduction.
CPUC Decision 93-11-013	Specifies CPUC requirements for reducing power frequency electric and magnetic fields.
Industry Standards	
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines	Specifies standard procedures for measuring electric and magnetic fields from an operating electric line.
Fire Hazards	
State	
14 CCR Sections 1250-1258, “Fire Prevention Standards for Electric Utilities”	Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.

TRAFFIC AND TRANSPORTATION

Applicable LORS	***Description***
Federal	
Code of Federal Regulations (CFR) Title 14, Chapter 1, Part 77	Includes standards for determining obstructions in navigable airspace. Sets forth requirements for notice to the Federal Aviation Administration of certain proposed construction or alteration. Also, provides for aeronautical studies of obstructions to air navigation to determine their effect on the safe and efficient use of airspace.
Title 49, Subtitle B	Includes procedures and regulations pertaining to interstate and intrastate transport (includes hazardous materials program procedures), and provides safety measures for motor carriers and motor vehicles who operate on public highways.
State	
California Vehicle Code, Division 2, Chapter. 2.5, Div. 6, Chap. 7, Div. 13, Chap. 5, Div. 14.1, Chap. 1 & 2, Div. 14.8, Div. 15	Includes regulations pertaining to licensing, size, weight and load of vehicles operated on highways, safe operation of vehicles, and the transportation of hazardous materials.
California Streets and Highway Code, Division 1 & 2, Chapter 3 & Chapter 5.5	Includes regulations for the care and protection of State and County highways, and provisions for the issuance of written permits.
Local	
Kings County General Plan – Circulation Element	Reflects the urban and rural nature of Kings County and establishes standards that guide the development of the transportation system, and management of access to the highway system by new development, throughout the unincorporated areas of the county. Roadways are classified in this system based on the linkages they provide, their function in the hierarchy of roadways, and the importance of the route's service to the residents and businesses of Kings County.
City of Avenal General Plan – Circulation Element	Purpose is to provide a safe, efficient, and adequate circulation system for the City. The Element addresses the circulation improvements needed to provide adequate capacity for future land uses.

TRANSMISSION SYSTEM ENGINEERING

Applicable LORS	***Description***
The North American Electric Reliability Corporation (NERC)	North American Reliability Council (NERC) Reliability Standards for the Bulk Electric Systems of North America provide national policies, standards, principles and guidelines to assure the adequacy and security of the electric transmission system. The NERC Reliability Standards provide for system performance levels under normal and contingency conditions. With regard to power flow and stability simulations, while these Reliability Standards are similar to NERC/WECC Standards, certain aspects of the NERC/WECC Standards are either more stringent or more specific than the NERC Standards for Transmission System Contingency Performance. The NERC Reliability Standards apply not only to interconnected system operation but also to individual service areas (NERC 2006).
Western Electricity Coordinating Council's (WECC)	The Western Electricity Coordinating Council (WECC) Planning Standards are merged with the North American Electric Reliability Council (NERC) Planning Standards and provide the system performance standards used in assessing the reliability of the interconnected system. These standards require the continuity of service to loads as the first priority and preservation of interconnected operation as a secondary priority. Certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards alone. These standards provide planning for electric systems so as to withstand the more probable forced and maintenance outage system contingencies at projected customer demand and anticipated electricity transfer levels, while continuing to operate reliably within equipment and electric system thermal, voltage and stability limits. These standards include the reliability criteria for system adequacy and security, system modeling data requirements, system protection and control, and system restoration. Analysis of the WECC system is based to a large degree on Section I.A of the standards, "NERC and WECC Planning Standards with Table I and WECC Disturbance-Performance Table" and on Section I.D, "NERC and WECC Standards for Voltage Support and Reactive Power". These standards require that the results of power

