VOLUME 1

APPLICATION FOR CERTIFICATION

STARWOOD POWER-MIDWAY, LLC PEAKING PROJECT

SUBMITTED TO THE
CALIFORNIA ENERGY COMMIISSION
NOVEMBER 2006

SUBMITTED BY

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WITH SUPPORT FROM

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Attachments

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Section 5.17
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Attachment B CalPeak Panoche Spill Prevention Control and Countermeasures Plan (SPCC)
Attachment C CalPeak Panoche Hazardous Materials Business Plan (HMBP)

AC	alternating current
ACHP	Advisory Council on Historical Preservation
ACMs	asbestos containing materials
ADT	average daily traffic
AFC	Application for Certification
AFY	acre-feet per year
AHM	Acutely Hazardous Materials
ALCC	Fresno County Agricultural Land Conservation Committee
ANSI	American National Standards Institute
APCD	Air Pollution Control District
APE	Area of Potential Effects
APN	assessors parcel number
APSSZ	Alquist-Priolo Special Study Zone
AQMP	Air Quality Management Plan
ASTs	aboveground storage tanks
ASTM	American Society for Testing Materials
ATC	Authority to Construct
ATCM	Airborne Toxic Control Measures
B	Boron
BACT	Best Available Control Technology
BEA	Bureau of Economic Analysis
Bgs	below ground surface
BLM	Bureau of Land Management
BMP	Best Management Practices
BOE	California Board of Equalization
BOP	balance-of-plant
Btu	British thermal unit
BPIP	Building Profile Input Program

CA	Calcium
CAA	(Federal) Clean Air Act
CAAA	(Federal) Clean Air Act Amendment
CAAQS	California ambient air quality standards
CAD	Computer-aided Design
CalARP	California Accidental Release Prevention (Program)
Cal-EPA	California Environmental Protection Agency
CalOSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CAS	California Academy of Sciences
CAS	Chemical Abstract Service
CBC	California Building Code
CBO	Chief Building Official
CCR	California Code of Regulations
CDC	California Department of Conservation
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEC	California Energy Commission
CEMS	Continuous Emissions Monitoring System
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (“Superfund”)
CFM	cubic feet per minute
CFR	Code of Federal Regulations
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System
CHSC	California Health and Safety Code
Cl	Chloride
CLME	California Licensed Mechanical Engineer
CNDDB	California Natural Diversity Data Base

CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO_2	carbon dioxide
COC	Conditions of Certification
COF	City of Fresno
COG	The Fresno Council of Engineers
COE	(Army) Corps of Engineers (also USACOE or USACE)
CPM	Compliance Project Manager
CPUC	California Public Utility Commission
CRHR	California Register of Historic Resources
CSO	construction safety orders
CTG	combustion turbine generator
CUP	Conditional Use Permit
CUPA	Certified Unified Program Agency
CVP	Central Valley Project
CWA	Clean Water Act
CWC	California Water Code
CWRCB	California Water Resources Control Board
dBA	decibels ‘A’ scale
dB	decibels
DC	direct current
DFG	California Department of Fish and Game
DEM	digital elevation model
DLN	dry low NO_x
DMV	Department of Motor Vehicles
DNL	Day-Night Avg. Sound Level
DOC	Determination of Compliance
DOC	Department of Conservation
DOF	Department of Finance
DOGGR	California Division of Oil, Gas, and Geothermal Resources
DOSH	Division of Occupational Safety and Health

DOT	U.S. Department of Transportation
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EC	Conductivity - Specific
EDD	Employment Development Department
EHD	Environmental Health Department
EIR	Environmental Impact Report
EIS	Environmental Impact Study
EMF	electric and magnetic fields
EMS	emergency medical service
EPC	Engineering, Procurement, and Construction
EPRI	Electric Power Research Institute
ERC	emissions reduction credit
ERPG	Emergency Response Planning Guidelines
ESA	Endangered Species Act
ESIL	existing scenic integrity level
ESO	Electrical Safety Orders
F	Fluoride
ºF	degrees Fahrenheit
FAA	Federal Aviation Administration
FC	Fresno County
FCDCH	Fresno County Department of Community Health
FCFD	Fresno County Fire Protection Division
FCFPD	Fresno County Fire Protection District
FCGP	Fresno County General Plan
Fe	Iron
FEMA	Federal Emergency Management Agency
FHA	Federal Highway Administration
FC	Fresno County
FCFD	Fresno County Fire Protection Division

FTA	Federal Transit Administration
FWS	United States Fish and Wildlife Service
GIS	geographical information system
GISO	General Industry Safety Orders
gpd	gallons per day
gpm	gallons per minute
GPS	global positioning system
GSUs	generator step-up unit transformers
GO	General Order
HARP	Hotspots Analysis and Reporting Program
HCM	Highway Capacity Manual
HCP's	Habitat Conservation Plans
HHV	MMBtu/hr
HMBP	Hazardous Materials Business Plan
HP	horsepower
HRA	Health Risk Assessment
HRSG	heat recovery steam generator
HVAC	heating, ventilating and air conditioning (system)
Hz	hertz
I-5	Interstate 5
IAN	Integrated Assessment of Need
ICBO	International Conference of Building Officials
ICEA	Insulated Cable Engineers Association
IDLH	immediately dangerous to life and health
IIPP	Injury and Illness Prevention Program
ISC	Industrial Source Complex
ISO	International Organization for Standardization
CAISO	Independent System Operator

JHA	Job Hazard Assessment
K	Potassium
km	kilometer
KOP	Key Observation Point
KPRA	Kingpin-to-rear-axle length
kV	kilovolts (unit of electrical potential)
kV/m	kilovolts per meter
kWh	kilowatt hour
lb/hr	pounds per hour
lb/MMcf	pounds per million cubic feet
lb/MMBtu	pounds per million British thermal unit
LBP	lead based paint
LCD	liquid crystal display
L_{eq}	equivalent sound level
L_{max}	maximum sound level
L_{min}	minimum sound level
LOC	levels of concern
LORS	laws, ordinances, regulations, and standards
LOS	level of service
M	magnitude
MCE	maximum credible earthquake
mG	milligauss (unit of magnetic field strength)
MBtu	mega British thermal unit
mG	milligauss (unit of magnetic field strength)
Mg	Magnesium
mg/L	milligrams per liter
MGD	million gallons/per day
ML	measurement location
MMBtu	Million BTUs

MRZ	Mineral Resource Zone
MSDS	Material Safety Data Sheet
Msl	mean sea level
MTA	Los Angeles Metropolitan Transit Authority
MVA	megavolt amps
MW	Megawatt
MWH	megawatt-hour
Na	Sodium
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NALMA	North American Land Mammal Ages
NCDC	National Climatic Data Center
NEHRP	National Earthquake Hazard Reduction Program
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NH_3-N	Ammonia
NHPA	National Historic Preservation Act
NIEHS	National Institute of Environmental health Science
NIOSH	National Institute of Occupational Safety and Health
NO	nitrogen oxide
NO_2	nitrogen dioxide
NO_3	nitrate
NO_x	Nitrogen Oxides
NOI	Notice of Intention
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRC	National Research Council
NRCS	National Resources Conservation Service (formerly Soil Conservation Service, SCS)
NRHP	National Register of Historic Places

NSPS	New Source Performance Standards
NSR	New Source Review
NTP	Notice to Proceed
O_2	Oxygen
O_3	Ozone
OCA	Offsite Consequences Analysis
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OHP	Office of Historic Preservation
OLM	Ozone Limiting Method
OSHA	Occupational Safety and Health Administration
PEC	Panoche Energy Center
pb	lead
PCF	Paid Call Firefighter
PCE	Passenger Car Equivalent
PG&E	Pacific Gas and Electric Company
PHMSA	Pipeline and Hazardous Materials Safety Administration
PLC	programmable logic control
PM	particulate matter
$PM_{2.5}$	particulates less than 2.5 microns
PM_{10}	particulates less than 10 microns
PPA	Purchase Power Agreement
PPE	personal protective equipment
ppm	parts per million
ppmvd	parts per million, volumetric dry
PRC	Public Resources Code
PSD	Prevention of Significant Deterioration
PSM	Process Safety Management
psi	pounds per square inch
psig	per square inch gauge

PTC	Permit to Construct
PTO	Permit to Operate
PVC	polyvinyl chloride
PWLs	power levels
RBM	Regulated Building Materials
RCRA	Resource Conservation and Recovery Act
REL	reference exposure level
RFO	Request for Offers
RH	relative humidity
RMP	Risk Management Plan
RMPP	Risk Management and Prevention Program
RO	Reverse osmosis
ROW	right-of-way
ROWD	Report of Waste Discharge
rpm	revolutions per minute
RTCs	RECLAIM trading credits
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
scf	standard cubic feet
SCR	Selective Catalytic Reduction
SCS	Soil Conservation Service
SHPO	State Historic Preservation Office
SIL	Significant Impact Levels
SIP	State Implementation Plan
SiO_2	Silica
SJVAPCD	San Joaquin Valley Unified Air Pollution Control District
SLM	sound level meter
SO_2	sulfur dioxide
SO_4	sulfate

So_x	oxides of sulfur
SPCC	Spill Prevention, Control, and Countermeasures
SPLs	sound power levels
SSJVIC	Southern San Joaquin Valley Information Center
STAA	Vehicle Length Surface Transportation Assistant Act
STPEL	short-term public emergency limit
SVP	Society for Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T-BACT	Toxic Best Available Control Technology
TDS	total dissolved solids
THI	total hazard index
TIN	triangulated irregular network
TLV	threshold limit values
TRI	Toxic Release Inventory
TSP	total suspended particulate
TSS	Total Suspended Solids
TWA	Time weighted Average
UBC	Uniform Building Code
UCMP	University of California Museum of Paleontology
UFC	Uniform Fire Code
UMV	Unitary Market Value
UPS	uninterruptible power supply
USACOE	(Army) Corps of Engineers (also COE)
USDA	United States Department of Agriculture
DOT	United States Department of Transportation
USEPA	U.S. Environmental Protection Agency (also EPA)
USF	United States Forest Service
USFW	United States Fish and Wildlife Service
USGS	United States Geological Survey

UTM	universal transverse mercator
V	volt
V/m	volts per meter
VAC	volts AC (alternating current)
VAC	Visual absorption capabilities
VCAPCD	Ventura County Air Pollution Control District
VRM	Visual resource management
VSOI	Visual Sphere of Influence
VOC	volatile organic compounds
Williamson Act	California Land Conservation Act
WAA	Warren-Alquist Act
WDR	Waste Discharge Requirement
WSS	Web Soil Survey
WWI	World War One
WWII	World War Two

SECTION 1 EXECUTIVE SUMMARY

1.1 INTRODUCTION

The Starwood Power - Midway, LLC Peaking Project (Midway) is a proposed simple-cycle electric generation project consisting of two (2) FT8-3 SwiftPac Gas Turbine Generator (CTG) units. The total net generating capacity is 120 megawatts (MW) with each CTG unit capable of generating 60 MW. The proposed plant will be owned and operated by Starwood Power – Midway, LLC (also referred to as the Applicant). The electricity generated by this project would meet the requirements of a contract with Pacific Gas and Electric (PG&E). Section 2.0 describes the contract in more detail.

The Applicant is seeking approval from the California Energy Commission (CEC) to construct and operate a power generation facility within western Fresno County. The proposed facility will use the FT8 generating package, which has been in operation at locations around the world since 1992. Each SwiftPac Unit has two (2) FT8-3 combustion gas turbines that drive opposite ends of a single electric generator. The FT8 is a modernization and more efficient version of the older Pratt & Whitney (P&W) FT4 package, which was sold for over 30 years, and is still operating in many locations, including California. The P&W FT8 units have been a reliable and proven technology for over 15 years and for 30 years prior to that in the form of the less efficient FT4 units.

Midway is located in the unincorporated area of western Fresno County approximately 50 miles west of the City of Fresno. The site is adjacent to the Panoche Hills and east of the San Benito County line. The site is surrounded by multiple existing electric generation facilities. A Wellhead Peaker plant is located to the southeast; the CalPeak Panoche Peaker plant lies to the southwest and; a PG&E Substation is to the west. The project will interconnect to the PG&E system by first tapping into the tie-line which connects the existing CalPeak Panoche plant to PG&E's system. The connection will include approximately 300 feet of 115kV transmission line which will be located entirely on the project site or the PG&E substation property (currently leased by CalPeak Panoche). Although the Midway project will be interconnected to the CalPeak Panoche transmission system each project will have independent breakers for isolation from the PG&E system. Neither plant will be dependent on the other for its transmission interconnection. Interconnection at this substation minimizes impacts to the PG&E transmission system while providing efficient peaking power.

The two (2) FT8-3 SwiftPac Gas Turbine Generator units to be installed in a simple cycle power plant arrangement are equipped with water injection into the combustors to reduce production of nitrous oxides (NOx), a selective catalytic reduction (SCR) system with 19% aqueous ammonia to further reduce NOx emissions, and an oxidation catalyst to reduce carbon monoxide (CO) emissions. The nominal plant power rating will be 120 MW. Auxiliary equipment will include one step up transformer, a water treatment system and water storage tanks, an air compressor with dryer skids, and control enclosures.

Typical operating hours for the Midway site will be comparable to the existing CalPeak Panoche plant. The Midway plant will have the same heat rate as the CalPeak Panoche plant, and therefore would be dispatched for system operation in a similar manner. Currently the CalPeak Panoche plant which averages to 4.5 hours per start, runs substantially less than 400 hours per year.

This Application for Certification (AFC) has been prepared in accordance with the CEC's Rules of Practice and Procedure and Power Plant Site Certification (August, 2000), as amended, and is intended to provide:

- A detailed description of the proposed Midway project
- An assessment of the anticipated project impacts on the existing environment
- A discussion of compliance with applicable laws, ordinances, regulations, and standards (LORS)

The remainder of this Executive Summary summarizes the more detailed information presented in the balance of the AFC.

1.2 FACILITY LOCATION AND DESCRIPTION

1.2.1 Facility Location

The project site located in the unincorporated area of western Fresno County is described as the Southwest Quarter of Section 5, Township 15 South, Range 13 East, on the United States Geological Survey (USGS) Quadrangle map. The assessor's parcel number (APN) is 027-060-78S. West Panoche Road lies just north of the site. The nearest intersections are West Panoche Road and South Fairfax Avenue approximately one mile to the northeast, and West Panoche Road and Interstate 5 (I-5) approximately 2 miles to the southwest. The surrounding area is predominantly used for agriculture with two existing power generation facilities nearby as well as the PG&E Substation (see Figure 1.2-1).

The proposed plant will be located on a 5.6-acre site within a 128-acre parcel. The plant site is leased by the applicant from the property owners and has been used since 2001 as a storage yard for CalPeak Power. Portions of the 128-acre parcel, not used for electric generation facilities or storage, are currently in agricultural production with pomegranate trees.

Off-site improvements associated with the project include approximately 300 feet of electric transmission line to tie into the PG&E Substation, a 1,200-foot underground, 3-inch water pipeline connecting the project to the existing CalPeak Panoche plant well, 50 feet of new gas transmission line and a gas metering set which will tap into the existing PG&E gas trunkline.

On-site project components include a 20-foot by 1,400-foot graded gravel and asphalt roadway to access the plant equipment, a 25,000 square-foot evaporation pond for RO wastewater discharge, approximately 600 feet of on-site gas line after the PG&E metering set, and the construction area, including laydown and parking.

Midway includes the plant site and all of the described on-site and off-site improvements.

1.2.2 Facility Description

The Midway project will consist of two (2) FT8-3 SwiftPac Gas Turbine Generator units installed in a simple cycle power plant arrangement. Auxiliary equipment will include one step up transformer, a water treatment system, water storage tanks, an air compressor with dryer skids, and control enclosures.

Each CTG will generate 60 MW net at ISO conditions of 60 degrees Fahrenheit (°F) and 59% humidity. The project will have an annual capacity factor no higher than 46 percent, depending on dispatch to meet PG&E peak load demand. Associated equipment will include emission control systems necessary to meet the proposed emission limits. Specifically, the SCR system will limit NO_x emissions at the stack exit to 2.5 parts per million, volumetric dry (ppmvd) referenced to 15 percent oxygen, while limiting ammonia slip to 10.0 ppmvd, referenced to 15 percent oxygen. These estimates are based on limiting the stack temperature to 750°F through the use of dilution air.

The plant will connect to the PG&E electrical transmission system via the tie-line which connects the existing CalPeak Panoche plant to the PG&E Substation. Refer to the appendices for the engineering design criteria for the project.

1.2.3 Fuel Gas Supply

At full load, each FT8-3 SwiftPac CTG unit requires an approximately 625 MMBtu (Million British Thermal Units)/hr HHV (High Heating Value) of natural gas for a plant total demand of 1,250 MMBtu/hr. The project will connect to an existing PG&E high-pressure gas trunk line, which currently serves the CalPeak Panoche plant site, located north of the Midway site. To tap into the existing PG&E gas trunkline, Midway will install approximately 650 feet of 6-inch diameter gas transmission line and a new gas metering set along the length of the western perimeter of the site.

1.2.4 Water Supply and Discharge

The Midway site has three equally viable sources for supply water: 1) Water from the well at the adjacent CalPeak Panoche plant; 2) Irrigation return flow water from the local farming operation's agricultural backwash pond (Baker Farming Company, LLC); or 3) Water from a new deep well. Water needs include NOx control (98 gallons per minute [GPM]), inlet fogging (40 GPM) and intermittent service water (5GPM). Water will be treated using a Reverse Osmosis (RO) system, followed by a demineralizer.

Safety water requirements include eye wash stations in hazardous chemical areas. The safety water will be supplied by self-contained water units. Potable drinking water will be supplied by a bottled water purveyor.

The combined wastewater discharge from the plant will consist of RO rejects and drain water from the gas turbine exhaust floor drains, the generator floor drains, the transformer containment area, equipment wash down areas, and the ammonia storage area. RO reject water will be conveyed to the evaporation pond and drain water will be contained, pumped out and transported off-site to be properly disposed.

Stormwater from the Midway site that does not contact the power-generation equipment will continue to run off the site as sheet flow.

1.2.5 Transmission Facilities

A new 300-foot, 115kV short line will be constructed from the dead-end structure on the Midway site and will tie into the CalPeak Panoche/PG&E interconnection line which leads to the 115kV switchyard and dead end structure at the PG&E Substation. Line design will take into account a 90 degree orientation

differential between the Midway dead-end structure and the CalPeak Panoche/PG&E tie-line. Intermediate structures will be installed as required. Line clearances over roads and under existing lines will conform to all applicable standards and requirements. The dead end structure and, if deemed necessary, any intermediate line supports will have foundations designed to meet seismic criteria applicable to the site.

1.3 PROJECT SCHEDULE

Midway will release the EPC contractor to start project engineering, design and procurement in February 2008 following the closing of project financing. The project anticipates receipt of the CEC license to construct by December 2007. Site construction activities will commence in June of 2008 and continue through March 2009 with commissioning activities to begin the same month. It is currently anticipated that Midway will be on line and in commercial service by May 1, 2009.

1.4 PROJECT OWNERSHIP

- Owner: Starwood Power - Midway, LLC
- Operator: Starwood Power - Midway, LLC

1.5 SUMMARY OF ENVIRONMENTAL IMPACTS

The proposed project has the potential to adversely impact the existing environment. In order to limit potential project impacts to a level of insignificance under normal operating conditions, the Applicant has carefully chosen the Midway location and incorporated design elements which serve to decrease impacts. Section 5.0 of this AFC assesses environmental impacts according to the following environmental resources:

- 5.2 Air Quality
- 5.3 Geologic Hazards and Resources
- 5.4 Agriculture and Soils
- 5.5 Water Resources
- 5.6 Biological Resources
- 5.7 Cultural Resources
- 5.8 Paleontological Resources
- 5.9 Land Use
- 5.10 Socioeconomic Resources
- 5.11 Traffic and Transportation
- 5.12 Noise
- 5.13 Visual Resources
- 5.14 Waste Management
- 5.15 Hazardous Materials Handling
- 5.16 Public Health and Safety
- 5.17 Worker Safety
- 5.18 Cumulative Impacts

Section 5.0 presents a detailed assessment of the environmental impacts of the project on the existing environment.

SECTION 2 PROJECT OBJECTIVES

Midway is a proposed simple-cycle electric generation project that has been designed and developed to conform to the requirements of the Pacific Gas and Electric Company (PG&E). The goal and objective of this project is simple, to meet the contractual requirements of PG&E. The following discussion gives the background pertinent to the contract with PG&E for the sale of power from the Midway project.

2.1 PG&E REQUEST FOR OFFERS

The California Public Utilities Commission (CPUC) approved the PG&E long-term resource plan on December 20, 2004. In Decision 12-04-048 the CPUC authorized PG&E to "plan for and procure the resources necessary to provide reliable service to their customer loads for the planning period 2005 through 2014" (Finding 1). In this proceeding, PG&E submitted their long-term resource needs and the increments of generation required to meet these load projections. PG&E indicated that most of the required generation would be acquired to satisfy peaking and shoulder loads, and would be dispatchable. In Finding 19, the CPUC stated, "We find that PG&E's LTPP plan is reasonable and we approve PG&E's strategy of adding 1,200 MW of capacity and new peaking generation in 2008 and an additional 1,000 MW of new peaking and dispatchable generation in 2010 through [Request For Offers] RFO" (Finding 19). Delays in the RFO process due to negotiations with the CPUC changed the online dates to cover a span of 2008 through 2010. Thus, PG&E was authorized and encouraged to seek new peaking, dispatchable generation through a bidding process to satisfy system loads by the end of this decade.

In response to this decision, PG&E re-issued its "2004 Long Term RFO – Power Purchase" on March 18, 2005. PG&E also indicated that, in accordance with the CPUC decision, they would utilize an "Independent Evaluator" to oversee the request for offers (RFO) process. PG&E notified prospective bidders that their bids would be evaluated utilizing a number of factors, including market valuation, portfolio fit, transmission impact, environmental characteristics, and conformance with PG&E's non-price terms and conditions. Finally, the projects were to be in the area designated as NP-15 (Zone North of Path 15).

2.2 RESPONSE TO REQUEST FOR OFFERS (RFO)

In response to the PG&E RFO, Starwood-Midway Power, LLC, investigated potential sites at or near the Vaca Dixon, Midway, Lodi and Panoche substations. Investigation included exploration of existing transmission path loads, flows, constraints, and growth potential. The only potential physical site near Vaca Dixon would have required leasing a parcel of land from PG&E, which PG&E determined was not available. Midway had previously been evaluated by CalPeak Power and had been determined unsuitable from a transmission perspective. The Lodi site required substantial gas system reinforcement that made the project uneconomical. Starwood–Midway Power, LLC chose the Panoche site for a variety of reasons. A parcel of land of sufficient size is available and had been leased by CalPeak Power for equipment storage since 2001. The site is ideal as it is located directly adjacent to the existing CalPeak Panoche plant, which allows for contiguous, compatible land uses and common ownership and could be developed with minimal impacts because, as a storage-yard, the site has been previously disturbed and graded. There is no existing vegetation on-site. The adjacent gas pipeline and electrical substation minimizes the need for and potential impacts from the linear facilities required for the plant. Project development on any

other site in the vicinity of the existing PG&E substation would require the destruction of existing agricultural and/or potential biological resources habitat. Thus, use of the proposed site allows for fewer impacts to biological and agricultural resources. Lastly, the Panoche site affords PG&E the opportunity to dispatch output into the Path 15 corridor as well as eastward to rapidly growing load centers along the Highway 99 corridor.

2.3 PG&E CONTRACT

Midway believes that a relatively large number of offers were submitted to PG&E in response to its RFO on April 27, 2005. PG&E evaluated the offers and created a short list of potential projects. Following the submittal of additional information to PG&E the list of projects was further shortened. Finally, in January 2006, PG&E informed Midway that its project had been accepted on a final list and that negotiations over contract terms and conditions would commence. Rigorous negotiation ensued over contract terms that culminated in a contract signed in March 2006 for generation services.

Salient contract provisions include:

- Contract term of 15 years.
- Midway would be constructed on the parcel of land adjacent to the PG&E Panoche Substation and adjacent to the existing CalPeak Panoche Power plant on West Panoche Road, Fresno County, California.
- Midway would have two (2) FT8-3 SwiftPac CTG units. The four turbines contained in the two units are able to ramp from 0 percent to 100 percent load in a fairly short time and they provide an attractive heat rate for a peaking plant.
- Each of these combustion turbine units is to provide approximately 54.9 MW of capacity in summer peak conditions with very low emission levels. This capacity level and emission levels can only be obtained with water injection and inlet cooling foggers.
- A turbine efficiency of 10,600 Btu/kWh is produced at 100 percent rated capacity, summer peak conditions.
- PG&E has the ability to dispatch each of the units as system conditions require.
- The entire Midway project is to be on-line and available for PG&E to dispatch into the grid on or before May 1, 2009.

SECTION 3 FACILITY DESCRIPTION AND LOCATION

3.1 INTRODUCTION

The Starwood Power–Midway, LLC Peaking Project (Midway) is a proposed simple-cycle electric generating facility located within western Fresno County adjacent to the Panoche Hills and east of the San Benito county line. The 5.6-acre project site is approximately 50 miles west of the city of Fresno and approximately 2 miles east of the Interstate 5 (I-5). The proposed facility will include two (2) FT8-3 SwiftPac Combustion Turbine Generator (CTG) units installed in a simple-cycle power plant arrangement. The gas turbines are equipped with a water injection system to reduce production of nitrous oxides (NOx), a selective catalytic reduction system (SCR) with 19% aqueous ammonia to further reduce NOx emissions, and an oxidation catalyst to reduce carbon monoxide (CO) emissions. The nominal plant power rating will be 120 megawatts (MW).

Each SwiftPac unit has two (2) FT8-3 combustion gas turbines that drive opposite ends of a single electric generator. The FT8 generating package has been in operation at locations around the world since 1992. The FT8 package is a modernization and more efficient version of the older Pratt & Whitney (P&W) FT4 package, which was sold for over 30 years, and is still operating in many locations, including California. The most critical components of the FT8 package are the P&W GG8 engines which have been adapted from the JT8D commercial aviation engine as its core. The JT8D heritage dates back to the early 1960's and P&W has sold nearly 15,000 of those engines.

On a worldwide basis there are multiple FT8 packages operating or under construction, in sum containing a total of 289 GG8 engines. Some are single engine applications and some are dual engine applications. These 289 units have a total of nearly 2 million operating hours. There are 5 dual engine FT8 applications in California operated by CalPeak Power, LLC that have been in operation since 2002 and have demonstrated an average availability of 97% since startup.

Three models of the FT8 package that have been developed and are labeled FT8-1, FT8-2, and FT8-3. The FT8-1 model uses water injection into the combustor to control NOx formation and was the original version of the GG8 engine developed in the early 1990's. In the mid 1990's a combustor was developed to reduce NOx formation without water injection (DLN or dry low NOx) and this version of the GG8 engine was labeled FT8-2. All other aspects of the FT8-1 and FT8-2 engines are identical. The power output of the FT8-2 engines are less than the FT8-1 engines because the water injection contributes to mass flow through the engine in addition to reducing NOx formation.

The FT8-3 model (proposed for use at Midway) is also a slight modification of the FT8-1 engine and was introduced in 2004. The FT8-3 uses some thermal barriers and coatings traditionally used in other P&W aviation engines in the hot section of the turbine. This improvement in the hot section of the turbine allows the engine to generate approximately 15% more power than the FT8-1 at essentially the same cost. This hot section design has been used in aviation engines for over 10 years and was migrated to the land based engines in 2004. There are now 54 FT8-3 engines operating or under construction around the world. The FT8-3 engine is only offered with water injection to control NOx production.

The two SwiftPac units proposed for Midway consist of dual engine FT8-3 engines with each unit nominally rated at 60MW under ISO (International Organization for Standardization) conditions. These units are similar to the five FT8-2 units that CalPeak Power operates in California (the FT8-2 units are nominally rated at 50MW). As stated previously, these CalPeak units have demonstrated an availability of 97% since operation began in 2002.

In summary, the P&W FT8 units have been a reliable and proven technology for over 15 years and for 30 years prior to that in the form of the less efficient FT4 units. The dual engine design provides advantages in reliability and operating flexibility since the units can be operated with one engine. Midway will be efficient, environmentally compliant and reliable with the use of FT8 technology.

Typical operating hours for the Midway site will be comparable to the existing CalPeak Panoche plant located adjacent to the Midway site. The Midway plant will have the same heat rate as the CalPeak Panoche plant, and therefore would be dispatched for system operation in a similar manner. Currently the CalPeak Panoche plant runs substantially less than 400 hours per year, averageing approximately 4.5 hours per start.

3.2 FACILITY LOCATION

The project site is located in the unincorporated area of western Fresno County approximately 50 miles west of the city of Fresno. The site is adjacent to the Panoche Hills and east of the San Benito County line. West Panoche Road lies just north of the site. The nearest intersections are West Panoche Road and South Fairfax Avenue approximately one mile to the northeast and West Panoche Road and I-5 approximately 2 miles to the southwest. The site is more specifically described as the Southwest Quarter of Section 5, Township 15, Range 13 East, on the USGA Quadrangle map. (Figure 3.2-1). The assessor parcel number (APN) is 027-060-78S.

3.3 SITE DESCRIPTION

The facility will be situated on approximately 5.6 acres of land within a 128-acre parcel. The plant site is leased by the applicant from the property owners. Portions of the 128-acre parcel, not used for electric generation facilities, are currently in agricultural production with pomegranate trees. The 5.6-acre site is used as a storage-yard by CalPeak Power and contained several large pieces of equipment and items used at the CalPeak Panoche plant directly southwest and adjacent to the site. A Wellhead Peaker Plant is southeast and the PG&E Panoche Substation is to the west. The land surrounding these electric facilities is agricultural. The site is relatively flat and supports sparse growth of annual, ruderal weeds and grasses.

3.3.1 Topography

Site topography, shown in Figure 3.3-1, is generally flat. The elevation ranges from approximately 400 feet above mean sea level (msl) at the northwest corner of the site closest to West Panoche Road and gently slopes to the southeast where the elevation is approximately 395 feet above msl. . The natural earth material consists of layers of silt, lean clay and sand.

3.3.2 Geologic Setting and Seismology

A general description of Site geology and seismology is outlined in the sections which follow. A more detailed discussion of the facility area geology and seismology is presented in Section 5.3.

3.3.2.1 Subsurface Conditions

During July of 2006 a field geotechnical exploration was conducted by Kleinfelder, Inc. Nine test borings were drilled within the project site with depths of up to 41.5 feet with the exception of one boring to a depth of 101.5 feet below existing ground surface. Soils encountered include silt near the surface underlain by discontinuous layers of silty sand, lean clay and poorly graded sand. No Groundwater was encountered within the depths explored. The geotechnical report is included as Appendix L.

3.3.2.2 Seismic Conditions

The project site and its vicinity are in an area traditionally characterized by low seismic activity. There are no known faults that cut through the local soils in or near the site. The site is not located in and Alquist-Priolo Earthquake Fault zone. Review of published data, the current geologic framework, and the tectonic setting of the proposed development reveal that the primary source of seismic shaking at the Project site is anticipated to be the Great Valley Fault System, Segment 12, which is located approximately 4.7 miles southwest of the site.

There are no anticipated geotechnical factors at the Project site that are unique and require special seismic consideration. The Project site is within Seismic Zone 3 of the Uniform Building Code (UBC). The California Energy Commission (CEC, 1989) recommends that non-nuclear power plants be designed to the level of conservatism implied by the Uniform Building Code (ICBO, 1997). Seismic Zone 4 of the UBC is the highest earthquake hazard zone recognized by the code and the Midway project will build to the specifications required for Seismic Zone 4.

3.3.2.3 Liquefaction Potential

Liquefaction and associated settlement of soils due to ground shaking generally occurs under four specific conditions. 1) The subsurface soils are in a relatively loose state; 2) the soils are saturated; 3) the soils are non-plastic; 4) ground shaking is of sufficient intensity to act as a triggering mechanism. The absence of groundwater (mentioned previously in Section 3.3.2.1) precludes these conditions being present and therefore the potential for liquefaction to occur is remote.

3.3.3 Hydrological Setting

The project lies in the western portion of the San Joaquin Valley which is characterized as semi-arid with relatively mild winters and long, hot, dry summers. Intermittent wet periods occur making the area's average precipitation approximately 11 inches. Average annual temperature is 63.3 degrees. The nearest weather station to the site is located outside of Fresno, approximately 45 miles to the east.

3.3.3.1 Surface Water

There are no long-term natural or artificial water bodies in the vicinity of the site, except for the California Aqueduct over two (2) miles to the East. Surface streams are dry most of the year. Flow in streambeds in the Panoche Fan area occurs as brief runoff events following precipitation. The largest streambed in the area is Panoche Creek, which flows from the southwest approximately two miles northwest of the project site (see Figure 3.2-1). In the immediate vicinity of the site, precipitation runoff occurs as sheet flow to the northeast across the alluvial fan surface of the site. The entirety of the Midway site is included within the special flood hazard area inundated by the 100-year flood with no base flood elevation determined (Zone A) on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map.

3.3.3.2 Groundwater

Groundwater in the western San Joaquin Valley occurs in thick alluvial aquifers that fill the valley. Aquifers underlying the site include a lower confined zone and an upper semiconfined zone that are separated by the Corcoran Clay of the Tulare Formation. The site is located in the Westside Sub-basin of the San Joaquin Valley Groundwater Basin.

Historically, groundwater was extensively used for agricultural development of the area surrounding the site. Groundwater withdrawal caused compaction of aquifer systems and extensive ground subsidence. Pumping of groundwater for agricultural use was substantially reduced following delivery of surface water to the region in the late 1960s, and land subsidence due to groundwater withdrawal has slowed considerably or stopped in most of the San Joaquin Valley. Agricultural use of groundwater in the area is limited except in times or drought when surface water supplies are curtailed.

3.4 FACILITY DESCRIPTION

3.4.1 Overview

The Midway project will consist of two (2) FT8-3 SwiftPac Combustion Turbine Generator units installed in a simple cycle power plant arrangement. Nominal plant power rating will be 120 MW. The two (2) FT8-3 CTG units will be part of a power plant that will also include the following Balance of Plant (BOP) equipment/systems:

- One (1) CTG Main Step-up transformer (13.8/115 kV)
- An SCR/CO catalyst system that will be implemented on both CTG units to provide post-combustion emissions control. The facility will include an aqueous ammonia storage and delivery system in support of the SCR catalyst system
- A Water Treatment system starting with a Reverse Osmosis (RO) unit will feed a demineralizer to provide high-purity water to the gas turbines for water injection / inlet fogging. Water injection will be utilized for control of NOx emissions during combustion. Inlet fogging will be utilized to provide cooling of inlet air. The water treatment system will

include one (1) 75,000 gallon Raw Water Storage Tank, an RO unit, a Mobile Water Treatment system (i.e., Demineralizer Trailers on a pad), two (2) 75,000 gallon Demineralized (DI) Water Storage Tanks, and a forwarding system to deliver the demineralized water to the gas turbines.

- A Natural Gas Fuel system that will supply natural gas to the gas turbines in a manner that meets the required engine specifications (i.e., pressure, flow, quality). The project will tie into the existing 6" diameter fuel natural gas supply pipeline for the CalPeak Panoche plant, which in turn ties into the PG&E main gas truckline running along West Panoche Road. A separate meter and 6" line will supply Midway with natural gas.
- A Compressed Air system that will provide clean, dry air to the gas turbines, BOP instrumentation, and BOP servicing areas. This system will include two (2) air compressor skids and one (1) dryer skid.
- A Waste Water system to collect oily water waste from equipment locations. This system will include a CTG drain system with storage tank(s) to contain drainage from the CTG units. Oily waste will be collected in sumps and pumped to above-ground storage tanks (ASTs).The oily waste will be sent off-site for disposal.
- A Site Stormwater Drainage system that will handle drainage of rainwater from non-equipment locations.
- A lined evaporation pond that will collect discharge wastewater from the RO Unit.

Refer to Figure 3.4-1 for a general arrangement of the power plant equipment.

3.4.2 List of Major Equipment

The following is an all inclusive list of the equipment which will be part of the Midway Project.

1. Two (2) FT8-3 SwiftPac Combustion Turbine Generator units. Each CTG unit includes, but is not necessarily limited to the following major assemblies:
   a) Two (2) CTG Driver Assemblies with engines, lube oil systems, enclosures
   b) One (1) Electric Generator
   c) One (1) Electric Generator Lube Oil System
   d) One (1) Electric Generator Enclosure With Silencers
   e) One (1) CTG Control House
   f) One (1) 15 kV Bus Duct Assembly
   g) Two (2) CTG Inlet Silencers
   h) Two (2) CTG Inlet Filter Houses with ladders and platforms
   i) Two (2) Engine Heater Skids
   j) One (1) Hydraulic Start Skid
   k) Two (2) Gas Fuel Metering and Filter Skids

l) Two (2) Water Injection Skids for NOx Control
m) Two (2) Fire Protection Skids
n) Two (2) Buffer Air Heat Exchangers
o) Interconnecting Field Piping
p) Cable Tray System
q) One (1) Fogging Pump/Control Skid – for Inlet Air Cooling
r) Two (2) Fogging Inlet Spool Pieces
s) One (1) Water Wash Skid – per unit

2. One (1) Gas Fuel Coalescer/Filter
3. Two (2) SCR/CO Catalysts - each with 50' Exhaust Stack
4. Two (2) Aqueous Ammonia Storage Tanks
5. One (1) Aqueous Ammonia Forwarding Skid
6. Two (2) Aqueous Ammonia Injection Control Skids
7. One (1) Wash Down Drain Tank
8. Two (2) Continuous emissions monitoring system (CEMS) Monitors
9. Two (2) DI Water Tanks (75,000 gallons each)
10. One (1) Raw Water Tanks (75,000 gallons)
11. Provision for Mobile Water Treatment Trailers
12. One (1) DI Water Forwarding Skid
13. Two (2) Air Compressor Skids
14. One (1) Air Dryer/Tank Skid
15. One (1) Generator Step-Up Transformer (13.8/115 kV)
16. One (1) 480V Auxiliary Transformers
17. 480V Switchgear
18. Plant MCC's
19. One (1) 1,000 Gallon CTG Drain Holding Tanks – per unit
20. Reverse Osmosis (RO) Unit
21. One (1) Oily Waste Storage Tank (4,700 gallon)

Table 3.4-1 provides further information about key equipment.

TABLE 3.4-1
DIMENSIONS OF KEY EQUIPMENT

Dimensions of Key Equipment				
Qty.	Description	Length (Feet)	Width (Feet)	Height (Feet)
2	Combustion Turbine Generator Units	120	35	33 (Top of CTG Inlet Air Filter)
1	GSU Main Transformer Dead End Structure	50	25	50
2	Exhaust Stack	N/A	15 - diameter	50
2	Primary Control Enclosure	45	12	15
1	Secondary Control Enclosure	40	15	15
3	Water Storage Tanks (Vertical)	23' diameter	n/a	25
2	Ammonia Injection Skids	10	10	10
1	Ammonia Fwd Skid	10	10	10
2	Ammonia Tank (Horizontal)	16'	n/a	12' diameter
2	SCR/CO Catalyst	65	20	45
1	DI Water FWD Skid	10	10	10
1	RO Unit	12.5	3.7	7.1

All structure dimensions shown are approximate. Actual dimensions will be determined during detailed design.

3.4.3 Site Access

Site access from West Panoche Road would be provided via a 20-foot wide access roadway easement adjacent (east of) the PG&E Substation. From a proposed entrance gate, which would be located just south of West Panoche Road, the proposed access roadway would be graded gravel and run for approximately 250 feet south and east to the site. At the project site the proposed roadway would become asphalt, with a vehicle turnaround area providing access to the project equipment. The asphalt portion of the proposed roadway would be approximately 1,150 feet.

3.4.4 Site Layout

The site layout is depicted on Figure 3.4-1 and the site elevation view of the new plant is illustrated in Figure 3.4-2. Figure 3.4-1 shows the location and size of the proposed plant facilities including off-

site improvements. The plant facilities have been arranged for optimum use of the property as well as to ensure ease of maintenance and operation.

Off-site improvements associated with the project include an approximate 300-foot electric transmission line to tie into the PG&E Substation, a 1,200-foot underground water pipeline connecting the project to the existing CalPeak Panoche plant well adjacent to the project site, 50 feet of new gas transmission line and a gas metering set which will tap into the existing PG&E gas trunkline.

Midway includes the plant site and all of the described on-site and off-site improvements.

3.4.5 Power Plant Cycle

Approximately 60 MW of electricity is produced by each of the two CTGs. Output is dependent on inlet air ambient conditions and inlet evaporative cooling. The CTG design incorporates an inlet fogging cooler and increased firing temperatures in order to achieve a high efficiency. The CTGs are equipped with SCRs to reduce NO_x, CO, and volatile organic compound (VOC) emissions.

The following paragraphs describe the major components of the generating facility.

3.4.5.1 Gas Turbine Generator

The Midway project will use two (2) FT8-3 SwiftPac CTG units installed in a simple cycle power plant arrangement. Nominal plant power rating will be 120 MW. Each CTG unit will consist of two (2) FT8-3 combustion gas turbines and one (1) electric generator. The FT8-3 combustion gas turbines are aero-derivative engines designed by Pratt and Whitney Power Systems.

3.4.5.1.1 CTG Water Injection Combustors

The FT8-3 SwiftPac units will utilize water injection to limit NOx levels at the exit of each CTG to 37 ppmvd referenced to 15% O_2. The FT8-3 SwiftPac units will also limit CO levels at the exit of each CTG to 19 ppmvd referenced to 15% O_2.

3.4.5.1.2 Post-Combustion Emissions Controls

An SCR/CO Catalyst system will be installed in the CTG exhaust streams of both units.

Aqueous ammonia (NH_3) will be introduced upstream of the SCR catalyst. The catalyst causes NH_3 to combine with NO_x, producing N_2 and H_2O. The SCR system will limit NO_x emissions at the stack exit to 2.5 ppmvd referenced to 15% O_2, while limiting ammonia slip to 10.0 ppmvd, referenced to 15% O_2. The SCR/CO Catalyst system will also limit CO at the stack exit to 6.0 ppmvd referenced to 15% O_2. For more detailed information see Section 5.2 Air Quality

The emission rates include estimates of particulate (PM_{10}) emissions. A stack exit PM_{10} level of 3.7 pounds per hour for each SwiftPac unit (two turbines operating) is expected at 100% power, based on results for source tests conducted over several years at the CalPeak Panoche facility.

CEMS will be utilized to monitor NOx, CO, and oxygen levels at the stack exit.

3.4.5.1.3 Emissions Dispersion

The exhaust gases will exit through a vertical stack. The stack discharges the gases to the atmosphere at a minimum temperature of approximately 730 °F and at a height of 50 feet above finished grade. At this temperature and elevation the gases mix with ambient air and are dispersed. Section 5.2 (Air Quality) addresses plant emissions and controls.

3.4.5.2 Performance Data

Predicted performance data play a major role in the selection of turbine generators. Key performance data are power output, fuel input and heat rate. Refer to Figures 3.4-3A, 3.4-3B, and 3.4-3C for heat/mass balances at 100% power for three different ambient conditions (low temp, high temp, and ISO conditions). Note that these heat/mass balances are per SwiftPac Unit. The plant will have two SwiftPac Units – each with the same performance characteristics.

Gas turbine power output and efficiency are greatly affected by atmospheric conditions and load variations. Power output is roughly proportional to mass flow which increases as the inlet air becomes colder and denser. Higher humidity makes the air less dense and also decreases the oxygen level per unit mass. Consequently, more fuel can be added and more power is produced at lower temperatures and humidity. Alternatively, less fuel can be added and less power is produced at higher temperatures and humidity. Turbine efficiency decreases as conditions depart from the optimum full-load design point.

3.4.5.3 Emissions Data

Air pollutant emissions are affected by turbine design and operating conditions. Emissions data for the Midway project are provided in Section 5.2 and Appendix I. Refer to Appendix I for integrated emission data during an 18 minute startup and an 18 minute shutdown (compiled in pounds). NOx startup and shutdown emissions are based upon actual data recorded for the CalPeak units and standard industry formulas.

3.4.6 Heat Rejection System

The FT8-3 SwiftPac unit auxiliary heat exchangers are all air-cooled fin-fan types. The SCR/CO Catalyst system also includes an air-cooled heat exchanger to maintain stack temperature less than the catalyst design upper limit.

3.4.7 Major Electrical Equipment and Systems

An overall one-line diagram of the proposed facility electrical generation and distribution system is shown in Figure 3.4-4 A & B. The CTG produces power at 13.8 kV. The generator output passes through a step-up transformer where the voltage is increased to a transmission level of 115 kV for interconnection to the existing CalPeak Peaker Generator tie line. A portion of the plant output is

converted to lower voltages to be utilized on-site for power station auxiliaries via a 480V Auxiliary Transformer. A 125 Voltage Direct Current (VDC) system provides battery power for an alternating current (AC) uninterruptible power supply (UPS) and for direct current (DC) control systems.

3.4.7.1 Step-up Transformers

The FT8-3 SwiftPac Combustion Turbine Generator (CTG) units generate power at 13.8 kV. The electricity generated at 13.8kV will be stepped up to 115 kV for transmission by a three-winding, oil-filled, generator step-up transformer (GSU). The transformer is anchored on concrete foundations that also provide oil containment. The high side of the step-up transformer is terminated at the plant 115kV switchyard. Surge arrestors are installed on the high voltage bushings of the transformer to protect the transformer from surges due to lightning strikes, switching or other disturbances on the 115 kV system. Transformer impedances and turns ratio are to be selected to optimize 115 kV system volt amps reactive (VAR) support by the generators. Transformer will have no-load tap changer at the high voltage side.

Each auxiliary transformer will supply power to two combustion turbine auxiliary loads in normal operation. The auxiliary power transformer will be sized to take care of the complete auxiliary load of the entire facility in case there is any failure or shut down of one of the auxiliary power transformer or the generator step up transformer. The Secondary Unit Substation (SUS) transformers will be oil-filled outdoor type and will each supply 480V, 3-phase power to the SUS buses through normally closed SUS main breakers. The 480V system will be solidly grounded.

The SUS transformers will be sized to provide 480V auxiliary load to the entire facility. The two 480V switchgears are designed to be interconnected in case of emergency to supply power only from one 480V bus.

The SUSs will provide power through feeder breakers to the various large 480V motors and to motor control centers (MCCs). The MCCs will distribute power to smaller 480V motors, to 480V power panels, and other intermediate 480V loads. The normal supply for the two BOP MCCs will be from the SUS transformers, but automatic transfer switches will allow supply from an alternate source. The MCCs will distribute power to 480-480/277V isolation transformers when 277V, single-phase lighting loads are to be served. The 480V power panels will distribute power to small 480V loads.

Power for the AC power supply (120/208V) system will be provided by the 480V MCCs and 480V power panels. Transformation of 480V power to 120/208V power will be provided by 480-120/208V dry-type transformers.

3.4.7.2 115kV Switchyard

The 115 kV transmission system will enter the Midway switchyard via the dead end structure. An 115 kV circuit breaker with twelve integral current transformers provides the switching for installation. 115 kV air break disconnect switches provide breaker isolation as required by Code. A set of 115 kV potential devices connected to the dead end structure provide system voltage for Utility metering and site voltage monitoring schemes. One set of current transformers at the 115 kV breaker is to be

specified with metering accuracy and is to be used as the required input to the utility metering package

Control, protection and monitoring panel or devices for the switchyard will be located in the electrical building and generation control module. Monitoring and alarms will be available to the PLC operator workstations in the control room. The 125Vdc battery system will provide control and protection voltage to circuit breakers.

The switchyard design will meet the requirements of the National Electrical Safety Code-ANSI C2.

A grounding grid will be provided to control step and touch potentials in accordance with IEEE Standard 80, Safety in AC Substation Grounding. All equipment, structures and fencing will be connected to the grounding grid of buried bare copper conductors and ground rods, as required. The substation ground grid will be tied to the plant ground grid.

Lightning protection will be provided by shield wires and/or lightning masts for any overhead lines. The lightning protection system will be designed in accordance with IEEE 998 guidelines.

All electrical faults shall be detected, isolated, and cleared in a safe and coordinated manner as soon as practical to insure the safety of Equipment, Personnel, and the Public. Protective relaying will meet ANSI and IEEE requirements and will be coordinated with PG&E's requirements.

The protection will be designed to maintain redundancy at the 115 kV level. The transformer will be protected by differential, over current and restricted ground fault loops. A second and redundant protection using separate instrument transformers will provide protection for the 115 kV breaker, transformer and generators breakers. There will be a breaker failure scheme associated with the 115 kV breaker. Interfaces requited with the PG&E system are included in the design. Each generator protective system has a breaker failure scheme. The 115 kV circuit breaker will have 2 redundant trip coils.

Interface with PG&E's supervisory control and data acquisition (SCADA) system will be provided. Interface will be at the interface terminal box and RTU. Communication between the facility switchyard and the control building to which it is connected will be included.

3.4.7.3 AC Power Distribution

Each auxiliary transformer will supply power to two combustion turbine auxiliary loads in normal operation. The auxiliary power transformer will be sized to handle the complete auxiliary load of the entire facility in case there is any failure or shut down of one of the auxiliary power transformer or the generator step up transformer. The Secondary Unit Substation (SUS) transformers will be oil-filled outdoor type and will each supply 480V, 3-phase power to the SUS buses through normally closed SUS main breakers. The 480V system will be high resistance grounded to minimize the need for individual ground fault protection.

The SUS transformers will be sized to provide 480V auxiliary load to the entire facility. The two 480V switchgears are designed to be interconnected in case of emergency to supply power only from one 480V bus.

The SUSs will provide power through feeder breakers to the various large 480V motors and to MCCs. The MCCs will distribute power to smaller 480V motors, to 480V power panels, and other intermediate 480V loads. The normal supply for the two BOP MCCs will be from the SUS transformers, but automatic transfer switches will allow supply from an alternate source. The MCCs will distribute power to 480-480/277V isolation transformers when 277V, single-phase lighting loads are to be served. The 480V power panels will distribute power to small 480V loads.

Power for the AC power supply (120/208V) system will be provided by the 480V MCCs and 480V power panels. Transformation of 480V power to 120/208V power will be provided by 480-120/208V dry-type transformers.

3.4.7.4 DC Power Supply

The DC power supply system for BOP loads will consist of two 125V DC battery bank, two 125V DC full capacity battery chargers, metering, ground detectors, and distribution panels. One 125V DC battery bank will be dedicated to the essential service uninterruptible power supply (UPS) system. The other 125V DC battery bank will feed all other station DC loads. Additional 125V DC systems may also be supplied as part of the CTG equipment.

Under normal operating conditions, the battery chargers will supply DC power to the DC loads. The battery chargers will receive 480V, 3-phase AC power from the AC power supply (480V) system and continuously float-charge the battery while supplying power to the DC loads. The ground detection scheme will detect grounds on the DC power supply system.

Under abnormal or emergency conditions when power from the AC power supply (480V) system is unavailable, the battery will supply DC power to the DC power supply system loads. Recharging of a discharged battery will occur whenever 480V power becomes available from the AC power supply (480V) system. The rate of charge will be dependent on the characteristics of the battery bank, battery charger, and the connected DC load during charging. However, the anticipated maximum recharge time will be 12 hours.

The BOP 125V DC system will be used to provide control power to the 4,160V switchgear, the 480V SUSs, and to critical control circuits.

3.4.7.5 Uninterruptible Power Supply (UPS) System

The CTGs will also have an essential service 120V AC, single-phase, 60 hertz power source to supply AC power to essential instrumentation, critical equipment loads, and unit protection and safety systems that require uninterruptible AC power. Both the essential service AC system and the DC power supply system will be designed to ensure that all critical safety and unit protection control circuits always have power and can take the correct action on a unit trip or loss of plant AC power.

The essential service AC system will consist of one full-capacity inverter, a solid-state transfer switch, a manual bypass switch, an alternate source transformer and voltage regulator, and AC panel boards for each CTG.

The normal source of power to the system will be from the DC power supply system through the inverter to the panel boards. A solid-state static transfer switch will continuously monitor both the inverter output and the alternate AC source. The transfer switch will automatically transfer essential AC loads without interruption from the inverter output to the alternate source upon loss of the inverter output.

A manual bypass switch will also be included to enable isolation of the inverter-static transfer switch for testing and maintenance without interruption to the essential service AC loads.

3.4.7.6 Emergency Power System

In the event of a total loss of auxiliary power, or in situations when the utility transmission system is out of service, the emergency power required for emergency lighting and CTG critical loads, such as turbine lube oil pumps, will be provided from batteries.

3.4.8 Natural Gas Fuel System

The FT8-3 SwiftPac Combustion Turbine Generator units will operate solely on natural gas. Natural gas will be supplied from PG&E's trunk line system immediately to the north of the property and would require approximately 50 feet of new line at the Midway site in order to tap into the existing PG&E system. Each FT8-3 SwiftPac CTG unit requires an approximate maximum feed of 625MMBtu/hr at 500-600 psig fuel gas pressure, and approximately 12,000 standard cubic feet per minute (SCFM) of flow at ISO, 100% power conditions. The natural gas supply pipeline will supply the required inlet pressure without need of supplemental compression.

3.4.9 Water Supply and Treatment

The process uses for water are NOx control and inlet cooling. The Midway project has three viable alternate water supply sources:

1. The existing CalPeak Panoche Well (Upper Aquifer Groundwater)
2. Irrigation Return Flow – Agricultural Backwash Pond
3. New Deep Well at Project Site (Lower Aquifer Groundwater)

Regardless of the water supply source, the plant will store water in three 75,000-gallon storage tanks, one for raw water and two for demineralized water. The Midway plant will use an RO unit to filter the water prior to demineralization. The RO wastewater will be discharged into a 25,000 square foot pond for evaporation.