	flow and stability simulations verify defined performance levels. Performance levels are defined by specifying the allowable variations in thermal loading, voltage and frequency, and loss of load that may occur on systems during various disturbances. Performance levels range from no significant adverse effects inside and outside a system area during a minor disturbance (loss of load or a single transmission element out of service) to a level that seeks to prevent system cascading and the subsequent blackout of islanded areas during a major disturbance (such as loss of multiple 500 kV lines along a common right of way, and/or multiple generators). While controlled loss of generation or load or system separation is permitted in certain circumstances, their uncontrolled loss is not permitted (WECC 2006).
California Public Utilities Commission (CPUC) General Order 95 (GO-95*), Rules for Overhead Electric Line Construction*	Specifies uniform requirements for the construction of overhead electric lines. Compliance with this order ensures both reliable service and a safe working environment for those working in the construction, maintenance, operation, or use of overhead electric lines, and for the safety of the general public.
CPUC General Order 128 (GO-128), *Rules for Underground Electric Line Construction*	Establishes uniform requirements for the construction of underground electric lines. Compliance with this order also ensures both reliable service and a safe working environment for those working in the construction, maintenance, operation, or use of underground electric lines, and for the safety of the general public.
National Electric Safety Code 1999	Provides electrical, mechanical, civil, and structural requirements for overhead electric line construction and operation.
California Independent System Operator (CAISO)	California ISO Planning Standards also provide standards, and guidelines to assure the adequacy, security and reliability in the planning of the California ISO transmission grid facilities. The California ISO Grid Planning Standards incorporate the NERC/WECC and NERC Reliability Planning Standards. With regard to power flow and stability simulations, these Planning Standards are similar

	to the NERC/WECC or NERC Reliability Planning Standards for Transmission System Contingency Performance. However, the California ISO Standards also provide some additional requirements that are not found in the WECC/NERC or NERC Standards. The California ISO Standards apply to all participating transmission owners interconnecting to the California ISO controlled grid. They also apply when there are any impacts to the California ISO grid due to facilities interconnecting to adjacent controlled grids not operated by the California ISO (California ISO 2002a). California ISO/FERC Electric Tariff provides guidelines for construction of all transmission additions/upgrades (projects) within the California ISO controlled grid. The California ISO determines the “Need” for the proposed project where it will promote economic efficiency or maintain system reliability. The California ISO also determines the Cost Responsibility of the proposed project and provides an Operational Review of all facilities that are to be connected to the California ISO grid (California ISO 2007a).

VISUAL RESOURCES

Applicable LORS	*Description*
Federal	
Transportation Equity Act for the 21st Century of 1998, and Safe, Accountable, Flexible, and Efficient Transportation Equity Act of 2005.	The project site does not involve federal managed lands, nor a recognized National Scenic Byway or All-American Road within its vicinity.
State	
California Streets and Highways Code, Sections 260 through 263 – Scenic Highways	Ensures the protection of highway corridors that reflect the State's natural scenic beauty. The project site does not involve a designated State Scenic Highway.
Local	
City of Avenal General Plan, adopted August 11, 2005 • Chapter 6.0 Circulation Element o Policy 6.1 General Circulation and Street System • Chapter 7.0 Land Use Element o Policy 7.4 Industrial Land Use • Chapter 8.0 Community Design Element o Policy 8.3 Commercial and Industrial Development	Includes a provision to provide additional landscaping, including street trees, along existing roadways. Includes a requirement that industrial development should not create significant off-site circulation, noise, dust, visual and hazardous material impacts that cannot be adequately mitigated. Includes a requirement that commercial and industrial development be attractive and of high-quality design to enhance the image of the city.

City of Avenal Municipal Code Title 9-Zoning Ordinance • Section 9.60.08 - Parking Lot Landscaping • Section 9.61.11- Business Signage • Section 9.63 - Site Landscaping • Section 9.79 – Screening of Trash Bins and Dumpsters •	Provides site development requirements for projects.
Local	
County of Fresno Ordinance Chapter 1, Part VII, Division VI – Zoning Division • Section 875 – Electric Utilities and Services o C. Review Of Electric Transmission Facilities	The section is intended to provide the County of Fresno with a formal means of project review and comment on electric transmission facilities and electric utility facilities which are subject to approval by the California Public Utilities Commission or California Energy Commission. Provision C. includes that routes of proposed electric transmission facilities be submitted to the Director of the Fresno County Department of Public Works and Planning for review either prior to filing an application with a State agency or prior to any property right acquisition or condemnation proceedings; or at least 100 days prior to construction.

WASTE MANAGEMENT

Applicable LORS	***Description***
Federal	
Title 42, United States Code (U.S.C.), §6901, et seq. Solid Waste Disposal Act of 1965 (as amended and revised by the Resource Conservation and Recovery Act of 1976, et al.)	The Solid Waste Disposal Act, as amended and revised by the Resource Conservation and Recovery Act (RCRA) et al., establishes requirements for the management of solid wastes (including hazardous wastes), landfills, underground storage tanks, and certain medical wastes. The statute also addresses program administration, implementation and delegation to states, enforcement provisions, and responsibilities, as well as research, training, and grant funding provisions. RCRA Subtitle C establishes provisions for the generation, storage, treatment, and disposal of hazardous waste, including requirements addressing: • Generator record keeping practices that identify quantities of hazardous wastes generated and their disposition; • Waste labeling practices and use of appropriate containers; • Use of a manifest when transporting wastes; • Submission of periodic reports to the United States Environmental Protection Agency (U.S. EPA) or other authorized agency; and • Corrective action to remediate releases of hazardous waste and contamination associated with RCRA-regulated facilities. RCRA Subtitle D establishes provisions for the design and operation of solid waste landfills. RCRA is administered at the federal level by the United States Environmental Protection Agency (U.S. EPA) and its 10 regional offices. The Pacific Southwest regional office (Region 9) implements U.S. EPA programs in California, Nevada, Arizona, and Hawaii.

Applicable LORS	***Description***
Title 42, U.S.C., §9601, et seq. Comprehensive Environmental Response, Compensation and Liability Act	The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as *Superfund*, establishes authority and funding mechanisms for cleanup of uncontrolled or abandoned hazardous waste sites, as well as cleanup of accidents, spills, or emergency releases of pollutants and contaminants into the environment. Among other things, the statute addresses: • Reporting requirements for releases of hazardous substances; • Requirements for remedial action at closed or abandoned hazardous waste sites, and brownfields; • Liability of persons responsible for releases of hazardous substances or waste; and • Requirements for property owners/potential buyers to conduct "all appropriate inquiries" into previous ownership and uses of the property to 1) determine if hazardous substances have been or may have been released at the site, and 2) establish that the owner/buyer did not cause or contribute to the release. A Phase I Environmental Site Assessment is commonly used to satisfy CERCLA "all appropriate inquiries" requirements.
Title 40, Code of Federal Regulations (CFR), Subchapter I – Solid Wastes	These regulations were established by U.S. EPA to implement the provisions of the Solid Waste Disposal Act and RCRA (described above). Among other things, the regulations establish the criteria for classification of solid waste disposal facilities (landfills), hazardous waste characteristic criteria and regulatory thresholds, hazardous waste generator requirements, and requirements for management of used oil and universal wastes. • Part 257 addresses the criteria for classification of solid waste disposal facilities and practices. • Part 258 addresses the criteria for municipal solid waste landfills. • Parts 260 through 279 address management of hazardous wastes, used oil, and universal wastes (i.e., batteries, mercury-containing equipment, and lamps). U.S. EPA implements the regulations at the federal level. However, California is an RCRA-authorized state, so most of the solid and hazardous waste regulations are implemented by state agencies and authorized local agencies in lieu of U.S. EPA.

Applicable LORS	***Description***
Title 49, CFR, Parts 172 and 173. Hazardous Materials Regulations	These regulations address the United States Department of Transportation (DOT) established standards for transport of hazardous materials and hazardous wastes. The standards include requirements for labeling, packaging, and shipping of hazardous materials and hazardous wastes, as well as training requirements for personnel completing shipping papers and manifests. Section 172.205 specifically addresses use and preparation of hazardous waste manifests in accordance with Title 40, CFR, section 262.20.
State	
California Health and Safety Code (HSC), Chapter 6.5, §25100, et seq. Hazardous Waste Control Act of 1972, as amended	This California law creates the framework under which hazardous wastes must be managed in California. The law provides for the development of a state hazardous waste program that administers and implements the provisions of the federal RCRA program. It also provides for the designation of California-only hazardous wastes and development of standards (regulations) that are equal to or, in some cases, more stringent than federal requirements. The California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) administers and implements the provisions of the law at the state level. Certified Unified Program Agencies (CUPAs) implement some elements of the law at the local level.