The plant water needs can be satisfied from any of the proposed sources. It should be noted that if the facility were to operate in excess of 400 hours in a year, the quantity of the wastewater generated could exceed the capacity of the evaporation pond. However, if the plant were to operate for enough hours so that the RO wastewater evaporation pond reaches its design capacity, the RO unit would be shut down and the demineralization units would run on raw water. This approach would eliminate a RO wastewater flow but would require more frequent replacement of the demineralizer (about once every other day). A vendor will perform demineralizer unit regeneration off site.

3.4.9.1 Water Balance and Supply Requirements

Essential plant functions requiring water are inlet cooling of the CTG inlet air which is done via the SwiftPac Inlet Fogging skid, water injection for NOx control during CGT combustion, and utility water for washdown and other purposes. The peak supply flow rate required at the site is approximately 138 gpm.

3.4.9.1.1 Water Balance

Plant water supply requirements and water balance calculations for the Midway project are tabulated and illustrated in Figure 3.4-5 of this document. The Figure provides peak water usage supply conditions. More specifically, Midway peak water requirements are as follows.

The peak flow rates are:

NOx Control	98GPM
Inlet Fogging	40GPM

During a typical 4.5 -hour operating day the plant will require approximately 49,680 gallons of water. The operating water requirements are based upon the expected 400 annual service hours and the Power Purchase Agreement (PPA) maximum 4000 hours are shown in Table 3.4-2 below.

TABLE 3.4-2
MIDWAY ANNUAL WATER SUPPLY REQUIREMENTS

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
Expected Operating Hours (400)	47	101	176	76	400
Water Consumption (acre-feet)	1.6	3.4	6.0	2.6	13.6 (4.4 million gallons)
PPA Maximum Hours (4,000)	800	800	1,400	1,000	4,000
Water Consumption (acre-feet)	27.1	27.1	47.4	33.9	135.6 (44.2 million gallons)

*The data is based upon operating at maximum water flow conditions at 114 degrees

3.4.9.1.2 Water Supply Sources

The Midway project has the option to use a number of alternate water sources.

Existing CalPeak Panoche Well (Upper Aquifer Groundwater) The Midway project can use well water from the existing well at the neighboring, CalPeak Panoche project., The 400-foot deep well has been tested to produce 100GPM and has TDS of approximately 3,400 ppm. Complete water analysis and well test data are described in Section 5.5 -Water Resources.

Irrigation Return Flow – Agricultural Backwash Pond The Midway site is located on a 128-acre parcel of land owned by PAO Investments, LLC. A large portion of this parcel and approximately 7,000 acres of land in the region is farmed by the Baker Farming Company, LLC (Baker). To take advantage of the economies of scale, Baker has developed a water delivery system that serves all of the property it farms in this area. The water system is owned and operated by Baker and utilizes approximately 24,000 acre-feet of water in the Bakers' farming operations, annually. Through a process described in Section 5.5 – Water Resources, the farming operations (primarily filter irrigation water filter backwash) produce approximately 160 acre-feet of wastewater on an annual basis which is discharged in an evaporation pond. Wastewater from this pond could potentially supply Midway's water needs.

Using the Baker's irrigation return flow water would require installing approximately 2-mile of piping in order to access the water source.

New Deep Well at Project Site Lastly, the Midway project could drill a new 1,500-foot well to access the lower aquifer where the water has less TDS than the existing CalPeak Panoche well (1,200 ppm as compared to 3,400 ppm TDS). The well would be located adjacent to the RO unit in order to limit the amount of piping needed.

3.4.9.2 Water Quality

The quality of the water supplied by each viable alternative is described in detail in Section 5.5 – Water Resources. Table 3.4-3 summarizes the expected TDS concentration for each source.

TABLE 3.4-3
SUPPLY WATER ANALYSIS

Source	TDS (ppm)
1. The existing CalPeak Panoche Plant Well (Upper Aquifer Groundwater)	3,400
2. Irrigation Return Flow – Agricultural Backwash Pond	190
3. New Deep Well at Project Site (Lower Aquifer Groundwater)	1,090

3.4.9.3 Water Treatment

The Midway site has included in its design a RO unit through which the supply water would first be processed. After being processed through the RO unit the water would then be demineralized. A 75,000 gallon Raw Water Storage Tank is included in the design to hold water after it has been through the RO Unit, prior to it being processed by the deminerlizer.

The Midway project will utilize a mobile water treatment system to produce the required DI water. This will involve use of rented mobile demineralizer trailers that will reside on a pad (See Figure 3.4-1). The rental company will perform regeneration of these units at their facility.

The DI water produced by the trailers will meet the following water quality limits required by PWPS standards:

* Total Solids	<1.0 PPM	ASTM D1888
* Sodium	<0.10 PPM	ASTM D2791
* Silica	<0.02 PPM	ASTM D859
* Conductivity	<1.0-1.5 Micromho/cm	ASTM D5391

Demineralized water will be stored in two (2) 75,000-gallon tanks. A forwarding system will be utilized to provide this DI water to the gas turbines within the required flow and pressure limits.

3.4.9.4 Waste Water Treatment Systems

The Midway project will utilize two different systems to manage wastewater.

3.4.9.4.1 Treatment and Disposition of Liquid Process Wastes

Wastewater generated by the RO process will be conveyed by gravity to an on-site, lined evaporation pond (which can accommodate 30 acre-feet per year) on the east side of the Midway site. The average wastewater generation rate that will require disposal is expected to be approximately 25gpm. Residue from this pond would be disposed of in a permitted landfill.

3.4.9.4.2 Plant Drains and Wash-down

A sump will collect oils and chemicals that could drain from the gas turbine exhaust floor drains, the generator floor drains, the transformer containment area, the equipment wash down areas, and the ammonia storage. Oil leakage from equipment is expected to be minimal. Composition will be similar to standard parking lot impacts. Nonetheless, all equipment that has potential for significant leakage of oil or hazardous chemicals, such as glycol coolants, will be located within spill containment basins which would also flow into the sump. A sump pump will convey this oily waste water/chemical drain water to an on-site 4,700 gallon storage tank. Waste from the storage tank will be pumped out and moved offsite. The storage tank will include level and leak detection instrumentation.

3.4.9.4.3 Domestic/Sanitary Wastewater

The project will not require sanitary waste systems. Portable sanitary units will be delivered and maintained by a local service company.

3.4.9.4.4 Stormwater Drainage

Rainfall from the project site will be predominantly drained by sheet flow and efforts will be made to maintain the integrity of the existing drainage patterns, wherever possible. Based on the final site-grading plan, some isolated areas may require underground stormwater collection and drainage piping.

3.4.10 Waste Management

The project will generate a variety of non-hazardous and hazardous wastes during construction and operation (see Tables 3.4-4 and 3.4-5). These include liquids and solids from the wastewater system (discussed in Section 3.4.9.4), replaceable parts, rags, and other waste materials and chemicals produced during construction and operation.

Handling of hazardous wastes is discussed in Section 3.4.11 and Section 5.15 (the Hazardous Materials Handling Section) of this application.

3.4.10.1 Solid Waste – Non-Hazardous

3.4.10.1.1 Construction Waste

Inert solid wastes resulting from construction activities may include lumber, excess concrete, metal and scrap, and empty non-hazardous containers. Management of these wastes will be the responsibility of the construction contractor(s). Typical management practices required for contractor waste include recycling when possible, proper storage of waste and debris to prevent wind dispersion, and weekly pickup of wastes with disposal at local Class III landfills. The total amount of solid waste generated by construction activities has been estimated to be similar to that for normal commercial construction. It is not expected to result in a significant impact on public health or to cause adverse effects on local landfill capacity. Table 3.4-4 provides an overview of the waste streams anticipated for the construction phase of the project. For projected quantities refer to Section 5.14.

3.4.10.1.2 Operations Waste

Inert solid wastes generated at the facility during operation are predominantly routine maintenance wastes. Scrap materials such as paper, packing materials, glass, metal, and plastic will be segregated and managed for recycling. Non-recyclable inert wastes will be stored in covered trash bins in accordance with local ordinances and picked-up by an authorized local trash hauler on a regular basis for transport and disposal in a suitable landfill in the area. Table 3.4-5 provides an overview of the waste streams anticipated for when the project is operational. For projected quantities refer to Section 5.14.

3.4.10.2 Liquid Wastes – Non-Hazardous

Non-hazardous liquid wastes produced in the facility consist of wastewater system wastes. Handling and disposal of these wastes is discussed in the Waste Management Section (Section 5.14) as well as the Hazardous Materials Handling Section (Section 5.15) of this application. Skim oil collected from equipment drains and other liquids drained from equipment will generally be treated as hazardous due to possible heavy metals content.

TABLE 3.4-4
SUMMARY OF CONSTRUCTION WASTE STREAMS AND MANAGEMENT

Waste Stream	Waste Classification	Estimated Frequency of Generation	On-site Treatment	Disposal Method
Paper, wood, glass, and plastics from packing materials, waste lumber, insulation, and empty non-hazardous containers	Non-hazardous	Intermittent	None	Weekly collection for recycling and/or disposal at a Class III Landfill
Residual Solids from Evaporation Pond (dirt and concrete particles)	Non-hazardous	One time at end	None	Excavate at end of construction and spread onsite
Empty hazardous material containers-drums	Hazardous Recyclable	Every 90 days	Store for < 90 days	Recondition, recycle, or waste disposal at Class I Landfill
Used and waste lube oil during Combustion Turbine Generator (CTG) Lube Oil Flushes	Hazardous Recyclable	Every 90 days	Store for < 90 days	Recycle
Spent batteries; lead acid	Hazardous	Every 90 days	Store for < 90 days	Recycle
Spent batteries; alkaline type, sizes AAA, AA, C, and D	Recyclable	Every 90 days	Store for < 90 days	Recycle
Sanitary waste-portable chemical toilets and construction office holding tanks	Sanitary	Periodically pumped to tanker truck by licensed contractors	None	Collection by licensed contractor (minimum) for offsite treatment/disposal
Stormwater	Non-hazardous	Intermittent	None	Discharged as sheet flow from the site
Waste oil including used motor oil, transmission fluid, hydraulic fluid, and antifreeze	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility or recycle
Waste paint, thinners, and solvents	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility or recycle
Oily rags	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility or recycled
Oil Absorbents	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility

TABLE 3.4-5
SUMMARY OF OPERATIONS WASTE STREAMS AND MANAGEMENT METHODS

Waste Stream	Waste Classification	Estimated Frequency of Generation	On-site Treatment	Treatment Off-Site
Paper, wood, plastic, cardboard	Non-hazardous	Intermittent	None	Weekly collection for recycling and /or disposal at a Class III Landfill
Empty hazardous material containers	Hazardous	Every 90 days	Store for < 90 days	Recondition or recycle
Used hydraulic fluids, oils, grease, oily filters from CTG and other equipment using hydraulic actuators and lubricants	Hazardous	Intermittent	Store for < 90 days	Recycle
Used Air Filters from the CTG	Non-hazardous	Every 5 years	None	Recycle
Spent batteries	Hazardous	Intermittent	Store for < 90 days	Recycle
Spent selective catalytic reduction (SCR) catalyst	Hazardous	Every 25,000 hours of operation	N/A	Recycle
Oily rags from CTG and other equipment using hydraulic actuators and lubricants	Hazardous	Intermittent	Store for < 90 days	Hazardous waste disposal facility or recycled
Oily Absorbent from CTG and other equipment using hydraulic actuators and lubricants	Hazardous	Intermittent	Store for < 90 days	Recycle or hazardous waste disposal facility
Sanitary waste-portable chemical toilets and construction office holding tanks	Sanitary	Continuous	Continuous	Collection by licensed contractor (minimum) for offsite treatment/disposal
CTG periodic operational chemical cleaning	Hazardous	Every 90 days	Store for < 90 days	Hazardous waste disposal facility (by licensed subcontractors)
RO evaporation pond residue	Non-hazardous	Once every 5 years (assumes 400 hours/year)	NA	Landfill

3.4.11 Management and Disposal of Hazardous Material and Hazardous Waste

The Project will implement a Hazardous Materials Management Program (HMMP) developed for Midway which will include procedures for: hazardous materials handling, use and storage; emergency response; spill control and prevention; employee training; and reporting and record keeping. The

Midway HMMP program is based off plans which have been developed for the nearby CalPeak Panoche plant. The HMMP will be developed and implemented prior to commercial operation. The content will be very similar to the plans for the existing CalPeak Panoche plant adjacent to Midway. The procedures outlined in the HMMP are in accordance with all applicable LORS.

3.4.11.1 Chemical Management

There will be a variety of chemicals stored and used during the construction and operation of Midway. The storage, handling, and use of all chemicals will be conducted in accordance with applicable LORS.

- Chemicals will be stored in appropriate chemical storage facilities. Bulk chemicals will be stored in storage tanks, and other chemicals will be stored in returnable delivery containers. Chemical storage and chemical feed areas will be designed to retain leaks and spills. Secondary containment area design will allow a full-tank-capacity spill. For multiple tanks located within the same area, the capacity of the largest single tank will determine the volume of the area and drain piping. Volatile chemicals will be trapped and isolated from other drains to eliminate noxious or toxic vapors.

- The aqueous ammonia storage and unloading area will have spill containment and ammonia vapor detection equipment. Aqueous ammonia will be transported and stored in two 12,000-gallon tank onsite, as a 19.5 percent solution, by weight.

- Eyewash stations will be provided in the vicinity of all chemical storage areas.

- Plant personnel will use approved personal protective equipment during chemical spill containment and cleanup activities. Personnel will be properly trained in the handling of these chemicals and instructed in the procedures to follow in case of a chemical spill or accidental release. Adequate supplies of absorbent material will be stored onsite for small-scale spill cleanup.

- A list of the chemicals anticipated to be used at the generating facility and their locations is provided in Section 5.15 (Hazardous Materials). This list identifies each chemical by type, intended use, and estimated quantity to be stored onsite.

3.4.11.2 Hazardous Wastes

Table 3.4-4 Summary of Operation Waste Streams and Management lists the types of wastes to be generated during operation of the project. These wastes will be managed in accordance with applicable LORS and consistent with the implementation of the HMMP developed for Midway, and carried out similarly to that for the existing CalPeak Panoche Peaker plant. Several methods will be used to properly manage and dispose of hazardous wastes generated by Midway.

- Workers will be trained to handle hazardous wastes generated at the site.

- Waste lubricating oil will be recovered and reclaimed by a waste oil recycling contractor. Spent lubrication oil filters will be disposed of in a Class I landfill.

- Spent SCR and oxidation catalysts will be reclaimed by the supplier or disposed of in accordance with regulatory requirements.

- When applicable, contractors working on site will be responsible for managing and disposing of their generated waste streams.

- The only chemical cleaning wastes are the detergent solutions used during turbine washing. These wastes, which contain primarily dust from the air and potentially compressor blade metals, will be temporarily stored onsite in portable tanks, monitored, and disposed of offsite by the chemical cleaning contractor in accordance with applicable regulatory requirements.

3.4.12 Emissions Control and Monitoring Equipment

CEMS equipment will record NO_x and CO emissions and alert operators of deviations from design levels. The following subsections describe the emissions controls, emissions data, and emissions impacts. Applicable regulations are addressed in the Air Quality Section (5.2) and the Air Quality Technical Report (Appendix I) of this application. Emissions that will be controlled include:

- Oxides of nitrogen (NO_x)

- Carbon monoxide (CO)

- Particulate matter (PM)

- Volatile organic compounds (VOCs)

- Oxides of sulfur (SO_x)

3.4.12.1 NOx Formation

NO_x is a general term pertaining to compounds including nitric oxide (NO), nitrogen dioxide (NO_2), and other oxides of nitrogen. Nitrogen oxides are produced from burning fuels, including gasoline, diesel, and coal under high temperature. In the typical combustion process, temperature distribution is erratic. NO_x production is greatest where the highest temperatures exist. Nitrogen oxides react with volatile organic compounds (VOC) to form ozone in the presence of sunlight.

3.4.12.2 CGT Water Injection for NOx Emission Controls

The FT8-3 SwiftPac units will utilize water injection to limit NOx levels at the exit of each CTG to 37 ppmvd referenced to 15% O2. The formation of NOx in the combustor is primarily a function of flame temperature. By injecting water into the combustor the flame temperature is reduced thereby limiting the formation of thermal NOx.

3.4.12.3 Post Combustion NOx Emissions Controls

An SCR/CO Catalyst system will be installed in the CTG exhaust streams of both units.

The SCR process will use 19 percent aqueous ammonia (NH_3) as the reducing agent to activate the catalyst. Diluted ammonia vapor will be injected into the exhaust gas stream via a grid of nozzles located upstream of the catalyst module. The subsequent chemical reaction with the catalyst will reduce NO_x to nitrogen and water. Ammonia slip, or the concentration of unreacted ammonia in the exiting exhaust gas, will be limited to 10 ppmvd, referenced to 15% O_2. The SCR equipment will include a reactor chamber, catalyst modules, ammonia storage system, ammonia vaporization and injection system, and monitoring equipment and sensors.

The plant will have two (2) SCR systems and an aqueous ammonia system. The main components of the aqueous ammonia system are as follows:

- One (1) Ammonia Unloading Station with an Unloading Pump skid
- Storage Tank(s) (2@12,000 gallon)
- One (1) Ammonia Forwarding Pump skid
- Two (2) Ammonia Injection Control Skids that include:
  - Dilution air fan(s)
  - Electric air heater(s)
  - Ammonia flow control valve(s)
  - Air/ammonia mixing vessel

3.4.12.3.1 Operation

Aqueous ammonia is forwarded from a storage tank to each SCR ammonia injection control skid via the forwarding pump skid. The control skid meters the amount of ammonia to be injected into the SCR based on the CEMS emissions monitoring system and adjusts the ammonia flow control valve as required. The ammonia injection skid is controlled via an independent Programmable Logic Controller (PLC).

Pressurized air is used as the dilution and injection medium to deliver the ammonia from the mixing vessel into the SCR. This air is provided by the dilution air fans and flows through an electronic heater before reaching the mixing vessel. Once the heated dilution air reaches the mixing vessel it combines with the atomized aqueous ammonia and vaporizes the ammonia for injection into the SCR. The ammonia will be atomized into the mixing vessel through the ammonia spray nozzles. The heated air ensures that the ammonia is completely vaporized and does not damage the SCR.

The SCR system will limit NO_x emissions at the stack exit to 2.5 ppmvd referenced to 15% O_2, while limiting ammonia slip to 10.0 ppmvd, referenced to 15% O_2. Refer to Section 5.2, Air Quality, for information on stack flow rates, temperatures and NOx emission rates over the full range of ambient conditions considered during normal operation (with either one or two CGT's running at base load).

A CEMS monitor will be utilized to monitor NOx levels at the stack exit.

3.4.12.4 CO and VOC Emissions

CO forms when hydrocarbons are burned in an oxygen deficient or low temperature atmosphere. The FT8-3 SwiftPac units will limit CO levels at the exit of each CGT to 26 ppmvd referenced to 15% O_2. The CO oxidation catalyst in the stack will limit CO at the stack exit to 6.0 ppmvd referenced to 15% O_2. Refer to Section 5.2, Air Quality, for stack flow rates, temperatures and CO emission rates over the full range of ambient conditions during normal operation (with either one or two CTG's running at base load). Refer to Appendix I for integrated CO emission data during a 18 minute startup and a 18 minute shutdown (compiled in pounds). A CEMS monitor will be utilized to monitor CO levels at the stack exit.

VOCs include all unburned hydrocarbons except methane and ethane. They remain in the exhaust when part of the incoming has insufficient contact with oxygen to support full combustion. The FT8-3 SwiftPac units will limit VOC levels at the exit of each CGT to no more than 2.0 ppmvd referenced to 15% O_2. Refer to Appendix A for stack flow rates, temperatures and VOC emission rates over the full range of ambient conditions considered during normal operation (with either one or two CGT's running at base load and for integrated VOC emission data during a 30 minute startup and a 30 minute shutdown (compiled in pounds).

3.4.12.5 Particulates

Particulate PM_{10} and PM_{25} emissions are minimized through selection of natural gas as the exclusive fuel. Combustion of natural gas produces minimal particulate emissions compared to other fuels.

A significant fraction of the particulate matter in stack emissions consists of compounds of ammonium and sulfate. Sulfur compounds, contained in small quantities in natural gas, are oxidized in the gas turbine combustors to form CO_2, H_2O, SO_2, and SO_3. While most of the fuel sulfur is converted to SO_2, approximately 1.5 percent is converted to SO_3, which then combines with water in the exhaust to form H_2SO_4, which is defined as a condensable particulate. Passing through the SCR, some of the ammonia injected for NO_x control combines with H_2SO_4 to form ammonium sulfate and ammonia bisulfate, which form very fine solids which meet the air quality definition of noncondensable PM_{10}. The remaining SO_2 is emitted as a gas.

Inlet air filtration removes particulate matter present in the air, thus preventing it from entering and being exhausted by the turbine. Refer to Section 5.2, Air Quality, and Appendix I for estimates of turbine PM10 and PM emissions.

3.4.12.6 Emission Monitoring

A Continuous Monitoring System (CEMS) will be installed at the stack of both CTG units. The system will sample, analyze and record the concentrations of CO, NOx, O_2, and CO_2 in the flue (stack) gas. The system will provide a record of emissions data and transmit alarm signals to the control room when the emissions levels approach or exceed pre-selected limits. The CEMS will comply with 40 CFR 75 requirements.

3.4.13 Fire Protection and Safety System

The Midway project fire protection and safety systems are designed to limit personnel injury, property loss, and plant downtime caused by a fire or other event. The systems are designed in accordance with:

- Federal, State and Local fire codes, occupational health and safety regulations, and other jurisdictional requirements
- California Building Code (CBC)
- National Fire Protection Association (NFPA) standard practices

The subsections below provide a detailed description of the fire protection and safety systems.

3.4.13.1 Fixed Fire Protection Systems

Each of the Pratt & Whitney Power Systems FT8 model CTG units comes with independent fire protection systems consisting of detection and suppression subsystems that meet the intent of National Fire Protection Association (NFPA) 37, *Standard for Installation and Use of Stationary Combustion Engines and Gas Turbines*, as modified by NFPA 850, NFPA 12, *Carbon Dioxide Extinguishing Systems*, and NFPA 72, *Fire Alarm Code.*

The two (2) CTG enclosures are protected with independent high pressure CO_2 fire suppression systems. The CO_2 tanks, solenoids, and manifolds are located outside each enclosure, with the system's control module located in the unit's Control House. The Generator and the Control House enclosures are protected by portable fire extinguishers that are located at the enclosures.

The CTG Units are also protected by a fire shut-off valve in the fuel line to each engine, outside each CTG enclosure. This valve is wired directly into the CTG unit fire protection panel in the Control House and closes upon a fire trip. It must be reset manually and locally.

There is a CTG unit fire protection system panel that monitors and displays the status of all fire system inputs and provides outputs to activate audible and visual alarms, discharge suppression systems, close fuel fire safety valves, and signal turbine and unit control systems for required responses. The system operates on 24 volts DC and contains its own internal power supply and battery backup. Automatic fire detection is provided by rate compensated thermal detectors in each

CTG enclosure. Facilities for manual (electric and mechanical) initiation of the fire systems are also provided. Each control house is monitored by smoke detectors. The CTG fire protection system shall provide automatic notification to a station that is continuously manned.

Immediately upon actuation of a CTG enclosure suppression system, the CTG enclosure secondary air supply fans are de-energized and the gas fuel supply shut off via manually reset fire safety valves located outside the CTG enclosures. A 20-second time delay permits rundown of the gas turbine and generator before a solenoid valve releases the pressurized CO_2 into its distribution manifold. A pneumatic cylinder, actuated by the pressurized CO_2, releases spring loaded dampers to close off the enclosure ventilation air supply. Simultaneously, a series of nozzles floods the CTG enclosures to a 34% CO_2 concentration, sufficient for inverting the combustion process. The CO_2 supply to the manifold is fed from pressurized tanks. The first set of tanks is quick emptying, while the second set of slow-emptying tanks maintains the 5% level required to overcome dilution from air leakage. This CO_2 concentration is maintained for approximately 30 minutes, sufficient time to allow combustibles to cool below their auto ignition temperatures. A CO_2 status display board is provided near each protected CTG enclosure entry to visually indicate the status of the fire protection system (i.e. CO_2 armed or disarmed).

Disarming may be accomplished by disabling the CO_2 suppression system, either electronically by means of a key switch and/or blocking the flow of CO_2 by a manually activated safety block valve in the CO2 piping discharge system. When disarmed the detection alarm system will remain active while the CO2 discharge capability will be disabled. Continuous signals (supervisory) are sent to the monitoring system notifying the operator while the system is disarmed.

Additional safety features include a suppressant release delay and audible and visual alarms inside and outside the CTG enclosures.

Each CTG enclosure is also provided with a resistance type combustible gas detection system. When the gas concentration reaches a 20% lower explosive level (LEL), the gas hazard alarm will be displayed in the CTG unit fire protection panel and warning alarms will be activated at the CTG enclosure. When a 60% LEL level is reached an automatic trip of the fuel and gas turbine will be initiated. The CTG enclosures ventilation system will remain operational to reduce the gas hazard.

3.4.13.2 Fire Alarm and Detection

The main fire control panel will be located in the Midway Control Room and will annunciate activation of a fire protection/detection system by location zones. The alarms will also be monitored in the remote CalPeak Power control room. The panel operates on 120 VAC power through the UPS system. The alarm and detection system is designed to comply with NFPA 70 and 72.

Local building fire pull boxes and audible alarms will be provided. Flashing lights will be used in addition to audible alarms in high noise areas.

3.4.13.3 Portable Extinguishers

Hand held CO_2 and dry chemical extinguishers will be located throughout the project area, with size, rating, and spacing in accordance with NFPA 10. Handcart CO_2 extinguishers will be provided as needed for specific hazards.

3.4.13.4 Miscellaneous Fire Safety Items

All materials of construction used in the plant will be free of asbestos and will meet the required fire and smoke rating requirements of NFPA 255.

Plant management will coordinate with the local County fire marshal and fire department to provide an appropriate orientation to the project and its operating and emergency procedures for emergency personnel.

3.4.14 Plant Auxiliaries

3.4.14.1 Lighting

Lighting will be required for safe and efficient operation in a number of areas. These include:

- Outdoor equipment platforms and walkways
- Transformer areas

To avoid intrusion on sensitive areas, outdoor lighting will be directed downwards and towards the interior of the plant.

Emergency lighting from DC battery packs will be provided in areas of normal personnel traffic to permit safe egress from the area in case of failure of the normal lighting system. In major control equipment areas and electrical distribution equipment areas, emergency lighting will be sufficient to allow equipment operation and to facilitate reestablishment of auxiliary power.

FAA Advisory Circular 70/7460-1K requires that all airspace obstructions over 200 feet in height or in close proximity to an airfield have obstruction lighting. The Midway exhaust stacks are elevated 50 feet above grade. Since the stacks are below the 200 feet limit and there is no airfield in close proximity to the site, the exhaust stacks will not require obstruction lighting.

3.4.14.2 Grounding and Lightning Protection

The electrical system may experience unit ground potential rise due to ground fault, lightning strike, or switching surge. This constitutes a hazard to site personnel and electrical equipment. A ground grid grounding system to permit dissipation of ground fault currents and minimize ground potential rise will be installed. The grounding grid will control step and touch potentials in accordance with IEEE

Standard 80, Safety in AC Substation Grounding. All equipment, structures and fencing will be connected to the grounding grid of buried bare copper conductors and ground rods, as required.

Lightning protection will be provided by shield wires and/or lightning masts for any overhead lines. The lightning protection system will be designed in accordance with IEEE 998 guidelines.

All electrical faults shall be detected, isolated, and cleared in a safe and coordinated manner as soon as practical to insure the safety of Equipment, Personnel, and the Public. Protective relaying will meet ANSI and IEEE requirements and will be coordinated with PG&E's requirements.

3.4.14.3 Cathodic Protection

Cathodic protection may be provided, using an impressed current or buried anode system to prevent corrosion of buried carbon steel piping and structures. Protective coatings are applied as primary protection and to minimize cathodic protection current requirements. The requirement for a cathodic protection system will be determined during detailed design.

3.4.14.4 Freeze Protection

Midway design incorporates insulation for all pipes less than 2-inches in diameter in order to protect from freezing.

3.4.14.5 Programmable Logic Controller

The programmable logic controller (PLC) provides modulating control, digital control, monitoring, and indicating functions for the plant power block systems. It is described in more detail in Section 3.9 in which facility operations are detailed.

3.4.14.6 Plant Instrument and Service Air System

A compressed air system will provide clean, dry air to the gas turbines, BOP instrumentation, and BOP servicing areas. This system will include an air compressor skid with two (2) 100 % capacity oil flooded rotary screw compressors and a dryer skid with twin desiccant type heatless regenerative air vessels.

3.5 CIVIL/STRUCTURAL FEATURES

This section describes the buildings, structures, and other civil/structural features that will constitute the facility as shown on Figure 3.4-1 (Site Plan).

3.5.1 Power Block

The Midway project will consist of two power blocks and associated BOP auxiliary equipment. Each power block will consist of one (1) FT8-3 SwiftPac Combustion Turbine Generator unit, SCR, and exhaust stack. Both power blocks will feed one (1) one generator step-up transformer. Corresponding

auxiliary mechanical and electrical equipment will be located adjacent to the power blocks. Refer to Figure 3.4-1 for a general arrangement of equipment.

The CTG units will be supported on a reinforced concrete foundation at grade. Individual reinforced concrete pads at grade will be used to support the BOP mechanical and electrical equipment. Foundation pilings will be used for major equipment and building foundations if required. All equipment will have seismic anchoring that meets or exceeds requirements for CBC Seismic Zone 4.

3.5.2 Exhaust Stacks

Each CTG unit will be provided with one self-supporting steel stack. The stack will be 15 feet in diameter and 50 feet tall and will include associated appurtenances, such as sampling ports, exterior ladders and side step platforms.

3.5.3 Buildings

The plant buildings will include two (2) primary control enclosures (one for each SwiftPac unit and one (1) secondary control enclosure. Building dimensions are shown in Table 3.4-1. All of the enclosures will be supported on mat foundations or individual spread footings.

3.5.4 Storage Tanks

The Midway project will utilize two (2) DI Water Storage Tanks (75,000 gallons each) and one (1) Raw Water Storage Tank (75,000 gallons). Each of these three storage tanks will be approximately 23’ in diameter and 24’ high, and will be supported by a concrete ringwall foundation. The Midway project will also utilize two (2) Aqueous Ammonia Storage Tanks (12,000 gallons each).

3.5.5 Roads

The site will be accessed from West Panoche Road via a new entrance road shown on Figure 3.4-1. The access road network serving the project will consist of a graded gravel entrance road extending for approximately 250 feet to an approximately 1,150-foot asphalt turn-around adjacent to the plant.

3.5.6 Site Security Fencing

A security fence will enclose the plant site. Access gates will be provided, as required. In addition to the perimeter security fence, the substation and transformer area will be fenced and provided with access gates. Security will be maintained on a 24-hour basis with either surveillance devices or personnel.

3.5.7 Site Grading and Drainage

The plant site will consist of a graded gravel entrance road, parking area, and an asphalt road turn-around adjacent to the plant equipment. Stormwater will continue to run off the site as sheet flow. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared prior to construction of the site.

This plan will be utilized at the site to control and minimize stormwater during the construction of the facility. The plan will use best management practices such as stabilized construction entrances, silt fencing, berms, hay bales, and detention basins to control runoff from all construction areas.

3.5.8 Site Flood Issues

According to the Federal Emergency Management Agency (FEMA), the site is within the 100-year flood plain. The site will be raised one foot in conformance with the Fresno County Ordinance Title 15 Flood Hazard Areas to ensure that in the event of a 100-year storm, the site and equipment is not subjected to any flood damage.

3.5.9 Earthwork

Excavation work will consist of the removal, storage, and/or disposal of earth, sand, gravel, vegetation, organic matter, loose rock, boulders, and debris to the lines and grades necessary for construction. Materials suitable for backfill will be stockpiled at designated locations using proper erosion protection methods. Any excess material will be removed from the site and disposed of at an acceptable location. If contaminated material is encountered during excavation, its disposal will comply with applicable LORS.

The site is currently a storage yard. If needed, fill will be imported to establish finish grade. Finish grade will be approximately one foot higher than existing grade. The quantity of fill for the project is approximately 9,500 cubic yards all of which will come from the site, as described in the Appendix L.

Graded areas will be smooth, compacted, free from irregular surface changes, and sloped to drain. Cut and fill slopes for permanent embankments will be designed to withstand horizontal ground accelerations for Seismic Zone 4. For slopes requiring soil reinforcement to resist seismic loading, geogrid reinforcement will be used for fills and soil nailing for cuts. Slopes for embankments will be no steeper than 2:1 (horizontal:vertical). Construction will be at one foot above existing grade, which is fairly level; therefore major cuts and fills are not anticipated.

Areas to be backfilled will be prepared by removing unsuitable material and rocks. The bottom of an excavation will be examined for loose or soft areas. Such areas will be excavated fully and backfilled with compacted fill.

Backfilling will be done in layers of uniform, specified thickness. Soil in each layer will be properly moistened to facilitate compaction to achieve the specified density. To verify compaction, representative field density and moisture-content tests will be performed during compaction. Structural fill supporting foundations, roads, and parking areas will be compacted to at least 95 percent of the maximum dry density as determined by American Society for Testing Materials (ASTM) D-1557 as described in Appendix L, Geotechnical Report. Embankments, dikes, bedding for buried piping, and backfill surrounding structures will be compacted to a minimum of 90 percent of the maximum dry density. Backfill placed in remote and/or unsurfaced areas will be compacted to at least 85 percent of the maximum dry density.

Where fills are to be placed on subgrades sloped at 6:1 (horizontal:vertical) or greater, keys into the existing subgrade may be provided to help withstand horizontal ground accelerations.

The subgrades (original ground), subbases, and base courses of roads will be prepared and compacted in accordance with California Department of Transportation (Caltrans) standards. Testing will be in accordance with ASTM and Caltrans standards.

3.6 ELECTRICAL INTERCONNECTION

The Project will interconnect to the 115kV bus at PG&E's Panoche Substation via the existing CalPeak Panoche generator tie line (see Figure 3.6-1). The tie line connecting the existing CalPeak Panoche Plant to PG&E's system is already sized to carry the output of the Midway plant. Midway will construct a 300-foot generator tap line from Midway to the first point of interconnection, the existing CalPeak Panoche Peaker tie line. The transmission line will be located entirely on either the Project site or the PG&E substation property.

3.6.1 Electrical Interconnection Points

The 115 kV transmission line for the existing CalPeak Panoche Plant is a direct intertie between the CalPeak Panoche switchyard and PG&E's Panoche Substation. The existing CalPeak Panoche Generator Tie line which connects the Peaker Plant to the 115 kV switchyard at PG&E's Panoche Substation is the point of interconnection for the project. Although the Midway project will be interconnected to the CalPeak Panoche transmission line, each project will have independent breakers for isolation from the PG&E system. Neither plant will be dependent on the other for its transmission interconnection.

3.6.2 Transmission Line Specifications

The proposed 115kV lines will be overhead conductor design, supported by wooden poles, with a transmission line span of 300 feet. There will be two dead-end take off structures, one existing at the PG&E Panoche substation and the other proposed as part of the Midway project. The line will originate at the main step-up transformer located at the Midway site and terminate at the tap point where it will intersect with the tie-line between the existing CalPeak Panoche Plant and the PG&E Substation.

3.6.2.1 Conductor

The generator tap line connecting the Midway project to the tap point at the CalPeak Peaker site will be constructed using 715.5 kcmil aluminum or equivalent.

3.6.2.2 Ground Wire

The transmission line will have shield or ground wires in place. The location of the shield wires in relation to conductors shall be in accordance with best industry practices and determined by the

surrounding terrain. The shield wire shall be extra high strength galvanized steel or copper-clad steel as determined by the location and the detailed design.

3.6.2.3 Route

The proposed transmission line will originate from the Midway generator step-up transformer near the western perimeter of the site north of the CTG Units (Figure 3.4-1). The 115kV transmission line will exit from the northwest edge of the project site and run west approximately 300 feet to tie into the existing CalPeak Panoche tie line to the Panoche Substation. Line design will take into account a 90 degree orientation differential between the Midway dead-end structure and the CalPeak Panoche/PG&E tie-line. Intermediate structures will be installed as required.

3.6.2.4 Tie Line Interconnect

In order to interconnect to the 115kV bus at PG&E's Panoche Substation via the existing CalPeak Panoche generator tie line, the Midway project will have to rearrange or rebuild to avoid multiple line crossings for the construction of the Project's tie line. This may be done by raising a segment of the PG&E transmission lines in order to accommodate the Midway generator tie lines. Line clearances over roads and under existing lines will conform to all applicable standards and requirements found in the NESC, ANSI STD C2, for such applications.

3.6.2.5 Transmission Structures

The proposed 115kV transmission lines will be overhead conductor design with a transmission line span of 300 feet. There will be one dead-end take off structure on-site. The structure will be at the originating outdoor switchyard located in the new Midway facility. The design of the transmission structures including lines and poles will be coordinated with PG&E in accordance with their specifications.

3.6.2.6 Types

The take off for the dead end structure will be an A frame type. It will be approximately 50 feet high with additional 15-foot lightning masts. The power conductor, the ground, and the shield wire will be attached in accordance with PG&E specifications.

3.6.2.7 Foundations

Foundations will be required for 115kV disconnect switch, 115kV circuit breaker, voltage and current transformers, and outgoing dead end structure. The foundations will be drilled pier concrete foundations with the necessary anchor bolts. The dead end structure and, if deemed necessary, any intermediate line supports will have foundations designed to meet seismic criteria applicable to the site.

3.6.2.8 Access to Structures

The entire electrical interconnection phase of the project will be located wholly within the property boundaries of either the project, the CalPeak Panoche Plant, or the PG&E substation. It will originate at the facility outdoor switchyard dead end structure and terminate at the CalPeak Panoche tie line to the PG&E substation. The public will not have access to any portions of the transmission lines or the switchyard.

3.6.3 Midway Transmission System Evaluation

PG&E performed a System Impact Study (SIS), March 2006, and a Facility Study, September 2006, under PG&E's Transmission Owner's Tariff for the Midway plant. The System Impact Study determined the impact on the PG&E system based on power flows on the existing transmission lines and transformers, short circuit duties of the existing transmission facilities and stability of the interconnected system considering various contingencies and fault conditions. The Facility Study outlines mitigation measures for transmission facility overloads. The System Impact Study and Facility Study will be submitted to the CEC under separate cover and are described further in Section 3.6.3.2 below. Refer also to Figure 3.6-1.

3.6.3.1 Transmission System Reliability Criteria

The North American Electric Reliability Council (NERC) and the Western System Coordinating Council (WSCC) Reliability Criteria for Transmission System Planning, the Independent System Operator (ISO) and the PG&E Reliability Criteria, will be used in the evaluation of the interconnection of this facility to the transmission system. These criteria will also be utilized in the analysis to insure minimum criteria requirements are adhered to and project objectives are met. The ISO processes will be monitored throughout the transmission system evaluation to insure that any changes to the criteria are considered.

3.6.3.2 System Impact Study/Facilities Study

PG&E completed a system impact study (SIS) for the project (March 30, 2006). The study included three (3) power flow base case conditions to evaluate the transmission system impacts of the project. Power flow analysis and governor power flow analysis was conducted using all three base cases. The 2009 Summer Peak Full Loop Base Case was used for dynamic stability analysis. The base cases for power flow and dynamic simulation took into account all approved PG&E transmission system reinforcement projects that will be operational by 2009. The SIS concluded that the Midway project would:

1. Cause one new Category "A" normal, one new Category "B" emergency, and two new Category "C" emergency overloads on PG&E's transmission facilities that require mitigation by the Project. The overloaded facilities are:

    a. The Le Grand - Dairyland 115 kV Line (Normal and Category "B")

b. The Coalinga NO.1 - Coalinga NO.2 70 kV Line between the Tornado Jct. and Coalinga 1 section (Category "C")

c. The Wilson - Oro Loma 115 kV Line between the Oro Loma and EI Nido section (Category "C")

2. Exacerbate two normal, three Category "B" emergency, and eleven Category "C" emergency pre-project overloads. Several projects with superior queue positions and earlier commercial operation dates are responsible for mitigating these overloads. Should those projects not materialize, Midway may be responsible for mitigating these overloads.

3. Require a fully redundant, double-pilot current differential scheme utilizing dual fiber optic communications for the Project's generator tie line.

4. Have no adverse impact on the transmission system's transient stability performance by the Project following the selected contingencies.

5. Exacerbate three pre-project overstressed breakers. However, a project with a superior queue position and an earlier online date is responsible for replacing these three breakers. Should this project not materialize, Midway may be responsible for replacing these breakers.

Based on the SIS, a facilities study (FS) was also conducted by PG&E in September 2006, which identifies mitigation measures for transmission facility overloads and upgrades if necessary due to the added generation. The FS evaluated both transmission line and substation capacity and determined various upgrades and requirements for Midway to complete.

Regarding transmission lines, the FS identified that the Midway project will need to:

- Provide a tap interconnection at the CalPeak Panoche generator tie line
- Rearrange or rebuild the Panoche-Shindler 115 kV NO.1 and 2 lines to accommodate crossing of the new tap line
- Re-conductor the CalPeak Panoche generator tie line between CB 142 at CalPeak Panoche and CB 162 at Panoche Substation with 477 kcmil ACSS conductor
- Re-conductor the Le Grand - Dairyland 115 kV Line

In relation to the substation, the FS determined that the Midway Project will be responsible for:

- Modification of the existing fully redundant double-pilot current differential protection scheme to a fully redundant, 3 Terminal, double-pilot current differential scheme utilizing dual fiber optic communications utilizing dual fiber optic communications
- Performing pre-parallel inspection, testing, SCADA, EMS setup, engineering support, etc.

- Upgrading substation equipment (protection relays, CTs, panels, conduits,etc) when required
- Providing telecommunication requirements
- Providing SPS to mitigate the overload of the Coalinga No.1-Coalinga NO.2 70 kV Line
- Providing SPS to mitigate the overload of the Wilson-Oro Loma 115 kV Line

As part of the aforementioned upgrades, Midway will be responsible for all transmission line engineering, design, and construction activities from the Project up to the Point of Interconnection. In addition, Midway will be responsible for all substation engineering, design, and construction activities beyond the Point of Interconnection. The final Direct Assignment and Network Upgrade facilities work scope will be determined after detailed design and engineering is completed.

After reviewing both the SIS and FS, CAISO issued the final interconnect approval for the Project, November 7, 2006. While approval has been granted, Midway remains in discussions with PG&E to determine whether Midway is required to include the re-conductoring of the Le Grand – Dairlyland 115kV line (11.4 miles) as part of the Project. If the outcome of PG&E and Midway's discussions determines that Midway must complete the re-conductoring, Midway will move forward once the specific re-conductoring requirements are provided by PG&E. Upon receipt of the re-conductoring project description, Midway will appropriately address any additional environmental analysis.

3.6.3.3 Electric Effects

The electric effects of the high voltage lines fall into two categories: corona effects and field effects. Corona is a the ionization of the air that occurs at the surface of the energized conductor and suspension hardware due to very high electric field strength at the surface of the metal during certain conditions. Corona may result in radio and television reception interference, audible noise, light, and production of ozone. A transmission line's field effects are the voltages and currents that may be induced in nearby conduction objects.

3.6.3.3.1 Generation of Electric and Magnetic Fields

Power lines, electrical wiring, electrical machinery, and appliances all produce electric and magnetic fields, commonly referred to as EMF. The EMF produced by the alternating current from the Midway site has a frequency of 60 Hertz (Hz), which means that the intensity and orientation of the field changes 60 times per second. When a conductor is energized, both an electric and magnetic field will form around the conductor directly proportional to the energization voltage and current, respectively. Both electric and magnetic field magnitudes are inversely proportional to the distance from the conductors, meaning that EMF will attenuate as a function of distance from the conductors.

In order to reduce electric and magnetic fields, overhead transmission lines are designed to carry power over three conductors with currents and voltages that are 120 degrees out of phase with each other. Combined, the phase differences tend to cancel out the fields from the conductors. However,

within a close range, for instance when a person stands on the ROW under a transmission line, one conductor will be significantly closer and hence, will contribute a net uncanceled field at the person's location.

The magnitude of the EMF depends on the current in the conductor, geometry of the structures, degree of cancellation from other conductors, and the distance of the receptor from the conductors. Maximum magnetic fields are produced at the maximum conductor currents. For the purpose of the EMF analyses, the maximum line loading is assumed to be 120 MW. This loading converts to approximately 188mva at 115kV.

3.6.3.3.2 Hazardous and Nuisance Shocks

A conducting object such as a vehicle or person in an electric field will experience induced voltages and currents. The strength of the induced current will depend upon the electric field strength, the size and shape of the conduction object, and the object-to-ground resistance. When a conducting object is isolated from the ground and a grounded person touches the object, a perceptible current or shock may occur as the current flows to the ground. The mitigation for hazardous and nuisance shocks is to ensure that metallic objects on or near the ROW are grounded and that sufficient clearances are provided at roadways and parking lots to keep electric fields at these locations low enough to prevent vehicle short-circuit currents from exceeding 5 mA.

Similarly, magnetic fields also induce voltages and currents in conducting objects. Typically this requires a long metallic object, such as a wire fence or above-ground pipeline that is grounded at only one location. Again, a person closing an electrical loop by grounding the object at a different location will experience a shock similar to one caused by the electric field described above. The mitigation for magnetic field effects is to ensure multiple grounds for fences or pipelines, especially those oriented parallel to the transmission line.

Furthermore, the proposed 115kV transmission interconnection will be constructed in conformance with California Public Utility Commission (CPUC) General Order (GO) 95 requirements and Title 8 CCR 2700 requirements. In this way, hazardous shocks are highly unlikely to occur as a result of the project construction, operation, and maintenance.

3.6.3.3.3 Corona Effect

The corona effect is the ionization of the air that occurs at the surface of the energized conductor and suspension hardware due to very high electric field strength that typically takes places at the surface of the conductor during certain conditions. Corona may result in certain radio and television reception interference, audible noise, light, and production of ozone, which are described in further detail below. The effects of corona are greatest at locations on the conductor where the field is enhanced by protrusions, such as nicks, insects, or drops of water (for instance during wet weather).

Well-maintained transmission lines will produce minimal corona effects. As previously noted, the project transmission line will be designed according to CPUC and California code, which will also

serve to keep noise and interference effects from reaching undesirable levels. Any complaints will be logged, investigated, and to the degree possible, mitigated.

Audible Noise. Corona-generated audible noise from transmission lines is generally characterized as a cracking/hissing noise. The Electric Power Research Institute (EPRI) has conducted several transmission line studies(1) which measure the sound levels for several line sizes with wet conductors, and found that the noise produced by a conductor attenuates by two to three decibels (dB) for each doubling of the distance from the source.

Radio and Television Interference. Corona-generated radio interference is most likely to affect the amplitude modulation (AM) broadcast band (535 to 1,605 kilohertz); frequency modulation (FM) radio is rarely affected. Only AM receivers located very near to transmission lines have the potential to be affected by interference.

Visible Light. Corona may be visible at night as a bluish glow or as bluish plumes. On the transmission lines in the area, the corona levels are so low that the corona on the conductors usually is observable only under the darkest conditions with the aid of binoculars.

Photochemical Reactions. When coronal discharge is present, the air surrounding the conductors is ionized and many chemical reactions take place producing small amounts of ozone and other oxidants. Approximately 90 percent of the oxidants are ozone, while the remaining 10 percent are composed principally of nitrogen oxides.

1 Transmission Line Reference Book, 345kV and Above. EPRI. 1975, 1982.

3.7 PIPELINES

The project includes both a natural gas supply pipeline and a water supply pipeline. The natural gas line would tap into an existing PG&E trunkline and would consist of a 6-inch line, approximately 50 feet of which would be off-site and approximately 600 feet on-site. The PG&E trunkline tie in is adjacent to the entrance of the property. The underground water pipeline would consist of approximately 1,200 feet of 3-inch line piped from the CalPeak Panoche site.

3.7.1 Natural Gas Supply Line

Natural gas will be delivered to the plant site from a connection to a PG&E trunk line. A metering and regulator station will be provided on the PG&E right of way northwest of the site. The gas will be metered by PG&E as it enters the project site. Additional flow metering will be provided at each CTG.

3.7.1.1 Pipeline Routes

PG&E will tap the 6-inch gas service line serving the existing CalPeak Panoche Peaker facility approximately 25 feet upstream of the existing meter set, and install 50 feet of 6-inch steel pipeline to a new 6-inch turbine meter set adjacent to CalPeak Power's existing meter set. See Figure 3.4-1 for

the location of the meter sets. From the newly installed meter set, approximately 600 feet of gas line would be constructed along the western perimeter of the project site.

3.7.1.2 Buried Pipe

Construction will primarily use an open trench method.

The pipeline will be constructed of carbon steel in accordance with the American Petroleum Institute (API) specifications for gas pipelines or specifications of the ASTM. The pipe will have corrosion-protection coating that is either factory- or field-applied. Joints will be welded, inspected using x-ray, and wrapped with a corrosion-protection coating.

Construction of the natural gas pipeline is described in the following subsections.

3.7.1.2.1 Trenching

The width of the trench is dependent on the soil type encountered and requirements of governing agencies. The optimal dimensions of the trench will be about 18 inches wide and 48 inches deep. For loose soil, a trench of up to 8 feet wide at the top and 2 feet wide at the bottom may be required. The pipeline will be buried with a minimum 36-inch cover. The excavated soil will be piled on one side of the trench and later used for backfilling after the pipe is installed in the trench.

3.7.1.2.2 Stringing

The pipe will be laid out (stringing) on wooden skids along the side of the open trench during installation.

3.7.1.2.3 Installation

Installation consists of:

- Welding, coating, and bending of pipe
- Laying sand or fine soil on the trench floor
- Lowering the pipe string into the trench

Welding will meet the applicable API and ASTM standards and shall be performed by qualified welders. Welds will undergo radio graphical inspection by an independent, qualified radiography contractor. All coatings will be checked for holidays and will be repaired before lowering the pipe into the trench.

3.7.1.2.4 Backfilling

Backfilling consists of returning excavated soil back into the trench around and on top of the pipe, and up to the original grade of the surface. The backfill will be compacted to protect the stability of the pipe and minimize subsequent subsidence.

3.7.1.2.5 Plating

Plating consists of covering any open trenches, for safety purposes, with solid rectangular plates in areas of foot or vehicular traffic at the end of a workday. Plywood plates can be used in areas of foot traffic and steel plates on areas of vehicular traffic.

3.7.1.2.6 Pneumatic Testing

Pneumatic testing consists of plugging both open ends of a pipeline that is to be tested, filling the pipe with air up to a pressure specified by code requirements, and maintaining the pressure for a period of time.

3.7.1.2.7 Clean up

Clean up consists of restoring the ground surface by removing construction debris, grading the surface to its original state, and replanting vegetation.

3.7.1.2.8 Commissioning

Commissioning consists of cleaning and drying the interior of the pipeline, purging air from the pipeline, and filling the pipeline with natural gas.

3.7.1.2.9 Safety

Safety consists of complying with all applicable CalOSHA, OSHA, and other regulations and standards as well as contractor's specific safety plans for the project, which will address specific pipeline safety issues.

3.7.2 Water Supply Line

Water can supplied to the project from multiple sources but for purposes of this report and data presented we will assume water will be delivered to the plant site from a connection to the existing CalPeak Panoche Peaker Plant well (refer to Figure 3.4-1).

3.7.2.1 Pipeline Routes

The water pipeline tying Midway to the existing CalPeak Panoche well would follow the perimeter of the CalPeak Panoche site before turning northwest along the shared property line between Midway and CalPeak Panoche. At the point where the water pipe reaches the north side of the Midway CTG

units, prior to the Midway step-up transformer, the line would travel east and north into the Midway Site where it would then tap into the RO unit. See Figure 3.4-1.

3.7.2.2 Buried Pipe

Construction of the water pipeline, similar to the natural gas line, will use the open trench method. See sections 3.7.1.2.1 thru 3.7.1.2.9 above.

3.8 PROJECT CONSTRUCTION

Construction of the Midway project includes site preparation, foundation construction, erection of major equipment and structures, installation of piping, electrical systems, control systems, and start-up/testing. These construction activities are expected to require approximately 10 months. The schedule commences when the Owner issues a notice to proceed and is completed when the project is commercially operational.

Table 3.8-1 presents the major construction milestones.

TABLE 3.8-1
CONSTRUCION MILESTONES

Activity	Dates
Procure Financing	December 2007 to February 2008
Engineering, Design, Procurement	February to June 2008
Construction	June 2008 to March 2009
Performance Testing	March to May 2009

Per the Power Purchase Agreement and EPC contract, the plant is to be in commercial service by May 1, 2009. Engineering, design, and procurement will commence February 2008 and will be completed by June 2008. Construction is scheduled to occur over a 10 month period after the notice to proceed is received. Construction will be completed by March 2009. Performance testing will be conducted between the end of construction and May 1, 2009 when commercial operation will begin.

3.8.1 Project Schedule and Workforce

The detailed work plans, logistical studies, project procedures, schedules and administrative control systems developed to perform, monitor, and control the Midway project and its implementation will all be prepared in accordance with the CEC regulations and applicable LORS.