Applicable LORS	***Description***
Title 22, California Code of Regulations (CCR), Division 4.5. Environmental Health Standards for the Management of Hazardous Waste	These regulations establish requirements for the management and disposal of hazardous waste in accordance with the provisions of the California Hazardous Waste Control Act and federal RCRA. As with the federal requirements, waste generators must determine if their wastes are hazardous according to specified characteristics or lists of wastes. Hazardous waste generators must obtain identification numbers; prepare manifests before transporting the waste off site; and use only permitted treatment, storage, and disposal facilities. Generator standards also include requirements for record keeping, reporting, packaging, and labeling. Additionally, while not a federal requirement, California requires that hazardous waste be transported by registered hazardous waste transporters. The standards addressed by Title 22, CCR include: • Identification and Listing of Hazardous Waste (Chapter 11, §66261.1, et seq.). • Standards Applicable to Generator of Hazardous Waste (Chapter 12, §66262.10, et seq.). • Standards Applicable to Transporters of Hazardous Waste (Chapter 13, §66263.10, et seq.). • Standards for Universal Waste Management (Chapter 23, §66273.1, et seq.). • Standards for the Management of Used Oil (Chapter 29, §66279.1, et seq.). • Requirements for Units and Facilities Deemed to Have a Permit by Rule (Chapter 45, §67450.1, et seq.). The Title 22 regulations are established and enforced at the state level by DTSC. Some generator and waste treatment standards are also enforced at the local level by CUPAs.

Applicable LORS	***Description***
HSC, Chapter 6.11 §§25404 – 25404.9 Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)	The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the six environmental and emergency response programs listed below. • Aboveground Petroleum Storage Act requirements for Spill Prevention, Control, and Countermeasure (SPCC) Plans. • Hazardous Materials Release and Response Plans and Inventories (Business Plans). • California Accidental Release Prevention (CalARP) Program. • Hazardous Material Management Plan / Hazardous Material Inventory Statements. • Hazardous Waste Generator / Tiered Permitting Program. • Underground Storage Tank Program. The state agencies responsible for these programs set the standards for their programs while local governments implement the standards. The local agencies implementing the Unified Program are known as CUPAs. The San Bernardino County Fire Department, Hazardous Materials Division is the CUPA for the SGGS project. Note: The Waste Management analysis only considers application of the Hazardous Waste Generator/Tiered Permitting element of the Unified Program.
Title 27, CCR, Division 1, Sub-division 4, Chapter 1, §15100, et seq. Unified Hazardous Waste and Hazardous Materials Management Regulatory Program	While these regulations primarily address certification and implementation of the program by the local CUPAs, the regulations do contain specific reporting requirements for businesses. • Article 9 – Unified Program Standardized Forms and Formats (§§ 15400-15410). • Article 10 – Business Reporting to CUPAs (§§15600–15620).
Public Resources Code, Division 30, §40000, et seq. California Integrated Waste Management Act of 1989	The California Integrated Waste Management Act (CIWMA) establishes mandates and standards for management of solid waste in California. The law addresses solid waste landfill diversion requirements; establishes the preferred waste management hierarchy (source reduction first, then recycling and reuse, and treatment and disposal last); sets standards for design and construction of municipal landfills; and addresses programs for county waste management plans and local implementation of solid waste requirements.

Applicable LORS	***Description***
Title 14, CCR, Division 7, §17200, et seq. California Integrated Waste Management Board	These regulations implement the provisions of the California Integrated Waste Management Act and set forth minimum standards for solid waste handling and disposal. The regulations include standards for solid waste management, as well as enforcement and program administration provisions. • Chapter 3 – Minimum Standards for Solid Waste Handling and Disposal. • Chapter 3.5 – Standards for Handling and Disposal of Asbestos Containing Waste. • Chapter 7 – Special Waste Standards. • Chapter 8 – Used Oil Recycling Program. • Chapter 8.2 – Electronic Waste Recovery and Recycling.
HSC, Division 20, Chapter 6.5, Article 11.9, §25244.12, et seq. Hazardous Waste Source Reduction and Management Review Act of 1989	This law was enacted to expand the state's hazardous waste source reduction activities. Among other things, it establishes hazardous waste source reduction review, planning, and reporting requirements for businesses that routinely generate more than 12,000 kilograms (approximately 26,400 pounds) of hazardous waste in a designated reporting year. The review and planning elements are required to be done on a four-year cycle, with a summary progress report due to DTSC every fourth year.
Title 22, CCR, §67100.1 et seq. Hazardous Waste Source Reduction and Management Review	These regulations further clarify and implement the provisions of the Hazardous Waste Source Reduction and Management Review Act of 1989 (noted above). The regulations establish the specific review elements and reporting requirements to be completed by generators subject to the act.
Policies	
Kings County, Countywide Integrated Waste Management Plan	This document sets forth the county's goals, policies, and programs for reducing dependence on landfilling solid wastes and increasing source reduction, recycling, and reuse of products and waste, in compliance with the CIWMA. The plan also addresses the siting and development of recycling and disposal facilities and programs within the county.

WORKER SAFETY AND FIRE PROTECTION

Applicable LORS	***Description***
Federal	
29 U.S. Code § 651 et seq (Occupational Safety and Health Act of 1970)	This act mandates safety requirements in the workplace with the purpose of "[assuring] so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources" (29 USC § 651).
29 CFR sections 1910.1 to 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations)	These sections 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.
29 CFR sections 1952.170 to 1952.175	These sections provide federal approval of California's plan for enforcement of its own safety and health requirements, in lieu of most of the federal requirements found in 29 CFR §§1910.1 to 1910.1500.
State	
8 CCR all applicable sections (Cal/OSHA regulations)	Requires that all employers follow these regulations as they pertain to the work involved. This includes regulations pertaining to safety matters during construction, commissioning, and operations of power plants, as well as safety around electrical components; fire safety; and hazardous materials use, storage, and handling.
24 CCR section 3, et seq.	Incorporates the current addition of the Uniform Building Code.
Health and Safety Code section 25500, et seq.	Risk Management Plan requirements for threshold quantity of listed acutely hazardous materials at a facility.
Health and Safety Code sections 25500 to 25541	Requires a Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at a facility.
Local	**(or locally enforced)**
Uniform Fire Code, Articles 4, 79, & 80	Specify requirements for proper storage and handling of hazardous materials and flammable/combustible liquids. Enforced by Kings County Fire Department (KCFD).
National Fire Protection Association (NFPA) Standards	Contain standards necessary to establish a reasonable level of safety and protect property from fire and explosion hazards. Enforced by the KCFD.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION
OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE
AVENAL ENERGY PROJECT

DOCKET NO. 08-AFC-1

EXHIBIT LIST

APPLICANT'S EXHIBITS

EXHIBIT 1 Avenal Energy Project Application for Certification; dated February 2008, and docketed on February 21, 2008. Sponsored by Applicant, and admitted into evidence on July 7, 2009.

EXHIBIT 2 Air Quality and Public Health Modeling Files; dated February 12, 2008, and docketed February 21, 2008. (a) Air Quality Modeling Files; (b) Public Health Modeling Files. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 3 Supplement to the Avenal Energy Project Application for Certification; dated March 27, 2008, and docketed March 28, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