The general sequence of work will proceed as follows:

- Receipt of the Final Decision from the CEC
- Close project financing

- Issuance of a notice to proceed by the Owner to the contractor
- Development of the project schedule incorporating items required by the CEC
- Commencement of engineering and procurement activities
- Site preparation and construction mobilization
- Installation of underground piping and electrical systems
- Construction of concrete foundations
- Installation of power-generating equipment
- Installation, interconnection, and testing of aboveground piping and electrical systems
- Installation, interconnection, and testing of instrumentation and control devices and distributed control system

Construction will conclude with start-up and testing activities, which will continue until the entire facility is capable of reliable operation within permit requirements and good operating practice. All of the systems and subsystems in each unit will be tested and adjusted, first individually and then combined with others, before the project is deemed ready for startup.

The Midway project will be declared commercially operational after successful completion of plant start-up activities, and after appropriate testing has been completed. Facility optimization activities may continue after commencement of commercial operation.

Attachments A and B present the projected manpower required for construction. Required manpower averages approximately 75 people per month – for a total required 743 man-months during the 10 month construction period. Monthly required manpower peaks at 110 people. Attachment B specifically illustrates the manpower breakdown by craft.

3.8.2 Execution Plans – Engineering and Construction Phases

3.8.2.1 Engineering and Pre-Construction Mobilization

Engineering activities will begin following the California Energy Commission (CEC) Final Approval of the project, which is anticipated by December 2007. Staff from the engineering and construction groups will work together in the same office to prepare a safe, qualitative, cost effective, and sequentially effective plan for the project. The initial focus will include the purchase and delivery of engineered equipment and specialty, long-lead material. Facility design will include early milestones to complete the civil, structural, and mechanical equipment aspects of the project. As the ground breaking occurs and site grading commences, the design and procurement continues to support the

overall schedule and reliability of the final project. Contractor is anticipated to mobilize within four months after notice to proceed.

3.8.2.2 Construction Facilities

Mobile trailers or similar suitable facilities (e.g., modular offices) will be used as construction offices for owner, contractor, and subcontractor personnel.

3.8.2.3 Construction Parking

Construction parking will be within existing site boundaries. Construction access will be from West Panoche Road, via the access road shown on Figure 3.4-1. There will be adequate parking space for construction personnel and visitors during construction on site.

3.8.2.4 Laydown and Storage

As part of the site access road construction previously described, an adjacent gravel laydown area will also be constructed (see Figure 3.4-1). In addition to the laydown area, other areas within the site boundary may also be used as off-load and staging during construction. All laydown and storage areas are wholly within the site perimeter and once construction is complete will be within site security perimeter fencing. Post-construction, the gravel laydown area will be used for parking as needed.

3.8.2.5 Emergency Facilities

The General Contractor will have a Safety Coordinator who will prepare a site-specific safety plan. Emergency services will be coordinated with the County of Fresno Fire Department and local hospital in the City of Mendota. An urgent care facility will be contacted to set up non-emergency physician referrals. First aid kits will be provided in the construction offices and regularly maintained. At least one person trained in first aid will be part of the construction crew. In addition, all foremen and supervisors will be given first aid training.

3.8.2.6 Construction Facilities

During construction, temporary utilities will be provided for the construction offices, laydown area, and the project site.

Temporary construction power will initially be provided by using diesel- and gas-powered generators. Eventually, temporary con

Water trucks and potable water delivery will initially provide construction water. As the project matures and the build-out of water wells is completed, the onsite water wells will then be used as the source of construction water.

Portable toilets will be provided throughout the site during construction.

3.8.2.7 Site Services

The General Contractor will provide the following site services:

- Environmental health and safety training
- Site security
- Site first aid
- Construction testing (e.g., nondestructive examination, soil compaction)
- Site fire protection and extinguisher maintenance
- Furnishing and servicing of sanitary facilities
- Trash collection and disposal
- Disposal of hazardous materials and waste in accordance with local, state, and federal regulations

3.8.2.8 Construction Equipment and Materials Delivery

Materials and supplies will be delivered to the site by truck. Truck deliveries of construction materials and equipment will generally occur on weekdays between 6:00 a.m. and 6:00 p.m., however, some larger heavy load deliveries may be delivered outside those hours. Site access will be controlled for personnel and vehicles.

3.9 FACILITY OPERATIONS AND MAINTENANCE

This section discusses operation and maintenance procedures that will be followed by the Midway staff to ensure safe, reliable, and environmentally acceptable operation of the power plant, transmission system, and pipelines. Additional information will be provided in the attached appendices.

3.9.1 Introduction

Midway will require approximately 2 full time employees. Plant operations will be directed from an existing and remote control room located in San Diego, California. All system equipment will be controlled through PLC's utilizing control integration software and the project controls will be integrated into this proven control system.

3.9.2 Power Plant Facility

The Midway plant is designed as a simple cycle peaking facility with two Swiftpac units. Each unit consists of two FT8-3 Gas Turbines with power turbines and a single generator. The project will be designed to emphasize efficiency and flexibility.

3.9.2.1 Peaker Plant Operation

The plant will be operated to provide its maximum available electrical output during the periods when the demand for electricity is greatest. As a peaking facility, the plant is contracted and will acquire all permits to operate a maximum of 4,000 hours per year. Midway expects actual operations under normal conditions to be substantially less than contracted hours. Plants with similar operation parameters in California typically operate less that 400 hours annually. The plant will be dispatched by PG&E in accordance with their economic dispatch procedures. The project equipment will be integrated with a CalPeak Power plant performance monitoring program that allows plant staff to make critical decisions as to when the equipment performance has deteriorated to the extent requiring corrective action. This program also allows the plant staff to accurately determine the cost of electrical production. This ability in conjunction with an experienced and adaptable staff will allow the plant to be operated and maintained in the most efficient method possible.

Planned maintenance will be coordinated to coincide with periods of low power demand on the California Independent System Operator (CAISO) system.

3.9.2.1.1 Annual Operating Practices

Generally, the plant will be operated to provide its maximum availability when the demand for electricity is highest. Planned maintenance will be coordinated with demand fluctuations so that outages occur during periods of low demand. Normally, this work will be planned during non-peak periods when electrical demand is low and must be approved by PG&E and the California Independent System Operator

3.9.2.1.2 Operation with Seasonal Variation in Ambient Temperature

Unit output is sensitive to the temperature and density of the ambient air taken into the CTG inlet and used in the combustion process. The temperature and humidity of the air ingested into the gas turbine inlets affect power output. The gas turbine will be equipped with evaporative coolers that will be operated when needed to enhance the power output of the gas turbines. Evaporative coolers will also reduce the inlet air temperatures whenever the ambient temperature is higher than 60°F.

3.9.2.1.3 Startup and Shutdown

The typical time required for startup is approximately 10 minutes. The PG&E contract allows for a maximum of 365 startups and shutdowns per unit in a one-year period. Plants with similar operating parameters in California typically have less than 50 startups and shutdowns annually.

3.9.2.2 Control Philosophy

The control system will consist of a state-of-the-art, integrated, microprocessor-based PLC using control integration software. The control system will provide for startup, shutdown, and control of plant operation limits and will provide protection for the equipment.

- Interlock and logic systems will be provided via hard-wired relays, and/or PLCs.
- Process switches (i.e., pressure, temperature, level, flow) used for protective functions will be connected directly to the PLC and the protective system.

3.9.2.3 Degree of Automation

The plant will be designed with automation where practical in order to reduce the required actions performed by operating personnel. Through subsystem automation and use of the PLC, the number of individual control switches and indicators that confront the operator will be greatly reduced. This will reduce the complexity and size of the main control room workstations and panels.

3.9.2.4 Centralized Control

The majority of the equipment that is required to support the operation of the plant will be located in the control and electrical equipment rooms. The control room contains the PLC CRT-based operator workstations and the auxiliary control panels. In addition, the control room contains the alarm, utility, and log printers.

Local control panels or stations will be furnished only where operator attention is required to set up a system for operation, or where the equipment requires intermittent attention during plant operation. Main control room indicators and control functions will only be duplicated for those variables critical to plant availability.

All of the control processes furnished on the local control panels and central control system will be mirrored in the San Diego operations control center. The plant will have the capability of being operated locally or from the remote location in San Diego. The remote operation will be transferred to the San Diego control center via T-1 line and internet service and will have redundant systems provided by a telephone dial up connection.

3.9.2.5 Programmable Logic Controller

The programmable logic controller (PLC) provides modulating control, digital control, monitoring, and indicating functions for the plant power block systems.

The PLC will be a redundant microprocessor-based system and will consist of the following major components:

- Liquid crystal display (LCD) flat screen operator displays

- Engineer work station
- Distributed processing units
- I/O consoles
- Printers
- Data link to the combustion turbine

The PLC will have redundant processing units linked to a group of operator consoles and the engineer work station by redundant data highways. Each processor will be programmed to perform specific dedicated tasks for control information, data acquisition, and annunciation. By being redundant, no single processor failure can cause or prevent a unit trip.

The PLC and Control integration software will interface with the control systems furnished by the gas turbine supplier to provide supervisory remote control capabilities, as well as data acquisition, annunciation, and historical storage of turbine and generator operating information.

3.9.2.5.1 PLC Configuration

Redundant microprocessor-based controllers will communicate via a high speed communications network.

The overall network will provide unit-wide data access for centralized operation through operator workstations.

Remote I/O will be used where practical to reduce the quantity of long cable runs for the PLC interface with remote equipment.

3.9.2.5.2 PLC Functions and Tasks

The PLC will perform the following functions and miscellaneous tasks:

- Perform analog and digital plant control functions to accommodate a local and remote operator interface for controlling the power plant equipment
- Monitor both analog and digital signals to provide the operator/engineer with access to data around the plant
- Perform alarm monitoring in the local and remote control rooms for the entire plant
- Provide graphic displays, including both control- and information-type displays, for all systems and equipment, including electrical systems
- Provide data logging and reporting via displays and printed reports

- Provide long-term data storage of process history

3.9.3 Transmission System Operation and Maintenance

Midway will be responsible for the maintenance, inspection, and normal operation of the new 300-foot 115kV interconnecting transmission line in agreement with PG&E and ISO protocols. Operation of the electrical interconnection facilities will be locally controlled at the new generating plant. Control and protection equipment at the plant and within the PG&E switchyard will monitor and control the safe operation of the line, and will automatically trip the plant (or a portion of it) and/or the line in the event of a fault. Midway will have continuous access to all of the electrical interconnection facilities in the event of an emergency.

The control, protection, and metering equipment for the interconnection will be tested for proper operation. The protection and metering equipment will be calibrated and tested approximately every 12 months in accordance with the Midway and PG&E procedures. Inspections of the transmission line and structures are anticipated to occur every 6 to 12 months. Periodic cleaning of the transmission line and switchyard insulators and bushings may be required to remove contamination. The cleaning will be performed based on visual inspections scheduled by plant and switchyard operating personnel. Washing operations will consist of spraying insulators with deionized water through high-pressure equipment mounted on a truck.

3.9.3.1 Introduction

Operation of the plants transmission system will be controlled using facilities at the Midway Plant as well as the point of interconnection at the CalPeak Panoche tie line to the PG&E Substation. Maintenance activities for the transmission system are described in the following sections.

3.9.3.2 Access Maintenance

All power poles and structures will be located on the power plant site that is adjacent to the PG&E substation. Consequently, no additional access maintenance, right-of-way management or inspection activities are required.

3.9.3.3 Emergency/Safety Repairs

Emergency repairs will be made if the transmission line is damaged and requires immediate attention. Maintenance crews will use tools and other such equipment, as necessary, for repairing and maintaining insulators, conductors, structures, and access ways.

3.9.3.4 Insulator Washing

The buildup of particulate matter on the ceramic insulators supporting the conductors on electric transmission lines increases the potential for “flashovers”, which affects the safe and reliable operation of the line. Structures with buildup of particulate matter are identified for washing during

routine inspections of the lines. Washing operations consist of spraying insulators with deionized water through high-pressure equipment mounted on a truck.

3.9.4 Pipelines

PG&E will own the natural gas pipeline from PG&E Gas Line 2 through the outlet of the project meter run. Maintenance of this fuel gas supply line will be performed by PG&E in accordance with applicable Federal Energy Regulatory Commission (FERC) and U.S. Department of Transportation (DOT) regulations. This piping system will receive periodic inspections as part of PG&E's pipeline maintenance program.

The water line will be owned by Starwood Power-Midway, LLC. The system will receive periodic inspections as part of Midway's maintenance program.

3.10 FACILITY CLOSURE

3.10.1 Temporary Closure

Temporary or unplanned closure can result from a number of unforeseen circumstances, ranging from natural disaster to economic forces. For a short term unplanned closure, where there is no facility damage resulting in a hazardous substance release, the facility would be kept "as is", ready to re-start operating when the unplanned closure event is rectified or ceases to restrict operations.

In the event that there is a possibility of a hazardous substances release, the Midway compliance representative will notify the CEC compliance unit and follow emergency plans that are appropriate to the emergency, such as the Risk Management Plan (RMP). Depending upon the expected duration of the shutdown, chemicals may be drained from the storage tanks and other equipment. All wastes (hazardous and non-hazardous) will be disposed of according to LORS in effect at the time of the closure. Facility security will be retained so that the facility is secure from trespassers.

3.10.2 Permanent Closure

The planned life of the Facility is 30 or more years. If the facility were economically viable at the end of the 15 year operating contract period, it could continue to operate for a much longer period of time. As power plant operators continuously upgrade their generation equipment, and maintain the equipment up to industry standards, there is every expectation that the generation facility will have value beyond its planned life.

3.10.3 Closure Mitigation

At the time of facility closure, decommissioning will be completed in a manner that: 1) protects the health and safety of the public; and, 2) is environmentally acceptable. One year prior to a planned closure, the Applicant will submit a specific decommissioning plan that will include the following:

- Identification, discussion, and scheduling of the proposed decommissioning activities to include the power plant, applicable transmission lines, and other pertinent facilities constructed as part of the project.

- Description of the measures to be taken that will ensure the safe shutdown and decommissioning of all equipment, including the draining and cleaning of all tankage, and the removal of any hazardous waste.

- Identification of all applicable laws, ordinances, regulations, and standards (LORS) in effect at the time, and how the specific decommissioning will be accomplished in accordance with the LORS.

- Specify notification of federal, state, and local agencies, including the CEC.

Once land is used for industrial or commercial purposes, it rarely reverts back to its natural state. Reuse of the land will be encouraged in this case, as opposed to taking additional land for future industrial or commercial purposes. If the plant site is to return to its natural state, the specific decommissioning plan will include discussion covering the removal of all aboveground and underground objects and material, and an erosion control plan that is consistent with sound land management practices.

In the event of an unplanned closure, due to earthquake damage or other circumstances, the Applicant will meet with the CEC and local agencies and submit a detailed decommissioning closure plan in a timely manner.

No decommissioning plan will be submitted for a temporary shutdown.

3.11 SAFETY, AVAILABILITY, AND RELIABILITY

3.11.1 Safety Precautions and Emergency Systems

Safety precautions and emergency systems will be implemented as part of the design and construction of the plant to ensure safe and reliable operation of project facilities. Administrative controls will include classroom and hands-on training in operating and maintenance procedures and general safety items, and a well-planned maintenance program. These will work with the system design and monitoring features to enhance safety and reliability.

Safety, auxiliary, and emergency systems will consist of lighting, grounding, DC backup for controls, fire and hazardous materials safety systems, security systems, and natural gas, steam, and chemical safety systems. The plant will include its own utilities and services such as plant and instrument air and fire suppression.

3.11.1.1 Safety Precautions

3.11.1.1.1 Worker Safety

Midway will implement programs to assure that compliance with federal and state occupational safety and health program requirements is maintained. In addition to compliance with these programs, Midway will identify and implement plant specific programs that effectively assess potential hazards and mitigate them on a routine basis.

3.11.1.1.2 Hazardous Material Handling

Hazardous materials will be stored and used at Midway during both construction and operation. Design and construction of hazardous materials storage and dispensing systems will be in accordance with applicable codes, regulations, and standards. Hazardous materials storage areas will be curbed or diked to contain spills or leaks.

Potential hazards that are associated with hazardous materials will be further mitigated by implementing a hazards communication (HAZCOM) program. This program involves thorough training of employees on proper identification, handling, and emergency response to spills or accidental releases.

Emergency eyewashes and showers will be provided at appropriate locations. Appropriate Personal Protective Equipment (PPE) will be provided during both construction and operation of the facility.

3.11.1.1.2.1 Aqueous Ammonia System

Midway will minimize the potential for an occurrence of an accidental release of aqueous ammonia at the facility. Ammonia system design features will include containment berms, drainage of the unloading area into the containment area below the storage tank, emergency shutdown procedures, ammonia sensors, alarms, training, emergency response plans, and other appropriate safety procedures that will ensure safe operation of the aqueous ammonia system. Midway's Operations Manager will have overall responsibility for administering the Risk Management Plan (RMP), which will be requested under the California Accidental Release Prevention Program (CalARP). The important safety features implemented by CalPeak Power are discussed in this RMP document. These key features of the ammonia system at the Facility will include:

- Proactive facility inspection and maintenance program that will be administered by the Midway Operations Manager, and is designed to identify potential hazards before a release occurs.

- A below-grade containment area sized to contain the entire contents of one of the storage tanks (12,000 gallons) plus 10% overage, plus the maximum rainfall in 24 hours for the entire period of record.

- An unloading area that is sloped to the containment area so that any spills occurring during unloading operations will be fully contained.
- System design incorporating the latest building codes designed for Seismic Zone 4.
- Automatically actuated safety valves throughout the system.
- Pressure relief valves that vent back to the storage tank.
- An emergency shut-off valve located on the aqueous ammonia truck that can be activated by the delivery truck operator.
- Comprehensive training of employees, Facility operators, and contractors.
- Written standard operating procedures.

The facility will be operated in a manner that will protect all employees, contractors, and the public from exposure to hazardous chemicals. The facility will be designed to assure safety and minimize the potential for ammonia releases. The system will have several features (control systems, pressure gauges, flow control indicators, level indicators, alarms, etc.) that will assure that the system will operate safely. In addition, Midway will install ammonia sensors that will provide operators with an indication of a release at the site. Any release that triggers the high alarm on the sensors will trigger emergency response procedures. Midway will implement policies and procedures that will assure proper operation and safety of the aqueous ammonia system.

3.11.1.1.2.2 System Safety Features

Midway has included both passive and active mitigation features in the aqueous ammonia system design. Passive controls such as connected fill and vent lines will be in place to minimize potential vent leakage paths and ammonia releases without the assistance of automatic shutdown, or human intervention. Passive controls at the site will include a below-grade containment area surrounding the 12,000-gallon aqueous ammonia tank that will be capable of containing 110% capacity of the tank plus rainfall. In addition, the truck unloading pad will be sloped toward the below-grade containment area so that any spills of aqueous ammonia that occur during unloading operations will be directed to the containment area. A berm will also be installed around the vaporizer skid to contain any aqueous ammonia releases that occur in that area.

Several active mitigation elements are incorporated into the aqueous ammonia system design. The Facility will be operated and controlled remotely at a site located in San Diego. The Midway Operations Manager will be responsible for administering the RMP. Operators will be present at the remote control room at all times, and will continually monitor the aqueous ammonia system. The site itself will be equipped with ammonia sensors and the control system will be designed such that the aqueous ammonia system will automatically shut down in the event of a detection of aqueous ammonia above the sensors' set points. A Midway operator will be present at the site during aqueous ammonia unloading for added safety.

3.11.1.1.2.3 Process Safety Equipment

The aqueous ammonia system is designed so that each part of the system can be isolated in the event of an accident or other event. System valves are generally designed to fail closed so that the systems are isolated. This will minimize the amount of a release in the event of an accident at the facility involving the aqueous ammonia system.

The process equipment associated with the aqueous ammonia system is part of the facility's SCR emissions control system for NOx. NOx emissions are monitored at the control room to ensure proper system operation. High NOx emissions will trigger an alarm resulting in a personnel investigation to determine the cause. The remote operations center will also monitor the aqueous ammonia level in the tank. As described above, the Facility will be equipped with ammonia sensors that will alarm in the event of an ammonia release. The ammonia sensors will trigger an automatic shutdown of the ammonia system, isolating the various components of the aqueous ammonia system. Operating the Facility during an ammonia release would not exacerbate the effects of the release or present any additional hazard. Depending on the amount of release or due to potential emissions increases, the Facility may ultimately have to be shut down, but this would remain at the discretion of the operator.

Table 3.11-1 presents a summary of the devices that will be monitored by the operator and would indicate occurrence of a leak.

TABLE 3.11-1
SUMMARY OF MONITORED DEVICES

Device	Manufacturer	Detection Capabilities	Event(s) Triggering an Alarm
Ammonia Tank Level Indicator	Rochester float indicator Model A6342-12-144 with R6315-23 level transmitter	Output: 4-20 mA Conformity: ± 1.5%	Operator monitors ammonia tank level visually. Should the operator observe a rapid drop in level, or should the high level alarm be triggered, the operator will evaluate the event and shut down the ammonia system as necessary.
Ammonia Sensors (2)	Scott Bacharach, Model 4600 GasPlus	0 to 50, 150, 250, 500 ppm, with 1 to 100 ppm as an optional range value Sensor repeatability: ± 2% full scale Sensor linearity: ± 2% full scale Sensor life: 22-24 months average	Detection of a concentration of 50 ppm NH3

3.11.1.1.3 Security

A security fence will enclose the plant site. Access gates will be provided, as required. In addition to the perimeter security fence, the substation and transformer area will be fenced and provided with access gates. Security will be maintained on a 24-hour basis with either surveillance devices or personnel.

3.11.1.1.4 Public Health and Safety

The programs implemented to protect worker health and safety will also benefit public health and safety. Facility design will include controls and monitoring systems to minimize the potential for upset conditions that could result in public exposure to acutely hazardous materials. Potential public health impacts associated with operation of the project will be mitigated by development and implementation of an Emergency Response Plan (ERP), a HAZCOM Program, a Spill Prevention, Control, and Countermeasures (SPCC) Plan, safety programs, and employee training.

Midway will coordinate with local emergency responders, provide them with copies of the plant site ERP, conduct plant site tours to point out the location of hazardous materials and safety equipment, and encourage these providers to participate in annual emergency response drills.

3.11.1.2 Emergency Systems

3.11.1.2.1 Fire Protection Systems

Midway will have onsite fire protection systems and will be supported by local fire protection services. Section 3.4.11 includes a detailed description of the fire protection systems.

Portable and fixed fire suppression equipment and systems will be included in the project. Portable fire extinguishers will be located at strategic locations throughout the project site. The fixed fire protection system will also include a carbon dioxide fire suppression system.

Employees will be given fire safety training including instruction in fire prevention, the use of portable fire extinguishers and hose stations, and reporting fires to the local fire department. Employees will only suppress fires in their incipient stage. Fire drills will be conducted at least twice each year for each work area.

The Fresno County Fire Protection Division (FCFPD) Station #96**,** located at 101 McCabe, Mendota, with an estimated response time of 15-20 minutes, will provide primary fire protection, fire fighting, and emergency response services to the Midway site. The County Fire Marshall will perform a final fire safety inspection upon completion of construction and, thereafter, will conduct periodic fire safety inspections. Prior to startup the FCFPD will be requested to visit the project site to become familiar with the site and with project emergency response procedures.

3.11.1.2.2 Medical Services and Emergency Response

Midway will have an Emergency Response Plan (ERP). The ERP will address potential emergencies, including chemical releases, fires, and injuries, and will describe emergency response equipment and its location, evacuation routes, procedures for reporting to local emergency response agencies, responsibilities for emergency response, and other actions to be taken in the event of an emergency.

Employee response to an emergency will be limited to an immediate response to minimize the risk of escalation of the accident or injury. Employees will be trained to respond to fires, spills, earthquakes,

and injuries. A first-aid facility with adequate first-aid supplies and personnel qualified in first-aid treatment will be onsite.

3.11.2 Aviation Safety – Power Generation Stacks

The FAA Regulations Part 77 establishes standards for determining obstructions in navigation space and sets forth requirements for notification of proposed construction. These regulations require notification of any construction over 200 feet in height above ground level. The closest airfield with regularly scheduled commercial flights is Fresno, approximately 50 miles away. A small general aviation airport in Firebaugh (Firebaugh Airport) is also located approximately 24 miles from the site.

The stacks will be 50 feet above ground. A Notice of Construction or Alteration will not be required to be filed with the FAA. Local air uses, such as crop dusting operations, will be reviewed to determine the need for other aviation safety markings.

3.11.3 Transmission Line Safety and Nuisance

3.11.3.1 Transmission Line Description

The onsite interconnection facilities will consist of 115kV outdoor switchyard, line surge arresters, high voltage disconnect switches, high voltage circuit breakers, metering and relaying devices, foundations, ground grid, fencing, and all other components necessary to connect the output of the generators to the existing CalPeak Panoche tie-line. The transmission line will be approximately 300 feet long.

3.11.3.2 Audible Noise and Radio and TV Interference

An electric field is generated in the air surrounding a transmission line conductor when the transmission line is in operation. A corona discharge occurs at the conductor surface when the intensity of the electric field at the conductor surface exceeds the breakdown strength of the surrounding air. The electrical energy released from the conductors during this process is known as corona loss and is manifested as audible noise and radio/television interference.

Energized electric transmission lines can also generate audible noise by a process called corona discharge, most often perceived as a buzz or hum. This condition is usually worse when the conductors are wet. The EPRI has conducted several transmission line tests and studies which measured sound levels for several power line sizes with wet conductors *(Transmission Line Reference Book, 345 kV and Above,* EPRI, 1975,1982). The *Transmission Line Reference Book, 345 kV and Above* also notes that the noise produced by a conductor attenuates (decreases) by two to three dB for each doubling of the distance from the source.

Radio and TV interference, known as gap-type noise, is caused by a film on the surface of two hardware pieces that are in contact. The film acts as an insulator between the surfaces. This results in small electric arcs that produce noise and interference. This type of noise is not a problem in well-maintained transmission lines. Well-trained transmission line maintenance crews will maintain the

project transmission line; therefore, problems that might occur can be readily pinpointed and corrected. Further, it is unlikely that the project transmission line would have any effect on radio or television reception, particularly noting the distance to the nearest residential development.

There are many factors contributing to the pre-project ambient noise levels in the plant area. The project transmission line will be designed such that noise from the line will continue to be well below undesirable levels. Any noise or radio/TV interference complaints will be logged, investigated and, to the degree possible, mitigated.

3.11.3.3 Induced Currents and Hazardous/Nuisance Shocks

3.11.3.3.1 Introduction

Touching metallic objects near a transmission line can cause hazardous or nuisance shocks, if the line is not properly constructed. Since the electric fields of the transmission line are negligible above ground, and the line is built in conformance with California Public Utility Commission General Order 95 requirements and Title 8 CCR 2700 requirements, hazardous shocks are highly unlikely to occur as a result of the project construction and operation.

3.11.3.3.2 Electromagnetic Fields

EMF occurs independently of one another as electric and magnetic fields at the 60-Hz frequency used in transmission lines, and both are created by electric charges. Electric fields exist when these charges are not moving. Magnetic fields are created when the electric charges are moving. The magnitude of both electric and magnetic fields falls off rapidly as the distance from the source increases (proportional to the inverse of the square of distance). Refer to Section 3.6.4.3 for a discussion of the EMF from the facility.

California does not presently have a regulatory level for magnetic fields. However, the values estimated for the project are well below those established by states that do have limits. Other states have established regulations for magnetic fields strengths that have limits ranging from 150 milligauss to 250 milligauss at the edge of the ROW, depending on voltage. The CEC does not presently specify limits on magnetic fields for 115 kV transmission lines.

3.11.4 Facility Availability

This facility consists of four simple cycle gas turbines (two per SwiftPac Unit) and two generators that are specifically designed for peaking services. To support dispatch service, each turbine generator is commonly operated at 100 percent of base load, hence the facility will be operated to support dispatch service control in response to system demands for electricity.

The facility will be designed for an operating life of 30 years. Reliability and availability projections are based on this operating life. Operations and maintenance procedures will be consistent with industry standard practices to maintain the useful life status of the plant components.

The percent of time that the power plant is projected to be operated is defined as the "service factor." The service factor considers the amount of time that a unit is operating and generating power, whether at full or partial load. Midway will be licensed to operate up to 4,000 hours per year, as required by PG&E. This differs from the equivalent availability factor (EAF), which considers the projected percent of energy production capacity achievable.

The EAF may be defined as a weighted average of the percent of full energy production capacity achievable. The projected EAF for Midway is estimated to be approximately 95 to 99 percent.

The EAF, which is a weighted average of the percent of energy production capacity achievable, differs from the "availability of a unit," which is the percent of time that a unit is available for operation, whether at full load, partial load, or standby.

3.11.5 Equipment Reliability and Redundancy

Control systems and auxiliary equipment serving the power generating and transmission equipment will be selected for high reliability, where possible. Redundant equipment and systems will be installed to allow the plant to continue operating in the case of an auxiliary equipment failure where cost effective or necessary for safety. Section 3.4.2 and Table 3.4-1 of this application list the plant's main generating components and major auxiliary equipment.

Reliability will be further ensured through a regular inspection and maintenance program. Outages will normally occur during times when regional electric demand is low and surplus generating capacity is readily available.

To further enhance reliability, the project will participate in the manufactures leased engine program. The gas turbine engines are readily interchangeable, within 72 hours a new engine can be installed to replace one that has failed. An outage caused by an engine failure will be remedied within 72 hours through the use of a lease engine.

Gas turbine inspections and overhauls will dictate the length and frequency of major scheduled outages. Under expected operating conditions, the gas turbine combustors and hot sections will require a scheduled outage during the off-peak period. Depending on the length of the outage a lease engine may be installed while the Midway engine is under repair. . As dictated by operating hours, major gas turbine overhauls will require scheduled outages. Major hot section overhauls will be required at about 25,000 equivalent fired hours and major overhauls of the complete turbine and compressor will be required at about 50,000 hours.

3.11.5.1 Personnel and Administration

Along with the plant hardware, plant administrative and operational procedures will be designed to enhance reliability. Plant operations and maintenance activities will be carried out in accordance with documented procedures and by personnel trained in accordance with a documented training program. To ensure operational efficiency, selected spare parts for plant equipment and machinery will be maintained onsite. The training program will include classroom and hands-on training. Plant

operations and maintenance personnel will also participate in the commissioning, startup and test activities during the plant construction period.

3.11.5.2 Combustion Turbine

The power block consists of four separate combustion turbines and two generators operating in the simple-cycle mode. Each combustion turbine generator can provide 25 percent of the total plant output and operate independent of its opposing combustion turbines.

3.11.5.3 Control and Information System

Critical functions will have redundant sensors and controls. The control systems will be designed with a redundancy level such that critical controls and indications do not fail due to a single component failure.

Control systems in general, and especially the equipment protection systems, will be designed according to stringent reliability criteria.

Plant operation will be controlled from either a locally installed operator panel or a control room off-site in San Diego, California.

3.11.5.4 RO and Demineralized Water Systems

The RO and demineralized water systems will provide high-purity water to be used for NOx control and inlet fogging. A 75,000 gallon Raw Water Storage Tank is included in the design to hold water after it has been processed through the RO Unit, prior to it being processed by the deminerlizer.

The Midway project will utilize a mobile water treatment system to produce the required demineralized water. Demineralized water will be stored in two 75,000 gallon demineralized water storage tanks

3.11.6 Power Plant Performance Efficiency

CTG output and efficiency are greatly affected by atmospheric conditions and load variations. The CTG design incorporates an inlet fogging cooler and increased firing temperatures in order to achieve a high efficiency. Air-cooled fin-fan heat exchangers are used to maintain stack temperature at less than 750°F.

3.11.7 Fuel/Water Availability

3.11.7.1 Gas Supply

The Midway site will be fueled by natural gas supplied from PG&E's trunk line system immediately to the north of the property. The gas interconnection would be require approximately 650 feet of new line at the Midway site in order to tap into the existing PG&E system. The proposed pipeline would

have sufficient capacity to supply each FT8-3 SwiftPac CTG unit with approximately 625MMBtu/hr at a pressure of 500-600 psig.

3.11.7.2 Water Availability

The water will come from the adjacent and existing CalPeak Panoche Plant well (upper groundwater aquifer). The proposed annual water use of approximately 13.6 acre-feet per year will not exceed the safe perennial yield of groundwater in the Westside Sub-basin of the San Joaquin Valley Groundwater Basins.

3.11.8 Project Quality and Control

The general contractor, the design-engineer contractor, and all significant vendors, suppliers, and subcontractors for the project will be required to develop a project-specific quality program prior to beginning work. Each program will define quality goals, processes to measure events, and incentive programs. Quality standards will include safety and environmental compliance objectives.

3.11.8.1 Quality Assurance

The quality assurance manual will define the quality management system and processes, management responsibility and organization, project execution, and measurement methods. Other elements of the quality assurance program will include a procedure manual, standards, job quality analysis, quality tours, preventive action planning, internal and external assessment, training, and trending.

Key quality indicators will be tracked and include surveillance, deficiencies, non-conformances, weld reject rate, audit results, quality incidents, and rework. The quality indicators will be metrically measured and reported.

3.11.8.2 Quality Control Records

Quality records will be maintained during the detailed design phase of the project, during the construction phase and during plant commissioning. Quality records include written documentation that procedures and standards are followed including inspection and testing reports, audit checklists, audit reports, and quality incident investigation reports.

3.12 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The applicable LORS for each engineering discipline are included as part of Appendices A through H.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Efficiency** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Sec. 1.2 Pg. 1-2 to 1-4 Sec. 2.2 Pg 2-1 to 2-2 Sec. 3.2, 3.3 Pg 3-2 to 3-4 Sec. 3.4.5.1, 3.4.7.5, 3.4.12, 3.8.1, 3.9.2.5, 3.9.3, 3.11.1 Table 3.11.1 Fig. 3.4-3, 3.4-3A. 3.4-3B, 3.4-3C		
Appendix B (i) (4) (A)	Heat and mass balance diagrams for design conditions for each mode of operation.	Fig. 3.4-3, 3.4-3A. 3.4-3B, 3.4-3C Appendix A		
Appendix B (i) (4) (B)	Annual fuel consumption in BTUs for each mode of operation.	Sec. 3.4.8 Pg, 3-13 Sec. 3.11.7.1 Pg. 3-18 Sec. 1.2.3 Pg. 1-3 Sec. 2.3 Pg. 2-2		
Appendix B (i) (4) (C)	Annual net electrical energy produced in MWh for each mode of operation.	Sec. 1.1, 1.2.2 Pg. 1-1, 1-3 Sec. 3.1, 3.2, 3.4.1 Pg. 3-4 Sec. 3.4.5 Pg.3-8		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Efficiency** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (i) (4) (D)	Number of hours the plant will be operated in each mode of operation in each year.	Sec. 1.1 Pg. 1-1 Sec 3.1 Pg 3-2 Sec. 3.4.9 Pg 3-14 Sec. 3.9.2.1 Pg 3-44 Sec. 3.11 Pg. 3-56 Table 3.4-2, 3-15		
Appendix B (i) (4) (E)	If the project will be a cogeneration facility, calculations showing compliance with applicable efficiency and operating standards.	N/A		
Appendix B (i) (4) (F)	A discussion of alternative generating technologies available for the project, including the projected efficiency of each, and an explanation why the chosen equipment was selected over these alternatives.	Sec. 4.3, 4.4 Pg. 4-1, 4-2		
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	N/A		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	N/A		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Efficiency** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	N/A		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	5.9.4 Pg. 5.9-18		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	N/A		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Facility Design** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (14) (B) (iii)	Water inundation zones, such as the 100-year flood plain and tsunami run-up zones.	See Water Resources		
Appendix B (g) (14) (D) (i)	Precipitation and storm runoff patterns; and	See Water Resources		
Appendix B (g) (14) (D) (ii)	Drainage facilities and design criteria.	See Water Resources		
Appendix B (g) (14) (E) (ii)	The effects of construction activities and plant operation on water quality; and	See Water Resources		
Appendix B (g) (14) (iii)	The effects of the project on the 100-year flood plain or other water inundation zones.	See Water Resources		
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	Table 5.3.3 Appendices C to H Sec. 3.12		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Sec. 5.3-4 Pg. 5.3-17		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Facility Design** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	Sec. 3.4.1, 3.5 Pg. 3-28		
Appendix B (h) (3)	The name, title, telephones number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Sec. 5.3-4		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Sec. 5.3.3		
Appendix B (i) (1) (A)	A description of the site conditions and investigations or studies conducted to determine the site conditions used as the basis for developing design criteria. The descriptions shall include, but not be limited to, seismic and other geologic hazards, adverse conditions that could affect the project's foundation, adverse meteorological and climatic conditions, and flooding hazards, if applicable.	Sec. 5.3.1 App. L Sec. 3.3 Pg. 3-2 to 3-4 Sec. 5.5.4.2.2 Pg. 5.5-14		
Appendix B (i) (1) (B)	A discussion of any measures proposed to improve adverse site conditions.	Sec. 3.5.9 Pg3-30		
Appendix B (i) (1) (C)	A description of the proposed foundation types, design criteria (including derivation), analytical techniques, assumptions, loading conditions, and loading combinations to be used in the design of facility structures and major mechanical and electrical equipment.	Sec. 3.6.2.7 Pg 3-32 Sec. 3.5 Appe. C-H		
Appendix B (i) (1) (D)	For each of the following facilities and/or systems, provide a description including drawings, dimensions, surface-area requirements, typical operating data, and performance and design criteria for protection from impacts due to adverse site conditions:	See Below		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Facility Design** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (i) (1) (D) (i)	The power generation system;	Sec. 1.1,1.2.2,3.1, 3.4.1, 3.4.5.1 Fig. 3.4-1, 3.4-2 Appendix E		
Appendix B (i) (1) (D) (ii)	The heat dissipation system;	Sec. 3.4.5, 3.4.9, 3.4.6, 1.1		
Appendix B (i) (1) (D) (iii)	The cooling water supply system, and, where applicable, pre-plant treatment procedures;	Sec. 3.4.9, 5.5.2, 5.5.4.1, 1.2.4 Fig. 3.4-5 App. B		
Appendix B (i) (1) (D) (iv)	The atmospheric emission control system;	Sec. 3.4.5.1.2, 3.4.5.2, 5.2, 1.2.2 App. I		
Appendix B (i) (1) (D) (v)	The waste disposal system and on-site disposal sites;	Sec. 5.14, 5.15, 3.4.9.4 3.4.10, 1.2.4		
Appendix B (i) (1) (D) (vii)	The geothermal resource conveyance and re-injection lines (if applicable);	N/A		
Appendix B (i) (1) (D) (viii)	Switchyards/transformer systems; and	Sec. 3.4.7 Pg. 3-9 to 3-13 Fig. 3.4-4A&B Sec. 3.6.1, 3.6.2, 3.6.3 Pgs 3-31 to 37 Sec. 1.2.5 Fig. 3.6-1 App. F		
Appendix B (i) (1) (D) (ix)	Other significant facilities, structures, or system components proposed by the applicant.	N/A		

Adequacy Issue: Adequate **x** Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Project Overview**

Project: Midway

Technical Staff: ____

Docket: ____

Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Cal. Code Regs., tit. 20, § 1704, (a) (3) (A)	Descriptions of all significant assumptions, methodologies, and computational methods used in arriving at conclusions in the document.	Various Sections		
Cal. Code Regs., tit. 20, § 1704, (a) (3) (B)	Descriptions, including methodologies and findings, of all major studies or research efforts undertaken and relied upon to provide information for the document; and a description of ongoing research of significance to the project (including expected completion dates; and	Various Sections		
Cal. Code Regs., tit. 20, § 1704, (a) (3) (C)	A list of all literature relied upon or referenced in the documents, along with brief discussions of the relevance of each such reference	Various Sections		
Cal. Code Regs., tit. 20, § 1704, (a) (4)	Each principal subject area covered in a notice or application shall be set forth in a separate chapter or section, each of which shall identify the person or persons responsible for its preparation.	Sec. 7.0 Pg. 7-1		
Appendix B (a) (1) (A)	A general description of the proposed site and related facilities, including the location of the site or transmission routes, the type, size and capacity of the generating or transmission facilities, fuel characteristics, fuel supply, water supply, pollution control systems, and other general characteristics.	Sec. 3.0 Pg 3-1 to 3-58		
Appendix B (a) (1) (B)	Identification of the location of the proposed site and related facilities by section, township, range, county and assessors parcel numbers.	Sec. 1.2.1 Pg. 1-2 Sec. 3.2 Pg. 3-2		
Appendix B (a) (1) (C)	A description of and maps depicting the region, the vicinity, and the site and its immediate surroundings.	Sec. 3.2, 3.3 Pg 3-2 to 3-4 Sec. 3.2-1, 3.3-1 Sec. 1.2.2 Pg. 1-2 to 1-3 Fig. 1.2-1		

Adequacy Issue: Adequate **x** Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Project Overview**

Project: Midway

Technical Staff: ____

Docket: ____

Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (a) (1) (D)	A full-page color photographic reproduction depicting the visual appearance of the site prior to construction, and a full-page color simulation or artist's rendering of the site and all project components at the site, after construction.	Cover Sec. 5.13-13, 5.13-14, 5.13-15		
Appendix B (a) (1) (E)	In an appendix to the application, a list of current assessor's parcel numbers and owners' names and addresses for all parcels within 500 feet of the proposed transmission line and other linear facilities, and within 1000 feet of the proposed powerplant and related facilities.			
Appendix B (a) (2)	Project Schedule: Proposed dates of initiation and completion of construction, initial start-up, and full-scale operation of the proposed facilities.	Sec. 3.8, 3.8.1 Table 3.8-1 Pg. 3-40		
Appendix B (a) (3) (A)	A list of all owners and operators of the site(s), the power plant facilities, and, if applicable, thermal host, the geothermal leasehold, the geothermal resource conveyance lines, and the geothermal re-injection system, and a description of their legal interest in these facilities.	Sec. 5.9-3 ,Table 5.9-1		
Appendix B (a) (3) (B)	A list of all owners and operators of the proposed electric transmission facilities.	Sec. 1.4. & 3.6		
Appendix B (a) (3) (C)	A description of the legal relationship between the applicant and each of the persons or entities specified in subsections (a)(3)(A) and (B).	Sec. 2.0		
Appendix B (b) (1) (A)	Maps at a scale of 1:24,000 (1" = 2000'), along with an identification of the dedicated leaseholds by section, township, range, county, and county assessor's parcel number, showing the proposed final locations and layout of the power plant and all related facilities;	Figure 3.2-1		

Adequacy Issue: Adequate **x** Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Project Overview**

Project: Midway

Technical Staff: ____

Docket: ____

Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (b) (1) (B)	Scale plan and elevation drawings depicting the relative size and location of the power plant and all related facilities;	Figures 3.4-1, 3.4-2		
Appendix B (b) (1) (C)	A detailed description of the design, construction and operation of the facilities, specifically including the power generation, cooling, water supply and treatment, waste handling and control, pollution control, fuel handling, and safety, emergency and auxiliary systems, and fuel types and fuel use scenarios; and	Sec. 3.0, Pages 3.1-3-58		
Appendix B (b) (2) (A)	Maps at a scale of 1:24,000 of each proposed transmission line route, showing the settled areas, parks, recreational areas, scenic areas, and existing transmission lines within one mile of the proposed route(s).	Figures. 3.2-1, 3.4-1		
Appendix B (b) (2) (B)	A full-page color photographic reproduction depicting a representative above ground section of the transmission line route prior to construction and a full-page color photographic simulation of that section of the transmission line route after construction.	Figure 5.13-13		
Appendix B (c)	In a section entitled, “Demand Conformance” provide a discussion explaining how the proposed project conforms with the requirements of Public Resources Code § 25524 or Public Resources Code § 25540.6(a)(5). If the provisions of Public Resources Code § 25523.5 are applicable, explain how the project conforms with the requirements of this section. Additional data adequacy requirements may be contained in the Electricity Report applicable pursuant to Title 20, California Code of Regulations, § 1720.5.	N/A		Not Applicable

Adequacy Issue: Adequate **x** Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Project Overview**

Project: Midway

Technical Staff: ____

Docket: ____

Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (d) (1)	A copy of any study or analysis required by the terms of the Commission's Final Decision on the NOI, and a brief summary of the results of the study or analysis.	N/A		
Appendix B (d) (2)	Updates of any significant information which has changed since the Commission's Final Decision on the NOI.	N/A		
Appendix B (e) (1)	A discussion of how facility closure will be accomplished in the event of premature or unexpected cessation of operations.	Sec. 3.10 Pg. 3-48 to 3-49		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Reliability** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Sec. 1.2 Pg. 1-2 to 1-4 Sec. 2.2 Pg 2-1 to 2-2 Sec. 3.2, 3.3 Pg 3-2 to 3-4 Sec. 3.4.5.1, 3.4.7.5, 3.4.12, 3.8.1, 3.9.2.5, 3.9.3, 3.11.1 Table 3.11.1 Fig. 3.4-3, 3.4-3A. 3.4-3B, 3.4-3C		
Appendix B (i) (3) (A)	A discussion of the sources and availability of the fuel or fuels to be used over the estimated service life of the facilities.	Sec. 1.2.3, 3.4.8, 3.11.7.1, 3.4.1		
Appendix B (i) (3) (B)	A discussion of the anticipated service life and degree of reliability expected to be achieved by the proposed facilities based on a consideration of:			
Appendix B (i) (3) (B) (i)	Expected annual and lifetime capacity factors;	Sec. 1.1. 3.4.1, 3.11.4, 3.9.2.1 3.4.5.2		
Appendix B (i) (3) (B) (ii)	The demonstrated or anticipated feasibility of the technologies, systems, components, and measures proposed to be employed in the facilities, including the power generation system, the heat dissipation system, the water supply system, the reinjection system, the atmospheric emission control system, resource conveyance lines, and the waste disposal system;	Sec. 1.1, 1.2.2, 1.2.4, 3.1, 3.4.1, 3.4.5.1, 3.4.9, 3.5.4, 3.7, 3.11.7.1, 3.11.7.2		
Appendix B (i) (3) (B) (iii)	Geologic and flood hazards, meteorologic conditions and climatic extremes, and cooling water availability;	Sec. 3.3, 3.4.9, 3.11.7.2, 3.5.8, 3.4.14.4		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Reliability** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (i) (3) (B) (iv)	Special design features adopted by the applicant or resource supplier to ensure power plant reliability; and	3.4..7.4, 3.4.7.5, 3.4.7.6, 3.9.2.5, 3.4.14.6, 3.5.4, 3.5.8, 3.9.2.1, 3.9.2.1.1, 3.9.2.5.1, 3.11.5, 3.11.5.1, 3.11.5.2, 3.11.5.3, 3.11.5.4, 3.11.8		
Appendix B (i) (3) (B) (v)	The expected power plant maturation period.	3.10.2, 3.11.4		
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	N/A		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	N/A		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	N/A		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Table 5.9-4		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Reliability** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	N/A		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Transmission System Eng.** Project: Midway Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (i) (2) (A)	A discussion of the need for the additional electric transmission lines, substations, or other equipment, the basis for selecting principal points of junction with the existing electric transmission system, and the capacity and voltage levels of the proposed lines, along with the basis for selection of the capacity and voltage levels.	2.0, 2.1, 2.1, 3.4.7, (pg 3-9), 3.6 (pg 3-31)		
Appendix B (i) (2) (B)	A discussion of the extent to which the proposed electric transmission facilities have been designed, planned, and routed to meet the transmission requirements created by additional generating facilities planned by the applicant or any other entity.	3.6.3, 3.6.3.1, 3.6.3.2		
Appendix B (b) (2) (C)	A detailed description of the design, construction, and operation of any electric transmission facilities, such as power lines, substations, switchyards, or other transmission equipment, which will be constructed or modified to transmit electrical power from the proposed power plant to the load centers to be served by the facility. Such description shall include the width of rights of way and the physical and electrical characteristics of electrical transmission facilities such as towers, conductors, and insulators. This description shall include power load flow diagrams which demonstrate conformance or nonconformance with utility reliability and planning criteria at the time the facility is expected to be placed in operation and five years thereafter; and	3.6.2, 3.6.2.1, 3.6.2.2, 3.6.2.3, 3.6.2.4, 3.6.2.5, 3.6.2.6, 3.6.2.7, 3.6.2.8		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Transmission System Eng.** Project: Midway Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (b) (2) (D)	A description of how the route and additional transmission facilities were selected, and the consideration given to engineering constraints, environmental impacts, resource conveyance constraints, and electric transmission constraints.	3.6.3, 3.11.3		
Appendix B (g) (18) (A)	The locations and a description of the existing switchyards and overhead and underground transmission lines that would be affected by the proposed project.	3.6.3.2		
Appendix B (g) (18) (B)	An estimate of the existing electric and magnetic fields from the facilities listed in (A) above and the future electric and magnetic fields that would be created by the proposed project, calculated at the property boundary of the site and at the edge of the rights of way for any transmission line. Also provide an estimate of the radio and television interference that could result from the project.	3.6.3.3.1, 3.6.3.3.2, 3.6.3.3.3, 3.11.3, 3.11.3.2, 3.11.3.3		
Appendix B (g) (18) (C)	Specific measures proposed to mitigate identified impacts, including a description of measures proposed to eliminate or reduce radio and television interference, and all measures taken to reduce electric and magnetic field levels.	3.11.3.2, 3.11.3.2		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

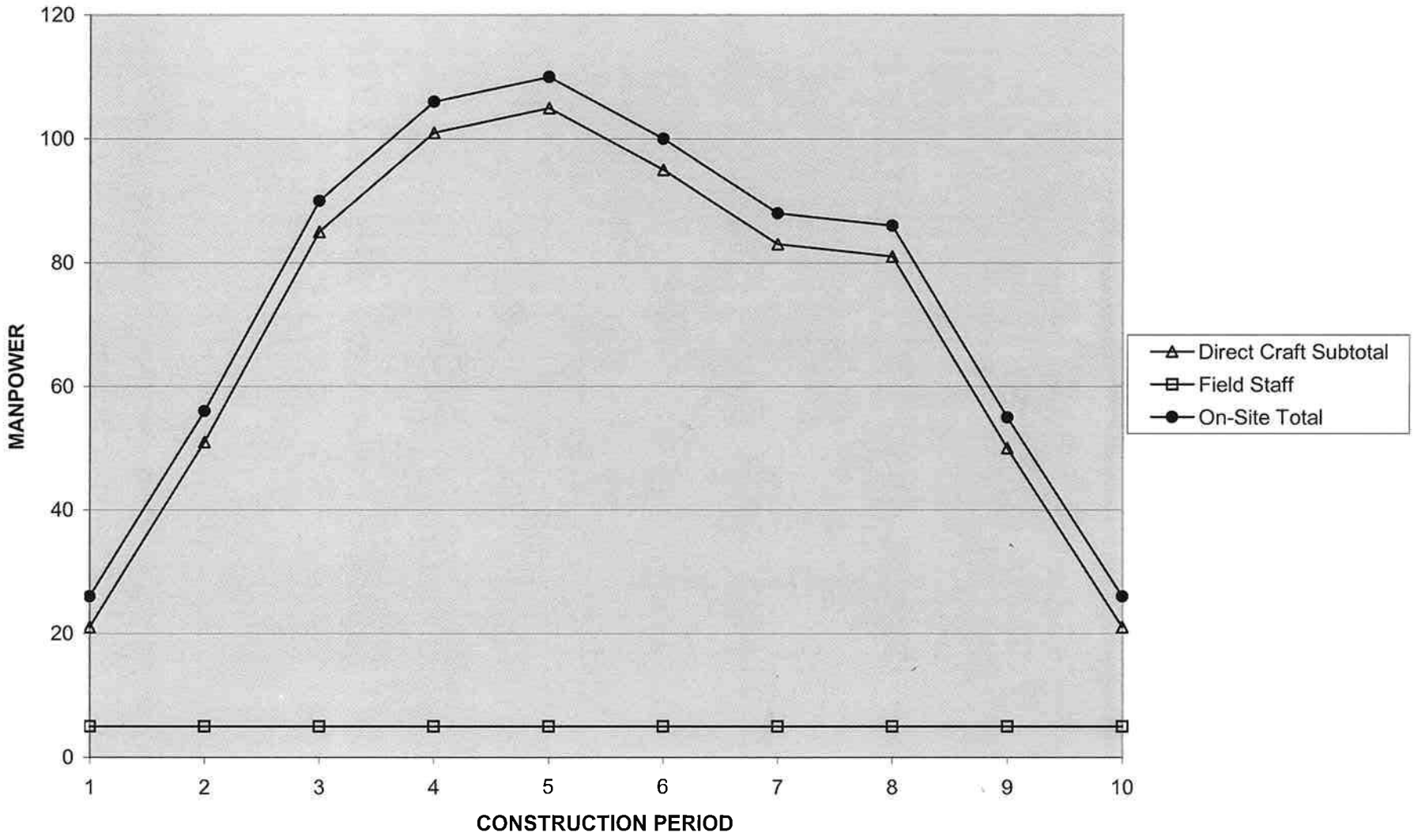
Revision No. ____ Date ____

Technical Area: **Transmission System Eng.** Project: Midway Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	3.12, Appendix F		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	3.6.3.2		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	3.6.3.2		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	3.6.3.2		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	3.6.3.2		

ATTACHMENT A: PROJECT ENGINEERING AND CONSTRUCTION MANPOWER BY MONTH



ATTACHMENT B:
PROJECT MANPOWER BY CRAFT
CONSTRUCTION PERIOD
Manpower per Month

Resource Description	1	2	3	4	5	6	7	8	9	10	Man- Months
Carpenters	4	10	10	12	10	2					48
Cement Masons	5	7	10	7							29
Electricians		6	6	12	15	15	15	15	5	2	91
Insulation Workers					10	10	10	10	10	4	54
Ironworkers (rebar structural)	4	8	8	8	8	8					44
Laborers	5	5	16	16	16	10	10	10	6	6	100
Millwrights			6	8	8	8	6	4			40
Mech Equip Erection		6	16	10	10	10	10	10	10	2	84
Operating Engineers	2	2	4	4	4	4	4	4	2		30
Painters			2	6	6	6	6	6			32
Pipefitters		6	6	16	16	20	20	20	16	6	126
Teamsters	1	1	1	2	2	2	2	2	1	1	15
Direct Craft Subtotal	21	51	85	101	105	95	83	81	50	21	693
Field Staff	5	5	5	5	5	5	5	5	5	5	50
On-Site Total	26	56	90	106	110	100	88	86	55	26	743

SECTION 4 ALTERNATIVES

Title 20 California Code of Regulations requires an applicant to discuss "the range of reasonable alternatives to the project, including the no project alternative…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, and an evaluation of the comparative merits of the alternatives."

4.1 NO PROJECT ALTERNATIVE

If Midway were not constructed, the goals and objectives of the developer would not be met. Additionally, the direction to PG&E by the CPUC to "plan for and procure the resources necessary to provide reliable service" would not be met. PG&E would not be able to meet the capacity addition amounts found reasonable by the CPUC, and would most likely be forced to interrupt anticipated system demand.

4.2 ALTERNATIVE SITE LOCATIONS

The Midway site is ideal as it is located directly adjacent to the existing CalPeak Panoche plant, which allows for contiguous, compatible land uses and could be developed with minimal impacts. Additionally, the site is currently utilized as a storage-yard for the surrounding power generating facilities and has been previously disturbed and graded. There is no existing vegetation on-site. The adjacent gas pipeline and electrical substation minimizes the potential impacts from the linear facilities required for the Midway plant. The project site is surrounded by extensive agricultural lands. The project could be located on any number of alternative parcels in the vicinity of the substation and gas pipeline. However, project development on an alternative site would require the destruction of existing agricultural and/or potential biological resources habitat. Thus, use of the proposed site allows for fewer impacts to biological and agricultural resources.

The 128-acre parcel, which includes the 5.6-acre Midway site, is currently under a California Land Conservation Act (Williamson Act) contract. The project will require cancellation for the 5.6-acre subject site. The Williamson Act is meant to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses. While this site is currently zoned for agricultural uses, as discussed, it has been previously graded and utilized as a storage-yard for approximately the last five years. Thus, the project would not be converting land which is in agricultural production to a non-agricultural use.

The proposed site suits the requirements of PG&E and its customers. A discussion of alternative sites considered is provided in Section 2.0.

4.3 ALTERNATE PROJECT CONFIGURATIONS

Midway consists of two (2) FT8-3 SwiftPac CTG units. Each SwiftPac Unit has two (2) FT8-3 combustion gas turbines that drive opposite ends of a single electric generator. The configuration of the facility complies with Best Available Control Technology (BACT) and requires small quantities of water for operations as compared to other gas-fired power plant configurations. This minimizes impacts to air quality and water resources. Additionally, the power purchase agreement between Midway and PG&E

requires that Midway construct these turbines in a simple-cycle mode. Other generation configurations would not meet the goals and objectives of Midway.

4.4 ALTERNATE TECHNOLOGIES

As directed by the CPUC in their Resource Adequacy proceedings, PG&E was required to pursue all reasonable alternative technologies such as wind, solar, biomass, and demand reduction. PG&E is required by the CPUC to demonstrate that they have developed these alternative technologies to the fullest extent reasonably possible before they can pursue conventional generation technologies. Coal and nuclear are considered conventional technologies but due to their high initial cost are not economically feasible for use in meeting peak load demands.

The only technology that could support the fast start capability requirements provided by PG&E is a gas turbine power plant. Therefore, alternatives such as wind, solar, biomass, etc. will not satisfy project goals and objectives.

4.5 ALTERNATE LINEAR ROUTES

All of the anticipated linear facilities for electrical transmission, gas and water are within the property boundaries of either the project, the PG&E substation or the PG&E pipeline easement immediately adjacent to the PG&E substation. Alternate linear routes would not be practical and would have an increased potential for environmental impacts.

4.6 WATER SUPPLY

The following alternative water supplies were initially considered for Midway.

- Surface Water
- State Water Project (SWP) Water
- Federal CVP Water
- Reclaimed Wastewater
- Ocean Water
- Water from Baker Farms Irrigation Distribution System
- Well at proposed PEC
- Future Baker Farms Well
- Existing CalPeak Panoche Well (Upper aquifer groundwater)
- Irrigation Return Flow – Agricultural backwash pond.
- New Deep Well at Project Site (Lower aquifer groundwater)

Based on a cursory review, the following alternatives were deemed impractical or not possible and were dropped from consideration:

- **Surface Water -** Sources of surface water are not located in sufficient proximity to the Midway site for consideration as a source of water supply.

- **State Water Project (SWP) Water.** The California Aqueduct, which is the State share of the State/Federal Joint Use Facilities, is located approximately two miles east of the Midway site. Use of this potable water from the California Aqueduct for project water supply is inconsistent with the State Water Policy. In addition, the Midway site does not lie within the State permitted place of use for SWP water.

- **Federal CVP Water.** Though structurally the same facility as the California Aqueduct, the CVP shares of the joint use canal facilities is named the San Luis Canal. The potable water available from the California Aqueduct for project water supply was determined to be inconsistent with the State Water Policy. The Midway site lies within Westlands Water District and within the permitted place of use for CVP water. However, in approximately 2002, based on concerns over increasing demands within the District, the Westlands Water District Board of Directors made a determination that no new non-agricultural service connections would be served if average annual water use would exceed 5 acre-feet.

- **Reclaimed Wastewater.** Reclaimed wastewater is wastewater treatment plant effluent that has received tertiary treatment. The nearest source of reclaimed water is in Firebaugh, which is located approximately 25 miles from the Midway site. This source is not available in the vicinity of the Midway site.

- **Ocean Water** – This source is located at too great a distance from the Midway site (more than 50 miles) to be considered economically feasible.

- **Water from Baker Farms Irrigation Distribution System** – This water source does not satisfy California Water Policy because the only allowable use of the water is agriculture.

- **Well at proposed PEC site** – The proposed PEC would be located southwest of the Midway site just west of the PG&E Substation and the CalPeak Panoche site. PEC proposes to drill an approximately 1,500-foot well to access the lower aquifer. This source, because the proposed PEC project has not yet been approved, cannot be guaranteed.

- **Future Baker Farms Well** – Baker Farms, LLC, farms approximately 7,000 acres in the region and has plans to drill a new deep water well. According to Baker, it is not guaranteed that the well will be competed and/or that the well water will be available in time for initial Midway operations.

The remaining alternatives are deemed to be feasible for use at Midway (i.e., sufficient volume available, satisfy California Water Policy, sufficient quality, safe and reliable). The relative feasibility of each alternative is based on economics, permit requirements, availability of the

water in the near and long term. Each of the remaining alternatives is discussed below. Additional discussions of these alternative water options is provided in Section 5.5, Water Resources.

4.6.1 Existing CalPeak Panoche Plant Well (Upper Aquifer Groundwater)

One viable water supply option for the Midway project is well water from the neighboring project, CalPeak Panoche, which utilizes an existing well that extracts water from the upper aquifer (200 to 500 feet below ground surface [bgs]). This is the semi-confined uppermost aquifer beneath the project site. Specifically, the CalPeak Panoche well is approximately 400 feet deep, produces approximately 100 gpm, and the concentration of TDS in water for this well is approximately 3,400 mg/L. Midway can utilize this water but it will require use of a reverse osmosis and demineralizing processes.

Relative advantages and disadvantages of this water supply source over the other water supply sources include the following:

- The CalPeak well is an existing well with adequate production capacity for the Midway project. There is no need to apply for additional permits for the use of this water.
- Construction costs are low as only an approximately 1,200-foot long, 3-inch diameter pipeline would be required to deliver the water from the CalPeak Panoche plant site to the Midway site.
- Treatment will be more costly due to the high TDS (3,400 mg/L).
- The high TDS concentration water will result in residue from the evaporation of RO wastewater.

4.6.2 Irrigation Return Flow – Agricultural Backwash Pond

A second viable alternative for supplying water to the project would be agricultural process wastewater. The Baker Farming Company, LLC which farms approximately 7,000 acres of land in the area produces sufficient quantities of filter backwash water from their irrigation practices to supply the Midway site with water required for operation. The Bakers purchase or obtain water from numerous sources for their farming operations. These include groundwater (wells) and surface water, although surface water is predominately used. Surface water, irrespective of the source, is delivered to the Baker water delivery system via the California Aqueduct. Because most of the water is initially delivered to the Bakers via an open canal, before water can be used for agricultural purposes, it must be filtered to remove entrained suspended solids (algae, garbage, dirt, etc.). Filtration occurs though a series of sand filters, placed strategically within the water delivery system. The filtered water is then distributed to the agricultural fields.

Approximately 24,000 acre-feet of water is utilized in the Baker Farms operations annually. Due to the large volumes of water pumped, it is necessary to clean the sand filters every 3 to 6 hours, depending on the season. This is accomplished by backwashing the sand filters. Each backwash flush cycle takes 2 minutes with a water flow rate of 300 gallons per minute per filter. There are approximately 162 filters in the land surrounding the Midway site, which generate 97,000 gallons of wastewater each filter cleaning

cycle. The filter wastewater contains suspended solids removed from the irrigation water. The Baker Farms operations produce 160 acre-feet of wastewater on an annual basis. The peak season for this water flow is during the irrigation period, April to September.

The wastewater is sent to a number of local settling ponds where the suspended solids precipitate out of solution. Historically, the wastewater was disposed of through evaporation and percolation. To efficiently dispose of wastewater, Baker Farming Company, LLC is connecting a number of small wastewater settling ponds to a large, centrally located evaporation pond. The network of pipes that Baker Farms will install to tie the small ponds to the large pond will be, at the closest distance, 1.5 miles away from the Midway site running along an existing dirt road used and maintained by Baker Farms (refer to Figure 4.6-1). This 8.0-acre pond can store approximately 80 acre-feet of water.

Presently, the system tying the small ponds to the large pond is not yet complete; however work is in progress to complete pond connection. Once the small ponds are tied to the large pond the water supply would be more reliable and it could be considered as a feasible water source for Midway.

Relative advantages and disadvantages of this potential water supply solution include the following:

- Pump station and filter would be located at the Baker's backwash pond approximately 1.5 miles away from the Midway site, making operation and maintenance more difficult.
- Construction of a pump station, filters and an approximately 1.5-mile, 4-inch diameter pipeline is required to deliver the water to the Midway site.
- Water treatment will be less costly than using the CalPeak well water due to the lower expected TDS (200 mg/L).
- Less water treatment residue would be generated relative to the CalPeak Panoche well water option due to the lower TDS concentration.

4.6.3 New Deep Well at Project Site (Lower Aquifer Groundwater)

The lower aquifer which sits beneath the Midway site is located at approximately 1,100 to 1,500 feet bgs. The water in this aquifer has a TDS content of approximately 1,200 mg/L (refer to Section 5.5, Table 5.5-6, and Appendix M). A third viable water source for the Midway project is to drill a new 1,500-foot well to access this aquifer.

Relative advantages and disadvantages of this potential solution over the other water supply sources include the following:

- Costs to drill and develop a new deep well.
- Well would be located adjacent to the Midway facility which would limit the amount of piping required.

- Water treatment will be less costly than for the CalPeak Panoche well water due to the lower TDS (1,200 mg/L vs. 3,400 mg/L), but more costly than the agricultural filter backwash water.

- Less residue would be produced from the evaporation of RO wastewater compared to the CalPeak Panoche well option, and more residue would be produced than the agricultural filter backwash water option.

4.7 RO WASTEWATER DISCHARGE OPTIONS

The wastewater solution is dependent upon the water supply source. The following is a summary of the wastewater disposal alternatives considered for Midway.

- On-site evaporation/infiltration pond
- On-site evaporation pond
- Discharge to irrigation system distribution system
- Discharge to irrigation system backwash pond
- Hauling to offsite treatment facility

Based on a cursory review, continuous hauling to off-site treatment facility alternative was deemed unacceptable and was dropped from consideration because the volume to be hauled would be too large to warrant hauling to an off-site facility.

The remaining alternatives may be feasible for use at Midway. The relative feasibility of each alternative is based on economics, permit requirements, the water options available (see Section 4.6) and other impacts including transportation, biological, energy, health & safety, etc. Each of the remaining alternatives is discussed below and additional discussion is provided in Section 5.5, Water Resources.

4.7.1 On-Site Evaporation/Infiltration Pond

This system would consist of an on-site unlined surface impoundment for disposal of wastewater via atmospheric drying and infiltration, resulting in residue that must be disposed of in a landfill system. This alternative is not suitable when the upper aquifer is used as the source water for Midway. The high concentration (13,600 mg/L) of TDS in the wastewater would not be allowed to infiltrate into the upper aquifer. If the agricultural backwash pond is utilized as the source of water, this alternative would be acceptable from a regulatory standpoint because the concentration of TDS in wastewater resulting from agricultural backwash water is expected to be less than 2,000 mg/L which would not impair the groundwater.

This alternative comprises an unlined pond, approximately 4,000 square feet of surface area, and a 4-inch PVC gravity pipe from the RO treatment facility to the pond. An access road would be provided on-site to allow for pond maintenance.

Relative advantages and disadvantages of this alternative over the other wastewater disposal alternatives include the following:

- Can accommodate discharge from up to 4,000 hours of operation
- Small (60-foot square) area required
- Relatively easy to operate – gravity drain to pond.
- Limited to use with high quality (agricultural backwash) water supply.

As stated, this alternative is not suitable for the existing CalPeak Panoche well water alternative. If Midway uses the high quality agricultural backwash water supply this alternative could be implemented.

4.7.2 On-Site Evaporation Pond

An evaporation pond would consist of a lined surface impoundment for disposal of wastewater via atmospheric drying, resulting in a residue that must be disposed of in a landfill system. This alternative is considered only when an evaporation/filtration pond is not feasible due to water quality issues. When groundwater is the water quality source, filtration is not acceptable and evaporation ponds are considered.

This alternative would consist of a 25,000 square foot pond lined with a polyethylene liner and a 4-inch PVC gravity pipe from the RO facility to the pond. An access road would be provided on-site to allow for pond maintenance.

Relative advantages and disadvantages of this alternative over the other wastewater disposal alternatives include the following:

- Can accommodate discharge from 400 operating hours on the Midway site
- Approximately 25,000 square-feet required for 400 operating hours
- Relatively easy to operate - gravity drain to pond
- Can be used with any water supply

While this method of wastewater disposal may create some limitations related to the amount of hours the plant could operate, water needs could still be satisfied. Specifically, in the rare instance that the plant were to operate for a high number of hours (more than 400) and the RO pond created a water system limitation, the RO unit would be shut down and the demineralization units would run on raw water. Though this approach would significantly increase demineralization treatment costs, it would eliminate the RO wastewater flow.

4.7.3 Discharge to Irrigation System Distribution System

Discharge of wastewater to irrigation distribution system for discharge to crops. Wastewater is blended with CVP water prior to discharge to crops. This alternative is technically feasible regardless of the water supply alternative and is viable for annual operation as high as 4,000 hours.

This alternative would include a 25 gpm pump station to pressurize the wastewater to match the pressure in the Baker Farms distribution system and a one-mile long, 2-inch PVC pipe to convey the wastewater to the 48-inch Baker Farms distribution main.

Relative advantages and disadvantages of this alternative over the other wastewater disposal alternatives include the following:

- Can accommodate discharges up to 4,000 operating hours
- Small area of Midway site required
- No residue to dispose
- Higher electricity costs
- Potential impacts due to construction of 1-mile of piping
- Can be used with any water supply
- Potential permitting issues
- Requires landowner consent and approval

4.7.4 Discharge to Irrigation System Backwash Pond

Discharge of wastewater to existing off-site evaporation/infiltration ponds utilized for disposal of irrigation system agricultural backwash water. Wastewater is blended with agricultural backwash water in the pond and infiltrates into the basin below. This alternative is technically feasible regardless of the water supply alternative and is viable for annual operation to a maximum of 4,000 hours. If the agricultural backwash pond is utilized as the source of water, this alternative would be likely be acceptable from a regulatory standpoint because the concentration of TDS in wastewater resulting from agricultural backwash water is expected to be less than 2,000 mg/L which would not impair the groundwater.

This alternative would include a 25 gpm low head pump station and a two-mile long, 2-inch PVC pipe to convey the wastewater to the Baker Farms infiltration pond.

Relative advantages and disadvantages of this alternative over the other wastewater disposal alternatives include the following:

- Can accommodate discharges up to 4,000 operating hours
- Small area of Midway site required
- Residue to be handled by farmer
- Electricity costs
- Potential impacts due to construction of two-mile of piping
- Can be used with any water supply
- Potential permitting issues
- Requires landowner consent and approval

4.8 SUMMARY OF WATER AND RO WASTEWATER DISCHARGE OPTIONS

The Project Description (Section 3) includes the Calpeak Panoche well as the source for water and an on-site evaporation pond as the RO wastewater discharge management strategy. These options are included in the environmental analysis in Section 5. It is possible that one of the other options identified in this section could become fully feasible and desirable as the detailed design and engineering of the project proceeds. Should this occur, the environmental analysis for the desired option will be provided.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Alternatives** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (b) (1) (D)	A description of how the site and related facilities were selected and the consideration given to engineering constraints, site geology, environmental impacts, water, waste and fuel constraints, electric transmission constraints, and any other factors considered by the applicant.	Sec.4.1-4.8, Pgs. 4-2 -4-9		
Appendix B (f) (1)	A discussion of the range of reasonable alternatives to the project, or to the location of the project, including the no project alternative, 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, and an evaluation of the comparative merits of the alternatives. In accordance with Public Resources Code section 25540.6(b), a discussion of the applicant's site selection criteria, any alternative sites considered for the project, and the reasons why the applicant chose the proposed site.	Sec.4.1-4.8, Pgs. 4-2 -4-9		
Appendix B (f) (2)	An evaluation of the comparative engineering, economic, and environmental merits of the alternatives discussed in subsection (f)(1).	Sec.4.1-4.8, Pgs. 4-2 -4-9		

SECTION 5 ENVIRONMENTAL INFORMATION

5.1 INTRODUCTION

This section presents a discussion of the affected environment and potential environmental consequences that are associated with the Midway project, along with measures to mitigate or avoid adverse impacts. Supporting information to determine compliance with applicable laws, ordinances, regulations and standards is included within the discussion in each applicable section.

The analyses presented in this section are based on the following:

- Details of the proposed project as presented in Sections 3 and 4
- Consideration of CEC regulations, including regulations applicable to the expedited processing of projects
- Consideration of CEC staff input

The environmental assessments presented in this section are meant to comply with CEC requirements, including those of CEQA. In general each section follows the same format of presenting the affected environment and existing site conditions, followed by the environmental consequences of the proposed project and measures proposed to mitigate significant adverse impacts.

5.2 AIR QUALITY

This section describes an analysis of the potential air quality impacts of the Midway project. The analysis has been conducted according to CEC power plant siting requirements, and also addresses the San Joaquin Valley Unified Air Pollution Control District (SJVAPCD) permitting requirements for the Determination of Compliance/Authority to Construct (DOC/ATC) process. The details of the air quality assessment of the project are contained in the following subsections:

- Section 5.2.1, Affected Environment, describes the local environment surrounding Midway, including topography, climate, and existing air quality. The most representative meteorological data, including wind speed and direction, temperature, relative humidity, and precipitation, and the most representative recent ambient concentration measurements for criteria air pollutants are summarized.
- Section 5.2.2, Environmental Consequences, evaluates the maximum potential air quality impacts due to the project's emissions of nitrogen oxides (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), volatile organic compounds (VOCs), particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). Emission estimates for these pollutants are presented for the construction phase of the project, as well as operation of the installed equipment over a full range of operating modes, including commissioning, startups and shutdowns, and normal operation with operable pollution control systems. The modeling analysis conducted for nitrogen dioxide (NO_2), CO, sulfur dioxide (SO_2), and PM_{10} is presented; the results show that the project will not cause or significantly contribute to exceedances of the California Ambient Air Quality Standards (CAAQS) or National Ambient Air Quality Standards (NAAQS).
- Section 5.2.3, Cumulative Impacts Analysis, addresses the cumulative impacts of the project emissions with other potential new sources of air pollution in the area around Midway.
- Section 5.2.4, Mitigation Measures, describes the project emission offsets strategy, including emission reduction credits (ERCs) that are proposed to offset project sources.
- Section 5.2.5, LORS, describes applicable LORS pertaining to air quality aspects of the project. This section also provides an analysis of best available control technology (BACT) for natural gas-fired turbines, and explains how the use of water injection in addition to selective catalytic reduction (SCR) with ammonia injection satisfies the SJVAPCD NO_x BACT requirements for NO_x emissions from simple cycle gas turbines, and how the use of an oxidation catalyst meets the corresponding BACT requirements for CO.
- Section 5.2.6, Involved Agencies and Agency Contacts, lists the agency personnel contacted during preparation of the air quality assessment.

Some air quality data are presented in other sections of this AFC, including an evaluation of toxic air pollutants (see Section 5.16, Public Health and Safety) and information relating to the fuel characteristics, heat rate, and startup and operating limits (see Section 3.0, Facility and Project Description).

5.2.1 Affected Environment

This section describes the regional climate and meteorological conditions that influence the transport and dispersion of air pollutants, as well as the existing air quality within the project region. The data presented in this section are representative of the project site.

The project site is located in far western Fresno County in the San Joaquin Valley, southeast of the intersection of West Panoche Road and South Fairfax Avenue. The project site is about 2.0 miles (3.2 kilometers [km]) east of Interstate 5 (I-5) and approximately 3 miles (5.0 km) west of the California Aqueduct. The site will be an addition to the existing CalPeak Panoche facility. Wellhead Power Peaker plant is located just to the southeast of the Midway site, and the Pacific Gas & Electric (PG&E) Substation is to the west of the site. Land use within 10 miles of the site is dedicated primarily to the cultivation of agricultural crops.

The towns nearest to the project site are Mendota and Firebaugh. The project site is at an elevation of 395 to 400 feet above mean sea level in terrain that slopes gently downward to the north, northeast, and east toward the San Joaquin River and Fresno Slough about 15 miles (25 km) from the site. Terrain elevations as high as the tops of the proposed natural gas turbine stacks are found within about 1.1 miles (1.75 km) to the southwest and south of the site, and the elevation rise continues in these directions to the Ciervo Hills (one of the foothill systems of the Diablo Range Mountains) about 6 miles (10 km) away. Topography within a 6- and 10-mile radius of the project site is shown on Figure 5.2-1

As mitigation to the noise impacts discussed in Section 5.12, occupants at a residence located approximately 100 feet from the northern perimeter of the site will be relocated as part of the Midway Project. Therefore, the nearest rural residence to Midway is approximately 1,300 feet (400 meters) west northwest of the site.

5.2.1.1 Meteorology and Climate

Fresno County is classified as having a mild climate characterized by low precipitation, warm summers, mild winters, and temperature inversions. It is separated from the coastal regions by the Diablo and Coastal mountain ranges to the northwest, southwest, west. The area's climatic conditions are strongly influenced by the large-scale sinking and warming of air in the semi-permanent subtropical high-pressure center over the eastern Pacific. This high-pressure system effectively blocks out most mid-latitude storms, except in winter when the high-pressure ridge is weaker and has moved farther south. The mountains on the western edge of the San Joaquin Valley also have a major influence on local climate, serving as a meteorological barrier that effectively removes moisture from the marine air flowing inland from the Pacific. An annual wind rose representing observations at the Fresno-Yosemite International Airport during the years 1987 to 1991 is presented in Figure 5.2-2. Quarterly wind roses for the project area are provided in Appendix I, Attachment A.

The generally flat terrain of the valley floor in the San Joaquin Valley area and the strong temperature differentials created by intense solar heating produce moderate winds and deep thermal convection currents. Subsiding air, protective mountains, and distance from the ocean all combine to limit precipitation. The valley area frequently experiences surface inversions in the early morning hours during the year, causing air stagnation. These inversions are usually broken by noon due to solar heating.

Temperature and precipitation means and extremes from the nearest long-term National Climactic Data Center station in Madera over a 30-year period (1971-2000) are presented in Table 5.2-1. This weather station is located approximately 35 miles to the northeast of the Midway site at latitude 36°58'N, longitude 120°02'W. The hottest month, July, has an average maximum temperature of 96.4 degrees Fahrenheit (°F) and an average minimum temperature of 61.8°F. The coldest month, December, has an average maximum temperature of 54.6°F, and an average minimum temperature of 35.0°F.

TABLE 5.2-1
AVERAGE TEMPERATURES AND PRECIPITATION
IN MADERA, MADERA COUNTY (1971-2000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max Temperature (°F)	54.4	61.3	67.0	74.3	83.0	91.0	96.4	95.0	89.7	79.8	62.9	54.6	76.0
Average Min Temperature (°F)	36.4	39.1	42.7	46.1	52.0	57.8	61.8	60.7	56.1	48.1	38.5	35.0	48.0
Precipitation (in)	2.23	2.21	2.06	1.07	0.44	0.13	0.01	0.06	0.23	0.59	1.34	1.50	11.9

Notes:
°F = degrees Fahrenheit
in = inches
Max = maximum
Min = minimum
Source: Western Regional Climate Center

During winter, the semi-permanent, subtropical high pressure system over the Pacific Ocean moves south, allowing the passage of frontal systems that bring most of the area's annual precipitation, which totals about 12 inches on average. Monthly mean precipitation amounts at Madera range from 2.23 inches in January to 0.01 inches in July. During summer, migrating storm systems are blocked by the semi-permanent Pacific high, and local rain associated with these storms is scarce. Relative humidity levels are generally moderate. In the summer, relative humidity averages 60 to 70 percent in the early morning and about 20 percent in the afternoon. In winter, relative humidity averages 90 percent in the early morning and 50 to 70 percent in the afternoon.

During the winter months the surface heating is less intense, and the rapid cooling of the surface layers at night retards the exchange of momentum between vertical atmospheric layers. As a result, winds are generally calmer in winter, except during the passage of frontal storm systems. During all seasons, the prevailing wind direction is from the northwest.

5.2.1.2 Existing Air Quality

All ambient air quality data presented in this section were published by the California Air Resources Board (CARB) on the ADAM website and/or by U.S. Environmental Protection Agency (USEPA) on the AIRS data website. Ambient air concentrations of ozone (O_3), NO_2, SO_2, CO, PM_{10}, and $PM_{2.5}$ and airborne lead are recorded at monitoring stations throughout Fresno County. The region surrounding the project site is a remote, agricultural environment with a very sparse population. Air quality monitoring stations in the region generally record measurements for only one or two criteria pollutants, except for

those stations located in urban areas. The monitoring stations are positioned to represent area-wide ambient conditions, rather than the localized impacts of any particular facility or grouping of emission sources. In remote, rural areas of Fresno County, pollutant concentrations are not expected to vary significantly from one location to the next, since the emission sources are few and widely distributed. However, concentrations of pollutants emitted by industrial and vehicular sources are generally observed in higher concentrations within the most populated areas of the City of Fresno than in the rest of the county.

Ambient concentrations of lead, O_3, NO_2, CO, $PM_{2.5}$, and PM_{10} are recorded at the Fresno First Street monitoring station located at 3425 North First Street, approximately 46 miles east of the project site. The Fresno First Street station is the closest station with a long-term record of all the criteria pollutants, except SO_2. The Fresno Freemont School station is the closest station that monitors ambient SO_2. To the extent that monitoring data from the Fresno stations have been used here to characterize conditions at the project site, this practice would almost certainly overestimate existing pollutant levels at Midway because of the much lower population and level of development of this area compared with the more urban locations. In addition, the project site is in a predominantly upwind location relative to the City of Fresno.

5.2.1.2.1 Ozone (O3)

Ozone is an end product of complex reactions between VOC and NO_x in the presence of ultraviolet radiation. VOC and NO_x emissions from vehicles and stationary sources, combined with daytime wind flow patterns, mountain barriers, temperature inversions, and intense sunlight, generally result in the highest O_3 concentrations. For purposes of both state and federal air quality planning, the entire San Joaquin Valley air basin is classified as a non-attainment area with respect to both state and national ambient standards for ozone.

Table 5.2-2 shows the measured ozone levels at the Fresno First Street station during the last five years. The 1-hour ozone NAAQS of 0.12 parts per million (ppm) has been exceeded at Fresno First Street during each of the past five years, with the maximum concentration of 0.144 ppm recorded in 2002. The more stringent state ozone CAAQS of 0.09 ppm was exceeded numerous times in each of the last five years, including 56 times in 2003.

The federal 8-hour ozone NAAQS requires that the 3-year average of the fourth-highest values for individual years be maintained at or below 0.08 ppm. Therefore, the number of days in each year with maximum 8-hour concentrations above the standard concentration in Table 5.2-2 does not equate to the number of violations. However, the highest 3-year (2001-2003) average of the fourth-highest 8-hour concentrations at the Fresno First Street station was 0.106 ppm, which is above the CAAQS of 0.08 ppm.

TABLE 5.2-2
OZONE LEVELS AT FRESNO FIRST STREET (ppm)

Fresno First Street Station, Fresno County	2001	2002	2003	2004	2005
Maximum 1-hour Average	0.135	0.144	0.135	0.123	0.134
Number of Days Exceeding California 1-hour Standard (0.09 ppm)	51	45	56	23	31
Number of Days Exceeding National 1-hour Standard (0.12 ppm)	5	11	5	0	3
Maximum 8-hour Average	0.113	0.119	0.111	0.103	0.111
Number of Days Exceeding National 8-hour Standard (0.08 ppm)[1]	40	41	47	18	27

Sources: CARB ADAM Website (www.arb.ca.gov/adam/welcome.html); USEPA AIRS Website (www.epa.gov/air/data/index.html)

[1] Number of days with an 8-hour average exceeding federal standard concentration of 0.08 ppm is listed. The applicable ambient standard requires the 3-year average of the fourth-highest daily maximum to be maintained below 0.08 ppm. Therefore, the number of days exceeding standard concentration in a given year does not equate to the number of violations of the standard.

NA = not applicable
ppm = parts per million

Completeness of the O_3 monitoring data at Fresno First Street was 98 percent for 2001 and 2002, and 99 percent for 2003 through 2005.

5.2.1.2.2 Nitrogen Dioxide (NO2).

NO_2 is formed primarily from reactions in the atmosphere between NO (nitric oxide) and oxygen (O_2) or ozone. NO is formed during high-temperature combustion processes, when the nitrogen and oxygen in the combustion air combine. Although NO is much less harmful than NO_2, it can be converted to NO_2 in the atmosphere within a matter of hours, or even minutes, under certain conditions. The control of NO and NO_2 emissions is also important because of the role of both compounds in the atmospheric formation of ozone.

Historical data presented in Table 5.2-3 show NO_2 levels at the Fresno First Street station for the years 2001 through 2005. This station is the closest monitoring location to the project site for NO_2 concentrations, but undoubtedly experiences much higher NO_2 concentrations than the project site, which has much lower exposure to significant emission sources. Accordingly, data for the less urban Fresno County site in Parlier, about 15 miles south-southeast from Fresno, are also displayed in Table 5.2-3.

For purposes of both state and federal air quality planning, the San Joaquin Valley air basin is in attainment with regard to NO_2. During the last five years, there have been no violations of the CAAQS 1-hour standard (0.25 ppm) at either the Fresno First Street or Parlier station. The highest 1-hour concentrations recorded at the stations during the last five years were 0.090 ppm and 0.06 ppm, respectively, both in 2001. The table also shows that there were no violations of the annual NAAQS (0.053 ppm) at either station during this period. Since ambient NO_2 concentrations are generally highest

in the immediate vicinity of large fuel-burning sources, the concentrations at Fresno First Street monitoring station almost certainly would overestimate actual concentrations of this pollutant in the very rural project site area. Thus, for purposes of the air impact assessment described later in this section, the Parlier NO_2 data were used to estimate background concentrations at the Midway site.

TABLE 5.2-3
NITROGEN DIOXIDE LEVELS AT FRESNO FIRST STREET AND AT PARLIER IN FRESNO COUNTY (ppm)

Fresno First Street Station, Fresno County	2001	2002	2003	2004	2005
Maximum 1-hour Average	0.090	0.088	0.090	0.077	0.084
Annual Average	0.021	0.020	0.019	0.017	0.017
Days Over State Standard (0.25 ppm, 1-hour)	0	0	0	0	0
Parlier Station, Fresno County					
Maximum 1-hour Average	0.060	0.056	0.051	0.052	0.063
Annual Average	0.012	0.013	0.012	0.011	0.011
Days Over State Standard (0.25 ppm, 1-hour)	0	0	0	0	0

Sources: CARB ADAM Website (www.arb.ca.gov/adam/welcome.html); USEPA AIRS Website (www.epa.gov/air/data/index.html)
ppm = parts per million

Completeness of NO_2 monitoring data was 100 percent for 2001, 99 percent for 2002 through 2004, and 96 percent for 2005.

5.2.1.2.3 Carbon Monoxide (CO)

Carbon monoxide is a product of incomplete combustion, and is emitted principally from automobiles and other mobile sources of pollution, although it is also a product of combustion from stationary sources (both industrial and residential) burning fossil fuels. Peak CO levels occur typically during winter months due to a combination of higher emission rates and poor dispersion during stagnant weather conditions. The Fresno Urbanized Area, although previously a non-attainment area for CO, was re-designated to attainment in 1998.

Table 5.2-4 shows the available data on maximum 1-hour and 8-hour average CO levels recorded at the Fresno First Street station during the period from 2001 to 2005. As indicated by this table, the maximum 1-hour average CO levels comply with the NAAQS and CAAQS (30.0 ppm and 20.0 ppm, respectively) and the maximum 8-hour values are well below the NAAQS and CAAQS of 9.0 ppm. The highest individual 1-hour and 8-hour CO concentrations at this location since 2001 have been 6.7 ppm and 4.6 ppm, respectively, both in 2001. Since ambient CO concentrations are generally highest in the immediate vicinity of large fuel-burning sources, the concentrations at Fresno First Street monitoring station almost certainly provide a conservative overestimate of actual concentrations in the very rural project site area. No recent CO monitoring data are available for comparable rural areas of Fresno County or the adjacent counties.

TABLE 5.2-4
CARBON MONOXIDE LEVELS AT FRESNO FIRST STREET (ppm)

Fresno First Street Station, Fresno County	2001	2002	2003	2004	2005
Maximum 1-hour Average	6.7	6.1	4.9	3.9	4.1
Maximum 8-hour Average	4.64	4.51	3.56	2.85	2.95
Days Over the 8-hour California Standard (9 ppm)	0	0	0	0	0
Days Over the 8-hour Federal Standard (9 ppm)	0	0	0	0	0

Sources: CARB ADAM Website (www.arb.ca.gov/adam/welcome.html); USEPA AIRS Website (www.epa.gov/air/data/index.html)
ppm = parts per million

Data completeness for CO concentrations at the Fresno First Street station was 98 percent for 2001, 99 percent for 2002, 96 percent for 2003 and 2004, and 97 percent for 2005.

5.2.1.2.4 Sulfur Dioxide (SO_2)

SO_2 is produced by the combustion of any sulfur-containing fuel. It is also emitted by chemical plants that treat or refine sulfur or sulfur-containing chemicals. Natural gas contains nearly negligible sulfur, while fuel oils may contain much larger amounts. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of California, depending on local fuel characteristics, weather, and topography. The San Joaquin Valley air basin is considered to be in attainment for SO_2 for purposes of state and federal air quality planning.

Background SO_2 data is provided in Table 5.2-5. SO_2 data has only been recorded in the San Joaquin Valley air basin for one of the past nine years (2003), a practice that is justified by the low levels that have been recorded for this pollutant when measurements have been made. The maximum SO_2 levels for 2003 did not exceed any state or federal standards. Since ambient SO_2 concentrations are generally highest in the immediate vicinity of large fuel-burning sources, the concentrations at Fresno Fremont School monitoring station almost certainly provide a conservative overestimate of actual concentrations in the very rural project site area.

TABLE 5.2-5
SULFUR DIOXIDE LEVELS AT FRESNO FREMONT SCHOOL (ppm)

Fresno Fremont School Station, Fresno County	2001	2002	2003	2004	2005
Highest 1-hour average	NA	NA	0.009	NA	NA
Highest 3-hour average	NA	NA	0.006	NA	NA
Highest 24-hour average	NA	NA	0.004	NA	NA
Annual Average	NA	NA	0.002	NA	NA
Days Over 1-hour State Standard (0.25 ppm)	0	0	0	0	0

TABLE 5.2-5
SULFUR DIOXIDE LEVELS AT FRESNO FREMONT SCHOOL (ppm)
(CONTINUED)

Fresno Fremont School Station, Fresno County	2001	2002	2003	2004	2005
Days Over 24-hour State Standard (0.04 ppm)	0	0	0	0	0
Days Over 3-hour Federal Standard (0.5 ppm)	0	0	0	0	0
Days Over 24-hour Federal Standard (0.14 ppm)	0	0	0	0	0
Days Over the Annual Federal Standard (0.03 ppm)	0	0	0	0	0

Sources: CARB ADAM Website (www.arb.ca.gov/adam/welcome.html); USEPA AIRS Website (www.epa.gov/air/data/index.html)
NA = not recorded
ppm = parts per million

SO_2 data completeness at Fresno Fremont School Station was 47 percent for 2003, and measurements for this pollutant were not recorded in 2001, 2002, 2004, and 2005.

5.2.1.2.5 Particulate Matter (PM_{10})

Particulates in the air are caused by a combination of windblown fugitive dust; particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed by atmospheric chemical reactions involving emitted hydrocarbons, sulfur oxides, and nitrogen oxides. In 1984, the California Air Resources Board (CARB) adopted standards for PM_{10}, and phased out the total suspended particulate (TSP) standards that had previously been in effect. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of respirable particulates related to human health effects. In 1987, USEPA also replaced national TSP standards with PM_{10} standards. The San Joaquin Valley air basin is a designated non-attainment area with respect to both federal and state PM_{10} standards. However, on July 6, 2006, USEPA issued a memorandum stating the intention of reclassifying the San Joaquin air basin to attainment with respect to the federal standards for PM_{10}. This proposal will become effective 30 days after publication in the Federal Register which has not yet occurred.

Table 5.2-6 shows the maximum PM_{10} levels recorded at the Fresno First Street monitoring station during the period from 2001 through 2005 and the arithmetic annual averages for the same period. (The arithmetic annual average is simply the arithmetic mean of the daily observations.) PM_{10} is monitored according to different protocols for evaluating compliance with the state and federal standards for this pollutant. Specifically, California uses a gravimetric or beta attenuation monitoring method, while compliance with federal standards is evaluated based on an inertial separation and gravimetric analysis. This accounts for the slightly differing 24-hour concentrations listed in Table 5.2-6 that represent data obtained by means of the state and federal samplers.

TABLE 5.2-6
PARTICULATE MATTER (PM_{10}) LEVELS AT FRESNO FIRST STREET ($\mu g/m^3$)

Fresno First Street Station, Fresno County	2001	2002	2003	2004	2005
Maximum 24-hour average (federal testing samplers)	193	96	74	54	106
Maximum 24-hour average (state testing samplers)	204	100	74	58	109
Annual Arithmetic Mean	43	39	35	31	33
Estimated Number of Days Exceeding Federal Standard (150 $\mu g/m^3$)	1	0	0	0	0
Estimated Number of Days Exceeding California Standard (50 $\mu g/m^3$)	16	15	13	5	10

Sources: CARB ADAM Website (www.arb.ca.gov/adam/welcome.html); USEPA AIRS Website (www.epa.gov/air/data/index.html)
$\mu g/m^3$ = micrograms per cubic meter
PM_{10} = particulate matter less than 10 microns in diameter

At the Fresno First Street station, the maximum 24-hour PM_{10} levels exceed the CAAQS state standard of 50 micrograms per cubic meter ($\mu g/m^3$) many times in each of the last several years. The maximum daily concentration was 204 $\mu g/m^3$ (state samplers) in 2001. The maximum annual arithmetic mean concentration recorded at Fresno First Street was 43 $\mu g/m^3$ in 2001, which is below the federal standard of 50 $\mu g/m^3$ but above the state standard of 30 $\mu g/m^3$. Because of the low population density and low level of industrial development in western Fresno County, the project site is most likely exposed to lower vehicular and industrial emissions and lower ambient PM_{10} concentrations than the Fresno First Street and other urban monitoring stations in the county. However, local particulate levels could be influenced by high wind conditions, agricultural tillage, and burning that may be less evident in the data of the more urban monitoring stations. Completeness of the PM_{10} concentration data at the Fresno First Street station was 96 percent for 2001, 97 percent for 2002, 99 percent for 2003, 100 percent for 2004, and 96 percent for 2005.

5.2.1.2.6 Fine Particulates ($PM_{2.5}$)

The $PM_{2.5}$ data in Table 5.2-7 shows that the national 24-hour average NAAQS of 65 $\mu g/m^3$ has been exceeded in three of the past five years. The maximum recorded 24-hour average value from 2000 through 2004 was 110.0 $\mu g/m^3$ in 2001. The annual $PM_{2.5}$ data are also presented in this table. The maximum recorded annual arithmetic mean was 21.6 $\mu g/m^3$ which is above both the national standard of 15 $\mu g/m^3$ and the California standard of 12 $\mu g/m^3$.

TABLE 5.2-7
PARTICULATE MATTER ($PM_{2.5}$) LEVELS AT FRESNO FIRST STREET ($\mu g/m^3$)

Fresno First Street Station, Fresno County	2000	2001	2002	2003	2004
Maximum 24-hour average (federal only)	110	84	63	71	53
Annual Arithmetic Mean	19.8	21.6	17.7	16.4	16.9
Estimated Number of Days Exceeding Federal Standard (65 $\mu g/m^3$)	10	13	0	2	0

Sources: CARB ADAM Website (www.arb.ca.gov/adam/welcome.html); USEPA AIRS Website (www.epa.gov/air/data/index.html)
$\mu g/m^3$ = micrograms per cubic meter
$PM_{2.5}$ = particulate matter less than 2.5 emissions microns in diameter

5.2.1.2.7 Airborne Lead (Pb)

Lead (Pb) pollution has historically been emitted predominantly from the combustion of fuels. However, legislation in the early 1970s required gradual reduction of the lead content of gasoline. Coupled with the introduction of unleaded gasoline in 1975, lead levels have been dramatically reduced throughout the United States and violations of the ambient standards for this pollutant have been virtually eliminated.

Table 5.2-8 shows the recorded 24-hour and quarterly lead concentration averages at the Fresno First Street station for the years 1999 through 2003. Both state and federal standards limit long-term average lead concentrations to 1.5 $\mu g/m^3$. The NAAQS for this pollutant pertains to a quarterly average concentration, whereas the CAAQS applies to a 30-day average.

TABLE 5.2-8
LEAD LEVELS AT FRESNO FIRST STREET ($\mu g/m^3$)

Fresno First Street Station, Fresno County	1999	2000	2001	2002	2003
Maximum 24-hour Average	0.02	0.02	0.02	0.02	0.01
Maximum Quarterly Average	0.005	0.01	0.01	0.01	0.01

Sources: CARB ADAM Website (www.arb.ca.gov/adam/welcome.html); USEPA AIRS Website (www.epa.gov/air/data/index.html)
$\mu g/m^3$ = micrograms per cubic meter

The maximum recorded 24-hour level was 0.02 $\mu g/m^3$ in each year from 1999 through 2002. The maximum quarterly average at the Fresno First Street station was 0.01 $\mu g/m^3$ in each of the last five years. Both maxima are far below the state and federal standards for lead. In addition, lead concentrations measured in the City of Fresno are almost certainly higher than at the rural project site.

5.2.1.2.8 Particulate Sulfates

Sulfate compounds found in the lower atmosphere consist of both primary and secondary particles. Primary sulfate particles are directly emitted from open pit mines, dry lakebeds, and desert soils. Fuel combustion is another source of sulfates, both primary and secondary. Secondary sulfate particles are produced when emissions of sulfur oxides (SO_x) are transformed into fine particles through physical and chemical processes in the atmosphere. Such particles can be transported long distances. The San Joaquin

Valley air basin is in attainment with the state standard for sulfates; there is no corresponding federal standard.

5.2.1.2.9 Other State-designated Criteria Pollutants

Along with sulfates, California has designated hydrogen sulfide and visibility-reducing particles as criteria pollutants, in addition to the federal criteria pollutants. The San Joaquin Valley air basin remains unclassified for both pollutants.

5.2.2 Environmental Consequences

The potential air quality impacts of Midway are evaluated in this subsection. Impacts would be considered significant if the pollutant concentrations resulting from the project, when combined with background concentrations, exceed an ambient air quality standard. However, project emissions of non-attainment pollutants and their precursors will be offset at a ratio of more than 1 to 1 to ensure that the project will result in a net air quality benefit. Emissions estimates for all aspects of project construction and operation are presented. Dispersion model selection and the development of appropriate model input data are also described (i.e., emissions scenarios and release parameters, building wake effects, meteorological data, and receptor locations), and analysis results are presented. Documentation that the project will comply with applicable local, state and federal air quality regulatory requirements is provided.

5.2.2.1 Construction Emissions

The primary emission sources during project construction will include exhaust from heavy equipment and vehicles, as well as fugitive dust generated in areas disturbed by grading, excavating, and erection of facility structures. Construction activities associated with the project include two areas of development: 1) the main 5.6-acre site that includes the future locations of the new turbines and associated facility transmission lines, the access road from West Panoche Road, the construction laydown area and parking area during the construction period; and 2) an area of approximately 0.5-acre south-southwest of the Midway site where the proposed water pipeline construction route will traverse the existing CalPeak Panoche plant site. While emissions will occur within both areas of development, the construction schedule calls for the project site to be disturbed by different types of activities during various stages of construction.

The URBEMIS2002 (Version 8.7) emissions model developed by CARB was used to estimate emissions from construction activities. Use of this model for estimation of construction emissions was specifically recommended by staff of the SJVAPCD (SJVAPCD, 2006). All URBEMIS2002 model input/output files are included in Attachment B to Appendix I. Based on information provided by the project design engineering firm, construction emissions calculations were performed for an expected 10-month construction period based on an 8-hour workday and a 5-day workweek. For purposes of the URBEMIS2002 calculations, construction activities will occur in three stages: 1) site grading; 2) building of facility structures; and 3) asphalt paving of a portion of the access road on-site. The estimated emissions resulting from site grading activities would occur over the first two months. No building or asphalt activities were assumed to occur during this time. The estimated emissions from the building

construction stage are not expected to overlap the site grading stage. Asphalt emissions are expected to occur during the final months of the building construction stage.

Combustion emissions were estimated using a construction schedule and a list of equipment needed during each month of the construction effort, as provided by the project design engineering firm (see Appendix I, Attachment B). Based on this list, maximum short term emissions for the site grading stage are expected to occur in Month 2 of the project construction schedule. Maximum emissions from the building of the facility structures are expected to occur in Month 3. The expected equipment usage was input into URBEMIS2002 to estimate emissions for each stage. Fugitive dust emissions resulting from onsite soil disturbances were estimated from the total acreage disturbed (5.6 acres) and an estimated maximum daily disturbance (1 acre per day). A dust control efficiency of 68 percent was assumed to be achieved for these activities by frequent daily watering when required. In addition, mitigation measures (e.g., covering exposed dirt piles, quickly replacing ground cover, and adding soil stabilizers) were included to reduce fugitive dust emissions. Emissions from on-road delivery truck and worker commute trips were estimated using default emission factors provided by URBEMIS2002, with inputs selected to be representative of heavy industrial land use in a rural area within the San Joaquin Valley.

Tables 5.2-9 and 5.2-10 present the mitigated maximum daily emissions for each stage of construction, as estimated by the URBEMIS2002 model. Table 5.2-11 presents the total mitigated emissions of air pollutants for all stages over the full 10-month construction project (1.5 months for site grading, 8.5 months for building).

TABLE 5.2-9
DAILY MAXIMUM CRITERIA POLLUTANT
CONSTRUCTION EMISSIONS SITE GRADING STAGE (pounds/day)

Activity	VOC	CO	NO_x	PM_{10}	SO_x
Fugitive Dust	-	-	-	1.22	-
Off-road Diesel	31.89	266.93	135.76	2.59	-
On-road Diesel	0.83	3.07	11.10	0.20	0.03
Worker Trips	0.19	5.73	0.64	0.03	0.0
Total Max. Daily Emissions	**32.91**	**275.73**	**147.49**	**4.04**	**0.03**

Notes:
- = not applicable
CO = carbon monoxide
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 microns in diameter
VOC = volatile organic compounds
SO_x = sulfur oxide(s)

TABLE 5.2-10
DAILY MAXIMUM CRITERIA POLLUTANT CONSTRUCTION EMISSIONS BUILDING AND ASPHALT PAVING STAGES (pounds/day)

Onsite Activity	VOC	CO	NO_x	PM_{10}	SO_x
Building Construction Stage Off-road Diesel	19.47	162.06	83.43	1.58	-
Building Construction Stage Worker Trips	0.0	0.0	0.0	0.0	0.0
Asphalting Stage Off-road Gas	0.24	-	-	-	-
Asphalting Stage Off-road Diesel	6.87	57.56	29.01	0.53	-
Asphalting Stage On-road Diesel	0.07	0.24	0.73	0.01	-
Asphalting Stage Worker Trips	0.03	0.30	0.01	0.01	0.0
Subtotal Maximum Daily Emissions	**26.67**	**220.16**	**113.18**	**2.13**	**0.0**
Offsite On-Highway Emissions					
Passenger Vehicle - Combustion Emissions	6.1	56.8	5.6	0.3	0.04
Delivery Truck - Combustion Emissions	12.3	117.6	34.4	0.7	0.03
Passenger Vehicle - Paved Road Dust				1.9	
Delivery Truck - Paved Road Dust				21.7	
Subtotal of Off-site Emissions (pounds)	**18.4**	**174.4**	**40**	**24.6**	**0.07**

Notes:
- = not applicable
CO = carbon monoxide
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 microns in diameter
VOC = volatile organic compounds
SO_x = sulfur oxide(s)

TABLE 5.2-11
TOTAL PROJECT CONSTRUCTION EMISSIONS
OF CRITERIA POLLUTANTS (tons)

Activities	VOC	CO	NO_x	PM_{10}	SO_x
Total Site Grading Stage[1]	0.54	4.55	2.37	0.07	0.00
Total Building Stage[2]	1.82	15.15	7.80	0.15	0.00
Total Asphalting Stage[3]	0.04	0.32	0.16	0.00	0.00
Total Project Emissions (tons)	2.40	20.02	10.33	0.22	0.01

Notes:
1 = Site grading totals are for only 1.5 months of activity.
2 = Building total is for 8.5 months.
3 = Asphalt total is for 0.5 months.
CO = carbon monoxide
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 microns in diameter
VOC = volatile organic compounds
SO_x = sulfur oxide(s)

5.2.2.2 Operational Emissions

The only important emission sources of the project will be the two SwiftPac units (two sets of paired simple-cycle CTGs) burning exclusively natural gas fuel. Annual operational emissions from each of the four project CTGs were estimated by summing the emissions corresponding to normal operating conditions and turbine startup/shutdown conditions. Estimated annual emissions of air pollutants for each turbine have been calculated based on 4,000 hours of normal operation, which includes up to 365 startup and shutdown events for each CTG.

The criteria pollutant emission rates provided by the turbine vendor, Pratt & Whitney for 100 percent load conditions are presented in Table 5.2-12. The emission scenarios in this table represent the expected normal operating range of these turbines at the project facility and the variability of pollutant emissions as a function of ambient temperature conditions. Two sets of stack parameters are provided, corresponding to either a high temperature or low temperature SCR catalyst system. The design decision for this system has not yet been finalized; consequently the air quality impact analysis in this AFC considers both designs and utilizes the stack parameters that yield the highest ground-level pollutant levels.

Note that individual turbines will be operated only at 100% capacity, i.e., not at partial loads, although a single turbine within a SwiftPac may operate alone in some instances. No other operational emissions sources will be present at the project site. Data from source tests conducted on existing FT8-1 and FT8-2 units were used in lieu of the vendor guarantees for SwiftPac FT8-3 units shown in Table 5.2-12 for PM_{10}. Specifically, a value of 3.7 lb PM_{10}/hour was used to quantify normal full-load operation and startup/shutdown conditions for each SwiftPac in the modeling analyses and offset calculations presented later in this section. Vendor data for SO_2 were also adjusted to reflect local natural gas sulfur contents.