(a) Section 2.0 - Air Quality
(b) Section 3.0 – Biological Resources
(c) Section 4.0 – Cultural Resources
(d) Section 5.0 - Socioeconomics
(e) Section 6.0 – Transmission System Design
(f) Section 7.0 – Water Resources
(g) Attachment A.1 – Air Permit Application Completeness Letters
(h) Attachment A.2 – Corrected AFC Page 6.2-20
(i) Attachment C.1 – CHRIS Record Search
(j) Attachment C.2 – Letters to Local Historical and Archaeological Societies
(k) Attachment C.3 – Historical Architectural Survey Report
(l) Attachment C.4 – Letter to NAHC
(m) Attachment S.1 – Agency Contacts for Socioeconomics
(n) Attachment W.1 – Existing Site Drainage
(o) Attachment W.2 – 100 Year Flood Zone
(p) Attachment W.3 – Pre-Construction Runoff and Drainage Plan
(q) Attachment W.4 – Existing Groundwater Wells Within One Half Mile
(r) Attachment W.5 – Land Option and Water Agreement
(s) Attachment W.6 – Conceptual Sanitary Sewer System and Leaching Field/Septic System

(t) Attachment W.7 – Ground Water Drawdown Modeling Report
(u) Attachment T.1 – Interconnection Feasibility Study Report
(v) Attachment T.2 – One Line Diagram for Gates Substation
(w) Attachment T.3 – System Impact Study Agreement

EXHIBIT 4 CHRIS Cultural Resource Reports for the Avenal Energy Application for Certification; dated April 1, 2008, and docketed April 2, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

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EXHIBIT 5 Applicant's Response to Department of Conservation's April 4, 2008 Letter Regarding the Avenal Application for Certification; dated May 15, 2008, and docketed May 16, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 6 Avenal Power Center, LLC's Objection to California Energy Commission Staff Data Requests (Set 1); dated June 10, 2008, and docketed June 10, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

(a) Objections to Data Request 16
(b) Objections to Data Request 53
(c) Objections to Data Requests 66, 67, and 68

EXHIBIT 7 Response to California Energy Commission Data Requests 1-74 for Avenal Energy; dated June 20, 2008, and docketed June 20, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

(a) Responses 1-6; Exhibit 2-1
(b) Responses 7-10; Exhibits 7-1, 7-2, 7-3, 10-1
(c) Responses 11-20; Exhibits 17-1, 17-2
(d) Response 21
(e) Responses 22-23; Exhibits 22-1, 23-1
(f) Responses 24-53; Exhibits 25-1, 35-1, 38-1, 48-1, 48-2
(g) Responses 54-58; Exhibit 58-1
(h) Responses 59-68; Exhibit 61-1
(i) Responses 69-74

EXHIBIT 8 Avenal Energy's Response to California Energy Commission Data Request Workshop for Avenal Energy (Site Cut and Fill Depth Plan); dated July 11, 2008, and docketed July 14, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

(a) Site Cut and Fill Depth Plan
(b) Cover Letter; Will-Serve Letter from Kings County Fire Department

EXHIBIT 9 Phase I Environmental Site Assessment and Appendices; dated October 30, 2007, and docketed July 23, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 10 Additional Pipeline Details for Avenal Energy Project; dated August 1, 2008, and docketed August 4, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 11 Letter from Avenal Power to United States Fish and Wildlife Service Regarding Migratory Buffer for Kit Fox; dated August 15, 2008. Not docketed. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 12 Memorandum Regarding SR 198 EB Ramps at Avenal Cutoff Road; dated August 25, 2008, and docketed August 26, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 13 Response to CEC Data Request Set 1 and Workshop for Avenal Energy (System Impact Study); dated September 19, 2008, and docketed September 22, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 14 Response to California Energy Commission Data Requests Set 2 (# 75-94) for Avenal Energy; dated September 24, 2008, and docketed September 24, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

(a) Responses 75-77
(b) Responses 78-88; Exhibits 79-1, 80-1, 83-1, 83-2, 83-3, 84-1
(c) Response 89; Exhibit 89-1
(d) Responses 90-94; Exhibits 92-1, 93-1

EXHIBIT 15 Avenal Power Center's Response to September 8, 2008 Letter from United States Fish and Wildlife Service to United States Environmental Protection Agency, Region 9; dated October 1, 2008, and docketed October 3, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 16 Supplemental Information Regarding a Buffer Along the San Luis Canal for Avenal Energy; dated October 6, 2008, and docketed October 7, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 17 Avenal Power Center LLC's Objections to California Unions for Reliable Energy's Data Requests; dated October 16, 2008, and docketed October 21, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