TABLE 5.2-12
SHORT-TERM EMISSION RATES FOR CTG OPERATING SCENARIOS
FOR EACH PRATT & WHITNEY FT8-3 SWIFTPAC UNIT

Load	Exhaust Flow (acfm)	Exit Velocity (ft/s)	Exit Temp (°F)	NO_x Controlled (lb/hr)	NOx Uncontrolled (lbs/hr)	CO Controlled (lbs/hr)	CO Uncontrolled (lbs/hr)	SO_x Normal (lbs/hr)	VOC Normal (lbs/hr)	PM_{10} Normal (lbs/hr)
100% Load, 1 Turbine High Catalyst Temperature										
114°F (Fogger On)	408,145	38.49	880	2.6	39.10	2.4	12.40	0.41	0.60	1.85
63°F (Fogger On)	428,435	40.41	849	2.8	41.80	2.6	13.30	0.43	0.70	1.85
18°F (Fogger Off)	426,215	40.20	783	2.8	41.60	3.4	17.60	0.43	0.70	1.85
100% Load, 2 Turbines High Catalyst Temperature										
114°F (Fogger On)	816,290	76.99	880	5.3	78.20	4.8	24.80	0.81	1.20	3.7
63°F (Fogger On)	856,871	80.81	849	5.7	83.60	5.2	26.60	0.87	1.40	3.7
18°F (Fogger Off)	852,430	80.40	783	5.7	83.20	6.8	35.20	0.86	1.40	3.7
100% Load, 1 Turbine Low Catalyst Temperature										
114°F (Fogger On)	423,777	39.97	830	2.6	39.10	2.4	12.40	0.41	0.60	1.85
63°F (Fogger On)	444,061	41.88	796	2.8	41.80	2.6	13.30	0.43	0.70	1.85
18°F (Fogger Off)	441,870	41.67	729	2.8	41.60	3.4	17.60	0.43	0.70	1.85
100% Load, 2 Turbines Low Catalyst Temperature										
114°F (Fogger On)	847,554	79.94	830	5.3	78.20	4.8	24.80	0.81	1.20	3.7
63°F (Fogger On)	888,122	83.76	796	5.7	83.60	5.2	26.60	0.87	1.40	3.7
18°F (Fogger Off)	883,739	83.35	729	5.7	83.20	6.8	35.20	0.86	1.40	3.7

TABLE 5.2-12
SHORT-TERM EMISSION RATES FOR CTG OPERATING SCENARIOS
FOR EACH PRATT & WHITNEY FT8-3 SWIFTPAC UNIT
(CONTINUED)

Note:
ºF= degrees Fahrenheit
%= percent
acfm = actual cubic feet per minute
CO = carbon monoxide
CTG = combustion turbine generator
lbs/hr = pounds per hour
m/s = meters per second
NOx = nitrogen oxide(s)
PM10 = particulate matter less than 10 microns in diameter
VOC = volatile organic compounds
SOx = sulfur oxides

The controlled hourly emission rates for NO_x, CO and VOC in Table 5.2-12 will conform to the following expected Best Available Control Technology (BACT) requirements for simple cycle gas turbine generators:

NO_x	2.5 ppmvd at 15% O_2
CO	6.0 ppmvd at 15% O_2
VOC	2.0 ppmvd at 15% O_2

The expected emissions and durations associated with individual turbine startup and shutdown events are summarized in Table 5.2-13. Based on vendor information, each turbine startup is expected to take 18 minutes and each turbine shutdown will be completed in 18 minutes. Hours that include startup and shutdown events may have higher NO_x, CO, and VOC emissions than the normal operating condition with functioning SCR and CO catalyst. Accordingly, they were incorporated into the worst-case short- and long-term turbine emissions estimates in the model simulations pertaining to these pollutants (see Section 5.2.2.3).

TABLE 5.2-13
CRITERIA POLLUTANT EMISSIONS FOR EACH COMBUSTION TURBINE DURING STARTUP AND SHUTDOWN

Pollutant	Startup 18 minutes	Shutdown 18 minutes
	Total Pounds per Event	Total Pounds per Event
NO_x[1]	1.25	0.45
CO[2]	3.75	6.40
VOC[2]	0.25	0.25
SO_2[3]	0.13	0.13
PM_{10}	0.56	0.56

Notes:

1. NO_x emissions only are taken from actual source test data on legacy FT8 units during 30 minute startup and shutdown events. Use of these emissions is conservative, because the same pollutant quantities are assumed to be emitted in 18 minute startups and 18 minute shutdowns for the proposed Midway turbines.
2. VOC and CO values came from estimated startup and shutdown emission values provided by the turbine vendors (see Appendix B, Attachment C).
3. SO_2 emission calculation based on worst-case fuel gas sulfur content of 0.5 grains sulfur per 100 dscf gas. For purposes of calculating annual emissions an average sulfur content of 0.32 grains/100 dscf was used.

CO	=	carbon monoxide
CTG	=	combustion turbine generator
NO_x	=	nitrogen oxide(s)
PM_{10}	=	particulate matter less than 10 microns in diameter
VOC	=	volatile organic compounds
SO_2	=	sulfur dioxide

SO_2 emission rates presented in this AFC were calculated assuming 100 percent conversion of the fuel sulfur to SO_2 and the natural gas sulfur limits guaranteed by the gas supplier. The maximum gas turbine SO_2 emission rates for the 1-hour, 3-hour, and 24-hour averaging periods were conservatively calculated assuming a worst-case fuel sulfur concentration of 0.50 grains of total sulfur per 100 standard cubic feet, based on Pacific Gas & Electric criteria for pipeline quality natural gas in the project area. The annual average gas turbine SO_2 emission rate was conservatively calculated based on the lower historical average fuel sulfur concentration of 0.32 grains per 100 standard cubic feet.

Table 5.2-14 shows the equipment operations assumed in developing the worst-case project emissions estimates for each averaging time and pollutant combination addressed in the ambient air quality standards. Notes on the selection of these emissions scenarios and the resulting emission calculations are provided below the table. The scenarios presented in this table correspond to continuous full-load operation of all four turbines (two SwiftPacs) whenever normal operations are indicated. This practice clearly ensures that the maximum emissions that could occur over each averaging time are addressed. However, as described in Section 5.2.2.3.7, additional cases involving other combinations of operating and non-operating turbines were also evaluated in the dispersion modeling analysis to ensure that maximum ground-level pollutant concentrations would also be addressed for all pollutants and averaging times.

TABLE 5.2-14
CRITERIA POLLUTANT SOURCES AND EMISSION TOTALS FOR THE WORST-CASE PLANT-WIDE EMISSION SCENARIOS CORRESPONDING TO ALL AVERAGING TIMES

Averaging Time	Scenario	Pollutant	Emissions in Pounds – Entire Period
1-hour	Two turbines operating at highest commissioning rate, except for SO_2 which uses the full load emission rate for four turbines at normal operations	NO_x	83.3
		CO	39.8
		SO_2	1.76
3-hour	Four turbines operating at normal operating loads.	SO_2	5.28
8-hour	Two turbines operating 8 hours at highest commissioning rates.	CO	670.56
24-hour	For PM_{10} and SO_2, all four turbines operating with 1 startup, 1 shutdown, and remaining time at normal full-load emission rate.	PM_{10}	177.6
		SO_2	42.375
Annual	Four turbines operating for 4,000 total hours which include 365 startups, 365 shutdowns, and 3,781 hour at normal operating loads.	NO_x	45,580
		PM_{10}	29,600
		SO_2	4,540

Worst-case 1-hour NO_x and CO emission rates for both turbines of one SwiftPac will occur during the brief period of equipment commissioning that will follow plant construction (i.e., operation without the benefit of SCR and CO catalyst emissions controls). Commissioning emissions are explained more fully

in Section 5.2.2.2.1. Starwood Power-Midway, LLC will accept a condition limiting turbine commissioning activity to no more than one SwiftPac at a time. Short-term (1-hour, 3-hour) turbine SO_2 emission rates will result from normal full-load operation of four turbines over each averaging period, because SO_2 is solely a function of fuel consumption rate and is essentially unaffected by the operation or non-operation of post-combustion controls.

CO is the only criteria pollutant with an ambient air quality standard for the 8-hour averaging time. The maximum 8-hour emission scenario used for dispersion modeling consists of the two turbines of one SwiftPac operating at the highest commissioning emission rate. This is clearly an extreme worst-case assumption that would be highly unlikely to occur in practice.

The scenario selected to represent a conservative maximum potential 24-hour average emission rates for particulate matter assumes one startup and one shutdown for all four turbines, with the remainder of the day spent in normal full-load operating mode. The scenario selected to represent a conservative maximum potential 24-hour average emission rate for SO_2 and PM_{10} assumes continuous full-load operation for the full duration of this period.

Annual emissions of all pollutants were calculated for the scenario with all turbines operating for 4,000 hours, including 365 startup and shutdown cycles. Estimated maximum annual emissions for the project are presented in Table 5.2-15.

TABLE 5.2-15
ANNUAL OPERATIONAL EMISSIONS
OF CRITERIA POLLUTANTS FROM THE MIDWAY POWER PROJECT

Pollutant	Emissions (tons/year)[1]
SO2	2.29
NOx	22.79
VOC	5.66
PM_{10}[2]	14.80
CO	33.12
Lead	Negligible[3]

Notes:

1 Turbine emissions based on 365 startups and shutdowns and 3,781 hours of normal full-load operations for all four turbines.

2 PM_{10} emissions include both filterable (front-half) and condensable (back-half) particulates.

3 Lead emissions are 'non-detect' from AP-42 for natural gas-fired combustion turbines.

CO = carbon monoxide

NO_x = nitrogen oxide(s)

PM_{10} = particulate matter less than 10 microns in diameter
VOC = volatile organic compounds

SO_2 = sulfur dioxide

5.2.2.2.1 Turbine Commissioning

The commissioning of the FT8-3 SwiftPac natural gas turbines will entail several relatively short periods of operation prior to and during installation and testing of the SCR and CO catalyst systems. During these test periods, emissions of NO_x and CO will be higher than during normal operations after the SCR and CO catalyst systems have become operational, because these controls will be either partially or completely inoperative.

Turbine commissioning activities can be broken down into nine separate test periods as described below. The first six tests occur without the SCR system and oxidation catalyst on-line. For this testing phase, NO_x emissions will be higher because the NO_x emissions control system would not be functioning. The final three tests occur with the SCR and oxidation catalysts fully operational. As noted previously, the applicant is willing to limit turbine commissioning to one SwiftPac unit (two paired turbines) at any one time.

At the conclusion of the commissioning period, all subsequent operational emissions rates will be at the controlled rates discussed previously in this section. Continuous emissions monitoring system (CEMS) for NO_x and CO (plus oxygen) will be operable during the commissioning period to document actual emissions during this period.

Based on information provided by Pratt & Whitney, the following nine specific commissioning tests for each FT8-3 SwiftPac are likely to be conducted:

- Power Turbine Break In (operate unit at synchronous idle and perform a system check – 5 hours);
- Overspeed Test (operate unit at synchronous idle - 1 hour);
- Brush Generator Test (operate unit at several points over entire load range for dynamic commissioning of the voltage regulator – 17 hours);
- Water Injection Tuning (operate unit at several points over entire load range for commissioning of the NO_x water injection system – 12.5 hours);
- Fogger Commissioning (operate unit for commissioning of the fogging system – 4 hours);
- Run Prior to Catalyst Loading (operate unit prior to catalyst loading – 4 hours);
- SCR Commissioning (unit operation to adjust SCR control – 4 hours);
- Performance Testing (operate the unit at full load for performance – 7.75 hours); and
- Emission Compliance (operate the unit at full load for emission tests – 12 hours).

During the commissioning tests the worst-case NO_x and CO emission rates for each turbine are expected to be 41.65 lb/hour and 19.9 lb/hour, respectively. Actual test durations will vary, but total commissioning emissions for each turbine are not expected to exceed totals based on these worst-case hourly rates over 67.25 hours of testing for each turbine (i.e., 2,801 lbs of NO_x and 1,338.3 lbs of CO). As mentioned earlier, the worst-case 1-hour and 8-hour emission rates for both pollutants in the dispersion modeling analysis were based on continuous operation over these averaging periods at the highest hourly emission rates predicted to occur at any time during the entire commissioning effort.

Appendix I, Attachment C presents supporting technical information and calculation spreadsheets used to develop emissions data for the various scenarios of the operational project.

5.2.2.3 Air Dispersion Modeling

The purpose of the air dispersion modeling analysis is to demonstrate that criteria air pollutant emissions from the project would not cause or contribute significantly to a violation of a state or national ambient air quality standard. Potential impacts of non-criteria pollutant emissions from the project are evaluated in Section 5.16, Public Health and Safety. The criteria pollutant modeling addresses emissions from both construction activities and the facility operations that will occur after construction. Impacts from construction activities include fugitive dust from grading and excavating disturbed areas and emissions associated with exhaust combustion products from diesel- and gasoline-fueled construction equipment. The impacts from operations are associated with natural gas combustion in the four turbines. A fumigation modeling analysis was also performed to predict maximum ground-level concentrations from facility operations under specialized meteorological conditions that may produce short-term elevated ground-level pollutant concentrations.

Separate modeling analyses were performed for the construction and operational emissions associated with the project, because these activities would occur during different time periods. The air quality modeling methodology used for the project was previously described in a modeling protocol submitted to CEC and SJVAPCD (URS, 2006). See Appendix I, Attachment D, for a copy of the protocol. The modeling approaches used to assess various aspects of the project's potential impacts to air quality are discussed below.

5.2.2.3.1 Model and Model Option Selections

The modeling was conducted using the USEPA Industrial Source Complex model (ISCST3) (Version 02035) to evaluate maximum potential air quality impacts from the project's construction and operational emissions (USEPA, 1 995a). Staff of SJVAPCD were consulted regarding model selection and stated that ISCST3 is acceptable for evaluating the air quality impacts of this project (SJVAPCD, 2006). ISCST3 has the ability to assess dispersion of emission plumes from multiple point, area or volume sources in flat, simple, and complex terrain, and to utilize sequential hourly meteorological input data. The short-term version of the model was used for modeling concentrations of pollutants having short-term (i.e., 1-, 3-, 8-, and 24-hour) ambient standards. Modeling for pollutants governed by annual ambient air quality standards (i.e., NO_2, SO_2, and PM_{10}), modeling was conducted using ISCST3 with the PERIOD option to predict annual average impacts. The ISCST3 model was run with the following additional user input specifications:

- Final plume rise;
- Stack-tip downwash;
- Buoyancy-induced dispersion;
- Calms processing;
- Default wind profile exponents;

- Default vertical potential temperature gradients; and,
- Rural dispersion coefficients.

Review of aerial photographs and U.S. Geological Survey (USGS) topographic maps indicate that the area surrounding the project is more than 90 percent rural; therefore, rural dispersion coefficients were used in the modeling analyses for this project.

5.2.2.3.2 Building Wake Effects

The effect of building wakes (i.e., downwash) on the dispersion of exhaust plumes from the gas turbines was evaluated for the turbines emissions in accordance with USEPA guidance (USEPA, 1985). Downwash is not applicable to area and volume sources and therefore was not considered in the modeling of construction phase impacts to air quality. Data on the locations and dimensions of buildings within the project site that could potentially cause plume downwash effects for the two SwiftPac stacks were determined for different wind directions using the USEPA Building Profile Input Program – Prime (BPIP-Prime) (Version 98086) (USEPA, 1995b). Four structures and three water tanks were identified in the project layout to be included in the downwash analysis, including the following:

- Demineralized water tank 1;
- Demineralized water tank 2;
- Demineralized water pump;
- Gas turbine building 1;
- Gas turbine building 2;
- SCR 1; and,
- SCR 2.

The results of the BPIP-Prime analysis were included in the ISCST3 input files to enable downwash effects to be simulated. The ISCST3 model considers direction-specific downwash parameters, as provided in the BPIP-Prime program. Input and output electronic files for the BPIP-Prime analysis are included with those from all other dispersion modeling analyses on the compact disks that are being submitted to accompany this AFC.

5.2.2.3.3 Meteorological Data

The modeling analyses for the project used a 5-year record of hourly meteorological data collected at the nearest long-term meteorological station to the project site, the Fresno Yosemite International Airport. The Fresno Yosemite International Airport (also known as the Fresno Air Terminal) is located approximately 48 miles east of the project site, and is the closest full-time meteorological station to the project site that provides data suitable for modeling. Hourly meteorological data from 1987 through 1991 were selected as the 5 consecutive years with the highest data capture currently available for this station (greater than 90 percent) for all years.

The meteorological data used in this analysis were recommended for this AFC by staff of the San Joaquin Valley Air Pollution Control District (SJVAPCD, 2006), and were downloaded from the District's website. Despite the distance of the project site from the Fresno Yosemite International Airport, the terrain and land use similarities throughout this part of the San Joaquin Valley and the lack of significant intervening terrain features between the airport and the site suggest that the selected meteorological data are reasonably representative of conditions at the Midway site.

As discussed briefly in Section 5.2.1, the topography of the San Joaquin Valley area is a wide, relatively flat valley with terrain elevations above sea level. The Diablo Range Mountains provide the terrain boundaries of the valley to the west and southwest and the Sierra Nevada Mountain range bounds the entire valley on the east side. The California inland valley is a long valley that extends from Redding in the northern portion of California (called the Sacramento Valley north of Stockton) to Bakersfield in the south (San Joaquin Valley south of Stockton). The San Joaquin Valley is approximately 50 miles across at the northern edge near Stockton and expands to more than 65 miles wide near Visalia and is only about 20 miles wide near Bakersfield. The project site is located near the western edge of the Valley, approximately 6 miles southeast of the Panoche Hills, foothills of the Diablo Range. The Fresno Yosemite International Airport is located in the eastern central portion of the valley, approximately 48 miles east of the project.

The terrain immediately surrounding the project site can be categorized as flat, or gradually sloping irrigated farm lands, with very few areas of concentrated human population. The terrain around the Fresno Yosemite International Airport is also flat and the area outside the City of Fresno urban area is flat irrigated farm lands. Additionally, there are no significant terrain features in the area between the Airport and the Midway site that would result in important differences in wind or temperature conditions between the two areas. Therefore, the 5 years of meteorological data selected from the Fresno Yosemite International Airport were determined to be representative for the project.

The upper air meteorological data used in the modeling analysis reflect atmospheric soundings conducted over the same five-year period in Oakland, California approximately 110 miles northwest of Midway. This is the closest National Weather Service data and is appropriate for use in all of central and northern California for modeling purposes.

5.2.2.3.4 Receptor Locations

Receptors for the criteria pollutant modeling analysis were placed at off-property locations to evaluate the impacts of the project (see Figures 5.2-3 and 5.2-4). Receptor spacing varies according to distance from the project property boundary. To ensure that the locations of highest potential impact were identified, the receptor spacing was closest at the project property boundary and increased with distance from the boundary. Receptors were placed as far as 10 kilometers from the property boundary. Note that because the Midway project will be permitted as a modification to the existing CalPeak Panoche facility, the boundary used to define the nearest receptors for the dispersion modeling analysis encompasses the combined sites for both plants. The following receptor spacing was used in the modeling analysis:

- 25-meter spacing extending around the property boundary and out to 1,000 meters beyond the boundary;

- 100-meter spacing between 1,000 meters and 5 kilometers of the property boundary; and
- 250-meter spacing between 5 kilometers and 10 kilometers of the property boundary.

If a maximum predicted concentration value was located in the portions of the receptor field with 100-meter or 250-meter spacing, the model was rerun using a dense receptor grid that was placed around the initial maximum concentration point. This dense receptor grid utilized 25-meter spacing and extended 500 meters in all directions from the point of initial point maximum concentration.

The receptor locations were designated using Universal Transverse Mercator (UTM) coordinates (North American Datum 27). Receptor elevations were obtained from the USGS 7.5-minute electronic terrain data.

5.2.2.3.5 Construction Impacts Modeling.

Section 5.2.2.1, Construction Emissions, describes the development emission estimates for the different stages of project construction. Since construction equipment will move continuously around the site during working hours, the corresponding emissions were represented in the dispersion modeling analysis as aggregated volume sources for fuel combustion emissions and area sources for fugitive dust emissions, rather than as point sources at fixed locations. To assess impacts from fugitive dust, the main facility site was modeled as a single area source of 5.6 acres. Small area sources were deployed along the route of the water pipeline to the site in order to include the fugitive dust impacts from constructing that project component. Based on information provided by the engineering design contractor, the peak month in terms of air pollutant emissions is expected to be the third month of construction. Activities associated with the water pipeline installation and the construction laydown area (within the proposed site) would involve minimal equipment usage, primarily for very short-term excavation and parking for worker vehicles. The fuel combustion emissions were represented in the dispersion model simulations as a single volume source within the main facility site.

Fugitive dust resulting from all construction activities in all areas on the project site was accounted for in the dispersion model as follows. The main facility site was modeled as a single 5.6-acre area source. The emissions resulting from the water pipeline installation were modeled as an additional four area sources along the linear route from the CalPeak Panoche well to the Midway site. Dust generation and equipment exhaust emissions associated with the on-site portion of the water pipeline construction were included in the larger volume and area sources, referred to above.

URBEMIS2002 emissions calculations evaluate each of the stages of construction separately. In reality, it is possible that activities associated with the building and asphalting stages may overlap; however the equipment usage on any day for all activities will not exceed the levels used for the third month of construction. In order to account for grading activities that may occur concurrently with the building and asphalting work, fugitive dust emissions resulting from these activities are included in the dispersion model simulations along with those from the appropriate fuel combustion emissions. This model input simulates a worst-case scenario, as it is unlikely that all fugitive dust resulting from the site grading would occur at the same time as maximum combustion emissions from fueled equipment.

The ozone limiting method (OLM) was employed to estimate maximum 1-hour and annual NO_2 impacts from the construction activities only. Measured ozone concentration data for the same hour corresponding

to the highest modeled NO_x concentrations for each year of the meteorological data set were used to estimate the atmospheric conversion of emitted NO to NO_2. The annual NO_2 impacts were estimated by the OLM using the annual average concentration of ozone to estimate the atmospheric conversion to NO_2. Short term and long term impacts of construction are further discussed in Section 5.2.2.4.

5.2.2.3.6 Operations Impacts Modeling

Turbine Impact Screening Modeling

Screening modeling was performed to determine which turbine operating mode produced "worst-case" impacts; i.e., maximum ground level concentrations for each pollutant and averaging time. The screening modeling incorporated one turbine operating (and the flow rate from just one turbine) with a unit emission rate in each SwiftPac, which will not be an actual operating scenario. If only two turbines operate at any given time, they will operate in the same SwiftPac unit. Depending on whether a high temperature or low temperature SCR catalyst system is ultimately selected, the exhaust flow rates and temperatures would be different. Thus, the screening analysis evaluated relative impacts for both designs operating at three ambient temperatures that cover the range of conditions expected at the Midway site. A total of six separate screening scenarios were thus evaluated by modeling with the five year Fresno meteorological input data set discussed previously. The high catalyst temperature design operating at 114 ºF ambient temperature produced the highest offsite pollutant concentration for all averaging times, except for CO 8-hour, SO_2 24-hour, and PM_{10} 24-hour. The highest offsite concentrations for these three averaging times were predicted for the high catalyst temperature design and 18 ºF ambient temperature. The SwiftPac units will operate only with one or two turbines at 100% load, and no other emissions sources will be present at the site.

The screening modeling results shown in Table 5.2-16 were used to identify the turbine stack parameters that led to the highest predicted ground-level pollutant concentration. The resulting worst-case turbine operating scenarios identified by the screening modeling exercise are presented in Table 5.2-17.

In all subsequent modeling analyses, emissions from the four natural-gas turbines were modeled using the stack parameters of the worst-case operating scenarios mentioned above. However, pollutant emission rates corresponding to 100 percent load conditions were assumed in the modeling analyses.

TABLE 5.2-16
CTG SCREENING MODEL RESULTS – ALL SCENARIOS, ALL YEARS (µg/m^3)

Scenario			100% Load High Catalyst Temperature			100% Load Low Catalyst Temperature		
		Pollutant	114° F	63° F	18° F	114° F	63° F	18° F
1987	1 hour	$NO_x/CO/SO_2$	4.48/5.45/0.71	4.39/5.33/0.69	4.46/5.41/0.70	3.94/4.79/0.62	3.99/4.84/0.63	4.46/5.42/0.70
	3 hour	SO_2	0.29	0.29	0.31	0.29	0.28	0.24
	8 hour	CO	1.0	1.06	1.16	1.02	1.08	1.04
	24 hour	PM_{10}/SO_2	0.23/0.06	0.24/0.06	0.31/0.07	0.22/0.05	0.23/0.05	0.24/0.06
	Annual	$NO_x/PM_{10}/SO_2$	0.04/0.03/0.01	0.04/0.03/0.01	0.04/0.03/0.01	0.04/0.03/0.01	0.04/0.03/0.01	0.04/0.03/0.01
1988	1 hour	$NO_x/CO/SO_2$	3.82/4.64/0.60	4.19/5.09/0.66	3.95/4.80/0.62	3.89/4.73/0.61	4.28/5.20/0.67	4.0/4.85/0.63
	3 hour	SO_2	0.35	0.36	0.40	0.32	0.36	0.41
	8 hour	CO	1.53	1.65	1.91	1.32	1.52	1.74
	24 hour	PM_{10}/SO_2	0.40/0.10	0.43/0.10	0.56/0.13	0.36/0.09	0.40/0.10	0.45/0.11
	Annual	$NO_x/PM_{10}/SO_2$	0.04/0.03/0.01	0.04/0.03/0.01	0.04/0.03/0.01	0.04/0.03/0.01	0.04/0.03/0.01	0.04/0.03/0.01
1989	1 hour	$NO_x/CO/SO_2$	5.14/6.25/0.81	5.05/6.13/0.79	5.12/6.21/0.80	5.16/6.26/0.81	5.06/6.14/0.80	5.11/6.20/0.80
	3 hour	SO_2	0.46	0.44	0.45	0.45	0.44	0.45
	8 hour	CO	1.67	1.62	1.84	1.67	1.61	1.65
	24 hour	PM_{10}/SO_2	0.46/0.11	0.47/0.11	**0.67/0.16**	0.420/0.10	0.43/0.10	0.46/0.11
	Annual	$NO_x/PM_{10}/SO_2$	0.06/0.04/0.01	0.05/0.04/0.01	0.05/0.04/0.01	0.05/0.04/0.01	0.05/0.03/0.01	0.05/0.04/0.01
1990	1 hour	$NO_x/CO/SO_2$	5.10/6.19/0.80	5.18/6.29/0.81	5.13/6.23/0.81	5.12/6.22/0.80	5.20/6.32/0.82	5.15/6.26/081
	3 hour	SO_2	0.46	0.48	0.46	0.46	0.48	0.47
	8 hour	CO	1.50	1.59	1.59	1.52	1.60	1.55
	24 hour	PM_{10}/SO_2	0.35/0.08	0.35/0.08	0.35/0.08	0.32/0.08	0.32/0.08	0.33/0.08
	Annual	$NO_x/PM_{10}/SO_2$	**0.07/0.04/0.01**	0.06/0.04/0.01	0.06/0.04/0.01	0.06/0.04/0.01	0.06/0.04/0.01	0.06/0.04/001
1991	1 hour	$NO_x/CO/SO_2$	**10.16/12.33/1.60**	9.77/11.86/1.54	10.03/12.18/1.58	9.07/11.02/1.43	8.67/10.53/1.36	9.96/12.10/1.57
	3 hour	SO_2	**0.53**	0.51	0.53	0.48	0.45	0.52
	8 hour	CO	2.35	2.23	**2.38**	2.18	2.05	2.29
	24 hour	PM_{10}/SO_2	0.53/0.13	0.49/0.12	0.51/0.12	0.53/0.13	0.49/0.12	0.51/0.12
	Annual	$NO_x/PM_{10}/SO_2$	0.06/0.04/0.01	0.06/0.04/0.01	0.06/0.04/0.01	0.06/0.04/0.01	0.06/0.04/0.01	0.06/0.04/0.01

TABLE 5.2-17
NATURAL GAS TURBINE STACK PARAMETERS CORRESPONDING TO MAXIMUM PREDICTED GROUND LEVEL POLLUTANT CONCENTRATIONS

Pollutant	Averaging Time	Operating Condition
NO_2	1 hour	100 percent load, 114 °F, 1991, high catalyst temp
	Annual	100 percent load, 114 °F, 1990, high catalyst temp
CO	1 hour	100 percent load, 114 °F, 1991, high catalyst temp
	8 hour	100 percent load, 18 °F, 1991, high catalyst temp
SO_2	1 hour	100 percent load, 114 °F, 1991, high catalyst temp
	3 hour	100 percent load, 114 °F, 1991, high catalyst temp
	24 hour	100 percent load, 18 °F, 1989, high catalyst temp
	Annual	100 percent load, 114 °F, 1990, high catalyst temp
PM_{10}	24 hour	100 percent load, 18 °F, 1989, high catalyst temp
	Annual	100 percent load, 114 °F, 1990, high catalyst temp

Notes:
CO = carbon monoxide
NO_2 = nitrogen dioxide
PM_{10} = particulate matter less than 10 microns in diameter
SO_2 = sulfur dioxide

Refined Operations Modeling

A refined modeling analysis was performed to estimate offsite criteria pollutant impacts from operational emissions of the project. The modeling was performed according to the methodology described in the previous sections using a 5-year record of hourly meteorological data. The turbines were modeled in several different operating configurations as described below.

The ISCST3 model simulated natural gas combustion emissions from two stacks, one for the two turbines of each SwiftPac. Each stack will have a 15-foot (4.57 meter) diameter and a height of 50 feet (15.24 meter) above local grade. The stacks were modeled as point sources at their proposed locations and with the stack exhaust flow rates and temperatures shown in Table 5.2-12. Information on hourly operating emission rates were supplied by the turbine vendor and are included in Appendix I, Attachment C.

Each SwiftPac generating unit consists of two simple cycle gas turbines, and these units are the only emissions sources associated with the operation of the project. According to Starwood, each turbine will be operated only at 100 percent load, such that evaluation of partial load conditions for individual turbines is not meaningful. However, the exhaust flow rate from either SwiftPac stack will obviously be lower when only one turbine is operational, so it may be possible to produce higher ground-level concentrations (due to lower plume rise) when only one of the turbines of a particular SwiftPac is in use.

The only realistic possible modes of operation for the Starwood SwiftPacs will be:

1. One turbine of one SwiftPac operating at 100% capacity - 1 turbine operating (2 combinations);
2. Two turbines of one SwiftPac operating at 100% capacity - 2 turbines operating (2 combinations);
3. Two turbines of one SwiftPac operating at 100% capacity and one turbine of the second SwiftPac operating at full capacity - 3 turbines operating (2 combinations); and,
4. Two turbines of each of the two SwiftPacs operating at 100% capacity - 4 turbines operating.

Theoretically, a situation could also occur in which one turbine from each of the SwiftPacs operates at the same time, but Starwood has stated that this would never occur in practice, since it would be more fuel efficient to operate two turbines of the same SwiftPac whenever the output of only two turbines is required. In any case, the impacts for that situation obviously could not be higher than those for Scenario 3 listed above (two turbines plus one turbine). Accordingly, the case with one turbine operating for each SwiftPac was not modeled.

It is also obvious that modeling Scenario 1 above could not result in higher pollutant concentrations than Scenario 3, so only the latter case was retained for modeling. Similarly, the cases with two turbines operating at just one SwiftPac (Scenario 2) could not produce higher impacts than those for both SwiftPacs operating with two turbines each (Scenario 4), or a combination with two turbines for one SwiftPac and one turbine for a second SwiftPac (Scenario 3). Accordingly Scenario 2 was also not included in the modeling analysis.

Based on this reasoning, only three equipment operating scenarios were modeled to ensure that maximum impacts from the proposed project were addressed. These include:

- Two operational turbines for one SwiftPac and one operational turbine for the second SwiftPac (2 combinations depending on whether the east or west SwiftPac is assumed to have two operating turbines, and
- Two operational turbines each for both SwiftPacs.

Thus the refined modeling analysis included separate simulations with each of these three emission source configurations using the full 5-year meteorological input data set to ensure that the maximum impacts would be reported. The model results presented later in this section are the highest concentrations for each pollutant and averaging time among those predicted for these three operating scenarios.

5.2.2.3.7 Fumigation Analysis

Fumigation may occur when a plume that was originally emitted into a stable layer of air is mixed rapidly to ground-level when unstable air below the plume reaches plume height. Fumigation can cause relatively high ground-level concentrations for some elevated point sources. Fumigation can occur during the breakup of the nocturnal radiation inversion by solar warming of the ground surface (inversion breakup fumigation), or by the transport of pollutants from a stable marine environment to an unstable inland environment (shoreline fumigation).

A fumigation analysis was performed using the USEPA model SCREEN3 (Version 96043). The SCREEN3 model was used to calculate concentrations from inversion breakup fumigation; no shoreline fumigation was performed for the project site. A unit emission rate was used (1 gram per second) in the fumigation modeling to represent the plant emissions and the model results were given in terms of predicted maximum concentrations per unit emission rate that were then scaled to reflect plant emissions for each pollutant. Inversion breakup fumigation concentrations were calculated for hourly and 3-hour averaging times using USEPA-approved conversion factors. These multiple-hour model predictions are very conservative since inversion breakup fumigation is a transitory condition that would most likely affect a given plume for only a few minutes at a time. Input and output electronic files for the fumigation modeling analysis are included in the modeling CDs submitted with this AFC.

5.2.2.4 Modeling Results – Compliance with Ambient Air Quality Standards

Air dispersion modeling was performed according to the methodology described in Section 5.2.2.3, Air Dispersion Modeling, to evaluate the maximum increase in ground-level pollutant concentrations resulting from the project emissions, and to compare the maximum predicted impacts, including background pollutant levels, with applicable short-term and long-term NAAQS. The impacts from construction activities and plant operations were analyzed separately because they will occur during different time periods. The same 5-year record of hourly meteorological data described in Section 5.2.2.3 was used in the modeling to evaluate both construction and operational impacts. In each case, the ISCST3 model predicted the increases in criteria pollutant concentrations at all receptor locations due to project emissions only. Next, the maximum incremental increases for each pollutant and averaging time were added to the maximum background concentrations, based on air quality data collected at the most representative monitoring stations during the last 5 years (i.e., 2001 through 2005). These background concentrations are presented and discussed in Section 5.2.1.2, Existing Air Quality. The resulting total pollutant concentrations were then compared with the most stringent CAAQS or NAAQS. Modeled criteria pollutant impacts for the construction and operational phases of the project are summarized in Table 5.2-18.

5.2.2.4.1 Construction Impacts

For the construction phase of the project, the predicted maximum short-term and long-term impacts for all pollutants were predicted to occur close to the plant site, with most peaks falling along the construction site boundary. This result reflects the relatively low source release heights that characterize construction equipment exhaust and dust-generating activities. Specifically, the predicted maximum annual impacts for SO_2, PM_{10}, and NO_x were predicted to occur along the southeastern boundary of the main construction site southeast of Unit 1. The predicted maximum 24-hour impacts for SO_2 and PM_{10} were predicted to occur along the southern boundary of the main construction site south of Unit 2. The locations of maximum predicted concentrations for other pollutants and averaging times were on the northwest boundary of the 5.6-acre power plant site near the proposed access road.

Maximum predicted concentrations of CO and SO2 during construction are well below the applicable ambient air quality standards. Peak 24-hour and annual concentrations of PM_{10} are predicted to exceed the federal and state ambient standards for this pollutant, but Table 5.2-18 shows that these results are primarily caused by high background concentrations, with only relatively small contributions from the

proposed construction activities (7.55 µg/m^3 and 1.61 µg/m^3 for the 24-hour and annual averaging periods, respectively).

The highest hourly and annual NO_x concentrations predicted by the ISCST3 model for each year of meteorological input data plus the maximum background NO_2 values recorded at the Parlier monitoring station were above the California 1-hour and federal annual NO_2 standards, respectively. However, this result corresponds to an assumption of full conversion of NO to NO_2 in the emission plumes, which would not occur in the area around the project site. Therefore, the ozone limiting method (OLM) was applied to the short-term and long-term NO_x modeling results to provide a more reasonable characterization of plume chemistry in this area. Hourly ozone data recorded from the Parlier monitoring station for the same years as the input meteorological data were used to identify the ozone concentration for the same hour in each year when the maximum 1-hour NO_x concentrations due to construction activities were predicted to occur and this value was used in the OLM calculation for the hourly NO_2 concentration. Similarly, the annual average ozone concentration was used for the OLM estimate of annual NO_2.

When the OLM calculations were completed, the peak predicted NO_2 concentration due to project construction emissions, plus the highest recorded NO_2 background level at the Parlier monitoring station from 2001 through 2005, resulted in a maximum total 1-hour NO_2 concentration of 453.4 µg/m^3, which is below the 1-hour California standard (470 µg/m^3), and a maximum total annual concentration of 88.8 µg/m^3, which is below the annual federal standard (100 µg/m^3).

5.2.2.4.2 Normal Plant Operations

As described previously, the emissions used in the model simulations for the project operations were selected to ensure that the maximum potential impacts would be addressed for each pollutant and averaging time corresponding to an ambient air quality standard.

As shown in the lower part of Table 5.2-18, maximum modeled concentrations due to the operational plant are below the federal Prevention of Significant Deterioration (PSD) significant impact levels (SILs) for all criteria pollutants. Although the project emissions will be well below the levels that trigger PSD review (see Section 5.2.5.2, Prevention of Significant Deterioration Requirements), these SILs are often used as a measure of the potential impacts of proposed new sources in California.

Note that Table 5.2-18 lists two maximum values for the one-hour NO_2 concentration. These include the highest impacts that are predicted to occur under the extreme worst-case NO_x emissions scenario that will occur only during turbine commissioning, as well as the highest potential value during normal plant operations when all four turbines are operating with functional control equipment, which is obviously a more typical condition. The table shows that the modeled impacts due to normal operations of the project would not cause a violation of any NAAQS and would not significantly contribute to the existing violations of the federal and state PM_{10} standards. In addition, as described later, all of the project's operational emission of non-attainment pollutants and their precursors, including $PM_{10,}$ will be offset to result in a net air quality benefit.

All three equipment operating scenarios discussed in Section 5.5.3.7 were modeled for all pollutants and the full 5-year meteorological input data set to ensure that maximum impacts from the proposed project

TABLE 5.2-18
ISCST3 MODELING RESULTS

Pollutant	Averaging Period	Maximum Modeled Impact (µg/m³)	Background[1] (µg/m³)	Maximum Total Predicted Concentration (µg/m³)	PSD Significant Impact Level[2] (µg/m³)	Most Stringent AAQS (µg/m³)	UTM Coordinates East (m)	UTM Coordinates North (m)
Construction Impacts								
CO	1 hour	6,425	7,705	14,130	NA	23,000	716,359	4,059,097
	8 hour	3,943	5,156	9,099	NA	10,000	716,359	4,059,097
NO_2	1 hour[3]	335.0	118.44	453.4	NA	470	716,359	4,059,097
	Annual[3]	64.3	24.53	88.83	NA	100	716,525	4,059,000
PM_{10}	24 hour	10.5	193.0 [4]	203.5	NA	50	716,527	4,058,033
	Annual	2.52	43.0 [4]	45.52	NA	20	716,509	4,059,015
SO_2	1 hour	0.47	23.6	24.07	NA	655	716,359	4,059,097
	3 hour	0.33	15.6	15.93	NA	1,300	716,341	4,059,088
	24 hour	0.06	10.5	10.56	NA	105	716,455	4,058,964
	Annual	0.01	5.3	5.31	NA	80	716,525	4,059,000
Routine Plant Operation Impacts								
CO	1 hour[5]	54.65	7,705	7,760	2,000	23,000	716,675	4,058,825
	8 hour[6]	15.47	5,156	5,171	500	10,000	715,050	4,049,625
NO_2	1 hour[5]	114.37	118.44	232.81	NA	470	716,675	4,058,825
	1 hour (normal)	7.83	118.44	126.27	NA	470	716,675	4,058,825
	Annual[7]	0.033	24.53	24.56	1	100	707,700	4,056,975
PM_{10}	24 hour[8]	0.68	193.0 [4]	193.68	5	50	707,700	4,056,975
	Annual[7]	0.021	43.0 [4]	43.02	NA	12	707,700	4,056,975
$PM_{2.5}$	24 hour[8,9]	0.68	110.0 [4]	110.68	NA	65	707,700	4,056,975
	Annual[7,9]	0.021	21.6 [4]	21.62	NA	12	707,700	4,056,975
SO_2	1 hour[5]	1.21	23.6	24.81	NA	655	716,675	4,058,825

TABLE 5.2-18
ISCST3 MODELING RESULTS
(CONTINUED)

Pollutant	Averaging Period	Maximum Modeled Impact (ìg/m³)	Background[2] (ìg/m³)	Maximum Total Predicted Concentration (ìg/m³)	PSD Significant Impact Level[1] (ìg/m³)	Most Stringent	UTM Coordinates	
						AAQS (ìg/m³)	East (m)	North (m)
	3 hour[10]	0.59	15.6	16.19	25	1,300	711,225	4,052,825
	24 hour[8]	0.16	10.5	10.66	5	105	707,700	4,056,975
	Annual[7]	0.0033	5.3	5.30	1	80	708,000	4,056,925

Notes:

$\mu g/m^3$ = micrograms per cubic meter
CO = carbon monoxide
ISCST3 = USEPA Industrial Source Complex model, Version 02035
m = meters
NA = Not applicable
AAQS = Ambient Air Quality Standard
NO_2 = nitrogen dioxide
OLM = ozone limiting method
PM_{10} = particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter. All PM emissions during operation assumed to be $PM_{2.5}$
PSD = Prevention of Significant Deterioration
SO_2 = sulfur dioxide
UTM = Universal Transverse Mercator

1 Background represents the maximum values measured at Fresno First St. (CO, PM_{10}, $PM_{2.5}$), Parlier (NO_2), or Fresno Fremont School (SO_2) monitoring stations, 2001-2005, depending on pollutant.

2 Source: 40 CFR 52.21.

3 Results for 1-hour and annual NO_2 during construction used OLM to estimate NO_2 impacts.

4 PM_{10} and $PM_{2.5}$ background levels exceed ambient standards.

5 Maximum hourly impact based on two turbines under commissioning conditions.

6 Maximum 8-hour impacts based on two turbines operating for 8 hours under commissioning rate.

7 Annual impacts based on 3,781 hours of normal operation, 365 startups, and 365 shutdowns for all four turbines (total of 4,000 hours each turbine).

8 Maximum 24-hour impacts based on one startup, one shutdown and remainder of period at normal operations for four turbines.

9 All operational project equipment PM_{10} emissions assumed to be $PM_{2.5}$.

10 Maximum 3-hour impacts based on 3 hours of normal operation for four turbines.

were addressed. The operational impacts in Table 5.2-18 represent the highest predicted concentrations obtained from modeling all three turbine operating conditions.

Figure 5.2-5 indicates the locations of the maximum predicted off site pollutant concentrations associated with the proposed Midway facility.

5.2.2.4.3 Fumigation Impacts

Potential worst-case fumigation impacts were modeled according to the method described in Section 5.2.2.3, Air Dispersion Modeling. The SCREEN3 modeling results obtained with a unit emission rate for the Midway gas turbines were multiplied by the actual turbine emission rates to obtain the 1-hour values presented below. The 1-hour values are multiplied by the USEPA conversion factor of 0.9 to estimate the maximum 3-hour concentration. As shown in Table 5.2-19, the resulting incremental concentration predictions for fumigation conditions are well below the corresponding modeled maximum operational impacts that were presented for non-fumigation conditions in the lower part of Table 5.2-18.

TABLE 5.2-19
PROJECT OPERATIONS FUMIGATION IMPACT SUMMARY

Pollutant	Source	Inversion Impact (µg/m³)	Distance to Maximum Impact (meters)
NO_2 1 hour[1]	Turbine	7.78	14,255
CO 1 hour[2]	Turbine	3.72	14,255
SO_2 1 hour[3]	Turbine	0.08	14,255
SO_2 3 hour[4]	Turbine	0.07	14,255

Notes:

1 NO_2 modeled with turbine in commissioning operation, 5.248 g/s and stack parameters for 100 percent load at 18°F with high catalyst temperature.

2 CO modeled with turbine in commissioning mode, 2.507 g/s and stack parameters of 100 percent load at 18°F with high catalyst temperature.

3 SO_2 modeled with turbine at 0.054 g/s emissions and 100 percent load at 18°F with high catalyst temperature.

4 SO_2 1-hour results multiplied by 0.9 to convert to 3-hour.

% = percent

µg/m³ = micrograms per cubic meter

CO = carbon monoxide

NO_2 = nitrogen dioxide

SO_2 = sulfur dioxide

5.2.2.4.4 Impacts for Non-attainment Pollutants and their Precursors.

The emission offset program described in the SJVAPCD Rules and Regulations was developed to implement the Clean Air Act requirement to ensure a net air quality improvement when new sources locate within the district. Project impacts on the concentration levels of non-attainment pollutants (PM_{10} and O_3) and their precursors (SO_x, NO_x, and VOC) will be fully mitigated by emission offsets. The offsets have not been accounted for in the modeled impacts noted above. Thus, the net impacts of Midway project emissions will actually be somewhat lower than has been indicated in the foregoing presentation of model results.

5.2.2.4.5 Turbine Commissioning

According to Pratt & Whitney, each SwiftPac could be operated for up to 67.25 hours for purposes of commissioning the turbine and associated generating equipment. Emissions estimates for the nine phases of commissioning described in Section 5.2.2.2 were provided by the turbine manufacturer, and have been used to estimate maximum ground level pollutant concentrations associated with these activities.

Maximum potential short-term (1-hour, 8-hour) impacts due to NO_x and CO emissions during commissioning were evaluated by dispersion modeling with the conservative assumption that the two turbines of a single SwiftPac would be operating concurrently at the highest commissioning emission rates for a full one-hour or eight-hour period. Specifically, the maximum 1-hour NO_x emission rates of 83.3 lbs/hr/SwiftPac (10.5 g/sec/SwiftPac) and the maximum 1-hour CO emission rate of 39.8 lbs/hr/SwiftPac (5.01 g/sec/SwiftPac) were predicted by the ISCST3 model to result in maximum incremental hourly concentrations of 61.36µg/m^3 NO_2 and 29.32 µg/m^3 CO.

Similarly, the assumed maximum 8-hour CO emission rate of 39.8 lbs/hr/SwiftPac (5.01 g/sec/SwiftPac) resulted in a predicted maximum incremental 8-hour concentration of 7.60 µg/m^3 for this pollutant during commissioning.

Note that the above results were obtained by assuming continuous operation at the very highest emission rates among those for all nine sets of commissioning tests. In reality, commissioning emissions and impacts during most of this phase of the project will be considerably lower than the values represented here.

Table 5.2-20 shows that when these peak incremental commissioning impacts are added to applicable background concentrations and compared with the most stringent state or national ambient standards, the results are below the applicable ambient air quality standards. Commissioning modeling was not conducted for PM_{10} and SO_2, as the emission rates for these pollutants will be essentially the same during commissioning as for normal operations.

TABLE 5.2-20
PROJECT COMMISSIONING MODELING RESULTS

Pollutant	Averaging Period	Maximum Modeled Impact (mg/m^3)	Background[1] (mg/m^3)	Total Predicted Concentration (mg/m^3)	Most Stringent Standard (mg/m^3)
Commissioning Impacts					
CO	1 hour	29.32	7,705	7,734	23,000
	8 hour	7.60	5,011	5,019	10,000
NO_2	1 hour	61.36	169.8	231.16	470

Notes:
1 Background represents the maximum value measured at Fresno First St. monitoring stations, 2001-2005.
NAAQS = Most stringent ambient air quality standard for the averaging period.
µg/m^3 = micrograms per cubic meter
CO = carbon monoxide
NO_2 = nitrogen dioxide

5.2.3 Cumulative Impacts

CEC requirements specify that an analysis is required to determine the cumulative impacts of the project and other projects within a 6-mile radius that have received construction permits but are not yet operational or that are in the permitting process or can be expected to do so in the near future. Information requests have been made to SJVAPCD to obtain data on new projects planned within six miles from the proposed site. The resulting list of projects will be submitted to CEC for final determination of which new projects need to be evaluated by cumulative modeling. It is understood that the cumulative analysis will need to include, at a minimum, the emissions from the existing CalPeak Panoche and Wellhead Peaker plants, as well as the Panoche Energy Center that is being proposed at a site just west of the Midway project.

Additional dispersion modeling will be submitted as an addendum to this AFC at a later date. Such a cumulative analysis would use the ISCST3 model with the same five-year meteorological input data set and receptor grids used for modeling Midway impacts. Decisions regarding which other sources are to be included and the manner in which these sources will be represented for modeling will be made in consultation with CEC and SJVAPCD.

5.2.4 Mitigation Measures – Emissions Offsets

Section 4.5.3 of SJVAPCD Rule 2201 and CEC policy will require that project operational emissions above 10 tons per year of NO_x or VOC, 100 tpy of CO, 14.6 tpy of PM_{10} and 27.375 tpy of SO_x be offset by emission reductions achieved at other sources. Per Section 4.6.1 of this rule, offsets for CO are not required if it can be demonstrated by modeling that the project's emissions will not cause or contribute to violations of the ambient standards for that pollutant. Modeling results presented in Section 5.2.2.3, Air Dispersion Modeling, provide this demonstration for CO. Thus offsets for this pollutant are not proposed.

Based on emissions data presented in Section 5.2.2.2, Operational Emissions, annual emissions of NO_x would exceed the offsets trigger of 10 tpy for the proposed operating year of 4,000 hours per turbine and PM_{10} emissions would exceed the 14.6 tpy threshold for that pollutant. Emissions of SO_x and VOC would be significantly less than the SJVAPCD thresholds of 27.375 tpy and 10 tpy, respectively. According to Rule 2201 Section 4.7.2, offsets need to be provided for the quantity of emissions above the offsets thresholds described above. However, it is CEC's established policy to require offsets for the full emissions of all non-attainment pollutants and their precursors. Accordingly, the Applicant will commit to offsetting the full project emissions of NO_x, VOC, PM_{10}, and SO_2.

Starwood Power-Midway, LLC will purchase emission reduction credits (ERCs) sufficient to comply with SJVAPCD and CEC requirements. Rule 2201 Section 4.8 specifies distance ratios that must be applied in determining the quantity of ERCs to be provided for a new source. If the location of the offsetting emission reduction is less than 15 miles from the new source, the ratio for a major source is 1.3 to 1. If the original location of the offsetting emission reduction is 15 miles or more from the new source, the applicable offset ratio is 1.5 to 1. Note that Midway will not be a major source as this term is defined in Section 3.24 of Rule 2201 (25 tpy of NO_x or VOC, 15 tons of PM_{10} or SO_2, 100 tpy of CO).

Section 4.5.3 of Rule 2201 states that the required offset amounts for stationary sources that remain constant throughout the year are expressed in pounds per year, whereas offsets for quarterly potential to

emit that is not constant throughout the year and seasonal sources are calculated in pounds per quarter. The expected distribution of turbine operating hours for Midway among the four quarters of the year will be as follows:

- First quarter 800 hours
- Second quarter 800 hours
- Third quarter 1,400 hours
- Fourth quarter 1,000 hours

The Midway project will not be a seasonal source (defined in Rule 2201 Section 3.35 as a source with more than 90 percent of annual emissions occurring within a consecutive 120-day period), but the quarterly potential to emit will not be constant throughout the year. Consequently, emissions offsets for this facility will be calculated in pounds per quarter.

Table 5.2-21 lists the estimated offset requirements for the operation of Midway. Annual project emissions from Table 5.2-15 have been apportioned among the four calendar quarters in proportion to the expected distribution of operating hours shown above. The quantity of credits needed to offset emissions for each pollutant will depend on the distance from the Midway site at which the offsetting emission reductions occurred. Because of the very rural character of the Midway site and the lack of significant nearby emission sources, it is probable that the maximum distance ratio of 1.5 to 1 will be applicable for most of the credits used to offset project emissions. Accordingly the ERC credit amounts presented in Table 5.2-21 reflect an assumed 1.5 distance ratio. Note that no distance factor has been applied in calculating ERC requirements for VOC and SO_2. This reflects the CEC policy of allowing a 1 to 1 factor in the case of non-attainment or precursor pollutants for which the emissions of the new source will be below the local air district's emissions offsets thresholds.

TABLE 5.2-21
ESTIMATED EMISSIONS OFFSETS REQUIREMENTS

Calendar Quarter	Project Emissions (tons)	ERCs Required (pounds)[1,2]
NO_x		
First	4.56	13,676
Second	4.56	13,676
Third	7.98	23,932
Fourth	5.69	17,095
Annual Total NO_x	**22.79**	**68,378**
VOC		
First	1.13	2,263
Second	1.13	2,263
Third	1.98	3,961
Fourth	1.42	2,829
Annual Total VOC	**5.66**	**11,317**

TABLE 5.2-21
ESTIMATED EMISSIONS OFFSETS REQUIREMENTS
(CONTINUED)

Calendar Quarter	Project Emissions (tons)	ERCs Required (pounds)[1,2]
PM_{10}		
First	2.96	8,880
Second	2.96	8,880
Third	5.18	15,540
Fourth	3.70	11,100
Annual Total PM_{10}	**14.80**	**44,400**
SO_x		
First	0.453	906
Second	0.453	906
Third	0.795	1,586
Fourth	0.566	1,133
Max. Annual Total	2.27	**4,531**

Notes:
1 Quantity of ERCs required depends on distance factor applicable to individual emission reduction sources. Values shown here correspond to an assumed distance factor of 1.5/1
2 No distance factor applied in calculating VOC and SO_2 ERC requirements, because annual emissions for these pollutants will be below the SJVAPCD offset triggering thresholds of 10 tons and 27.375 tons, respectively.
ERCs = emission reduction credits
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 microns in diameter
SO_x = sulfur oxides
VOC = volatile organic compounds

Starwood Power-Midway, LLC has been active in pursuing ERCs for the project, and has determined that sufficient credits are available to cover the offset requirements shown in Table 5.2-21. Discussions are ongoing with various ERC owners. Detailed information is being provided under separate cover (for confidentiality) with this AFC describing the agreements Starwood Power-Midway, LLC has entered into thus far to obtain the required offsets, including the locations of the offset sources and the nature of their source reduction activities, as well as ERC certificate numbers. Information is also provided in this separate submittal on the other specific ERC opportunities that are still being pursued.