(a) Objections to Data Request 2
(b) Objections to Data Requests 6(a), 6(c), 7(a), and 7(b)
(c) Objection to Data Request 9
(d) Objections to Data Requests 10-30
(e) Objections to Data Request 35 and 41
(f) Objections to Data Request 47
(g) Objections to Data Request 48
(h) Objections to Data Request 53

EXHIBIT 18 Letter from Avenal Energy to San Joaquin Valley Air Pollution Control District Regarding Avenal Energy Carbon Monoxide Emission Limit Reduction; dated October 28, 2008, and docketed November 13, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 19 Response to CURE Data Request Set 1 for Avenal Energy; dated October 30, 2008, and docketed November 3, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

(a) Responses 1-5
(b) Responses 6-7; Exhibit C6
(c) Response 8
(d) Response 9
(e) Responses 10-30
(f) Responses 31-44; Exhibits C31-1, C31-2, C31-3, C31-4, C32, C40
(g) Responses 45-59

EXHIBIT 20 Supplement to the System Impact Study; dated November 21, 2008, and docketed November 21, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 21 Applicant's Final Comments to Avenal Energy Preliminary Staff Assessment; dated March 4, 2009, and docketed March 5, 2009. Sponsored by Applicant, and received into evidence on July 7, 2009.

(a) Attachment 1, Pages 1-4
(b) Attachment 1, Pages 5-21
(c) Attachment 1, Pages 22-28
(d) Attachment 1, Pages 29-33
(e) Attachment 1, Pages 34-35
(f) Attachment 1, Page 36
(g) Attachment 1, Pages 37-39

(h) Attachment 1, Pages 40-42
(i) Attachment 1, Pages 43-44
(j) Attachment 1, Pages 45-46
(k) Attachment 1, Pages 47-48
(l) Attachment 1, Page 49
(m) Attachment 1, Page 50
(n) Attachment 2 (Revised Exhibit 83-3 from Response to California Energy Commission Data Requests Set 2)
(o) Attachment 3 (Revised Exhibit 83-2 from Response to California Energy Commission Data Requests Set 2)
(p) Attachment 4 (Kettleman Hills Facility Cumulative Impact Considerations

EXHIBIT 22 Avenal Project System Impact Study Determining Re-Rate Potential for Impacted Lines; dated April 17, 2009, and docketed April 21, 2009. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 23 Study Regarding Change in Carbon Emissions from the Base Case When the Avenal Energy Power Plant Is Added; dated May 7, 2009, and docketed May 14, 2009. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 24 Environmental Analysis for Gates Substation and Surrounding Property Owned by PG&E; dated May 21, 2009, and docketed May 22, 2009, and received into evidence on July 7, 2009.

EXHIBIT 25 Written Testimony, Witness Declarations and Resumes; dated June 8, 2009, and docketed June 8, 2009. Sponsored by Applicant, and received into evidence on July 7, 2009.

(a) Executive Summary
(b) Project Description
(c) Air Quality
(d) Biological Resources
(e) Cultural Resources
(f) Hazardous Materials Management
(g) Land Use
(h) Noise and Vibration
(i) Public Health
(j) Socioeconomics
(k) Soil and Water Resources
(l) Traffic and Transportation
(m) Transmission Line Safety and Nuisance
(n) Visual Resources
(o) Waste Management
(p) Worker Safety and Fire Protection

(q) Facility Design
(r) Geology and Paleontology
(s) Power Plant Efficiency
(t) Power Plant Reliability
(u) Transmission System Engineering
(v) Alternatives

EXHIBIT 26 Supplemental Testimony Regarding Greenhouse Gas Issues; dated June 8, 2009, and docketed June 8, 2009. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBITS 27 to 49 Reserved