5.2.5 LORS

The applicable LORS related to the potential air quality impacts from the project are described below. These LORS are administered (either independently or cooperatively) by USEPA Region IX, CEC, CARB, and SJVAPCD.

5.2.5.1 Ambient Air Quality Standards

USEPA, in response to the federal Clean Air Act (CAA) of 1970, established NAAQS in 40 Code of Federal Regulations (CFR) Part 50. The NAAQS include both primary and secondary standards for six "criteria" pollutants. These criteria pollutants are O_3, CO, NO_2, SO_2, PM_{10}, and lead. Primary standards were established to protect human health, and secondary standards were designed to protect property and natural ecosystems from the effects of air pollution.

The 1990 Clean Air Act Amendments (CAAA) established attainment deadlines for all designated areas that were not in attainment with the NAAQS. In addition to the NAAQS described above, a new federal standard for $PM_{2.5}$ and a revised O_3 standard were promulgated in July 1997. In 1988, as part of the California Clean Air Act, the State of California adopted the CAAQS that are in some cases more stringent than the NAAQS. The CAAQS and NAAQS are summarized in Table 5.2-22.

USEPA, CARB, and the local air pollution control districts determine the air quality attainment status of areas within the state by comparing ambient air quality measurements from the state or local agency ambient air monitoring stations with the national and California AAQS. Those areas that meet ambient air quality standards are classified as "attainment" areas; areas that do not meet the standards are classified as "non-attainment" areas. Areas that have insufficient air quality data may be identified as unclassifiable areas. These attainment designations are determined on a pollutant-by-pollutant basis. Fresno County has been designated as a federal and state non-attainment area for O_3, $PM_{2.5}$, and PM_{10}. The District's status for all other criteria pollutants is considered to be attainment or unclassified. Table 5.2-23 presents information on the County's attainment status with respect to both the national and California AAQS.

As mentioned above, both USEPA and CARB are involved with air quality management in Fresno County, along with SJVAPCD. The area of responsibility for each of these agencies is described below.

USEPA has ultimate responsibility for ensuring that, pursuant to the CAAA, all areas of the United States meet, or are making progress toward meeting the NAAQS. The state of California falls under the jurisdiction of USEPA Region IX, which is headquartered in San Francisco. USEPA requires that all states submit State Implementation Plans (SIPs) for non-attainment areas that describe how and when the NAAQS will be achieved and maintained. USEPA has delegated this responsibility for the state of California to the CARB.

The CARB, in turn, has delegated attainment responsibility to regional or local air quality management districts (or air pollution control districts), such as SJVAPCD. CARB is responsible for attainment of the CAAQS, implementation of nearly all phases of California's motor vehicle emissions program, and oversight of the operations and programs of the regional air districts.

Each air district is responsible for establishing and implementing rules and control measures to achieve air quality attainment within its jurisdiction. The air district also prepares an air quality management plan (AQMP) that includes an inventory of all emission sources within the district (both man-made and natural), a projection of future emissions growth, an evaluation of current air quality trends, and any rules or control measures needed to attain the NAAQS. This AQMP is submitted to CARB, which then compiles the plans from all air districts within the state into the SIP. The responsibility of the air districts also includes maintaining an effective permitting system for existing, new, and modified stationary sources, monitoring local air quality trends, and adoption and enforcement of such rules and regulations as may be necessary to achieve the NAAQS.

TABLE 5.2-22
NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	CAAQS[1,2]	NAAQS[3,2]	
			Primary	Secondary
O_3	8 hour[4]	0.07 ppm (137 μg/m³)	0.08 ppm (157 μg/m³)	Same as primary standard
	1 hour	0.09 ppm (180 μg/m³)	See footnote "4"	
CO	8 hour	9 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	
NO_2[5]	Annual (arithmetic mean)		0.053 ppm (100 μg/m³)	Same as primary standard
	1 hour	0.25 ppm (470 μg/m³)		
SO_2	Annual (arithmetic mean)		0.03 ppm (80 μg/m³)	
	24 hour	0.04 ppm (105 μg/m³)	0.14 ppm (365 μg/m³)	
	3 hour			0.05 ppm (1,300 μg/m³)
	1 hour	0.25 ppm (655 μg/m³)		
Respirable Particulate Matter (PM_{10})[6]	Annual (arithmetic mean)	20 μg/m³	50 μg/m³	Same as primary standard
	24 hour	50 μg/m³	150 μg/m³	
Fine Particulate Matter ($PM_{2.5}$)[6,7]	Annual (arithmetic mean)	12 μg/m³	15 μg/m³	Same as primary standard
	24 hour		65 μg/m³	
Sulfates	24 hour	25 μg/m³		
Visibility Reducing Particles	1 observation	See footnote "8"	No federal standard	No federal standard

Notes:

1 Title 17, California Code of Regulations, CAAQS for O_3, (as volatile organic compounds), CO, SO_2 (1-hour), NO_2, and particulate matter (PM_{10}), are values that are not to be exceeded. The visibility standard is not to be equaled or exceeded.

2 Concentrations are expressed first in units in which they were promulgated. Equivalent units are given in parentheses and based on a reference temperature of 25°C and a reference pressure of 760 mm of mercury. All measurements of air quality area to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibars); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of natural gas.

3 40 CFR 50. NAAQS, other than those for ozone and based on annual averages, are not to be exceeded more than once a year. The 8-hour ozone standard is based on a 3-year average of the fourth-highest daily maximum.

4 New federal 8-hour ozone and fine particulate matter ($PM_{2.5}$) standards were promulgated by USEPA on July 18, 1997. The federal 1-hour ozone standard was revoked by USEPA on June 15, 2005. California 8-hour standard officially implemented May 17, 2006.

5 NO_2 is the compound regulated as a criteria pollutant; however, emissions are usually based on the sum of all oxides of nitrogen (NO_x).

TABLE 5.2-22
NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS
(CONTINUED)

[6] CARB established new standards for PM_{10} and $PM_{2.5}$ in June 2002.

[7] Annual federal standard is 3-year average. The 24-hour federal standard is 3-year average of 98th percentile.

[8] In sufficient amount to reduce the prevailing visibility to less than 10 miles when the relative humidity is less than 70 percent. "Prevailing visibility" is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

$\mu g/m^3$	=	micrograms per cubic meter
CO	=	carbon monoxide
mg/m^3	=	milligrams per cubic meter
NAAQS	=	National Ambient Air Quality Standard
NO_2	=	nitrogen dioxide
O_3	=	ozone
PM_{10}	=	particulate matter less than 10 microns in diameter
$PM_{2.5}$	=	particulate matter less than 2.5 microns in diameter
ppm	=	parts per million
SO_2	=	sulfur dioxide

TABLE 5.2-23
ATTAINMENT STATUS FOR FRESNO COUNTY WITH RESPECT TO FEDERAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Federal Attainment Status	State Attainment Status
Ozone	Non-attainment	Non-attainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
PM_{10}	Nonattainment[1]	Non-attainment
$PM_{2.5}$	Non-attainment	Non-attainment
Lead	Unclassified	Attainment

Notes:
1 = USEPA issued a memorandum on July 6, 2006 proposing the attainment status of the San Joaquin air basin be changed to attainment.
CO = carbon monoxide
NO_2 = nitrogen dioxide
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
SO_2 = sulfur dioxide

5.2.5.2 Prevention of Significant Deterioration (PSD) Requirements

In addition to the ambient air quality standards described above, the federal PSD program has been established to protect deterioration of air quality in those areas that already meet national ambient air quality standards. Specifically, the PSD program specifies allowable concentration increases for attainment pollutants due to new emission sources. These increases allow economic growth while preserving the existing air quality, protecting public health and welfare, and protecting Class I areas (selected national parks and wilderness areas).

The PSD regulations require major stationary sources to undergo a preconstruction review that includes an analysis and implementation of BACT, a PSD increment consumption analysis, an ambient air quality impact analysis, and analysis of air quality related values. For PSD purposes, a major source is one with annual emissions that exceed threshold values. The trigger levels applicable to new sources of air pollutants, such as the Midway project, are shown in Table 5.2-24 along with the projected annual emissions for the project. The 250 tpy emission threshold is applicable to all new stationary sources that do not belong to one of 28 named source categories that trigger PSD at an annual emission level of 100 tpy. As a simple-cycle gas turbine plant, Midway does not belong to any of the named 28 source categories, and is thus subject to the 250 tpy trigger. Since emissions from the project will be less than either 100 tpy or 250 tpy for each pollutant, the PSD regulations are not applicable to the project. Discussions with CEC and SJVAPCD staff indicate that neither regulatory agency requires PSD or Class I Area impact analysis for a non-PSD project.

The Midway project is considered a modification to the existing CalPeak Panoche plant. Since CalPeak Panoche is a minor source under the PSD rules and the Midway project emissions will be below the PSD thresholds, the combined project remains a minor source.

TABLE 5.2-24
PSD EMISSION THRESHOLD TRIGGERS
FOR NEW STATIONARY SOURCES

Pollutant	Significant Thresholds (tpy)	Midway Project Emissions (tpy)	PSD Triggered by Project?
SO_2	250	2.27	No
NO_x	250	22.79	No
VOC	250	5.66	No
PM_{10}	250	14.80	No
CO	250	33.12	No

Project emissions include all emissions from natural gas.
Notes:
CO = carbon monoxide
NO_x = nitrogen oxide(s)
Pb = lead
PM_{10} = particulate matter less than 10 microns in diameter
PSD = prevention of significant deterioration
SO_2 = sulfur dioxide
tpy = tons per year
VOC = volatile organic compounds

5.2.5.3 Acid Rain Program Requirements

Title IV of the CAAA applies to sources of air pollutants that contribute to acid rain formation, including sources of SO_2 and NO_x emissions. The SJVAPCD has been delegated the authority by USEPA to administer the Title IV requirements under its Title V Operating Permit program in Regulation II. The Acid Rain Program provisions of Part 72, Chapter I, Title 40 of the Code of Federal Regulations (40 CFR Part 72), Subparts A through I are incorporated in SJVAPCD Rule 2540. Allowances of SO_2 emissions are set aside according to the provisions of 40 CFR 73. Affected sources are required to obtain SO_2 allowances, monitor their emissions, and obtain SO_2 allowances when a new source is permitted. Sources such as the project that use pipeline-quality natural gas as the exclusive fuel are exempt from many of the acid rain program requirements. However, Midway will be required to estimate SO_2 and CO_2 emissions from the project and to monitor NO_x emissions with a certified CEMS, and must submit an acid rain permit application within 12 months after commencement of plant operations.

5.2.5.4 New Source Performance Standards

New Source Performance Standards (NSPS) have been established by USEPA to limit air pollutant emissions from certain categories of new and modified stationary sources. The NSPS regulations are contained in 40 CFR Part 60 and cover many different industrial source categories. Stationary gas turbines are regulated under Subpart KKKK. The enforcement of NSPS has been delegated to the SJVAPCD, and the NSPS regulations are incorporated by reference into the District's Regulation IV Rule

4001. In general, local emission limitation rules or BACT requirements in California are far more restrictive than the NSPS requirements. For example, the controlled NO_x emission rate from the project's gas turbines of less than 0.095 lb of NO_x per MW-hour will be well below the applicable Subpart KKKK requirement of 25 ppmv at 15% oxygen (or 1.2 lb of NO_x per MW-hour) for new turbines firing natural gas with fuel energy input between 50 MMBtu/hr and 850 MMBtu/hr. Similarly, the projected maximum SO_2 emissions from the Midway gas turbines will be about 0.009 lb of SO_2 per MW-hour, which is substantially less than the Subpart KKKK requirement of 0.90 lb of SO_2 per MW-hour or 0.06 lb SO2/MMBtu fuel energy input.

NSPS fuel requirements for SO_2 will be satisfied by the use of natural gas, and the emissions and fuel monitoring that will be performed to meet the requirements of BACT will comply with NSPS, acid rain, and other regulatory requirements.

5.2.5.5 Federally Mandated Operating Permits

Title V of the CAA requires USEPA to develop a federal operating permit program that is implemented under 40 CFR Part 70. This program is administered by SJVAPCD under Regulation II, Rule 2520. Each major source, Phase II acid rain facility, and other source types designated by USEPA must obtain a Part 70 permit. Permits must contain emission estimates based on potential to emit, identification of all emissions sources and controls, a compliance plan, and a statement indicating each source's compliance status. The permits must also incorporate all applicable federal requirements.

The Midway project will not have annual emissions greater than 100 tpy for any pollutants; however, the facility does have new emission units that are subject to recently promulgated NSPS and will also require an acid rain permit. Therefore, according to the definitions in Rule 2520, the facility will be subject to the Title V Operating Permit requirements.

5.2.5.6 California Power Plant Siting Requirements

Under the Warren-Alquist Act, the CEC has been charged with assessing the environmental impacts of each new power plant over 50 MW and considering the implementation of feasible mitigation measures to prevent potential impacts. California Environmental Quality Act (CEQA) Guidelines (Title 14, California Administrative Code, Section 15002(a)(3)) state that the basic purpose of CEQA is to "prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible."

The CEC siting regulations require the evaluation of the project's compliance with all federal, state, and local air quality rules, regulations, standards, guidelines, and ordinances that govern the construction and operation of the project. A project must demonstrate that project emissions will be appropriately mitigated to ensure that the impacts from the project are insignificant and will not jeopardize attainment and maintenance of the NAAQS. Cumulative impacts, impacts due to pollutant interaction, and impacts from non-criteria pollutants must also be considered.

5.2.5.7 Air Toxics "Hot Spots" Program

As required by the California Health & Safety Code Section 4430, all facilities with criteria air pollutant emissions in excess of 10 tons per year are required to submit air toxic "Hot Spots" emissions information. The operational Midway facility will be required to provide quantitative information to SJVAPCD on the facility's emissions of toxic air contaminants, but this requirement is applicable only after the start of operation. Section 5.16, Public Health and Safety, of this AFC demonstrates that the project's emissions of toxic air contaminants will not cause a significant health risk to in the neighboring area.

5.2.5.8 Determination of Compliance, Authority to Construct, and Permit to Operate

Under Regulation II, Rule 2010, 2070, and 2201, SJVAPCD administers the air quality regulatory program for the construction, alteration, replacement, and operation of new power plants. As part of the AFC process, the project will be required to obtain a preconstruction DOC from the SJVAPCD. Regulation II, Rule 2201 incorporates other SJVAPCD rules that govern how sources may emit air contaminants through the issuance of air permits (i.e., ATC and Permit to Operate [PTO]). This permitting process allows the SJVAPCD to adequately review new and modified air pollution sources to ensure compliance with all applicable prohibitory rules and to ensure that appropriate emission controls are used. Projects that are reviewed under the CEC Application process must obtain an ATC from the local air district (in this case, SJVAPCD) prior to construction of the new power plant. The ATC remains in effect until the PTO Application is granted, denied, or canceled. Once the project commences operations and demonstrates compliance with the ATC, SJVAPCD will issue a PTO. The PTO specifies conditions that the facility must meet to comply with all applicable air quality rules, regulations, and standards.

5.2.5.9 New Source Review Requirements

The SJVAPCD New Source Review (NSR) rule (Regulation II, Rule 2201) establishes the criteria for siting new and modified emission sources and this rule is applicable to the project. SJVAPCD has been delegated authority for NSR rule development and enforcement according to the terms of Rule 2201. In a memorandum issued on September 6, 2006, the District stated that the proposed project will constitute a minor modification to an existing minor facility, the CalPeak Panoche plant, if the incremental emissions of NO_x and VOC are each below 25 tpy the incremental emissions of PM_{10} are less than 15 tpy and the incremental emissions of SO_x are less than 40 tpy. As described earlier in this section, annual emissions for the Midway project are expected to be below these thresholds. The following discussion on the project permitting requirements thus pertains to a minor modification to an existing minor source

There are three basic requirements within the NSR rules. First, BACT must be applied to any new source with potential emissions above specified threshold quantities. Second, all potential emission increases of non-attainment pollutants or precursors from the proposed source above specified thresholds must be offset by real, quantifiable, surplus, permanent, and enforceable emission decreases in the form of ERCs. Third, an ambient air quality impact assessment must be conducted to confirm that the project does not cause or contribute to a violation of a national or California AAQS or jeopardize public health.

5.2.5.10 San Joaquin Valley Air Pollution Control District Specific Requirements

Local districts have the principal responsibility for developing plans for: meeting the NAAQS and CAAQS; developing control measures for non-vehicular sources of air pollution necessary to achieve and maintain both state and federal air quality standards; implementing permit programs established for the construction, modification, and operation of sources of air pollution; enforcing air pollution statutes, regulations and prohibitory rules governing non-vehicular sources; and developing programs to reduce emissions from indirect sources. The following paragraphs outline the SJVAPCD rules and regulations that apply to the project.

5.2.5.10.1 Rule 1080, Stack Monitoring

Outlines facility requirements for continuous monitoring equipment from any facility emitting pollutants for which emission limits have been established. The Midway facility will be constructed and operated to comply with the requirements of Rule 1080.

5.2.5.10.2 Rule 1081, Source Sampling

Outlines facility design requirements for source sampling from any facility emitting pollutants for which emission limits have been established. The Midway facility will be constructed and operated to comply with the requirements of Rule 1081.

5.2.5.10.3 Rule 1100, Equipment Breakdown

This rule details the notification and corrective action requirements necessary in an equipment breakdown situation. As operator of the project, Starwood Power-Midway, LLC will comply with these requirements.

5.2.5.10.4 Rule 2010, Permits Required

An Authority to Construct and Permit to Operate will be required for the project. Starwood Power-Midway, LLC will submit the required Application materials for these permits to SJVAPCD.

5.2.5.10.5 Rule 2201, New and Modified Stationary Source Review

This rule outlines the emission standards, the offset requirements and conditions, the required demonstrations that the new source or modification will not cause or contribute to violations of the ambient air quality standards, procedures for power plants under the CEC process, methods for calculating project emissions, and required air quality analysis procedures. Compliance with the specific provisions of this rule is discussed below.

Section 4.1, BACT. An Applicant must apply BACT to any new or modified emissions unit that has a potential to emit 2.0 lbs per day or more of any pollutant. The SJVAPCD maintains a list of current BACT standards for specific source categories, which is posted on the District's website.

All air pollutant emissions from the operational Midway project will be from the natural gas turbines, which will be fired exclusively on natural gas and be equipped with water injection and SCR for the

control of NO_x emissions and an oxidation catalyst for control of CO emissions. Aqueous ammonia at a concentration not to exceed 20 percent in water will be used as the reagent for the SCR control system. Ammonia slip will be limited to 10 ppmvd. The proposed BACT levels for the project turbines are shown in Table 5.2-25.

TABLE 5.2-25
PROPOSED BACT FOR MIDWAY SIMPLE CYCLE GAS TURBINES

Pollutant	Control Technology	Concentration ppmvd @ 15 percent O_2
NO_x	Water injection and SCR with ammonia injection	2.5
CO	Catalytic oxidation	6
VOC	Catalytic oxidation	2
Ammonia Slip	Aqueous ammonia strength not to exceed 20% by weight in water mixture	10
SO_x	Pipeline quality natural gas	NA
PM_{10}	Pipeline quality natural gas	NA

BACT = best available control technology
CO = carbon monoxide
NA = not applicable
NO_x = nitrogen oxide(s)
O_2 = oxygen
PM_{10} = particulate matter less than 10 microns in diameter
ppm = parts per million
VOC = volatile organic compounds
SCR = selective catalytic reduction
SO_x = sulfur oxide(s)

Appendix I, Attachment E provides a formal BACT evaluation for the project.

Section 4.5, Emissions Offset Requirements. This section of Rule 2201 requires that offsets be provided for a new stationary source with a potential to emit equal to or exceeding the levels shown in Table 5.2-26 and describes the methods for determining the quantities of emission reduction credits needed to offset emissions for a new stationary source.

TABLE 5.2-26
SJVAPCD OFFSET THRESHOLDS

Pollutant	Pounds per Year
VOC	20,000
NO_x	20,000
SO_x	54,750
PM_{10}	29,200
CO (attainment areas)	200,000

Notes:
CO = carbon monoxide
lb = pounds
NO_x = nitrogen oxide(s)
PM_{10} = particulate matter less than 10 microns in diameter
VOC = volatile organic compounds
SO_x = sulfur oxide(s)

As described in Section 5.2.2.2, Operational Emissions, annual emissions from the project will exceed the offset triggers for NO_x and PM_{10} if the facility operates for 4,000 hours per year as requested in this AFC. Information on the required offset amounts for the Midway operations and on the progress to date in obtaining the required numbers of ERCS is provided in Section 5.2.4, Mitigation Measures – Emissions Offsets.

Section 4.14, Ambient Air Quality Standards. Emissions from a new or modified Stationary Source may not cause or make worse the violation of an AAQS. Modeling used for the purposes of demonstrating compliance with this rule must be consistent with the requirements contained in the most recent edition of EPA's *Guidelines on Air Quality Models*, unless the Air Pollution Control Officer finds that such model is inappropriate for use. After making such a finding, the Air Pollution Control Officer may designate an alternate model only after allowing for public comments and only with the concurrence of the California Air Resources Board or the Environmental Protection Agency.

As described in Section 5.2.2.4, Modeling Results – Compliance with Ambient Air Quality Standards, an air quality modeling analysis has been conducted to demonstrate that the project will not cause or make worse the violation of any air quality standard.

Section 5.8, Power Plants. This section applies to all power plants proposed to be constructed in the SJVAPCD and for which a Notice of Intention (NOI) or AFC has been accepted by the CEC. It describes the actions to be taken by SJVAPCD to provide information to CEC and CARB to ensure that the project will conform to the District's rules and regulations. After the Application has been submitted to CEC and other responsible agencies, including SJVAPCD, the Air Pollution Control Officer is required to conduct a DOC review. This determination consists of a review identical to that which would be performed if an Application for an ATC had been received for the power plant. If the information contained in the AFC does not meet the requirements of this regulation, then the Air Pollution Control Officer is required to so inform the CEC within 20 calendar days following receipt of the AFC. In such an instance, the AFC is considered to be incomplete and returned to the Applicant for resubmittal.

Section 6.0, Certification of Conformity. This section describes how a new or modified source that is subject to the requirements of Rule 2520 may choose to apply for a certificate of conformity with the procedural requirements of 40 CFR Part 70 for a Federal Operating Permit. A certificate of conformity will allow changes authorized by the ATC permit to be incorporated in the Part 70 permit as administrative permit amendments.

5.2.5.10.6 Rule 2520, Federally Mandated Operating Permits

Provides an administrative mechanism for issuing operating permits for new and modified sources of air contamination accordance with the federal requirements of 40 CFR Part 70. Under this rule, the Midway project will be required to obtain an operating permit, because it will include emission units that are subject to recently promulgated NSPS and because it will also require an acid rain permit.

5.2.5.10.7 Rule 3010/3020, Permit Fees

This rule and the fee schedules in rule 3020 establish the filing and permit review fees for specific types of new sources, as well as annual renewal fees and penalty fees for existing sources.

5.2.5.10.8 Rule 3110, Air Toxics Fees

This rule applies to facilities subject to the requirements of the Air Toxics "Hot Spots" Information and Assessment Act (Sections 44340 and 44383 of the California Health and Safety Code) and to facilities subject to National Emission Standards for Hazardous Air Pollutants (NESHAPs) issued pursuant to Section 112 of the federal Clean Air Act.

5.2.5.10.9 Rule 3135, Dust Control Plan Fee

This rule recovers the District's cost for reviewing Dust Control Plans and conducting site inspections to verify compliance with such plans.

5.2.5.10.10 Rule 3170, Federally Mandated Ozone Non-attainment Fee

The purpose of this rule is to satisfy requirements specified in Section 185 and Section 1 82(f) of the CAA. This rule applies to major sources of NO_x and VOC. The fees required pursuant to this section are additional to the permit fees and other fees required under other Rules and Regulations. This rule will cease to be effective when the Administrator of USEPA designates the SJVAPCD to be in attainment of the federal 1-hour standard for ozone. The Midway project will not be a major source under either the federal or SJVAPCD definitions and is thus not subject to Rule 3170.

5.2.5.10.11 Rule 4001, New Source Performance Standards

This rule incorporates the federal NSPS from 40 CFR Part 60.

5.2.5.10.12 Rule 4002, National Emission Standards for Hazardous Air Pollutants

This rule incorporates the federal NESHAPs from Part 61 and Part 63, Chapter I, Subchapter C, Title 40 CFR.

5.2.5.10.13 Rule 4101, Visible Emissions

This rule applies to the opacity of discharges from any single source. Emissions from the sources of the project will be below threshold opacity levels described in this rule.

5.2.5.10.14 Rule 4102, Nuisance

This rule states that there shall be no discharge of such quantities of any pollutant or material which could 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.

5.2.5.10.15 Rule 4201, Particulate Matter Concentration

This rule applies to the discharge of particulate matter into the atmosphere. The relevant limit for the project is expressed in Rule 4201, which states that no person shall release or discharge into the atmosphere from any single source operation dust, fumes, or total suspended particulate matter, in excess of 0.1 grains per dry standard cubic foot of natural gas as determined by following test methods: Particulate matter concentration – EPA Method 5; Stack gas velocity – EPA Method 2; Stack gas moisture – EPA Method 4. The proposed Midway facility natural gas turbines will easily comply with this requirement, with a maximum PM_{10} emission rate of approximately 0.045 grains per dry standard foot of natural gas consumption.

5.2.5.10.16 Rule 4301, Fuel-burning Equipment

This rule limits the emission levels of NO_x, SO_2, and fuel combustion contaminants (particulates) from any fuel burning equipment unit. The specific limits are 140 lbs per hour of NO_x, calculated as NO_2, 200 lbs per hour of SO_2, 0.1 grains per cubic foot of gas calculated to 12 percent of CO_2 at dry standard conditions, and 10 pounds per hour of combustion contaminants.

5.2.5.10.17 Rule 4703, Stationary Gas Turbines

This rule limits the NO_x and CO emissions from gas turbines with ratings greater than 0.3 MW. NO_x emissions concentrations shall be averaged over a 3-hour period using consecutive 15-minute sampling periods, or if CEMS are used, all applicable requirements of 40 CFR Part 60 must be met.

5.2.5.10.18 Rule 4801 – Sulfur Compounds

This rule limits the emissions of sulfur compounds to less than 0.2 percent by volume on a dry basis averaged over 15 consecutive minutes by using EPA Method 8 and ARB Method 1-100.

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

This rule limits fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities such that opacity levels are kept to no more than 20 percent.

5.2.5.10.20 Rule 8041, Carryout and Trackout

This rule requires the limiting of carryout and trackout dust emissions from sites is applicable to construction of the project.

5.2.5.10.21 Rule 8051, Open Areas

This rule applies to any open area of 3.0 acres or more in rural areas with at least 1,000 square feet of disturbed surface area. Dust emissions must be kept below 20 percent opacity.

5.2.5.10.22 Rule 8061, Paved and Unpaved Roads

This rule limits the emission of fugitive dust from roads to no more than 20 percent opacity through different control measures. Depending on traffic levels, the road must meet certain width requirements.

5.2.5.10.23 Rule 8071, Unpaved Vehicle/Equipment Traffic Areas

This rule limits the emission of fugitive dust to no more than 20 percent opacity through different control measures.

Table 5.2-27 summarizes the LORS pertaining to air quality aspects of the project, and references the subsection where the Midway project's compliance with each requirement is discussed.

TABLE 5.2-27
APPLICABLE LORS

LORS	Applicability	Section
Federal		
40 CFR Part 50	NAAQS	Section 5.2.2.4, Modeling Results – Compliance with Ambient Air Quality Standards, and Section 5.2.5.1, Ambient Air Quality Standards
40 CFR Part 52.21	PSD	Section 5.2.5.2, Prevention of Significant Deterioration Requirements
40 CFR Part 73	Acid rain Program	Section 5.2.5.3, Acid Rain Program Requirements
40 CFR Part 60 Subpart GG	NSPS	Section 5.2.5.4, New Source Performance Standards

TABLE 5.2-27
APPLICABLE LORS
(CONTINUED)

LORS	Applicability	Section
40 CFR Part 70	Federally mandated operating permits	Section 5.2.5.5, Federally Mandated Operating Permits
State		
Title 17, California Code of Regulations	CAAQS	Section 5.2.2.4, Modeling Results – Compliance with Ambient Air Quality Standards, and Section 5.2.5.1, Ambient Air Quality Standards
California Administrative Code, Title 14, Section 15002(a)(3)	Power plant siting requirements	Section 5.2.5.6, Power Plant Siting Requirements
California Health and Safety Code Section 4430	Air toxics "Hot Spots" emission inventory	Section 5.2.5.7, Air Toxics "Hot Spots" Program
Local		
SJVAPCD Regulation I, Rule 1080	Stack Monitoring	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation I, Rule 1081	Source Sampling	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation I, Rule 1100	Equipment breakdown	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation II, Rule 2010	Permits required	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation II, Rule 2201	New and modified stationary source review	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation II, Rule 2520	Federally mandated Operating Permits	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation III, Rule 3010/3020	Permit fees/fee schedules	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation III, Rule 3110	Air toxics fees	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation III, Rule 3135	Dust control plan fee	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation III, Rule 3170	Federally mandated ozone non-attainment fee	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation IV, Rule 4001	New Source Performance Standards	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation IV, Rule 4002	National Emission Standards for Hazardous Pollutants	Section 5.2.5.10, SJVAPCD Requirements

TABLE 5.2-27
APPLICABLE LORS
(CONTINUED)

LORS	Applicability	Section
SJVAPCD Regulation IV, Rule 4101	Visible Emissions	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation IV, Rule 4102	Nuisance	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation IV, Rule 4201	Particulate matter concentrations	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation IV, Rule 4301	Fuel burning equipment	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation IV, Rule 4703	Stationary gas turbines	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation IV, Rule 4801	Sulfur compounds	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation VII, Rule 7012	Hexavalent chrome from cooling towers	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation VIII, Rule 8021	Construction, demolition, excavation, extraction, and other earthmoving activities	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation VIII, Rule 8041	Carryout and trackout	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation VIII, Rule 8051	Open areas	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation VIII, Rule 8061	Paved and unpaved roads	Section 5.2.5.10, SJVAPCD Requirements
SJVAPCD Regulation VIII, Rule 8071	Unpaved vehicle/equipment traffic areas	Section 5.2.5.10, SJVAPCD Requirements

Notes:

CFR = Code of Federal Regulations

SJVAPCD = San Joaquin Valley Unified Air Pollution Control District

LORS = laws, ordinances, regulations, and standards

5.2.6 Involved Agencies and Agency Contacts

Agencies and individuals contacted in connection with the air quality assessment of the project are detailed in Table 5.2-28

TABLE 5.2-28
INVOLVED AGENCIES AND AGENCY CONTACTS

Agency	Contact/Title	Telephone
California Energy Commission	Will Walters CEC Contractor Air Quality Specialist Aspen Environmental Group 30423 Canwood Street, Suite 211 Agoura Hills, CA 91301	(818) 597-3407
U.S. Environmental Protection Agency	Laura Yannayan Region 9 Permit Engineer 75 Hawthorne Street (ORC-2) San Francisco, CA 94105	(415) 972-3534
San Joaquin Valley Unified Air Pollution Control District	Errol Villegas and Leland Villalvazo Senior Permit Engineers 1990 E. Gettysburg Avenue Fresno CA 93726	(559) 230-6000

5.2.7 Permits and Permitting Schedule

Under Regulation II of its Rules and Regulations, SJVAPCD regulates the construction, alteration, replacement, and operation of new stationary emissions sources and modifications to existing sources. During the CEC review of this AFC, a DOC for the project will be provided by SJVAPCD as part of the CEC review to confirm that the project will meet all of the District's rules and regulations. In addition to the CEC License, the SJVUPACD will be responsible for issuing an ATC and PTO for the proposed Midway facility, which has been determined to be a modification of the existing CalPeak Panoche facility. This permitting process allows the SJVAPCD to adequately review new and modified air pollution sources to ensure compliance with all applicable prohibitory rules and to ensure that appropriate emission controls will be used. An ATC allows for the construction of the air pollution source and remains in effect until the PTO Application is granted, denied, or canceled. The ATC should be issued within 3 to 6 months following submittal by the Applicant of a complete Application. Once the project has completed construction and commences operations, SJVAPCD will require verification that the Midway facility conforms to the ATC Application and then issues a PTO. The PTO specifies conditions that the air pollution source must meet to comply with all air quality standards and regulations.

5.2.8 References

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California Air Resources Board (CARB). 1998. California Ambient Air Quality Data 1980-1997. CD# PTSD-98-01 0-CD. December, 1998.

CAPCOA. 1993. Air Toxics "Hot Spots" Program: Revised 1992 Risk Assessment Guidelines. California Air Pollution Control Officers Association.

San Joaquin Valley Unified Air Pollution Control District (SJVAPCD), 2006. Telephone conversation between Leland Villalvazo of SJVAPCD and Tom Carr of URS Corporation, May 11.

URS Corporation. 2006. Application for Certification, Panoche Energy Center.

URS Corporation. 2006 Modeling Protocol for the Starwood Power-Midway Facility, Fresno County, California. Prepared by URS Corporation for submittal to the San Joaquin Valley Unified Air Pollution Control District and the California Energy Commission. October, 2006.

United States Environmental Protection Agency (USEPA). 1985. Guideline for Determination of Good Engineering Stack Height (Technical Support Document for the Stack Height Regulation) (Revised), EPA-450/4-80-023R. Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina. June.

1995a. User's Guide for the Industrial Source Complex (ISC3) Dispersion Models, EPA-454/B-95-003a, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina. September, 1995.

1995b. User's Guide to the Building Profile Input Program (Revised), EPA-454/R-93-038, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina. February, 1995.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Air Quality** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Section 5.2 Sections 5.2.2 and 5.2.3 Section 5.2.4		
Appendix B (g) (8) (A)	The information necessary for the air pollution control district where the project is located to complete a Determination of Compliance.	Section 5.2.1 through Section 5.2.5		
Appendix B (g) (8) (B)	The heating value and chemical characteristics of the proposed fuels, the stack height and diameter, the exhaust velocity and temperature, the heat rate and the expected capacity factor of the proposed facility.	Section 5.2.2.2 Appendix I, Attachment C		
Appendix B (g) (8) (C)	A description of the control technologies proposed to limit the emission of criteria pollutants.	Section 5.2.2.2 Table 5.2-23 Appendix I, Attachment E		
Appendix B (g) (8) (D)	A description of the cooling system, the estimated cooling tower drift rate, the rate of water flow through the cooling tower, and the maximum concentrations of total dissolved solids.	N/A		
Appendix B (g) (8) (E)	The emission rates of criteria pollutants from the stack, cooling towers, fuels and materials handling processes, delivery and storage systems, and from all secondary emission sources.	Section 5.2.2.2 Appendix I, Attachment C		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Air Quality** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (8) (F)	A description of typical operational modes, and start-up and shutdown modes for the proposed project, including the estimated frequency of occurrence and duration of each mode, and estimated emission rate for each criteria pollutant during each mode.	Section 5.2.2.2 Appendix I, Attachment C		
Appendix B (g) (8) (G)	The ambient concentrations of all criteria pollutants for the previous three years as measured at the three Air Resources Board certified monitoring stations located closest to the project site, and an analysis of whether this data is representative of conditions at the project site. The applicant may substitute an explanation as to why information from one, two, or all stations is either not available or unnecessary.	Section 5.2.1.2		
Appendix B (g) (8) (H)	One year of meteorological data collected from either the Federal Aviation Administration Class 1 station nearest to the project or from the project site, or meteorological data approved by the California Air Resources Board or the local air pollution control district.	Section 5.2.2.3.3 Modeling input/output data on compact disk provided with AFC		
Appendix B (g) (8) (H) (i)	If the data is collected from the project site, the applicant shall demonstrate compliance with the requirements of the U.S. Environmental Protection Agency document entitled "On-Site Meteorological Program Guidance for Regulatory Modeling Applications" (EPA - 450/4-87-013 (August 1995), which is incorporated by reference in its entirety.)	N/A		
Appendix B (g) (8) (H) (ii)	The data shall include quarterly wind tables and wind roses, ambient temperatures, relative humidity, stability and mixing heights, upper atmospheric air data, and an analysis of whether this data is representative of conditions at the project site.	Section 5.2.1.1 Appendix I, Attachment A		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Air Quality** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (8) (I)	An evaluation of the project's direct and cumulative air quality impacts, consisting of the following:			
Appendix B (g) (8) (I) (i)	A screening level air quality modeling analysis, or a more detailed modeling analysis if so desired by the applicant, of the direct inert pollutant impacts of project construction activities on ambient air quality conditions, including fugitive dust (PM_{10}) emissions from grading, excavation and site disturbance, as well as the combustion emissions [nitrogen oxides (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), and particulate matter less than 10 microns in diameter (PM_{10})] from construction-related equipment;	Sections 5.2.2.4 and 5.2.3 Modeling input/output data on compact disk provided with AFC		
Appendix B (g) (8) (I) (ii)	A screening level air quality modeling analysis, or a more detailed modeling analysis if so desired by the applicant, of the direct inert criteria pollutant (NO_x, SO_2, CO and PM_{10}) impacts on ambient air quality conditions of the project during typical (normal) operation, and during shutdown and startup modes of operation. Identify and include in the modeling of each operating mode the estimated maximum emissions rates and the assumed meteorological conditions; and	Section 5.2.2.4 Modeling input/output data on compact disk provided with AFC		
Appendix B (g) (8) (I) (iii)	A protocol for a cumulative air quality modeling impacts analysis of the project's typical operating mode in combination with other stationary emissions sources within a six mile radius which have received construction permits but are not yet operational, or are in the permitting process. The cumulative inert pollutant impact analysis should assess whether estimated emissions concentrations will cause or contribute to a violation of any ambient air quality standard.	Section 5.2.3		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Air Quality** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (8) (J)	If an emission offset strategy is proposed to mitigate the project's impacts under subsection (g)(1), provide the following information:			
Appendix B (g) (8) (J) (i)	The quantity of offsets needed;	Section 5.2.4		
Appendix B (g) (8) (J) (ii)	Potential offset sources, including location, and quantity of emission reductions; and	Section 5.2.4 and confidential document submitted separately		
Appendix B (g) (8) (J) (iii)	Method of emission reduction.	Section 5.2.4		
Appendix B (g) (8) (K)	A topographic map containing contour and elevation data, at a scale of 1:24,000, showing the area within 6 miles of the power plant site.	Section 5.2.1		
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	Section 5.2.5 Table 5.2-25		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Section 5.2.5 Table 5.2-26		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Air Quality** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	Section 5.2.5		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Section 5.2.6 Table 5.2-26		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Section 5.2.7		

5.3 GEOLOGICAL HAZARDS AND RESOURCES

5.3.1 Affected Environment

The Midway site is located in the western San Joaquin Valley, which is part of the Central Valley. The Central Valley comprises approximately 20,000 square miles and extends from near Red Bluff on the north to near Bakersfield on the south, a distance of approximately 400 miles. The average width of the valley is approximately 50 miles. Elevations in the Central Valley range from slightly below mean sea level to 400 feet above mean sea level at its north and south ends. The Central Valley is bounded on the north by low-lying hills; on the northeast by a volcanic plateau of the Cascade Range; on the west by the Coast Ranges, which in places rise to elevations of approximately 4,000 feet above mean sea level; on the east by the Sierra Nevada, which in places rise to elevations of more than 14,000 feet above mean sea level; and on the south by the Coast Ranges and the Tehachapi Mountain. Roughly the northern one-third of the valley is known as the Sacramento Valley and the southern two-thirds as the San Joaquin Valley (Page, 1986; Norris and Webb, 1990).

The Central Valley is also referred to as the Great Valley geomorphic province. The most extensive geomorphic units in the province include dissected uplands, low alluvial plains and fans, river flood plains and channels, and overflow lands and lake bottoms. The valley represents the alluvial, flood, and delta plains of two major rivers (the Sacramento and San Joaquin rivers) and their tributaries. The region persisted as a lowland or shallow marine embayment during the entire Cenozoic and at least the later Mesozoic. In the late Cenozoic, much of the area was occupied by shallow brackish and freshwater lakes, particularly in the San Joaquin Valley which has had interior drainage in its southern third since the Pliocene. Lake Corcoran formerly spread over much of the northern San Joaquin Valley during the middle and late Pleistocene. An associated diatomaceous-lacustrine clay (the Corcoran or E-Clay) covers more than 5,000 square miles of the San Joaquin Valley and is the confining layer for the most extensive confined aquifer in the San Joaquin Valley (Poland and Evenson, 1966; Croft, 1972; Page, 1986; Norris and Webb, 1990).

5.3.1.1 Midway Project

The Midway site is located southeast of Panoche Creek on the Panoche Creek alluvial fan. The fan is one of a belt of coalescing alluvial fans 12 to 19 miles wide, and located on east flank of the Coast Ranges between the flood plains of the San Joaquin River and Fresno Slough in the trough of the valley to the northeast and the foothills of the Coast Range to the southwest. The site is located near the head of the largest of the fans in the region, near its intersection with the smaller Tumey Gulch alluvial fan to the south. Elevations of the alluvial fans range from approximately 130 feet above mean sea level at the base to as much as 900 feet above mean sea level at their apexes. The slopes of the fans range from approximately 10 feet per mile near the base of the larger fans to approximately 150 feet per mile on the upper slopes of some of the smaller fans (Bull, 1964a; 1972). The site elevation is approximately 395 to 400 feet above mean sea level and slopes gently with elevation decreasing to the northeast. The facilities are situated on a thick section of Quaternary surficial sediments and older alluvium underlain by Tertiary age sediments, Cretaceous age marine deposits, and pre-Tertiary age basement rocks.

5.3.1.1.1 Regional Geology

The San Joaquin Valley is an asymmetrical basin defined by the Coast Ranges to the west, the Tehachapi Mountains to the south, the Sierra Nevada to the east, and the delta of the San Joaquin and Sacramento Rivers to the north. The axis of the valley trough is closer to the Coast Ranges than to the Sierra Nevada (Belitz and Heimes, 1990).

The oldest rocks in the area are basement complex rocks that form much of the Tehachapi Mountains, San Emigdio Mountains, and the southern Sierra Nevada which are composed of a mass of plutonic and metamorphic rocks commonly referred to as the Sierra Nevada batholith of pre-Tertiary age (Figure 5.3-1, Regional Geologic Map). Figure 5.3-2A and 5.3-2B show the site geologic map. The basement complex is buried beneath the Tulare Lake bed by more than 14,000 feet of rocks of Cretaceous, Tertiary, and Quaternary age. Marine rocks of Jurassic and Cretaceous age also underlie the site at great depth below the valley floor. Due to their great depth, these rocks are usually not penetrated by water wells. Where they are exposed at the ground surface, they are generally mapped as the Franciscan, Panoche, and Moreno formations (Croft, 1972). Franciscan, Panoche, and Moreno formation rocks are exposed within the Diablo Range (part of the Coast Ranges) west of the site (CDMG, 1959). The Panoche and Moreno formations were formerly mapped as the Great Valley Sequence and are exposed in a 6- to 9-mile-wide belt in the Coast Ranges northwest of the site. Panoche Formation rocks in excess of 1,730-feet thick and Moreno Formation rocks approximately 1,870-feet thick have been encountered in gas wells in the Chaney Ranch Gas Field located north of the site (DOGGR, 2006)

Younger consolidated marine and nonmarine sedimentary rocks of Tertiary age unconformably overlie the older marine rocks. The Tertiary age section is highly asymmetrical and generally thickens from east to west and from north to south. These rocks have been divided into numerous formations and members with names that vary in the region (Croft, 1972). Locally, the Tertiary age section includes the Laguna Seca and the Lodo formations of Eocene and Paleocene age. Lodo Formation rocks ranging from approximately 530- to 800-feet thick have been encountered in nearby gas wells. An unconformity separates the overlying Domengine Sandstone and Kreyenhagen Shale of Eocene age from older rocks. The Domengine Sandstone ranges from approximately 130- to 400-feet thick and the Kreyenhagen Shale is approximately 470-feet thick in nearby gas wells (DOGGR, 2006). The unconformably overlying Oro Loma Formation is of Pliocene and Miocene age (Bartow, 1996; Bartow and Lettis, 1990).

Earlier work did not recognize the Oro Loma Formation and identified Tertiary age rocks overlying the Kreyenhagen Shale as the Tumey Formation of Oligocene age, marine sedimentary rocks of middle Miocene age that included the Monterey Shale and Temblor Formations, and unnamed nonmarine sediments of Pliocene age (Dibblee, 1975). Rocks identified as the Tumey Formation approximately 400-feet thick have been encountered in nearby gas wells (DOGGR, 2006).

The Tulare Formation of late Pliocene and early Pleistocene age unconformably overlies the Oro Loma Formation (Bartow and Lettis, 1990). Based on geologic cross sections, Tulare Formation rocks probably exceeded 600 feet in thickness underlying the site. Little if any of the original depositional surface remains. The Tulare Formation is locally divided into a lower unit, the Cororan Clay Member of the upper unit, and the upper unit. Based on geologic cross sections, thicknesses of these units are greater than 275 feet, 130 feet, and 190 feet, respectively immediately to the southeast of the site (Lettis, 1982). It

is difficult to delineate the top and bottom of the Tulare Formation because of the thickness and similarity of deposits overlying and underlying the Corcoran Clay (Hotchkiss, 1972). The Corcoran Clay Member of the Tulare Formation is notable because it divides the groundwater flow system into a lower confined zone and an upper semiconfined zone. The Corcoran Clay Member of the Tulare Formation is often referred to as the "blue clay" in drillers' logs (Croft, 1972).

Figure 5.3-3 summarizes the local stratigraphic nomenclature. The underlying basement rocks and marine and nonmarine sedimentary rocks of Tertiary age included in Figure 5.3-3 are of regional significance but are not exposed within a two-mile radius of the site.

5.3.1.1.2 Local Geology – Stratigraphy

The alluvium of the Panoche fan is composed of sediment derived largely from older rocks shed eastward from the Diablo Range towards the valley trough. The sediments comprising the fan were deposited during relatively short-lived water flow and infrequent mudflow events by depositional processes including debris flows, sheet floods, stream channel deposits, and sieve deposits. Debris flows are high viscosity flows that have sufficient matrix strength to support and transport large clasts resulting in poorly-sorted and elongate deposits that lack cross bedding. Sheet floods are low viscosity, shallow channel and unchannelized flows where rapid decreases in flow depth and velocity result in channel filling and lateral shifts in channel location. Stream channel deposits result from filling of entrenched channels and are generally coarse-grained and more poorly-sorted than sheet flood deposits and are characteristically lenticular with basal erosional contacts that truncate stratigraphy. Sieve deposits result from infilling of fine-grained sediments into older, well-sorted, porous gravel deposits during infiltration of surface water. As a result, Panoche Fan sediments generally consist of poorly to moderately sorted subangular to subrounded, gravels, sands, silts, and clays complexly arranged as interfingering layers and lenses of variable thickness (Geomatrix, 1989).

The alluvial sediments of the fan grade eastward into fine-grained alluvial deposits of the flood basin of the San Joaquin River and Fresno Slough in the valley trough. At depth, the arkosic sands are granitic glacial outwash deposits derived primarily from the Sierra Nevada to the east. Alluvial sediments in the Panoche Fan derived from the Diablo Range are referred to as Coast Range alluvium, and the arkosic sands derived from the east are referred to as Sierran sands (Geomatrix, 1989).

The westernmost extent of Sierran sands is well to the east of the site within alluvium above the Corcoran Clay. Thin lenses of Sierran sands may interfinger with Coast Range alluvium underlying the Corcoran Clay at the site, but Sierran sands are generally not encountered in the subsurface west of the California Aqueduct. Based on drilling logs for a well drilled approximately ½ mile northeast of the site by US Geological Survey (USGS, 1987b) and mapping (Westlands, 2006), there is approximately 666 feet of alluvium overlying the Corcoran Clay at the site. The Corcoran Clay ranges from 20- to 120-feet thick and is at least 100-feet thick underlying the site (Belitz and Heimes, 1990).

Late Cenozoic age alluvial deposits of the Panoche Fan have been subdivided into a series of geologic units based on tentative correlation with units mapped at the surface in areas north of the fan. The distinctions are based primarily on geomorphic and pedologic indicators of relative age and to a lesser extent on lithologic and absolute age criteria. The units are represent discrete periods of deposition separated by periods of relative stability and minimal sediment accumulation. Stratigraphic units

identified in order of decreasing age include the formally recognized Tulare Formation of late Pliocene and Pleistocene age, and the informally named Los Banos alluvium of middle and late Pleistocene age, San Luis Ranch alluvium of late Pleistocene and early Holocene age, and Patterson alluvium and Dos Palos alluvium of Holocene age. In addition, the Los Banos alluvium and San Luis Ranch alluvium have been further divided into three and two members, respectively. Geologic cross sections indicate that the Los Banos alluvium is approximately 365-feet thick, the San Luis Ranch Alluvium is approximately 135-feet thick, and the Patterson Alluvium is approximately 20-feet thick immediately southeast of the site (Lettis, 1982; Geomatrix, 1989).

Published geologic mapping of the site at a 15-minute quadrangle (1:62,500 scale) indicates that geologic materials exposed within a two-mile radius of the site are limited to surficial sediments. The site is located within an area mapped as Quaternary age alluvium composed of clay and sand. The Panoche Creek channel northwest of the site is mapped as Quaternary age gravel and sand of stream channels (Dibblee, 1975).

More detailed published mapping of the alluvial fan deposits of Holocene and Pleistocene age of the Chounet Ranch 7.5-minute quadrangle (1:24,000 scale) describes more detailed stratigraphy of the recent sediments located west of the site. The mapping differentiates between deposits in active channels and in areas of active sedimentation on fan surfaces, deposits on inactive areas of fans, deposits on slightly to moderately dissected older fans, deposits on moderately dissected older fans, deposits on highly dissected older fans, and floodplain deposits. Floodplain deposits are further divided into alluvium found in active channels and on lowest terraces, intermediate terraces, and highest terraces (historic floodplain) (Bartow and Lettis, 1990).

5.3.1.1.3 Local Geology – Groundwater

The Corcoran Clay is an extensive diatomaceous-lacustrine clay deposit of low permeability that divides the groundwater flow system into a lower confined zone and an upper semiconfined zone (Davis and Poland, 1957). The Corcoran Clay was encountered in nearby USGS water well at a depth of approximately 666 feet below ground surface (USGS, 1987b). The Corcoran Clay ranges in thickness from 20 to 120 feet (Belitz and Heimes, 1990) and is estimated to be approximately 100-feet thick underlying the site.

The deposits of the semiconfined zone above the Corcoran Clay are typically alluvium derived from the Coast Ranges. The deposits can include Sierran-derived sand east of the site. Sierran sands do not generally extend very far to the west of the axis of the valley trough, and the semiconfined zone underlying the site is dominated by Coast Range alluvium. These hydrogeologic units differ in texture, hydrologic properties, and oxidation state. In contrast to Coast Ranges alluvium, the Sierran sand is reduced in the valley trough. The Sierran deposits are highly permeable and historically have been tapped by wells as a source of irrigation water (Belitz and Heimes, 1990). Groundwater within the Coast Ranges alluvium is generally of sulfate or bicarbonate type with relatively high dissolved mineral concentration and is generally considered to be of relatively low quality (Davis et al., 1959; Bull and Miller, 1975; Gilliom et al., 1989).

The deposits of the confined zone below the Corcoran Clay used as aquifers for groundwater production consist of poorly consolidated floodplain, deltatic, alluvial fan, and lacustrine deposits of the Tulare

Formation. In general, groundwater in the confined zone generally contains smaller quantities of dissolved minerals and a higher concentration of sodium than groundwater in the overlying semiconfined zone (Davis et al., 1959). Many of the agricultural production wells in the study area are perforated below the Corcoran Clay (Belitz and Heimes, 1990). About 75 to 80 percent of the groundwater pumped for irrigation was from the confined lower aquifer (Davis and Poland, 1957; Bull and Miller, 1975).

Most agricultural wells in the area are perforated both above and below the Corcoran Clay. The sound of falling water in idle irrigation wells in heavily pumped areas of the western San Joaquin Valley has long been recognized as evidence that groundwater has been circulating downward through the casings of active and abandoned wells from the upper to lower aquifers (Davis et al., 1964). Due to the design of most agricultural wells in the area, groundwater used for irrigation includes water produced from both the semiconfined and confined aquifers.

Groundwater withdrawal from the confined zone generated extensive ground subsidence prior to delivery of surface water for agricultural water supply replacement beginning in the 1960's (Poland et al., 1975). Local maximum compaction due to groundwater withdrawal from the confined lower aquifer was concentrated a few miles northeast of the site near Pilibos Ranch (Bull and Poland, 1975). Today, ground subsidence has decreased because agricultural use of groundwater is limited except in times of drought when surface water supplies are curtailed. Subsequent to the initial compaction of the lower confined aquifer, heavy pumping of the groundwater reservoir during the 1976-77 drought caused artesian head declines that were 10 to 20 times faster than the first cycle of long-term drawdown that ended in the late 1960's (Ireland, et al., 1984).

Based on December 2005 data, the depth to the confined zone piezometric groundwater surface at the site is expected to be approximately 400 feet below ground surface. The elevation of the base of fresh groundwater is approximately 1,200 feet below mean sea level in the confined zone below the Corcoran Clay. Locally, the base of fresh groundwater is defined as groundwater with total dissolved solids exceeding 2,000 parts per million total dissolved solids, which is too high for irrigating crops (Westlands, 2006).

Depth to the semiconfined groundwater surface is poorly constrained because few wells in the area are completed solely in aquifers located above the Corcoran Clay. In addition, groundwater elevations appear to vary significantly depending on the completion depth of the well. A relatively shallow USGS water well drilled close to the site was perforated between 285 and 295 feet below ground surface and the standing water level after well completion was 195 below ground surface. The following year, a standing water level of 290 feet below ground surface after well completion was reported for an adjacent USGS well perforated between 623 to 633 feet below ground surface (USGS, 1987a; 1988). Significant variations within the hydrologic unit depending on well completion depth indicate that perched aquifers may be present within the semiconfined aquifer.

Groundwater is also discussed in Section 5.5, Water Resources.

5.3.1.1.4 Local Geology – Structure

The San Joaquin Valley is synclinal structure between the tilted block of the Sierra Nevada on the east and the complexly folded and faulted Coast Ranges on the west. The Sierra Nevada is uplifted along its eastern flank and depressed along its western flank where it is overlain by sedimentary deposits of the San Joaquin Valley. Beneath the San Joaquin Valley, a westwardly thickening wedge of sediments overlies crystalline basement rocks similar to those exposed in the Sierra Nevada. Indirect evidence suggests that the Sierra Nevada block extents westward to the flanks of the Coast Ranges (Miller, et al., 1971).

The large northwest-trending syncline between the Sierra Nevada and the Coast Ranges is the principal late Cenozoic structure in the San Joaquin Valley. The axial part of the syncline has subsided at a minimum rate of 0.7 to 1 foot per 1,000 years during the past 600,000 years. The structural axis 3 to 6 miles east of the western valley margin has remained stationary during the late Quaternary and governs the general location and orientation of the valley. The topographic axis (trough) of the valley, approximated by the interface of Sierran sands and Coast Range alluvium in the valley subsurface, has rarely coincided with the structural axis, suggesting that rates of sedimentation have equaled or exceeded rates of subsidence (Lettis, 1982).

The Diablo Range (the most easterly of the Coast Ranges) forms the western border of the San Joaquin Valley. The structure of this range is a broad anticline with an eastern monoclinal limb dipping beneath the valley. The exposed core of the range is formed by complexly folded and contorted sedimentary and igneous rocks of the Franciscan Formation. Lesser folds pass beneath the valley and trend obliquely to the range. Structural complexity along the west flank of the Coast Ranges generally increases in a southward direction. Less deformed sedimentary strata exposed along the western border of the valley and folded during the uplift of the Coast Ranges range in age from Late Cretaceous to Quaternary in age (Miller, et al., 1971).

Within the foothills, the principal Quaternary folds west of the site include the Tumey Hills, Panoche Hills, Wisenor Hills, and Laguna Seca Hills anticlines and the Little Panoche Valley, and Carrisalito Flat synclines. These structures are much smaller than the San Joaquin Valley syncline, and typically have northeast or east-trending axes. The domed Panoche Hills anticline is the largest foothill structure in the region and has risen at a minimum rate of 1 to 1.3 feet per 1,000 years during the late Quaternary. Minimum rates of uplift for the smaller Laguna Seca Hills and Wisenor Hills anticlines approximate 0.7 feet per 1,000 years during the same period (Lettis, 1982).

5.3.1.1.5 Plate Tectonic Setting

Persistent tectonic activity affected much of the Central Valley during the Cenozoic and is shown by the numerous unconformities that occur in the deposits that underlie the valley margins. At least four or five erosional events separate Cenozoic deposits from one another and indicate that deposition in the central parts of the valleys continued with little interruption during most of the Cenozoic, but deposition was frequently separated by tectonism and erosion along the margins of the bordering mountain ranges (Norris and Webb, 1990).

The boundary between the North American and Pacific tectonic plates lies within 30 miles southwest of the site. The site is located on the North American tectonic plate, which is separated from the Pacific

tectonic plate by the San Andreas Fault. The relative motion between these two plates has been determined from paleomagnetic lineations in the Gulf of California, from global solutions to known slip rates along plate boundaries, from geology, and from geodesy (Minster and Jordan, 1978; DeMets et al., 1987; Wallace, 1990) to be primarily horizontal at a rate of approximately 50 millimeters a year (DeMets et al., 1987). On a broad scale, the North American – Pacific tectonic plate boundary in California is a transform fault that extends from the Gulf of California to Cape Mendocino. The San Andreas Fault and the transform plate boundary end to the north at the Mendocino Triple Junction in northernmost California. North of Cape Mendocino, the spreading center and subduction zone of the Juan de Fuca plate lie between the North American and Pacific tectonic plates. At the southern end, another spreading center lies in the Gulf of California, creating parts of the Pacific and Rivera tectonic plates. The transform faults of that spreading center merge into the San Andreas Fault system near the Imperial Valley and the Salton Sea (Hutton et al., 1991).

5.3.1.1.6 Seismicity and Seismotectonics

Figure 5.3-4 and Table 5.3-1 summarize the historic seismicity in the region between 1800 and 2000. Table 5.3-2 depicts faults considered to be significant seismic sources for the site. The site area was subjected to an estimated historic peak site acceleration of approximately 0.09g during the 1983 magnitude 6.70 Coalinga earthquake (Panoche, 2006). This acceleration is estimated to be the maximum ground acceleration experienced by the site between 1800 and 2000. The 1983 magnitude 6.70 Coalinga earthquake was centered approximately 34 miles from the site.

5.3.1.1.7 Significant Quaternary Faults

The three most significant Quaternary faults in the Panoche Fan region are the Ortigalita, San Andreas, and Nunez faults. Figure 5.3-5 shows regional seismogenic fault locations within California. An “active fault” is defined by the CDMG as one that has had surface displacement within the last 11,000 years. Faults with no evidence of surface displacement with the last 11,000 years (i.e., Holocene age) are not necessarily inactive. Potentially active faults have shown displacement within the last 1.6 million years (Quaternary age). “Inactive faults” show no evidence of movement in historic or recent geologic time, suggesting that the faults are dormant (Fresno County, 2000).

The Alquist-Priolo Earthquake Fault Zoning Act of 1994 (formerly known as the Alquist-Priolo Special Studies Zone Act of 1972) stipulates that no structure for human occupancy may be built within an earthquake fault zone until geologic investigations demonstrate that the site is free of fault traces that are likely to rupture with surface displacement (Fresno County, 2000). The Ortigalita Fault Zone, the San Andreas Fault Zone, and the Nunez Fault are described because they are the closest designated earthquake fault zones to the site. The Great Valley thrust faults are also described due to their proximity to the site and potential for activity. The site is not located within an earthquake fault zone.

Table 5.3-1
Magnitude 5.8 and Greater Earthquakes Occurring
Between 1800 and 2000 within 100 Miles of the Site

Latitude (North)	Longitude (West)	Date	Time (UTC)	Estimated Magnitude	Approximate Distance (mi [km])		Location (USGS Earthquake Catalog)
36.4000	121 .0000	04/12/1885	4:05:00	6.20	29.0	(46.0)	S. Diablo Range
36.2200	120.4000	7/22/1 983	23:42:00	6.00	32.0	(51.0)	Coalinga
36.2200	120.2900	5/2/1 983	23:42:39	6.70	34.0	(55.0)	Coalinga
36.1510	120.0490	8/4/1985	12:01 :56	5.80	46.0	(73.0)	North Kettleman Hills
36.8300	121 .5700	10/18/1800	0:00:00	7.00	56.0	(90.0)	-
37.0000	121 .5000	06/20/1897	20:14:00	6.20	56.0	(90.0)	Gilroy
36.9000	121 .6000	04/24/1890	11:36:00	6.00	59.0	(95.0)	Pajaro Gap
37.1000	121 .5000	8/6/1979	17:05:22	5.80	59.0	(95.0)	Coyote Lake
35.8000	120.3300	6/8/1 934	4:47:00	6.00	61.0	(97.0)	Parkfield
37.2000	121 .5000	07/06/1899	20:10:00	5.80	63.0	(102.0)	Morgan Hill
35.7500	120.2500	3/10/1922	11:21 :20	6.50	65.0	(105.0)	Parkfield
37.4000	121 .4000	04/10/1881	10:00:00	5.90	69.0	(110.0)	W. San Joaquin Valley
37.1000	121 .7000	02/26/1864	13:47:00	5.90	69.0	(111.0)	S. Santa Cruz Mountains
37.5000	121 .3000	07/15/1866	6:30:00	5.80	71.0	(114.0)	W. San Joaquin Valley
35.7300	121 .2000	11/22/1952	7:46:37	6.00	72.0	(116.0)	Bryson
37.2500	121 .7500	7/1/1911	22:00:00	6.60	76.0	(123.0)	Calaveras fault
37.0360	121 .8830	10/18/1989	0:04:15	7.00	77.0	(123.0)	Loma Prieta
37.3200	121.6980	4/24/1984	21:15:19	6.20	77.0	(124.0)	Morgan Hill
37.3000	121 .9000	10/08/1865	20:46:00	6.30	85.0	(137.0)	S. Santa Cruz Mountains
36.5700	122.1700	10/22/1926	13:35:22	6.10	88.0	(142.0)	Monterey Bay
37.2000	122.1000	02/17/1870	20:12:00	5.80	92.0	(148.0)	Los Gatos
37.5000	121 .9000	11/26/1858	8:35:00	6.10	93.0	(150.0)	San Jose Region
35.3000	120.7000	12/7/1906	6:40:00	5.90	94.0	(151.0)	-
37.1000	122.2000	03/26/1884	4:00:00	5.90	95.0	(152.0)	Santa Cruz Mountains
36.6100	122.3500	10/22/1926	12:35:07	6.10	98.0	(158.0)	Monterey Bay

Table 5.3-2
Faults Considered to be Significant
Seismic Sources for the Site

Abbreviated Fault Name	Approximate Distance (mi [km])		Maximum EQ Magnitude (Mw)
Great Valley 11	5.0	(9.0)	6.4
Great Valley 10	6.0	(9.0)	6.4
Great Valley 9	15.0	(24.0)	6.6
Great Valley 12	15.0	(24.0)	6.3
Ortigalita	19.0	(31.0)	6.9
Great Valley 13	25.0	(40.0)	6.5
San Andreas (creeping)	28.0	(45.0)	6.5
Calaveras (south of Calaveras Res)	33.0	(53.0)	6.2
Quien Sabe	36.0	(57.0)	6.4
Great Valley 8	38.0	(61.0)	6.6
Great Valley 14	43.0	(69.0)	6.4
San Andreas - Parkfield Segment	45.0	(72.0)	6.7
San Andreas - 1857 Rupture	45.0	(72.0)	7.8
Rinconada	48.0	(76.0)	7.3
Zayante-Vergeles	50.0	(80.0)	6.8
Sargent	50.0	(81.0)	6.8
Foothills Fault System	52.0	(84.0)	6.5
San Andreas (1906)	52.0	(84.0)	7.9
San Andreas (Pajaro)	52.0	(84.0)	6.8
Monterey Bay - Tularcitos	56.0	(90.0)	7.1
Great Valley 7	63.0	(101.0)	6.7
San Andreas - Cholame	64.0	(104.0)	6.9
San Andreas (Santa Cruz Mountain)	65.0	(105.0)	7.0
San Juan	69.0	(111.0)	7.0
Hosgri	71.0	(114.0)	7.3
Palo Colorado - Sur	72.0	(116.0)	7.0
Greenville	74.0	(119.0)	6.9
Hayward (southeast extension)	76.0	(123.0)	6.4
Monte Vista - Shannon	79.0	(127.0)	6.8
San Andreas (peninsula)	87.0	(140.0)	7.1
San Gregorio	87.0	(140.0)	7.3

Table 5.3-2
Faults Considered To Be Significant
Seismic Sources for the Site
(Continued)

Abbreviated Fault Name	Approximate Distance (mi [km])		Maximum EQ Magnitude (Mw)
Calaveras (north of Calaveras Res)	87.0	(140.0)	6.8
Hayward (total length)	87.0	(140.0)	7.1
Hayward (South)	87.0	(140.0)	6.9
Great Valley 6	91.0	(146.0)	6.7
Los Osos	94.0	(151.0)	6.8
San Luis Range (S. Margin)	96.0	(155.0)	7.0

Ortigalita Fault Zone. The Otigalita Fault Zone is approximately 50 miles long, originating near Crow Creek in western Stanislaus County and extending southeast to a few miles north of Panoche in western Fresno County. Most of the fault is considered active due to displacement during Holocene time (Fresno County, 2000).

The Ortigalita Fault Zone is a major Holocene dextral strike-slip fault in the central Coast Ranges that is an eastern part of the lager San Andreas Fault system. The Ortigalita Fault Zone is approximately 19.0 miles from the site at its closest point. The Ortigalita Fault Zone extends from northwest of San Luis Reservoir southeast to the vicinity of Panoche Valley. The Ortigalita Fault Zone is characterized by echelon fault traces separated by pull-apart basins. The fault zone is divided into 4 sections. The Little Panoche Valley section is the southern most section and is closest to the site. The Little Panoche Valley section is late Holocene active. Late Quaternary slip rates and recurrence intervals are unknown, although the recurrence interval for the entire Ortigalita Fault Zone is approximately 2,000 to 5,000 years. The vertical slip rate is at least 0.01-0.04 millimeters per year. The dextral slip component is probably greater than the vertical component and is estimated to be 0.5 to 1.5 millimeters per year (USGS, 2006b).

San Andreas Fault Zone. The San Andreas Fault lies to the west and southwest of the site. The fault is considered active and is of primary concern in evaluating seismic hazards throughout western Fresno County (Fresno County, 2000). The 684-mile-long San Andreas Fault Zone is the principal element of the San Andreas Fault system, a network of faults with predominantly dextral strike-slip displacement that collectively accommodates the majority of relative north-south motion between the North American and Pacific plates. The San Andreas Fault Zone is the most extensively studied fault in California, and perhaps the world. The creeping section of the San Andreas Fault is approximately 28.0 miles from the site at its closest point. The San Andreas Fault Zone is considered to be the Holocene and historically active dextral strike-slip fault that extends along most of coastal California from its complex junction with the Mendocino Fault Zone on the north, southeast to the northern Transverse Range and inland to the Salton Sea, where a well-defined zone of seismicity transfers the slip to the Imperial fault along a right-releasing step (USGS, 2006b).

Two major surface-rupturing earthquakes have occurred on the San Andreas Fault in historic time: the 1857 Fort Tejon and 1906 San Francisco earthquakes. Additional historic surface rupturing earthquakes include the unnamed 1812 earthquake along the Mojave section and the northern part of the San Bernardino Mountains section, and a large earthquake in the San Francisco Bay area that occurred in 1838 that was probably on the Peninsula section. Historic fault creep rates are as high as 32 millimeters per year for the 82-mile-long creeping section in central California with creep rates gradually tapering to zero at the northwestern and southeastern ends of the section. Average slip rates for the San Andreas Fault Zone exceed 5.0 millimeters per year (USGS, 2006b).

Nunez Fault. The Nunez fault is located approximately 6.0 to 7.0 miles northwest of Coalinga and is approximately 30 miles from the site at its closest point. The fault is approximately 2.6 miles long and is considered active based on surface rupture associated with the 1983 Coalinga earthquake. The fault is divided into two north and south trending segments. About 2.1 miles of right-reverse surface rupture occurred on the segments. Total displacement and timing of past fault movements are poorly constrained (Rymer and Ellsworth, 1990; Fresno County, 2000).

Great Valley Thrust Faults. The Great Valley thrust faults have been divided into at least 14 segments extending over 300 miles in cumulative length based on geomorphic interpretation of the range front bordering the western edge of the Central Valley (USGS, 2006a). The closest Great Valley thrust fault is approximately 4.7 miles from the site at its closest point (Kleinfelder, 2006). Recent evidence suggests that the faults located along the western boundary of the San Joaquin Valley may be more active than once believed. Asymmetrical folds identified on the eastern slopes of the Coast Ranges can hide faults that show no surface rupture. The faults and folds along the Coast Range-Sierran Block Boundary (Great Valley thrust faults) are similar or include the faults and folds that were the source of the 1983 Coalinga earthquake. The Great Valley thrust faults are now believed to be active and capable of generating large magnitude earthquakes (Rymer and Ellsworth, 1990; Fresno County, 2000). The Great Valley thrust faults are not identified as earthquake fault zones.

5.3.1.1.8 Ground Shaking

Ground shaking is the most significant geologic hazard at the site. Although most of Fresno County is situated within an area of relatively lower seismic activity, the southern Coast Ranges have been the most tectonically active area within the county (Fresno County, 2000).

The California Energy Commission (CEC, 1989) recommends that non-nuclear power plants be designed to the level of conservatism implied by the Uniform Building Code (ICBO, 1997). The geotechnical investigation (Kleinfelder, 2006) for the subject site locates the site within Seismic Zone 3 as defined in the 1998 Edition of the California Building Code. The seismic zone definitions of the 1998 Edition of the California Building Code are based on the 1997 Edition of the UBC. Seismic Zone 3 of the UBC is the second highest earthquake hazard zone recognized by the code. The closest type A fault to the site is the San Andreas fault, which is approximately 28 miles from the site at its closest point. The closest type B fault to the site is a segment of the Great Valley thrust faults, which is approximately 4.7 miles from the site at its closest point.

Estimates of potential seismic ground motion based on a review of the California Geological Survey's regional probabilistic hazard mapping the site area is subject to ground motions approaching 0.4g for the

10% in 50 year hazard level. Deterministic evaluations of ground motion for adjacent projects have estimated ground motions of 0.36g (URS AFC, 2006).

5.3.1.1.9 Ground Rupture

No faults were identified within 2.0 miles of the site (Dibblee, 1975; Fresno County, 2000). The nearest earthquake fault zone as defined by the Alquist-Priolo Earthquake Fault Zoning Act of 1994 is the Ortigalita Fault Zone, which is approximately 19.0 miles from the site at its closest point. Earthquake fault zones include faults considered to have been active during Holocene time and to have a relatively high potential for surface rupture (CDMG, 2000). Ground rupture is not likely at the site.

5.3.1.1.10 Liquefaction

Liquefaction is a phenomenon whereby loose, saturated, granular soils lose their inherent shear strength due to excess pore water pressure build-up such as that generated during repeated cyclic loading from an earthquake. A low relative density of the granular materials, shallow groundwater table, long duration, and high acceleration of seismic shaking are some of the factors favorable to cause liquefaction. Presence of predominantly cohesive or fine-grained materials and/or absence of saturated conditions can preclude liquefaction. Liquefaction hazards are usually manifested in the form of buoyancy forces during liquefaction, increase in lateral earth pressures due to liquefaction, horizontal and vertical movements resulting from lateral spreading, and post-earthquake settlement of the liquefied materials.

No specific countywide assessments to identify liquefaction hazards have been performed. Ground accelerations must approach 0.3g before liquefaction occurs in a sandy soil with relative densities typical of San Joaquin alluvial deposits. Areas subject to 0.3g acceleration or greater are located along the Coast Range foothills, but depth to groundwater in these areas is typically great enough to minimize liquefaction potential (Fresno County, 2000). Recent soil borings drilled at the proposed Panoche Energy Center site did not encounter groundwater to the maximum depths explored of 101 feet below ground surface. As discussed in Section 5.3.1.1.3, the depth to existing topography at the site does not provide sufficient relief that would cause concern due to potential landslides. There are no topographic features of significant relief that could present a landslide hazard to the facility within 2.0 miles of the site. The channel of Panoche Creek is located approximately 1.7 miles northwest of the site but is too shallow and too distant to pose a landslide hazard to the site.

Based on general screening criteria, the site topography does not meet the categories for geologic environments likely to produce earthquake-induced landslides. However, construction of the proposed site facilities would consider stability against landslides.

5.3.1.1.11 Subsidence and Settlement

Subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas. Soils that are particularly susceptible to subsidence include those with high silt or clay contents. Subsidence caused by groundwater withdrawal can affect large areas (Fresno County, 2000).

Four types of subsidence occur in the San Joaquin Valley. In order of decreasing magnitude, they are: 1) subsidence caused by water-level decline produced by groundwater withdrawal and consequent compaction of aquifer systems; 2) subsidence related to the hydrocompaction of moisture-deficient deposits above the water table; 3) subsidence related to withdrawal from oil and gas fields; and 4) subsidence caused by deep-seated tectonic movements. The primary causes of subsidence in the San Joaquin Valley are aquifer-system compaction due to groundwater withdrawal and near-surface hydrocompaction. Hydrocompaction is the process of volume decrease and density increase that occurs when moisture-deficient deposits compact as they are wetted for the first time since burial (Poland et al., 1972; Ireland, 1986).

By 1966, withdrawal of groundwater for agriculture caused more than 2,000 square miles of the western San Joaquin Valley to subside more than 1 foot. The area that had subsided by more than 10 feet was 70 miles long. Maximum subsidence was 26 feet. Subsidence rates increased until the mid-1950s when the maximum observed rate was 1.8 feet per year (Bull, 1975). Much of the subsidence was produced by water-level declines due to groundwater pumping that exceeded 400 feet in some locations. The large-scale fluid withdrawal for irrigation resulted in the largest known volume of land subsidence in the world (Williamson et al., 1989). Beginning in 1967, surface water imported via the California Aqueduct began to replace groundwater as the primary source of irrigation supply in the area south of Mendota (Gilliom et al., 1989; Belitz and Heimes, 1990). By 1983, land subsidence due to groundwater withdrawal appeared to have slowed considerably or stopped in most of the San Joaquin Valley (Ireland, 1986). Increased reliance on surface water and generally lower irrigation water demands in the area due to microirrigation techniques and land retirements lessen the likelihood of subsidence due to groundwater withdrawal at the site.

About 120 square miles adjacent to the Diablo Range is susceptible to near-surface subsidence, where compaction due to wetting of moisture-deficient alluvial-fan deposits has caused as much as 15 feet of subsidence. Subsidence of 3 to 10 feet is common for soils in this area (Bull, 1975). Small pockets of moisture deficient deposits within alluvial fan soils are the result of erratic prehistoric percolation from streams. New wetting of previously unirrigated land on the Panoche Creek fan southwest of the California Aqueduct underlain by pockets of moisture-deficient deposits could produce as much as 5 to 10 feet of near-surface subsidence (Bull, 1972). Near-surface subsidence in the region has destroyed or damaged ditches, canals, roads, pipelines, electric transmission towers, and buildings and has made the irrigation of crops difficult (Bull, 1 964b). The site is located close to or within areas of historic near-surface subsidence (Ireland et al., 1984). However, the site was irrigated during agricultural use for many years which greatly reduces the likelihood of any significant near-surface subsidence in the future.

Settlement can occur in poorly consolidated soils during groundshaking. Earthquake induced settlement can cause distress to structures supported on shallow foundations, damage to utilities that serve pile-supported structures, and damage to lifelines that are commonly buried at shallow depths (Kramer, 1996). During settlement, the soil materials are physically rearranged by the shaking to result in a less stable alignment of the individual minerals. Settlement of sufficient magnitude to cause significant structural damage is normally associated with rapidly deposited alluvial soils, or improperly founded or poorly compacted fill (Fresno County, 2000). Soils encountered during the geotechnical investigation of the site were generally fine-grained and medium dense with localized zones or layers of loose material. Based on

the evaluation of the adjacent site which is underlain by similar distal fan deposits, peak site accelerations at the site are unlikely to be high enough to produce settlement (URS AFC, 2006).

5.3.1.1.12 Expansive Soils

Expansive soils are those that greatly increase in volume when they absorb water and shrink when they dry out. Expansion is measured by shrink-swell potential, which is relative volume change in soil with a gain in moisture. Soils with moderate to high shrink-swell potential may damage buildings, roads, and other structures built on them. Based on the site specific geotechnical assessment, expansive soil concerns are not likely at the site (Kleinfelder, 2006). The surface materials at the site consist predominantly of low plasticity silt which does not represent a significant expansive soil hazard.

5.3.1.1.13 Flooding

Small streams, which are usually dry except during winter and spring runoff, drain the foothills of the Coast Range. Streams draining the Coast Range foothills frequently flood much valuable agricultural land, roads, and communities including Mendota and Firebaugh (Fresno County, 2000). All streams in the mapped area are intermittent or ephemeral, flowing only during stormwater runoff events.

The entirety of the Midway site is included within the special flood hazard area (Zone A) inundated by the 100-year flood with no base flood elevation determined on the FEMA Flood Insurance Rate Map. The boundaries of the 100-year floodplain are delineated by FEMA on the basis of hydrology, topography, and modeling of flow during predicted rainstorms. The analysis of predicted flooding does not account for the effects of continued land subsidence or increases in sea level (Fresno County, 2000).

The Panoche Fan area is ultimately drained by the San Joaquin River into the Sacramento River Delta. The drainage of the site is toward the northeast and consists of overland sheet flow. The topography slopes northeast at less than one percent grade as shown on Figure 5.3-2A and 5.3-2B (USGS, 1971). Major flooding is not expected at the site but sheet overland flow and pooling in low areas is probable during heavy or prolonged storms.

Seiches are standing waves produced in a body of water such as a reservoir, lake, or harbor by wind, atmospheric changes, or earthquakes. Several small agricultural water reservoirs less than an acre in size are located within 2.0 miles of the site. Earthquake induced seiches are not considered a risk in Fresno County. The effects from a seiche would be similar to the flood hazard for a particular area, and the risk of occurrence is perceived as considerably less than that risk of flooding (Fresno County, 2000).

5.3.2 Environmental Consequences

No adverse effect on geological resources is expected from construction or operation of Midway and associated linear components.

The southern extent of the Chaney Ranch gas field is located approximately 0.5 mile north of the site. Originally, the field was classified as an oil field with two producers. The last production from the field was during 1951, and the field was officially abandoned in 1964. The field was reactivated in 1972 as a gas field but has since been abandoned (DOGGR, 2006).

There are no known mines or aggregate borrow operations in the immediate vicinity of the plant site. The site is located outside of the Fresno aggregate materials production-consumption region (CDMG, 1988). The region includes urban and urbanizing parts of Fresno and Madera counties. No imports of aggregate into the region were identified until 1998 when one company in the region began to import approximately ½ million tons per year of aggregate from the Coalinga area. The importation of aggregate into the region is a departure from previous market patterns (CDMG, 1999). Construction sand and gravel production within Fresno County is limited to the Fresno and Coalinga areas in the 2004 California State Minerals Yearbook (USGS, 2004).

No collectable or marketable minerals are known to be present within two miles of the site. Marly magnesian limestone was mined from the Tulare Formation in the Panoche Hills several miles west of the site between 1947 and 1953 for use in soil conditioning. Future value of the deposit and similar marl deposits of the Panoche Hills appears limited to agricultural uses, as the material is considered too impure to be of value for most limestone or dolomite uses (CDMG, 1978).

5.3.3 LORS Compliance

The Fresno County Ordinance Code indicates building codes that are currently in use for an “industrial facility” constructed at the site.

Fresno County presently uses the California Building Code, including the appendices as referenced in the 2001 California Building Standards Code and the Uniform Building Code Standards adopted by reference to govern the design of buildings. Exceptions and superseding provisions include adoption of the seismic zone definitions of the 1998 California Building Code, which are based on the 1997 Uniform Building Code. It also uses the 2001 Edition of the California Mechanical Code, including Appendices A, B, and C, and the 2001 Edition of the California Electrical Code, including Administrative Chapters 1, 2, and 3.

Applicable LORS are discussed below and are summarized in Table 5.3-3.

Table 5.3-3
LORS Applicable To Geologic Hazards And Resources

LORS	Applicability	Conformance (Section)	Administering Agency
Federal			
	No Federal LORS are applicable	See Section 5.3.3.1	NA
State			
Cal PRC S25523(a), Alquist-Priolo Earthquake Fault Zoning	Not Applicable	5.3.1.1.9, 5.3.3.2	1
Local			
Fresno County Ordinance Code, Title 15	Regulates building and grading permits and adopts and amends CBC Code	5.3.3.3	4
California Building Code, Chapters, 16, and 33	Code address excavation, grading and earthwork construction, including construction applicable to earthquake safety and seismic activity hazards	5.3.3.3	4

5.3.3.1 Federal

No federal LORS are applicable.

5.3.3.2 State California Public Resources Code Section 25523(a): 20 CCR Section 1252(b) and (c)

The project site is not within an earthquake fault zone as defined by the Alquist-Priolo Earthquake Fault Zone Act. The Midway project will not be subject to requirements for construction within an earthquake fault zone.

5.3.3.2.1 California Building Code 1998, Volume 2, Chapter 16

This element sets forth rules and regulations that address potential seismic hazards.

The administering agency for the above authority is the Fresno County Department of Public Works and Planning. The project site is located in an unincorporated area. The site lies outside of the boundaries of the closest town, which is Firebaugh

5.3.3.2.2 California Building Code (CBC), Chapter 33: Site Work, Demolition and Construction, and Appendix Chapter 33

These elements set forth rules and regulations to control excavation, grading, and earthwork construction, including fills and embankments. It establishes basic policies to safeguard life, limb, property, and public welfare by regulating grading on private property.

The geotechnical engineer and engineering geologist will certify the placement of fills and adequacy of the site for structural improvements in accordance with the CBC, Appendix Chapter 33.

The geotechnical engineer will address Sections 3309 (Grading Permit Requirements), 3312 (Cuts), 3315 (Drainage and Terracing), 3316 (Erosion Control), 3317 (Grading Inspection), and 3318 (Completion of Work) of the CBC, Appendix Chapter 33.

5.3.3.2.3 California Environmental Quality Act of 1970 (CEQA)

The CEC will be the lead agency for rules and regulations to implement the California Environmental Quality Act. Appendix G, Section VI of the CEQA guidelines contains the geologic hazards and resources related to the Project.

5.3.3.3 Local

Fresno County Ordinance Code. Fresno County will review, approve and enforce applicable building and grading permits. Fresno County currently uses 2001 CBC as discussed above in 5.3.3.

5.3.3.4 Agencies and Agency Contacts

Agencies with jurisdiction to issue applicable permits and/or enforce LORS related to geologic hazards and resources, and the appropriate contact person are shown in Table 5.3-4.

Table 5.3-4
Applicable Agencies and Agency Contacts

	Agency	Contact/Title	Telephone
1	California Energy Commission	Robert Anderson, Geologist	916-654-3836
2	State of California, Division of Mines and Geology	Library, Dale Stickney	916-327-1850
3	State of California, Division of Mines and Geology	Lena Dida	916-654-5076
4	County of Fresno, Department of Public Works and Planning, Development Services Division		559-443-5340

5.3.3.5 Applicable Permits

Grading permits are issued by Fresno County based on a review of the grading plan and the Geotechnical Investigation Report.

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Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Geological Hazards** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Existing conditions: Sec. 5.3.1 Impacts: Sec. 5.3.2 Mitigation: Sec. 5.3.2 Appendix L		
Appendix B (g) (17) (A)	A summary of the geology, seismicity, and geologic resources of the project site and related facilities;	Seismicity/Geology: Sec. 5.3.1.1, Pgs. 5.3-1-5.3-14, Sec. 5.3.1.1.6, Table 5.3.2, Figure 5.3-4, , 5.3-1, 5.3-2A/B Appendix L		
Appendix B (g) (17) (B)	A map at a scale of 1:24,000 and description of all recognized stratigraphic units, geologic structures, and geomorphic features within 2 miles of the project site. Include an analysis of the likelihood of ground rupture, seismic shaking, mass wasting and slope stability, liquefaction, subsidence, and expansion or collapse of soil structures.	Description: Sec. 5.3.1.1.2 through 5.3.1.1.4, Analysis: Sec. 5.3.1.1.6 through 5.3.1.1.9 Appendix L Figure: 5.3-2A/B, 5.3-3		
Appendix B (g) (17) (C)	A map and description of geologic resources of recreational, commercial, or scientific value which may be affected by the project. Include a discussion of the techniques used to identify and evaluate these resources.	Resources: Sec. 5.3.2, Pg. 5.3-14		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

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Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	LORS compliance: Sec. 5.3.3, Pgs. 5.3-15-5.3-17, Table 5.3-3		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Agency jurisdiction: Sec. 5.3.3.4, Table 5.3-4, Pg. 5.3-17		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	LORS conformity: Sec. 5.3.3, Pgs. 5.3-15-5.3-17, Table 5.3-3		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Agency contacts: Table 5.3-4, Pg. 5.3-17		

5.4 AGRICULTURE AND SOILS

This section describes the affected environment and the environmental effects of Midway on agriculture and soils in accordance with CEC requirements. Impacts are assessed for the construction and operations of the proposed new generating plant structures. As appropriate, agriculture and soils-related mitigation measures are also included in this section. The affected environments for the soils resource and agriculture are described in the Sections 5.4.1.1 and 5.4.1.2, respectively. Environmental impacts are discussed in Section 5.4.2. The project's consistency with applicable laws, ordinances, regulations, and standards (LORS) is discussed in Section 5.4.4.

5.4.1 Affected Environment

The land in the general site vicinity is designated for agricultural use and is zoned AE-20. Land use in the immediate site vicinity is power related and includes a neighboring PG&E substation site and adjacent existing Wellhead and CalPeak Panoche Peaker plant sites (see Figure 5.4-1). The surrounding properties are predominantly agriculture but include a variety of mixed usage. Within a 1-mile radius and in addition to agricultural and power-related use there are three single-family dwelling units and an apartment complex with five residential dwelling units, the PG&E substation, the Wellhead Peaker plant, and the CalPeak Panoche Peaker plant (see Figure 5.4-2).

The Midway site is located approximately 2 miles east of Interstate 5, southwest of the intersection of West Panoche Road and Fairfax Avenue and 14 miles west of Highway 33. The project area is located in the unincorporated area of western Fresno County, adjacent to the Panoche Hills and east of the San Benito County line and approximately 50 miles west of the City of Fresno. The site is more specifically described as the Southwest Quarter of Section 5, Township 15, Range 13 East, on the United States Geological Survey (USGS). The assessor parcel number (APN) is 027-060-78S.

5.4.1.1 Soil Resources

Soils are mapped and described at the "soil series" level. The locations and properties of the soil series were identified from data and maps prepared by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS). A list of soil types is included in Table 5.4-1. The WSS Database contains official USDA soil survey information as viewable maps and tables for more than 2,300 soil surveys in the United States and its territories.

The entire Midway site has been previously disturbed with agriculture production as well as more recently utilized as a storage-yard for CalPeak Power. Refer to Section 5.3 (Geological Hazards and Resources) and the associated geotechnical report for the site specific characteristics of the subsurface soils.

Table 5.4-1
Soil Types in the Western Part of Fresno County
(In Proximity to Midway)

Map Unit	Symbol Map Unit Name
406	Guijarral Sandy Loam, 2 to 5 Percent Slopes
442	Panoche Clay Loam, 0 to 2 Percent Slopes
445	Excelsior Sandy Loam, 0 to 2 Percent Slopes
447	Excelsior Sandy Loam, Sandy Substratum, 0 to 2 Percent Slopes
477	Westhaven Clay Loam, 0 to 2 Percent Slopes
478	Cerini Sandy Loam, 0 to 2 Percent Slopes
479	Cerini Clay Loam, 0 to 2 Percent Slopes
491	Cerini Clay Loam, Subsided, 0 to 5 Percent Slopes
492	Panoche Loam, Subsided, 0 to 5 Percent Slopes
493	Panoche Clay Loam, Subsided, 0 to 5 Percent Slopes
590	Cerini-Anela-Fluvaquents, Saline-Sodic, Association, 0 to 2 Percent Slopes
960	Excelsior, Sandy Substratum-Westhaven Association, Flooded, 0 to 2 Percent Slopes
982	Water

The native soils present at the vicinity of the Midway facility site and surrounding property consist of the Panoche Series. The Panoche Series soil typically slope at zero (0) to two (2) percent, with medium runoff. The Panoche Series soils in this area are made up of about 85 percent Panoche clay loam, 5 percent Cerini clay loam, 4 percent Calflax clay loam, 2 percent Ciervo clay loam, 2 percent Posochanet clay loam, saline-sodic, and 2 percent Kimberlina sand loam.

Panoche clay loam soils are Capability Unit Classification I, with Capability Subclass VIIc. There are no major limitations and few overall limitations for this soil. Permeability of this Panoche soil is moderate, with an available water capacity that is high or very high. Effective rooting depth is 60 inches or more. As stated, runoff is medium, and the hazard of water erosion is slight.

The surface layer is light brownish gray clay loam about 7 inches thick. The upper 9 inches of the subsoil is light brownish gray loam. The next 27 inches is light gray loam over 14 inches of light brownish gray loam. The lower part to a depth of 72 inches is light brownish gray sandy loam. The soil is calcareous throughout. In some areas the surface layer is clay, sandy clay loam, or loam.

As stated above, the site has been historically disturbed with agriculture production, and is currently developed as a storage-yard. The Panoche Series soil identified and discussed above represents the soil conditions on-site.

The Midway site is relatively flat, unpaved, and does not have existing unnatural runoff drainage (refer to Figure 3.3-1 for a depiction of elevations at the Midway site). Results of the current geotechnical investigation presenting detailed description of soils at the Midway site are included in Appendix L.

5.4.1.2 Agriculture and Prime Farmland

Although the Midway site is disturbed land and has been used as an industrial storage-yard for over five years, the 128-ace parcel the project site and adjacent lands sit on is considered Prime agricultural lands and is designated as Farmlands of Statewide Importance. Prime farmland, as defined by the USDA and California Department of Conservation (CDC), is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. Midway's impact on Prime agricultural lands is described in Section 5.9 Land Use.

5.4.2 Environmental Consequences

5.4.2.1 Construction Related Impacts

Significance criteria have been selected based on CEQA Guidelines, as well as performance standards adopted by responsible agencies. An impact may be considered significant from an agriculture and soil standpoint if the project results in:

- Substantial soil erosion or loss of topsoil
- Degradation or loss of available agricultural land, agricultural activities, or agricultural land productivity in the project area
- Alteration of agricultural land characteristics due to plant air emissions
- Conversion of Prime or Unique Farmland, or Farmland of Statewide Importance, to non-agricultural use

Construction impacts on soil resources can include increased soil erosion and soil compaction. Soil erosion causes the loss of topsoil and can increase the sediment load in the surface receiving waters downstream of the construction site. The magnitude, extent, and durations of this construction-related impact depends on the erodibility of the soil (slight, as discussed above), the proximity of the construction activity to a receiving water, the degree of contamination of the excavated soil stockpiles, and the construction methodologies, duration, and the season.

5.4.2.2 Midway Project Site

Project construction activities (including site preparation) at the Midway site are estimated to be conducted during a 10-month period which will be followed by three months of commissioning activities before the facility is operational. Land disturbances related to development activities will be conducted on approximately a 5.6-acre plant site. Site grading will be minimal, as the final grade at the site will be similar to the relatively flat existing grade. Excavation work will consist of the removal, storage, and/or disposal of sand, gravel, vegetation, organic matter, loose rock, and debris to the lines and grades necessary for construction. Material suitable for backfill will be stored in stockpiles at designated

locations using proper erosion protection methods. Excess material will be removed from the site and disposed of at an acceptable location. During the construction phase of the project, erosion and sediment control measures, such as mulching, jute netting, culverts, sediment detention basins, etc., will be temporarily installed as required by local regulations.

Areas to be backfilled will be prepared by removing unsuitable material and rocks. The bottom of an excavation will be examined for loose or soft areas. Such areas will be excavated fully and will be backfilled with compacted fill.

Backfilling will be done in layers of uniform, specified thickness. Soil in each layer will be properly moistened to facilitate compaction to achieve specified density. To verify compaction, representative field density and moisture-content tests will be made during compaction. Structural fill supporting foundations, roads, parking areas, etc., will be compacted to at least 95 percent of the maximum dry density as determined by the ASTM D1557. Embankment, dikes, bedding for buried piping, and backfill-surrounding structures will be compacted to at least 90 percent of the maximum dry density. General backfill placed in remote and/or unsurfaced areas will be compacted to at least 85 percent of the maximum dry density.

Short-term increases in soil erosion are expected to occur during the construction phase. The erosion characteristics of the Panoche Series mapped at the location of Midway are slight.

Project-related soil erosion will be minimized through implementation of erosion control measures described in Sections 3.5 (Civil/Structural Features) and 5.4.3. Therefore, impacts from soil erosion are expected to be insignificant.

Construction of the proposed electrical generating plant will result in soil compaction due to the site grading and the placement of foundations and paving. Soil compaction will also result from vehicle traffic along temporary access roads and in equipment staging areas. Compaction makes the soil more dense, reducing pore space and impeding water and gas movement through this medium. This can result in increased runoff, erosion, and sedimentation. The incorporation of erosion control measures described in Sections 3.5 (Facility Civil/Structural Features) and 5.4.3 during project construction will result in less than significant impacts from soil compaction.

Site preparation and construction of the project may potentially involve excavation of contaminated soils. Contaminated excavated soils, if encountered will be stored temporarily in on-site construction zones and removed for disposal or treatment and recycling. Management of contaminated excavated materials will be conducted in accordance with applicable federal, state, and local regulations, as described in Section 5.14 (Waste Management). Therefore, impacts to the potential receiving waters will be less than significant. As applicable, the engineered fill will be imported to replace excavated materials that are not suitable for replacement.

Following construction, wind and water erosion on developed portions of the site will be reduced because the plant site will be compacted, covered with asphalt, concrete, and/or gravel, and drainage will be controlled through a storm drainage system. Implementation of the Applicant-committed mitigation measures discussed in Section 5.4.3 is expected to limit impacts to the soils resource at the generating

plant to insignificant levels. Operation of Midway will expose soils and vegetation to increased levels of air pollutants as discussed in Section 5.2 (Air Quality).

5.4.2.3 Transmission Lines

The proposed project will connect new onsite transmission lines to the adjacent PG&E Substation. Given the proximity of the existing transmission line (300 feet away), the impacts on native soils are expected to be insignificant.

5.4.2.4 Pipelines

The proposed project will not include alteration of existing offsite pipelines but will consist of construction of approximately 650 feet of new pipeline to supply natural gas. Water service will be supplied via an existing water well located at the adjacent CalPeak Panoche Peaker plant site. An approximately 1,200-foot 3-inch pipeline to Midway from the existing CalPeak Panoche Peaker plant well and connections to this will be established. However, given the close proximity of the proposed water well and new gas pipeline to the proposed project site, the soil impact will be less than significant.

5.4.2.5 Cumulative Impacts

Soil erosion and sedimentation impacts associated with Midway will not be significant; thus, cumulative impacts will be negligible. In addition, the location is not expected to have an effect on revegetation potential. The project is going to be constructed on previously disturbed land currently in use as a storage-yard. Agricultural impacts are described in Section 5.9 Land Use. Impacts related to the potential excavation of contaminated soils will not be significant because all excavated materials will be handled in accordance with the procedures described in Section 3.8 (Project Construction) and Section 5.14 (Waste Management).

5.4.3 Mitigation Measures

As stated, the project site is currently utilized as a storage-yard and the surrounding areas are currently in agricultural production or in use as by energy related projects. Anticipated impacts to the surrounding area from the construction of Midway will be minimized by the use of best management practices and the implementation of erosion control plans and stormwater pollution prevention plans. No additional mitigation measures are proposed as impacts to soils during construction and operation are minimal.

Sediment barriers such as straw bales or silt fences, slow runoff and trap sediment. Generally, placement of barriers will occur at the base of exposed slopes below disturbed areas. Placing barriers around the proposed project and the property boundary serves as prevention against sediment leaving the site. Because the Midway site is relatively level, standard surface erosion control techniques should be effective. Runoff retention basins, drainage diversions, and other large-scale sediment traps are not expected to be needed because of the level topography. Soil stockpiles generated during construction will be covered and protected from rainfall if left onsite for extended periods of time.

5.4.4 Applicable LORS

The following laws, ordinances, regulations, and standards (LORS) are applicable to protection of soils resource and protection of surface water quality from project-induced erosion impacts. Table 5.4-2 provides a summary of these applicable LORS. As discussed below, the proposed project will be constructed and operated in accordance with applicable LORS and permit conditions.

Table 5.4-2
LORS Applicable To Soils Resources and Agriculture

LORS	Applicability	Conformance
Federal		
The Federal Water Pollution Control Act of 1972; Clean Water Act of 1977	Establishes requirements for any facility or activity that has or will discharge waste (including sediment due to accelerated erosion) that may interfere with the beneficial uses of receiving waters	Sections 5.4.2, 5.4.5.1
U.S. Department of Agriculture, Soil Conservation Service (SCS). National Engineering Handbook (1983), Sections 2 and 3	Planning, design, and construction of best management practices to minimize soil erosion	Sections 5.4.2, 5.4.5.1
State		
Cal. Public Resources Code * 25523(a): CCR** 1752, 1752.5, 2300-2309, and Chapter 2, Subchapter 5, Article 1, Appendix B, Part (i)	Protection of Environmental Quality	Sections 5.4.2, 5.4.5.2
California Environmental Quality Act, Cal. Public Resources Code * 21000 *et seq.;* Guidelines for Implementation of the California Environmental Quality Act of 1970, 14 CCR * 15000-1 5387, Appendix G	Substantial soil erosion or loss of topsoil, degradation or loss of available agricultural land, agricultural activities, or agricultural land productivity in the project area, alteration of agricultural land characteristics due to plant air emissions, or conversion of prime or unique farmland, or farmland of statewide importance, to no-agricultural use	Sections 5.4.2, 5.4.5.2
The California Porter-Cologne Water Quality Control Act of 1952; Cal. Water Code, * 13260 – 13269; 23 CCR Chapter 9	Requires adequate protection of water quality by appropriate design, sizing, and construction of erosion and sediment controls	Sections 5.4.2, 5.4.5.2
Local		
Fresno County Ordinance Code, Title 15: Chapter 15.28	Establishes grading and excavation requirements during the construction phase of the project	Sections 5.4.2, 5.4.5.3

5.4.4.1 Federal

5.4.4.1.1 The Federal Water Pollution Control Act of 1972; Clean Water Act of 1977 (including its 1987 amendments)

These authorities establish requirements for any facility or activity that has or will discharge waste (including sediment due to accelerated erosion) that may interfere with the beneficial uses of receiving waters.

Administering Agencies. The administering agency for the above authority is the Regional Water Quality Control Board (RWQCB), Central Valley Region (5), under the direction of the State Water Resources Control Board (SWRCB).

5.4.4.1.2 U.S. Department of Agriculture, Soil Conservation Service (SCS). National Engineering Handbook (1983), Sections 2 and 3

The U.S. Department of Agriculture prescribes standards of technical excellence for the SCS, now called the Natural Resources Conservation Service (NRCS) for the planning, design, and construction of soil conservation practices.

Administering Agency. The administering agency for the above authority is the NRCS.

5.4.4.2 State

5.4.4.2.1 Cal. Public Resources Code * 25523(a): CCR** 1752, 1752.5, 2300-2309, and Chapter 2, Subchapter 5, Article 1, Appendix B, Part (i)

The Act provides for protection of environmental quality. With respect to Midway, the Act requires submittal of information to the CEC concerning potential environmental impacts, and the CEC's decision on the Application for Certification (AFC) must include consideration of environmental protection.

Administering Agency. The administering agency for the above authority is the CEC.

5.4.4.2.2 California Environmental Quality Act, Cal. Public Resources Code * 21000 et seq.; Guidelines for Implementation of the California Environmental Quality Act of 1970, 14 CCR * 15000-15387, Appendix G

The CEQA guidelines specify that an impact may be considered significant from an agriculture and soil standpoint if the project results in: substantial soil erosion or loss of topsoil, degradation or loss of available agricultural land, agricultural activities, or agricultural land productivity in the project area, alteration of agricultural land characteristics due to plant air emissions, or conversion of prime or unique farmland, or farmland of statewide importance, to no-agricultural use.

Administering Agency. The administering agency for the above authority is the CEC.

5.4.4.2.3 The California Porter-Cologne Water Quality Control Act of 1952; Cal. Water Code, * 13260 – 13269; 23 CCR Chapter 9

The code requires adequate protection of water quality by appropriate design, sizing and construction of erosion and sediment controls. Discharge of waste earthen material into surface waters resulting from land disturbance may require filing of a report of waste discharge (Water Code * 13260(a)) and provides for issuance of waste discharge requirements with the respect to the discharge of any waste that can affect the quality of the waters of the state. Concerning potential surface water pollution from project area runoff, the waste discharge requirements may incorporate requirements based on the following source of recommended methods or procedures: California Regional Water Quality Control Board, 1996, Erosion and Sediment Control Field Manual.

Administering Agencies. The administering agency for the above authority is the CEC, the RWQCB, and the SWRCB.

5.4.4.3 Local

5.4.4.3.1 Fresno County Building and Construction Code, Title 15: Chapter 15.28

This section of the Municipal Code establishes grading and excavation requirements during the construction phase of the project.

Administering Agency. The administering agency for the above authority is Fresno County.

5.4.4.4 Agencies and Agency Contacts

Agencies with jurisdiction to issue applicable permits and/or enforce LORS related to soils resources and agriculture are shown in Table 5.4-3.

Table 5.4-3
Agency Contacts

Agency	Contact	Telephone
Fresno County Department of Planning & Public Works	Briza Sholars	559.443.5342

5.4.4.5 Applicable Permits

Table 5.4-4 lists all applicable permits for Midway in the area of Agriculture and Soils.

Table 5.4-4
Applicable Permits

Jurisdiction	Potential Permit Requirements
Federal	No federal permits were identified
State	No state permits were identified
Local	Grading Permit from Fresno County

5.4.5 References

URS Corporation. 2006. Application for Certification, Panoche Energy Center.

United States Department of Agriculture, Natural Resources Conservation Service; Web Soil Survey. 2006. http://websoilsurvey.nrcs.usda.gov/app/.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Soils** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Existing: Sec: 5.4.1 Impacts: Sec: 5.4.2, 5.4.2.5 Mitigation: Sec: 5.4.3		
Appendix B (g) (15) (A)	A map at a scale of 1:24,000 and written description of soil types and all agricultural land uses that will be affected by the proposed project. The description shall include:	Sec: 5.4.1.1 Fig. 5.4.1 and 5.4.2		
Appendix B (g) (15) (A) (i)	The depth, texture, permeability, drainage, erosion hazard rating, and land capability class of the soil; and	Sec: 5.4.1.1, 5.4.2.2, 5.4.2 Table 5.4-1		
Appendix B (g) (15) (A) (ii)	An identification of other physical and chemical characteristics of the soil necessary to allow an evaluation of soil erodibility, permeability, re-vegetation potential, and cycling of pollutants in the soil-vegetation system.	Sec: 5.4.1.1, 5.4.2		
Appendix B (g) (15) (C)	An assessment of the effects of the proposed project on soil resources and agricultural land uses. This discussion shall include:	Sec. 5.4.2, 5.4.1.2, 5.9		
Appendix B (g) (15) (C) (i)	The quantification of accelerated soil loss due to wind and water erosion;	Sec. 5.4.2		
Appendix B (g) (15) (C) (iii)	The effect of power plant emissions on surrounding soil-vegetation systems.	Sec. 5.4.2, 5.2, 5.6		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Soils** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	Sec. 5.4.4 Table 5.4-2		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Sec. 5.4.4.4, 5.4.4.5 Table 5.4-2, 5.4-3, 5.4-4		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	Sec. 5.4.4		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Table 5.4-3		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Sec. 5.9.4.5 Table 5.4-4, 5.9-5		

5.5 WATER RESOURCES

The existing conditions in the project area and the water demands for the Starwood Power-Midway, LLC Peaking Project (Midway) have been evaluated and are presented in this section. The water resources data and information for the area, and the water demand data, were used to identify and evaluate the potential effects of the project on local water resources, and to identify mitigation measures that would reduce potential significant impacts (if any) to a level of insignificance. Details of this evaluation are presented below and in Appendix M.

5.5.1 Existing Site Conditions

5.5.1.1 Site Location

The Midway site is located in the unincorporated area of western Fresno County, approximately halfway between Fairfax Avenue and Davidson Avenue, along West Panoche Road, as shown on Figure 5.5-1.

The elevation at the site is approximately 395 to 400 feet above mean sea level (msl). The Midway site is a 5.6-acre area located on a gently sloping alluvial fan surface. The ground surface of the site slopes generally downward from southwest to northeast. Figure 3.3-1 shows the topography of the Midway site.

5.5.1.2 Physiographic Setting

The Midway site is located in western San Joaquin Valley, which is part of the Central Valley. The Central Valley comprises about 20,000 square miles and extends from near Red Bluff on the north to near Bakersfield on the south, a distance of about 400 miles.

5.5.1.3 Climate

The climate of the Central Valley in the vicinity of the Midway site can be characterized as semi-arid. The valley experiences long, hot, dry summers and relatively mild winters. Monthly average, maximum, and minimum temperature data based on a 128-year record for the Fresno weather station, located approximately 35 miles east of the Midway site, are presented in Table 5.5-1. Based on 128 years of record, the average annual temperature for Fresno is 63.2°F. The Five Points 5 SSW weather station (No. 043083), located approximately 35 miles south of the Midway site, has a 58-year record of temperature that is summarized in Table 5.5-2.