EXHIBIT 50 Letter from Department of Conservation Regarding Avenal Power Center, LLC Application for Certification; dated April 4, 2008, and docketed April 8, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 51 Report of Conversation with TRC Solutions Regarding Avenal Energy AFC Socioeconomics Questions; dated May 9, 2008, and docketed July 9, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 52 Letter from California Department of Fish and Game to the California Energy Commission Summarizing Department of Fish and Game's Comments from the March 18, 2008 Meeting; dated May 27, 2008, and docketed May 30, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 53 California Air Resources Board's Comments on the Avenal Power Center; dated June 16, 2008; and docketed June 17, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 54 Kings County Fire Department Service Support Letter for Avenal Energy; dated June 27, 2008, and docketed June 30, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 55 Letter From United States Environmental Protection Agency to United States Fish and Wildlife Service Regarding Request for Formal Consultation Under Section 7 of the Federal Endangered Species Act; dated July 10, 2008, and docketed July 11, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 56 Letter from City of Avenal to Avenal Power Center in Response to Request Regarding Potable Water Availability; dated September 22, 2008,

and docketed January 13, 2009. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 57 Letter from Environmental Protection Agency to United States Fish and Wildlife Service; dated October 22, 2008. Not docketed. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 58 Final Determination of Compliance; dated October 30, 2008, and docketed November 4, 2008. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 59 Letter from Westlands Water District Withdrawing Its May 29, 2008 Letter; dated January 12, 2009, and docketed January 26, 2009. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 60 Letter from Kings County Economic Development Corporation Supporting Avenal Energy Project; dated April 1, 2009, and docketed April 1, 2009. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 61 Letter from San Joaquin Valley Air Pollution Control District Clarifying Questions from CEC Staff During February 18, 2009 PSA Workshop; dated May 27, 2009 and docketed June 2, 2009. Sponsored by Applicant, and received into evidence on July 7, 2009.

EXHIBIT 62 Statement of Basis and Ambient Air Quality Impact Report; dated June 2009. Sponsored by Applicant, and received into evidence on July 7, 2009.

ENERGY COMMISSION STAFF'S EXHIBITS

EXHIBIT 200 Final Staff Assessment for the Avenal Energy Project, dated June 2009, docketed June 2, 2009. Sponsored by Staff; and received into evidence on July 7, 2009.

EXHIBIT 201 Energy Commission Staff's Pre-Hearing Conference Statement, dated June 22, 2009, docketed June 22, 2009. Sponsored by Staff; and received into evidence on July 7, 2009.

EXHIBIT 202 Energy Commission Staff's Update to Pre-Hearing Conference Statement and Minor Errata To Final Staff Assessment dated June 25, 2009, docketed June 25, 2009. Sponsored by Staff; and received into evidence on July 7, 2009.

EXHIBIT 203 MRW & Associates Report: Framework for Evaluating Greenhouse Gas Implications of Natural Gas-Fired Power Plants in California, dated May, 2009, docketed June 4, 2009. Sponsored by Staff; and received into evidence on July 7, 2009.

EXHIBIT 204 Draft Biological Opinion on the Proposed Avenal Power Center, LLC, Avenal Energy Power Plant Project, dated, July 1, 2009, docketed, July 3, 2009. Sponsored by Staff; and received into evidence on July 7, 2009.

INTERVENOR EXHIBITS

EXHIBIT 300 Intervenor Rob Simpson Testimony: Avenal Testimony Interpollutant Trade, filed as rebuttal testimony and labeled as Avenal W, 3 page document, docketed June 16, 2009. Sponsored by Intervenor Rob Simpson; and received into evidence on July 7, 2009.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION
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APPLICATION FOR CERTIFICATION
For the AVENAL ENERGY PROJECT

Docket No. 08-AFC-1

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DECLARATION OF SERVICE

I, _____, declare that on_____, 2009, I served and filed copies of the attached, _____ dated , 2009. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [http://www.energy.ca.gov/sitingcases/avenal/index.html].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

_____ sent electronically to all email addresses on the Proof of Service list;

_____ by personal delivery or by depositing in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses NOT marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

_____ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (*preferred method*);

OR

_____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-1
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

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

_____