TABLE 5.5-1
MONTHLY TEMPERATURE DATA (°F) FOR FRESNO, CALIFORNIA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	53.6	61.3	66.1	74.0	82.7	90.9	96.6	94.8	88.8	78.1	63.0	53.4
Mean	46	51.4	55.5	61.2	68.8	76.1	81.4	79.9	74.6	65.0	52.7	45.2
Min	38.4	41.4	44.9	48.4	54.9	61.2	66.1	64.9	60.4	51.9	42.3	37.0

TABLE 5.5-2
MONTHLY TEMPERATURE DATA (°F) FOR FIVE POINTS, CALIFORNIA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	55.1	62.6	68.5	75.4	84.1	91.6	97.4	95.2	90.2	80.2	66.3	55.5
Mean	45.9	51.3	55.4	60.6	67.6	74.4	80.1	78.4	76.6	65.2	53.4	46.0
Min	36.6	40.0	42.3	45.8	51.1	57.3	62.9	61.6	58.0	50.2	41.6	36.5

Precipitation in the area is characterized by long dry summers and intermittent wet periods. The Fresno weather station (No. 043257), located approximately 55 miles east of the Midway site, has a 128-year record of precipitation. Based on this record, the average annual precipitation is 11.23 inches (see Table 5.5-3).

TABLE 5.5-3
FRESNO AVERAGE MONTHLY PRECIPITATION (INCHES)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2.11	1.91	1.89	1.00	0.37	0.15	0.01	0.01	0.17	0.53	1.17	1.58

The Five Points SSW weather station (No. 043083), located approximately 35 miles south of the Midway site, has a 58-year record of precipitation. Based on this record, the average annual precipitation is 6.92 inches (see Table 5.5-4).

TABLE 5.5-4
FIVE POINTS AVERAGE MONTHLY PRECIPITATION (INCHES)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1.47	1.3	1.04	0.51	0.27	0.09	0.01	0.02	0.19	0.36	0.70	0.96

5.5.1.4 Demographics and Land Use

The Midway site is proposed on a 5.6-acre site currently utilized as a storage-yard for CalPeak Power. A Wellhead Peaker plant is located to the southeast and CalPeak Panoche is immediately adjacent to the southwest of the site. Additionally, a PG&E substation is located to the west. The nearest communities are Mendota and Firebaugh, located 18 and 25 miles northeast of the Midway site, respectively.

5.5.1.5 Geology

The San Joaquin Valley is an asymmetrical basin defined by the Coast Ranges to the west, the Tehachapi Mountains to the south, the Sierra Nevada to the east, and the delta of the San Joaquin and Sacramento rivers to the north. The axis of the valley trough is closer to the Coast Ranges than to the Sierra Nevada (Belitz and Heimes, 1990). The oldest rocks in the area are basement complex rocks underlying the basin

that form much of the Tehachapi Mountains, San Emigdio Mountains, and the southern Sierra Nevada. The basement rocks are composed of a mass of plutonic and metamorphic rocks commonly referred to as the Sierra Nevada batholith of pre-Tertiary age. The basin is filled with more than 14,000 feet of rocks of Jurassic, Cretaceous, Tertiary, and Quaternary age (Croft, 1972). A more detailed discussion of regional and site geology is presented in Section 5.3.

5.5.1.6 Hydrogeology

The hydrogeology of the San Joaquin Valley is described in California Groundwater Bulletin 118 (California Department of Water Resources [DWR], 2006) and the Annual Deep Groundwater Conditions Report issued by the Westlands Water District (Westlands, 2006). Figure 5.5-2 presents a schematic showing the cross-section of the San Joaquin Valley's hydrogeologic formations.

The Tulare Formation is included in undifferentiated non-marine strata approximately 2,580 feet thick encountered in the upper portion of nearby gas wells (DOGGR, 1985). The Tulare Formation is late Pliocene and early Pleistocene in age, and includes the Corcoran Clay, which is an extensive lacustrine deposit of low permeability that divides the groundwater flow system into a lower confined zone and an upper semiconfined zone. The Corcoran Clay was encountered in a nearby United States Geological Survey (USGS) observation well cluster site at a depth of about 666 feet below ground surface (USGS, 1987). The Corcoran Clay ranges in thickness from 20 to 120 feet (Belitz and Heimes, 1990).

The deposits of the semiconfined zone above the Corcoran Clay can include alluvium derived from the Coast Ranges and Sierran-derived sand. These hydrogeologic units differ in texture, hydrologic properties, and oxidation state. In contrast to Coast Ranges alluvium, the Sierran sand is reduced in the valley trough. The Sierran deposits are highly permeable and historically have been tapped by wells as a source of irrigation water (Belitz and Heimes, 1990). Sierran sands do not generally extend very far to the west of the axis of the valley trough, and the semiconfined zone underlying the site is dominated by Coast Range alluvium. Groundwater within the Coast Ranges alluvium is generally considered to be of relatively low quality due to the presence of water-soluble deleterious minerals within the parent rocks (Gilliom et al., 1989).

The deposits of the confined zone below the Corcoran Clay used as aquifers for groundwater production consist of poorly consolidated floodplain, deltatic, alluvial fan, and lacustrine deposits of the Tulare Formation. Many of the agricultural production wells in the study area are perforated below the Corcoran Clay (Belitz and Heimes, 1990). Groundwater withdrawal from the confined zone generated large-scale ground subsidence prior to delivery of surface water for agricultural water supply replacement beginning in the 1960s (Poland et al., 1975). Today, agricultural use of groundwater is limited except in times of drought when surface water supplies are curtailed.

5.5.1.6.1 Groundwater Subbasins

The Midway site is located in the Westside Subbasin (DWR No. 5-22.09) of the San Joaquin Valley Groundwater Basin. The Westside Subbasin consists mainly of the lands in Westlands Water District. It is located between the Coast Range foothills on the west and the San Joaquin River drainage and Fresno Slough on the east. The subbasin is bordered on the southwest by the Pleasant Valley Groundwater Subbasin and on the west by Tertiary marine sediments of the Coast Ranges, on the north and northeast by

the Delta-Mendota Groundwater Subbasin, and on the east and southeast by the Kings and Tulare Lake groundwater subbasins.

5.5.1.6.2 Aquifer Characteristics

The aquifer system comprising the Westside Subbasin consists of unconsolidated continental deposits of Tertiary and Quaternary age. These deposits form an unconfined to semi-confined upper aquifer and a confined lower aquifer. These aquifers are separated by an aquitard named Corcoran Clay (E-Clay), a member of the Tulare Formation. These water-bearing zones are recharged by subsurface inflow from the west, east and northeast and by percolation of precipitation and irrigation water.

The unconfined to semi-confined aquifer (upper zone) above the Corcoran Clay includes younger alluvium, older alluvium, and part of the Tulare Formation. These deposits consist of highly lenticular, poorly sorted clay, silt, and sand incercalated with occasional beds of well-sorted sand.

5.5.1.6.3 Groundwater Occurrence and Flow

The development of irrigated agriculture in the western San Joaquin Valley including the Panoche Fan area has significantly altered the groundwater flow system. Percolation of irrigation water past crop roots has caused a rise in the altitude of the water table in midfan and distal fan areas. Pumpage of groundwater from wells has caused a lowering of the potentiometric surface of the confined zone over much of the western valley. Percolation of irrigation water has replaced infiltration of intermittent streamflow as the primary mechanism of recharge. Pumpage of groundwater from wells and crop evapotranspiration have replaced natural evapotranspiration and seepage to streams in the valley trough as the primary mechanisms of discharge. The combination of percolation and pumpage has resulted in development of a large downward hydraulic-head gradient in the semiconfined zone and has created a groundwater divide. Decreases in groundwater pumping following delivery of surface-water have allowed consequent recovery in hydraulic head throughout the groundwater flow system. The present-day groundwater flow system is in a transient state and is adjusting to the stresses placed upon it in both the past and present (Belitz and Heimes, 1990).

5.5.1.6.4 Basin Water Balance

The Westlands Water District has determined that the perennial yield of groundwater in the Westside Subbasin is 200,000 acre-feet.

5.5.1.6.5 Groundwater in Storage

The storage capacity of the upper semi-confined aquifer is approximately 36.5 million acre-feet. This estimate is based on an average thickness of 675 feet from the ground surface to the top of the Corcoran Clay, an area of 600,000 acres, and a specific yield of 9 percent (DWR, 2006). Specific yield is the ratio of the volume of water a rock or soil will yield by gravity drainage (Fetter, 1994).

The storage capacity of the lower confined aquifer is approximately 65 million acre-feet. This estimate is based on an average thickness of 1,200 feet from the base of the Corcoran Clay to the base of fresh groundwater, an area of 600,000 acres, and a specific yield of 9 percent (DWR, 2006).

Groundwater in storage in the subbasin was estimated by the USGS to be about 52 million acre-feet at a depth of less than or equal to 1,000 feet in 1961. The available storage in the sub-basin is estimated to be 6 million acre-feet. This estimate is based on an average depth to groundwater in October 1984 of 111 feet, an area of 600,000 acres, and a specific yield of 9 percent (DWR, 2006).

5.5.1.6.6 Groundwater Quality

Groundwater in the Westside Subbasin is generally of the sulfate or bicarbonate type. The waters of the upper aquifer are generally high in calcium and magnesium sulfate. Groundwater below 300 feet and above the Corcoran Clay shows a tendency of decreased dissolved solids with increased depth. Most of the groundwater of the lower aquifer is of the sodium sulfate type. The difference in quality between the upper and lower aquifers is that the confined zone contains less dissolved solids. Groundwater in the Westside subbasin can have an upper range of dissolved solids concentrations between 2,000 and 3,000 mg/L. Dissolved solids concentrations in shallow groundwater can be greater than 10,000 mg/L at some locations.

Groundwater quality of the upper aquifer underlying the site is estimated to be similar to the quality of the groundwater from the existing 500-foot well at the adjacent CalPeak Panoche site. Groundwater from the existing CalPeak Panoche well was sampled on March 30, 2006 and the quality of the groundwater is summarized in Table 5.5-5.

Groundwater quality estimates for the lower aquifer are presented in Table 5-5.6 and are based on historic data for water wells surrounding the site because no water wells are located within the site boundary. While locations of the historic groundwater sampling locations are not precise, distances from the Midway site range from approximately 500 feet to approximately 24,300 feet. Sampling data were reported between 1951 and 1995.

Groundwater quality estimates for the lower aquifer are based on historic groundwater sampling data from 30 wells in the area and are summarized in Table 5.5-6.

TABLE 5.5-5
WATER QUALITY DATA FOR EXISTING CALPEAK PANOCHE WELL

Constituent	Concentration
Alkalinity (as $CaCO_3$)	140 mg/L
Ammonia (NH_3-N)	Not Detected
Bicarbonate (as $CaCO_3$)	140 mg/L
Boron (B)	4.2 mg/L
Calcium (Ca)	240 mg/L
Carbonate (as $CaCO_3$)	1 mg/L
Chloride (Cl)	200 mg/L
Conductivity – Specific (EC)	4000 µmho/cm
Hardness (as $CaCO_3$)	1500 mg/L
Hydroxide (as $CaCO_3$)	None Detected
Iron (Fe)	None Detected
Magnesium (Mg)	220 mg/L
Nitrate (NO_3)	140 mg/L
o-Phosphate (o-PO_4-P)	None Detected
pH at 21.60°C	7.8 Standard Unit
Potassium (K)	8.4 mg/L
Silica – Total (SiO_2)	47 mg/L
Sodium (Na)	470 mg/L
Sulfate (SO_4)	1900 mg/L
Total Dissolved Solids (TDS)	3400 mg/L
Total Suspended Solids (TSS)	None Detected

TABLE 5.5-6
WATER QUALITY DATA FOR DEEP WELLS NEAR SITE

Constituent	Concentration Range	Average Concentration
Alkalinity (as $CaCO_3$)	133-220 mg/L	170 mg/L
Arsenic	0.004–0.021 ppb	0.012 ppb
Bicarbonate (as HCO_3)	182-594 mg/L	237 mg/L
Boron (B)	1.0-15 mg/L	3.2 mg/L
Calcium (Ca)	12-78 mg/L	38 mg/L
Carbonate (as $CaCO_3$)	Not Detected	Not Detected
Chloride (Cl)	28-1405 mg/L	150 mg/L
Conductivity – Specific (EC)	940-9078 µmho/cm	2120 µmho/cm
Fluoride (F)	0.4–0.6 mg/L	0.5 mg/L
Hardness (as $CaCO_3$)	75-7795 mg/L	320 mg/L
Magnesium (Mg)	2.4-50 mg/L	25 mg/L
Nitrate (NO_3)	None Detected – 5.1 mg/L	2.7 mg/L
pH	7.2-8.4	7.8
Potassium (K)	3.00-5.40 mg/L	4.2 mg/L
Silica – Total (SiO_2)	42-52 mg/L	44 mg/L
Sodium (Na)	180-644 mg/L	320 mg/L
Sulfate (SO_4)	230-1760 mg/L	630 mg/L
Total Dissolved Solids (TDS)	860-4800 mg/L	1090 mg/L

5.5.1.7 Water Supply History and Future Projections

5.5.1.7.1 Water Supply History

Early farmers in the Westlands sub-basin made use of groundwater for irrigation. In 1968, the delivery of surface water with low levels of dissolved solids from the San Luis Unit of the federal Central Valley Project (CVP) largely replaced the use of groundwater containing elevated levels of dissolved solids for irrigation. However, in response to drought conditions and other surface water shortfalls beginning in 1988, farmers reactivated old wells and constructed new wells to pump groundwater to irrigate their crops. Surface water delivered by the Westlands Water District is generally used rather than groundwater wells, and many wells in the area have collapsed or are abandoned.

5.5.1.7.2 Future Water Supply

In any given year the availability of surface water supplies imported from the Sacramento delta is a function of the amount of precipitation received in northern California, quantities of water carried over from prior years in reservoirs and the imposition of regulatory operational constraints in the delta. The amount of groundwater pumping is generally inversely proportional to the availability of surface water supplies.

5.5.1.8 Effects of Current Groundwater Pumping on Groundwater Basin

From 1987 though 1994 California, and much of the western United States, experienced the second worst drought of the 20th century. Prior to this period following construction of its distribution system in the mid 1960's, Westlands Water District received full water service contract entitlements (1,150,000 acre-feet) in all but two years (1976 and 1977) and usually received additional (Interim) water supplies that would, in the future, be delivered to other CVP contractors once their delivery facilities were constructed.

During the 1987-94 drought, Westlands Water District received an average supply of 61 percent of contract entitlement, and during 1991 and 1992 allocations of only 25 percent were received. It was during this period that the conveyance facilities were completed to the San Felipe Unit, the final element within the CVP delta export service area, thus making Interim water no longer available to Westlands and others.

Beginning in 1992 a series of state and federal regulatory actions were initiated that have had a significant long term effect on agricultural water supplies for both state and federal water service contractors relying on delta export water supplies. These regulatory actions include the listing of five fish species under the Endangered Species Act (ESA), increased delta outflow standards under the federal Clean Water Act (CWA) and establishment of more stringent water quality standards by the State Water Resources Control Board. In other actions the CVP was required to provide approximately 400,000 acre-feet per year to wildlife refuges, and up to an additional 800,000 acre-feet per year for restoration of fisheries. One of the most significant resulting operational changes was a reduction in delta export pumping for a minimum of 30 days in the spring for protection of out-migrant San Joaquin River salmon smolts and delta smelt.

Year-to-year surface water allocations and groundwater pumpage varied significantly between 1976 and 2006. During this period, groundwater pumpage ranged from a low of 15,000 acre-feet, to a maximum of 600,000 acre-feet in 1991 and 1992. Groundwater levels show maximum annual variations of up to -97 ft/yr (declining) to positive (increasing) levels of up to 89 ft/yr.

5.5.1.9 Effects of Future Use on Groundwater Basin by Others

Since its inception, the Westlands Water District has been faced with shallow groundwater drainage problems over an area of up to 200,000 acres that the federal Bureau of Reclamation (BOR) was obligated to remedy. Following passage of the CVP Improvement Act, BOR initiated a land retirement program in which drainage-impacted lands were purchased and taken out of irrigated production. As of 2006, a total of nearly 100,000 acres has been retired. The BOR recently released a San Luis Drainage Features Re-evaluation Report and EIR/EIS in which the recommended alternative is additional land retirement in lieu

of providing drainage service. Ultimately the total acreage retired in the Westlands Water District may reach 200,000 acres or more, reducing total annual District demand by up to 500,000 acre-feet.

As a part of the land retirement program, CVP contract water supplies associated with the retired land will remain with Westlands Water District. This will increase the water supplies available to remaining lands and reduce the year-to-year variability in surface water supplies and groundwater pumpage. In the long term this can be expected to stabilize or increase groundwater levels throughout the basin.

5.5.2 Water Needs for Midway

The water balance diagram (Appendix B) shows the raw, process and service water flow streams at peak flow requirements. It is anticipated that Midway will operate approximately 400 hours per year and water use is expected to be approximately 14 acre-feet per year. However, Midway will be permitted to operate up to 4,000 hours per year; should demand for power increase. Midway will require approximately 136 acre-feet of water when operating at the permitted maximum of 4,000 hours per year.

Peak water usage for Midway includes the following:

- 98 gpm of demineralized (DI) water for NOx control
- 40 gpm for inlet fogging

Table 5.5-7 shows the minimum and maximum water volume required for Midway.

TABLE 5.5-7
PEAK AND ANNUAL WATER FLOW RATES AND VOLUMES

	Estimated Quantity (gpm)	Peak Usage (gpm)	Minimum[2] Annual Volume (Acre-Feet)	Maximum[3] Annual Volume (Acre-Feet)
Raw Water Supply	100[4]	-	-	-
RO Output	75	-	-	-
RO Reject Water	25	-	-	-
Raw Water Supply to Demineralizer	70	-	-	-
Demineralizer Output	70	-	-	-
Total Demineralized Water Requirements	-	138[5]	13.6	135.6

Notes:
[1]Average flow is not relevant to a plant that operates intermittently. Pump operating time is twice the engine operating time.
[2]Based on annual operation of 400 hours per engine.
[3]Based on annual operation of 4,000 hours per engine.
[4]Maximum daily flow is 144,000 gallons, assuming 100 gpm pumped continuously.
[5]Peak usage is required for a 12-hour period/day. This translates into approximately 100,000 gallons of DI water which will be provided by the DI process unit and 50,000 gallons for DI water from the storage tanks. Running the RO Unit/ DI for 24 hour day at 70 gpm (75 gpm minus the 5 gpm service water) will provide approximately 100,000 gallons/day of DI. Water to the DI storage tanks. Thus flow is balanced.

During a typical 4.5-hour operating day the plant will require approximately 49,680 gallons of water. The operating water requirements based on the expected 400 annual service hours, and the Power Purchase Agreement (PPA) maximum 4,000 hours are broken out by quarter in Table 5.5-8 below.

TABLE 5.5-8
MIDWAY ANNUAL WATER SUPPLY REQUIREMENTS

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
Expected Operating Hours (400)	47	101	176	76	400
Water Consumption (acre-feet)	1.6	3.4	6.0	2.6	13.6 (4.4 million gallons)
MPPA Maximum Hours (4,000)	800	800	1,400	1,000	4,000
Water Consumption (acre-feet)	27.1	27.1	47.4	33.9	135.6 (44.2 million gallons)

*The data is based upon operating at maximum water flow conditions at 114 degrees

5.5.2.1 Water Supply

Groundwater located in the upper aquifer beneath the project site has a TDS of approximately 3,400 mg/L (refer to Table 5.5-5). Water will be supplied from the groundwater well at the adjacent CalPeak Panoche peaker plant. Well water would be pumped at a rate of 100 gpm to the on-site RO treatment facility where the water is filtered and then treated by RO. The treated water flows at a rate of approximately 75 gpm into the Raw Water Storage Tank. Approximately 25 gpm of RO reject water would be generated. The Raw Water Storage Tank has capacity for approximately 18 hours of storage at the feed water rate of 75 gpm. From the Raw Water Storage Tank, the water is withdrawn by a pump and distributed to the Demineralization Treatment Units and/or the Service Water distribution system. Following treatment, demineralized water flows from the Demineralization Treatment Units to the Demineralized Storage Tanks. The Demineralized Storage Tanks have capacity to store approximately 33 hours of demineralized water at the inlet feed rate of 75 gpm if no water is withdrawn. If water is withdrawn and no water is being pumped to the storage tanks, the tanks have a capacity of approximately 18 hours. If the tanks are being fed at the same time that water is being withdrawn from the system, the tanks have a storage capacity of approximately 37 hours. In short, as part of Midway design, ample storage has been included in order to meet water supply demand.

As discussed in Section 4-6, an 8.0-acre agriculture filter backwash pond that can store approximately 80 acre-feet of water is a potential water source for Midway. This pond is currently being designed by the adjacent agricultural operations. Allowing for normal evaporation and the seasonal flow into the pond, the profile of available water from the large agricultural backwash pond would be approximately:

Period:	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Water Available, Acre-feet	12.9	59.3	71.6	15.7

The water quality characteristics of filter backwash water are presented in Table 5.5-9. The characteristics shown are based on a single sample taken from the pond.

TABLE 5.5-9
WATER QUALITY DATA FOR BAKER FILTER BACKWASH WASTEWATER

Constituent	Concentration
Alkalinity (as $CaCO_3$)	72 mg/L
Ammonia (NH_3-N)	Not Detected
Bicarbonate (as $CaCO_3$)	Not Detected
Boron (B)	0.013 mg/L
Calcium (Ca)	14 mg/L
Carbonate (as $CaCO_3$)	62 mg/L
Chloride (Cl)	48 mg/L
Conductivity – Specific (EC)	310 µmho/cm
Hardness (as $CaCO_3$)	61 mg/L
Hydroxide (as $CaCO_3$)	9.8 mg/L
Iron (Fe)	0.076 mg/L
Magnesium (Mg)	6.3 mg/L
Nitrate (NO_3)	Not Detected
o-Phosphate (o-PO_4-P)	Not Detected
pH at 21.60°C	9.8 Standard Unit
Potassium (K)	Not Detected
Silica – Total (SiO_2)	10 mg/L
Sodium (Na)	38 mg/L
Sulfate (SO_4)	21 mg/L
Total Dissolved Solids (TDS)	170 mg/L
Total Solids (TS)	190 mg/L

Water from this option has adequate quantity and better quality than water from the shallow aquifer. However, as discussed in Section 4.6 this option cannot be considered a reliable water supply for Midway until the design and construction it is complete. If either this water source or the deep well option (previously discussed in Section 4.0) becomes reliable early in the project permitting process, an environmental analysis for the option will be provided.

5.5.3 Wastewater Disposal

Midway's operation will generate a wastewater discharge from the RO unit. The estimated quality of wastewater that results from use of upper aquifer groundwater is presented in Table 5.5-10.

TABLE 5.5-10
ESTIMATED WASTEWATER QUALITY DATA

Constituent	Concentration
Alkalinity (as $CaCO_3$)	560 mg/L
Ammonia (NH_3-N)	Negligible
Bicarbonate (as $CaCO_3$)	560 mg/L
Boron (B)	17 mg/L
Calcium (Ca)	960 mg/L
Carbonate (as $CaCO_3$)	4.0 mg/L
Chloride (Cl)	800 mg/L
Hardness (as $CaCO_3$)	6,000 mg/L
Hydroxide (as $CaCO_3$)	Negligible
Iron (Fe)	Negligible
Magnesium (Mg)	880 mg/L
Nitrate (NO_3)	560 mg/L
o-Phosphate (o-PO_4-P)	Negligible
Potassium (K)	34 mg/L
Silica – Total (SiO_2)	188 mg/L
Sodium (Na)	1,880 mg/L
Sulfate (SO_4)	7,600 mg/L
Total Dissolved Solids (TDS)	13,600 mg/L
Total Suspended Solids (TSS)	Negligible

The project description includes an evaporation pond (lined surface impoundment) for disposal of wastewater via atmospheric drying, resulting in a residue that must be disposed of in a landfill system. The evaporation pond would be a 25,000 square-foot pond lined with a polyethylene liner and a 4-inch PVC gravity pipe from the RO facility to the pond. The size of the pond is limited by space available on the project site. While this method of wastewater disposal may create some limitations related to the amount of hours the plant could operate, water needs could still be satisfied. Specifically, in the rare instance that the plant were to operate for a high number of hours (more than 400) and the RO pond created a water system limitation, the RO unit would be shut down and the demineralization units would run on raw water. This approach would eliminate a RO wastewater flow.

5.5.4 Water Resources and Wastewater Management

5.5.4.1 Midway Water Resources Plan

For purposes of the remainder of this analysis, the existing CalPeak Panoche well is utilized as the water source for Midway. This would utilize the upper aquifer groundwater.

Service water will be treated in the on-site RO treatment facility. All other process water will be further treated in the demineralizer. The production well location and the water treatment facilities are shown on the site layout drawing, Figure 3.4-1. The production well water quality is presented in Table 5.5-5.

Midway will use water to inject into the gas turbines for NO_X control, gas turbine inlet fogging and for intermittent miscellaneous service water uses. The peak flow rates are as follows:

NO_X Control	98 gpm
Inlet Fogging	40 gpm

The NO_X control and inlet fogging water will be treated using a RO system, followed by a mixed-bed demineralizer. The amounts of water used for each purpose is summarized in Table 5.5-7.

5.5.4.1.1 Service Water Supply Facilities

Service water for Midway will be supplied via the existing CalPeak Panoche well connected to the upper aquifer. The service water would only be processed by the RO unit. It would not flow through the demineralizer process.

5.5.4.1.2 Demineralized Water

A Water Treatment system would provide demineralized water to the gas turbines for water injection/inlet fogging. Water injection will be utilized to provide control of NOx emissions during combustion. Inlet fogging will be utilized to provide cooling of inlet air. This system will include one (1) 75,000 gallon Raw Water Storage Tank, an RO Treatment System, a Mobile Water Treatment system (i.e., Demineralizer Trailers on a pad), two (2) 75,000 gallon Demineralized Water Storage Tanks, and a forwarding system to deliver the demineralized water to the gas turbines.

The water injected into the CTG for NO_x control must be free of contaminants. A demineralized water system utilizing trailer-mounted exchangers that will be regenerated offsite will provide high-purity water to be used for injection water into the turbine generator for NO_x control. The product water from the RO system, stored in the Raw Water tank, is sent through a demineralizer and then to one of two 75,000 gallon demineralized water storage tanks. A forwarding system will be utilized to provide this demineralized water to the gas turbines within the required flow and pressure limits.

5.5.4.2 Midway Wastewater Management Plan

For purposes of the remainder of this analysis, the existing CalPeak Panoche well is utilized as the water source for Midway. Based on this water source, use of an on-site evaporation pond was identified as the alternative to be implemented for disposal of wastewater. The industrial wastewater discharge from the plant will consist of RO reject water. Table 5.5-7 shows the water and wastewater streams. Refer to the water balance, Appendix B, for flow rates.

Wastewater from Midway will consist of RO reject water that is non-hazardous. The volume of process wastewater is expected to range from approximately 3.4 acre-feet per year at 400 hours of operation to approximately 34 acre-feet per year at 4,000 hours of operation. The expected wastewater composition utilizing CalPeak Panoche well water as the source is shown in Table 5.5-10.

Process wastewater will be conveyed by gravity to an evaporation pond on the east side of the Midway site. When the well pump is operating (in general, twice as often as the generators), the average process wastewater generation rate that will require disposal is expected to be approximately 25 gallons per minute (gpm).

Incorrect disposal of process wastewater can degrade soil, surface water and groundwater. All other liquid wastes generated by Midway will flow by gravity to oily water sumps which then pump the liquid waste to a 4,700 gallon tank that will be used to temporarily store the waste before it is hauled off-site for disposal in accordance with all regulations.

5.5.4.2.1 Domestic/Sanitary Wastewater

Portable toilets will be provided at the site. The sanitary wastes from the toilets will be hauled off-site for disposal in accordance with all regulations.

5.5.4.2.2 Stormwater Runoff

According to the Federal Emergency Management Agency (FEMA), the entirety of the Midway site is included within the special flood hazard area (Zone A) inundated by the 100-year flood with no base flood elevation. The site will be raised (approximately 1-foot) in conformance with the Fresno County ordinance Title 15, Flood Hazard Areas to ensure that, in the event of a 100-year storm, the site and equipment is not subjected to any flood damage. Stormwater permits are required for the following industrial facilities: steam electric power generating facilities, manufacturing facilities included in certain designated Standard Industrial Classifications, and facilities located within municipal separate storm sewer systems (MS4) areas. Midway is not proposed as a steam electric power generating facility and is not included in any of the designated Standard Industrial Classifications subject to stormwater effluent limitations guidelines. In addition, the Midway site is not within an MS4 urban area. Therefore, the facility does not require a stormwater permit. Stormwater from the Midway site will continue to run off the site as sheet flow.

A Stormwater Pollution Prevention Plan (SWPPP) will be prepared prior to construction of Midway. This plan will be implemented at the Midway site to control and minimize contamination of stormwater during construction of the facility. The plan will employ best management practices such as stabilized construction entrances, silt fencing, berms, hay bales, and detention basins to control runoff from all construction areas.

5.5.5 Midway Effects on Water Resources

5.5.5.1 Effect on SubBasin Water Balance

Midway would impact on water balance in that groundwater would be extracted from a well and reject water would be discharged to a lined evaporation pond. However, the effect on the subbasin water balance will be insignificant due to the annual water withdrawn relative to the volume of groundwater storage in and annual yield of the Westside Subbasin. The annual water withdrawn, volumes of groundwater storage and annual yields are presented in Table 5-5.11.

TABLE 5.5-11
SUBBASIN WATER BALANCE

Description	Value
Maximum Annual Water Withdrawn, Acre-Feet	147
For Withdrawal from Upper Aquifer	
Groundwater Storage, Upper Aquifer, Acre-Feet	36,500,000
Maximum Annual Water Withdrawn, Percent of Storage	0.0004
For Withdrawal from Lower Aquifer	
Groundwater Storage, Lower Aquifer, Acre-Feet	65,000,000
Maximum Annual Water Withdrawn, Percent of Storage	0.00027
Annual Subbasin Yield, Acre-Feet	200,000
Maximum Annual Water Withdrawn, Percent of Annual Yield	0.074

5.5.5.2 Water Level Drawdown Effects

Midway is expected to have an insignificant effect on the water level drawdown in the Westside Sub-basin due to the annual water withdrawn relative to the volume of groundwater storage and relative to the annual yield.

5.5.5.3 Water Quality Effects

The withdrawal of groundwater from the upper aquifer will remove dissolved solids from the Westside Subbasin. The dissolved solids removed from the subbasin will be concentrated in the wastewater and then, following drying in the evaporation pond, the solids will be removed to a landfill and therefore, will not be returned to the subbasin.

If an alternative to the evaporation pond is implemented in the future, any waste stream returned to the subbasin by either infiltration or through crop irrigation will be returned with a dissolved solids concentration that is less than the dissolved solids concentration that is withdrawn. Thus, the groundwater quality will not be degraded.

As described in Section 3.0, Midway includes design features that will isolate storm water from hazardous materials and equipment that may contain hazardous material. Liquids storage areas are designed with spill containment. These features, along with proper maintenance will assure that surface waters are not contaminated by chemical releases and that storm water that comes in contact with potential contamination is contained. Consequently, impacts to surface water quality would be insignificant.

5.5.5.4 Cumulative Impacts

Total groundwater pumping by all users from the subbasin is expected to be below the perennial yield of 200,000 acre-feet determined by the Westlands Water District. If the total groundwater pumped by all users exceeds the yield of the aquifer from which Midway obtains its water supply, the impact attributable to Midway will be a lowering of the groundwater table by less than 0.0029 inch per year based on an area of 600,000 acres for the aquifer.

As discussed in the Cumulative Section 5.18, the only Projects in the area with potential for cumulative impacts to water are the proposed PEC (400MW Plant), Plan Check Power Generation Facility (existing CalPeak Panoche) and the new Shell building with a convenience store (addition to an existing store). It is not anticipated that the water quality in the area will be negatively impacted by any of these projects due to the following reasons:

- Proposed PEC – It is understood that the proposed PEC will supply CTG cooling activities with a deep well accessing water from the lower aquifer. Midway will draw supply water from the upper aquifer, therefore it is not anticipated that the proposed PEC will affect Midway's water supply.

- Existing CalPeak Panoche well – Midway will utilize the existing CalPeak Panoche well and therefore the upper aquifer groundwater. CalPeak Panoche's current water usage is 30gpm (worst case scenario water usage is for 2,500 hours). With the addition of Midway, total demand will be 168gpm (30 gpm for existing + 138 gpm for Midway). With Midway in operation at worst case scenario of 4,000 hours, and CalPeak Panoche in operation at worst case scenario of 2,500 hours, this equates to an approximate demand of 150.4 acre-feet of groundwater per year. The upper groundwater aquifer has a maximum yield of 36,500,000 acre-feet per year. Therefore, it can sustain both Projects and no significant cumulative impacts are anticipated to groundwater supply.

- Convenience Store - From the project description provided by the County of Fresno, this seems to be an addition to an already existing convenience store. Detailed information on this specific project was unavailable. As an addition to an existing use, it is not anticipated to significantly impact groundwater supply.

5.5.6 Available Documents and Information

The geology and hydrogeology of the groundwater basins and sub-basins in the Central Valley have been studied by the USGS, California Department of Water Resources (DWR), the United States Bureau of Reclamation and the Westlands Water District. Midway is located within the service area of the Westlands Water District, the largest agricultural water agency in the United States with a service area of nearly 1,000 square miles. Westlands Water District also monitors well facilities in the Midway area, and has performed and commissioned groundwater studies within its boundaries the most recent of which were performed in the year 2005. The Westlands Water District annually collects water quality and water level data and other water-related information for the Midway area and develops estimates of groundwater pumpage and depth and elevation contour maps. The available historic records document long-term hydrologic and water-related conditions in the area.

Overall, data and information have been developed over an extended period of time, through available published and unpublished reports, that provide a base of detailed information related to local hydrogeologic conditions. Reviews and assessments of the data and information available indicated that there is sufficient data to evaluate the water resources of the Midway area and to assess the effects of proposed Midway groundwater pumping.

The available data regarding important water resource factors include: historical groundwater levels and estimates of pumpage, surface water and groundwater characteristics, historical and projected groundwater production, surface water flows, well construction logs, production well-specific capacities, surface topography, historical precipitation, temperature, land use, geophysical surveys, geologic reports and maps, hydrogeologic reports, and groundwater modeling studies. These data provide a reliable foundation for decision-making related to the proposed Midway project and its potential effects on area water resources. These data are fully adequate as a basis to evaluate the potential effects of Midway on local groundwater resources and users near the site, to assess the significance of the effects, and to identify and evaluate mitigation methods that can reduce potential significant impacts (if any) to a level of insignificance.

5.5.7 Avoidance and Minimization Measures

The analysis of the effect of Midway on water resources indicates that the project will have no significant effect on the water resources. However, in order to avoid and minimize impacts the following stipulations must be implemented.

- Prior to beginning any grading or excavating activities associated with Midway construction, and as required by the General Construction Activity Stormwater Permit, the Applicant will develop and implement a stormwater pollution prevention plan prepared under the requirements of the General Construction Activity Stormwater Permit.

- Prior to beginning grading or excavation activities associated with project construction, the Applicant shall submit an Erosion Control and Revegetation Plan to the Compliance Project Manager (CPM) for approval. The final plan shall contain all the elements of the draft plan with changes made to address the final design of the project.

- A Report of Waste Discharge will be filed with the Central Valley Regional Water Quality Control Board in order to obtain Waste Discharge Requirements (WDRs). The Report of Waste Discharge will be filed early in the design process so the evaporation pond facilities are constructed in accordance with the requirements of the permit.

- If a new well is constructed in the future, the Applicant shall conduct well tests in the new project well to determine the drawdown-discharge characteristics of the well. The Applicant shall conduct an aquifer test in the project area of the groundwater sub-basin from which groundwater is produced using the new well to determine the site-specific aquifer parameters of transmissivity and storativity.

- The Applicant will record the amount of groundwater pumped each month by the project from each groundwater subbasin from which groundwater is produced. The amounts of groundwater

pumped will be summarized in a Report of Monthly Groundwater Pumpage that will be submitted by the Applicant to the CPM and to the Westlands Water District.

- The Applicant shall measure and record static, non-pumping groundwater levels in the well used for project groundwater on a monthly basis for the first six months following project start up, and thereafter on a quarterly basis. The groundwater levels will be summarized in a Report of Monthly Groundwater Pumpage that will be submitted by the Applicant to the CPM and to the Westlands Water District.

5.5.8 Mitigation Measures

In relation to water resources, mitigation measures for Midway would be applied in situations where the project has or would have an unmitigated significant impact. As discussed above, the evaluation of water resources impacts considered both the occurrence and the quality of water in the area. For the occurrence of groundwater in the area, the project will have no significant impact on the depth to water in the aquifer, or water resources in the area as a result of the drawdown caused by pumping. Furthermore, the project will not have any effect on water quality in the area. Thus, no mitigation is required for water resources.

5.5.9 Water-Related LORS

The construction and operation of Midway will be in accordance with all federal, state, county and local LORS applicable to water resources. Applicable LORS are discussed in this section and are summarized in Table 5.5-12

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TABLE 5.5-12
LORS RELATED TO WATER RESOURCES

LORS	Applicability	Conformance
Federal		
CWA § 402; 33 USC § 1342; 40 CFR Parts 110, 112, 116	Requires NPDES Permits for construction and industrial stormwater discharges. Requires preparation of a SWPPP and Monitoring Program.	No coverage under NPDES industrial stormwater permit required. NOI for coverage under NPDES construction stormwater permit will be filed prior to construction. A SWPPP will also be prepared for construction activity.
CWA § 311; 33 USC § 1342; 40 CFR Parts 122-136	Requires reporting of any prohibited discharge of oil or hazardous substance.	Midway will conform by proper management of oils and hazardous substances both during construction and operation. If an accidental release or unintended spill occurs it will promptly be reported.
Code of Federal Regulations (CFR), Title 40, Parts 124, 144 to 147	Requires protection of underground water resources	Underground water resources will be protected due to the lined evaporation pond.
State		
CWC § 13552.6	Use of potable domestic water for cooling towers and air conditioning is unreasonable use if suitable recycled water is available.	Recycled water is not available in the vicinity of the Midway site. Additionally, no cooling towers are proposed. Water will be used to cool inlet air; however, no potable domestic water will be used.
California Constitution Article 10 § 2	Avoid the waste or unreasonable uses of water. Regulates methods of use and diversion of water.	Midway includes appropriate water conservation measures, both during construction and operation.
State Water Resources Control Board, Resolution No. 75-58	Addresses sources and use of cooling water supplies for power plants which depend on inland waters for cooling and in areas subject to general water shortages.	Recycled water is not available at the Midway site. Moreover, no cooling towers are proposed.
Porter-Cologne Water Quality Act of 1972; CWC § 13000-14957, Division 7, Water Quality	Requires State and Regional Water Quality Control Boards to adopt water quality initiatives to protect state waters. Those criteria include identification of beneficial uses, narrative and numerical water quality standards.	Midway will conform to applicable state water standards, both qualitative and quantitative, prior to and during plant operation. Applicable permits will be obtained from Regional Water Quality Control Board.

TABLE 5.5-12 (cont'd)
LORS RELATED TO WATER RESOURCES

LORS	Applicability	Conformance
Title 22, CCR	Addresses the use of recycled water for cooling equipment	Midway has investigated the technical and economic feasibility of using reclaimed water and determined that this resource is not available.
The Safe Drinking Water and Toxic Enforcement Act of 1986 (proposition 65), Health and Safety Code 25241.5 *et seq.*	Prohibits the discharge or release of chemicals known to cause cancer or reproductive toxicity into drinking water sources.	Midway will conform to all state water quality standards, both qualitative and quantitative. Midway will not discharge into any drinking water source. If an unintended spill occurs, reporting of spill will be prompt.
CWC Section 461	Encourages the conservation of water resources and the maximum reuse of wastewater, particularly in areas where water is in short supply.	Midway has investigated the technical and economic feasibility of using reclaimed water and determined that it is not available. However, Midway will use non-potable, high TDS groundwater.
CWC Section 5002	Requires a "Notice of Extraction and Diversion of Water" to be filed with the State Water Resources Control Board on or before March 1st of the succeeding year.	Notice will be filed as required by state law.
CWC Section 13751	Requires a "Report of Completion" to be filed with the State Water Resources Control Board within 60 days of well construction.	Midway will use the existing CalPeak Panoche well. If, in the future, a well is developed a Report of Completion will be filed.
California Public Resources Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300 – 2309, and Chapter 2 Subchapter 5, Article 1, Appendix B, Part (1)	The code provides for the inclusion of requirements in the CEC's decision on an AFC to assure protection of environmental quality and requires submission of information to the CEC concerning proposed water resources and water quality protection.	Midway will comply with the requirements of the CEC to assure protection of water resources.
CWC §§ 13271 – 13272; 23 CCR §§ 2250 – 2260	Reporting of releases of reportable quantities of hazardous substances or sewage and releases of specified quantities of oil or petroleum products.	No releases of hazardous substances are anticipated; however, Midway will conform to all State water quality standards, both qualitative and quantitative. If an unintended spill occurs, reporting of spill will be prompt.

TABLE 5.5-12 (cont'd)
LORS RELATED TO WATER RESOURCES

LORS	Applicability	Conformance
CWC §13260 – 13269; 23 CCR Chapter 9	Requires the filing of a Report of Waste Discharge (ROWD) and provides for the issuance of WDRs with respect to the discharge of any waste that can affect the quality of the waters of the state.	An ROWD will be filed for the RO Unit discharge waste. The RO Unit will be constructed and monitored in accordance with RWQCB requirements.
CEQA, Public Resources Code § 21000 *et seq.;* CEQA Guidelines, 14 CCR § 15000 *et seq.;* Appendix G	The CEQA Guidelines (Appendix G) contain definitions of projects which can be considered to cause significant impacts to water resources.	Midway will comply with the requirements of the CEC to assure protection of water resources.
Title 27, CCR Division 2. §20375. SWRCB - Special Requirements for Surface Impoundments. (C15: §2548)	This regulation governs the design requirements for surface impoundments.	The evaporation pond for wastewater disposal will be designed and operated in accordance with the requirements of this section.
Local		
Fresno County Department of Community Health, Environmental Health System, California Well Standards Ordinance and California Well Standards, Bulletins 74-81 and 74-90.	Regulates construction of new water wells, reconstruction, repair or deepening of existing wells and destruction of abandoned wells.	If it is determined that a new well be constructed, Midway will conform to all Fresno County water well construction standards.
Fresno County General Plan Water Quality Policies and Programs.	Non-point sources of water pollution, such as runoff from urban areas, grading, construction, and agricultural activities shall be recognized as potentially significant impacts of development.	Midway will conform to all water quality policies and programs, and will have zero discharge off-site from industrial activities. Grading and erosion control plans will prevent construction impacts.

5.5.9.1 Federal Authorities and Administering Agencies

5.5.9.1.1 Clean Water Act of 1977 (including 1987 amendments) § 402; 33 USC § 1342; 40 CFR Parts 122 – 136

The CWA requires a National Pollutant Discharge Elimination System (NPDES) permit for any discharge of pollutants from a point source to waters of the United States. This law and its regulations apply to stormwater and other discharges into waters of the United States. The CWA requires compliance with a general construction activities permit for the discharge of stormwater from construction sites disturbing one acre or more. This federal permit requirement is administered by the State of California Water Resources Control Board (SWRCB).

No water is discharged from this site to the waters of the United States so no NPDES permit will be required.

Construction activities at the Midway site will be performed in accordance with a SWPPP and associated monitoring plan that is required in accordance with the NPDES General Permit for Stormwater Discharges Associated with Construction Activities issued by the SWRCB. The SWPPP will include control measures including Best Management Practices (BMP) to reduce erosion and sedimentation as well as other pollutants associated with vehicle maintenance, material storage and handling, and other activities occurring at the Midway site. The administering agencies for the above authority are the Central Valley RWQCB.

5.5.9.1.2 Clean Water Act § 311; 33 USC § 1342; 40 CFR Parts 122 – 136

This portion of the CWA requires reporting of any prohibited discharge of oil or hazardous substance. Midway will conform by proper management of oils and hazardous materials both during construction and operation. The administering agency is the Central Valley RWQCB and the California Department of Toxic Substances Control.

5.5.9.1.3 Code of Federal Regulations (CFR), Title 40, Parts 124, 144 to 147

This portion of the federal code requires protection of underground water resources. Midway will comply with this requirement through the use of a lined evaporation pond for RO discharge water.

5.5.9.2 State Authorities and Administering Agencies

5.5.9.2.1 Water Code Section 13552.6

This portion of the California Water Code (CWC) relates to the use of potable domestic water for cooling towers, air conditioning devices, and floor trap priming. No cooling towers are proposed as part of the Midway project. Water will be used to cool inlet air; however, it will not be potable domestic water.

5.5.9.2.2 State Water Resources Control Board, Resolution 75-58 (June 18, 1975)

The SWRCB prescribes state water policy on the use and disposal of inland water used for power plant cooling. No cooling towers are proposed as part of the Midway project. Therefore, this resolution is not applicable to Midway.

5.5.9.2.3 California Porter-Cologne Water Quality Control Act 1998; California Water Code § 13000 – 14957; Division 7, Water Quality

The Porter-Cologne Water Quality Control Act authorizes the state to develop and implement a statewide program for the control of the quality of all waters of the state. The Act establishes the SWRCB and the nine RWQCBs as the principal state agencies with primary responsibility for the coordination and control of water quality. Under § 13172, siting, operation, and closure of waste disposal sites are regulated. The SWRCB requires classification of the waste and the disposal site. Discharges of waste must comply with the groundwater protection and monitoring requirements of the Resource Conservation and Recovery Act

of 1976 (RCRA), as amended (42 USC Sec. 6901 *et seq.),* and any federal acts which amend or supplement RCRA, together with any more stringent requirements necessary to implement this revision or Article 9.5 (commencing with Section 25208) of Chapter 6.5 of Division 20 of the Health and Safety Code. Midway will comply with the regulations set forth in this Act.

The administering agencies for the above authority are the CEC, SWRCB and the Central Valley RWQCB.

5.5.9.2.4 Title 22, CCR Division 4, Chapter 3

This regulation requires maximum use of reclaimed water in the satisfaction of requirements for beneficial uses of water. The project satisfies this requirement in that it complies with the Central Valley Region Basin Plan's designated beneficial uses for local groundwater. The administering agency is the Central Valley RWQCB.

5.5.9.2.5 California Water Code, Section 5002

This requirement relates to the extraction of groundwater and requires that a Notice of Extraction and Diversion of Water be filed with the SWRCB. This requirement applies for extractions greater than 25 AFY. Midway will comply with this requirement by filing the required notice once pumping begins. The administering agency is the Central Valley RWQCB.

5.5.9.2.6 California Water Code, Section 13751

This is a requirement for a Report of Well Completion to be filed with the Central Valley RWQCB within 60 days of well completion. If at any time it is determined the Midway requires a well, reports will be filed.

5.5.9.2.7 California Public Resources Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300 – 2309 and Chapter 2 Subchapter 5 Article 1, Appendix B, Part (1)

The code provides for the inclusion of requirements in the CEC's decision on an AFC to assure protection of environmental quality and requires submission of information to the CEC concerning proposed water resources and water quality protection. The administering agency for the above authority is the CEC.

5.5.9.2.8 California Water Code §§ 13271 – 13272; 23 CCR §§ 2250 – 2260

These code sections require reporting of releases of specified reportable quantities of hazardous substances or sewage (§ 13272), when the release is into, or where it will likely discharge into, waters of the state. For releases into or threatening surface waters, a "hazardous substance" and its reportable quantities are those specified at 40 CFR § 116.5, pursuant to § 311 (b)(2) of the CWA, 33 USC § 1321 (b)(2). For releases into or threatening groundwater, a "hazardous substance" and its reportable quantities are those specified at 40 CFR § 116.5, pursuant to § 31 1(b)(2) of the CWA, 33 USC § 1321(b)(2). For releases into or threatening groundwater, a "hazardous substance" is any material listed as hazardous pursuant to the California Hazardous Waste Control Act, Health & Safety Code §§ 25100 – 2520.24, and

the reportable quantities are those specified at 40 CFR Part 302. Although such releases are not anticipated, Midway would comply with the reporting requirements.

The administering agencies for the above authority are the Central Valley RWQCB and the California Office of Emergency Services.

5.5.9.2.9 California Water Code § 13260 – 13269; 23 CCR Chapter 9

The code requires the filing of a ROWD and provides for the issuance of WDRs with respect to the discharge of any waste that can affect the quality of the waters of the state. The WDRs will serve to enforce the relevant water quality protection objectives of the Central Valley Region Basin Plan and federal technology-based effluent standards applicable to Midway. With respect to potential water pollution from construction activities, the WDRs may incorporate requirements based on the CWA § 402(p) and implementing regulations at 40 CFR Parts 122 seq., as administered by the Central Valley RWQCB. The administering agency for the above authority is the Central Valley RWQCB.

5.5.9.2.10 California Environmental Quality Act, Public Resources Code § 21000 *et seq.;* CEQA Guidelines, 14 CCR § 15000 *et seq.;* Appendix G

The CEQA Guidelines (Appendix G) contain definitions of projects that can be considered to cause significant unmitigated impacts to water resources. Midway is not expected to cause significant impacts to water resources, as described in Section 5.5.2. The administering agency of the above authority is the CEC.

5.5.9.2.11 Title 27, CCR Division 2. §20375. SWRCB - Special Requirements for Surface Impoundments. **(C15: §2548)**

This regulation governs the design requirements for surface impoundments. The evaporation pond for wastewater disposal will be designed and operated in accordance with the requirements of this section

5.5.9.3 Local Authorities and Administering Agencies

5.5.9.3.1 Fresno County Department of Community Health, Environmental Health System, California Well Standards Ordinance and California Well Standards, Bulletins 74-81 and 74-90

The Fresno County Environmental Health System regulates the construction of new water wells, the reconstruction, repair or deepening of existing wells and the destruction of abandoned wells in unincorporated Fresno County. The Environmental Health System regulates these activities through the provisions of the California Well Standards Ordinance and the construction standards set forth in the California Well Standards, Bulletins 74-8 1 and 74-90. Any water supply well constructed for Midway will be constructed in accordance with this ordinance and these bulletins. The administering agency is the Fresno County Department of Community Health, Environmental Health System.

5.5.9.3.2 Fresno County General Plan, Water Quality Policies OS-A.23 through OS-A.30 and Programs OS-A.A through OS-AD.

The purpose of these policies and programs is to help control potentially significant impacts of development, including non-point sources of water pollution, such as runoff from urban areas, grading, construction, and agricultural activities. Midway compliance with other LORS, such as the CWA, will result in general compliance with this objective.

5.5.9.4 Industry Codes and Standards

With regards to water resources and the related project facilities, including wells, pumps, piping, evaporation/infiltration ponds and other facilities, construction will be in compliance with all applicable LORS mentioned in this report or state and local building codes.

5.5.10 Agency Contacts and Permits

See Table 5.5-13 for agency contacts.

TABLE 5.5-13
AGENCY CONTACTS

Agency	Contact	Title	Telephone
California Regional Water Quality Control Board, Central Valley Region	W. Dale Harvey	Senior Water Resource Control Engineer	(559) 445-6190
California Regional Water Quality Control Board, Central Valley Region	Shelton Gray (surface impoundments)	Senior Engineering Geologist	(559) 445-5508
California Regional Water Quality Control Board, Central Valley Region	Anthony Toto (stormwater)		(559) 445-6278
Westlands Water District	Susan Ramos	Deputy General Manager - Resources	(559) 224-1523

The water-related permits that are required for Midway include:

- Waste Discharge Requirements. A Report of Waste Discharge will be filed with the Central Valley Regional Water Quality Control Board in order to obtain Waste Discharge Requirements (WDRs). The Report of Waste Discharge will be filed early in the design process so Waste Discharge Requirements can be obtained prior to the planned date of plant startup.

- General Construction Activity Stormwater Permit. Notice of Intent to comply with this general permit to be prepared and submitted to the SWRCB at least two weeks prior to the start of Midway operation. Draft of SWPPP to be prepared and submitted to CPM at least 30 days prior to the start of construction for review and comment. A final plan to be submitted to the CPM no later than two weeks prior to the start of construction.

5.5.11 References

Belitz, K. and Heimes, F. J. 1990. Character and Evolution of the Ground-Water Flow System in the Central Part of the Western San Joaquin Valley, California. U.S. Geological Survey Water-Supply Paper 2348.

California Department of Conservation, Division of Oil and Gas (DOGGR). 1985. California Oil and Gas Fields, Central California. Publication TR 11.

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Gilliom, R. J., and others. 1989. Preliminary Assessment of Sources, Distribution, and Mobility of Selenium in the San Joaquin Valley, California. U.S. Geological Survey Water Resources Investigation 88-4186.

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Williamson. 1989. California Stormwater BMP Handbook.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Water Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Site Description: Sec. 3.3, 5.5.1		
Appendix B (g) (14) (A)	All information required by the Regional Water Quality Control Board in the region where the project will be located to apply for:	Sec. 5.5-9		
Appendix B (g) (14) (A) (i)	Waste Discharge Requirements; and	Table 5.5-12		
Appendix B (g) (14) (A) (ii)	a National Pollutant Discharge Elimination System Permit.	Sec. 5.5.7 Table 5.5-9		
Appendix B (g) (14) (B)	A description of the hydrologic setting of the project. The information shall describe, in writing and on maps at a scale of 1:24,000, the chemical and physical characteristics of the following water bodies that may be affected by the proposed project:	Sec. 5.5.1.6 Fig. 5.5-1, 5.5-2		
Appendix B (g) (14) (B) (i)	Ground water bodies and related geologic structures;	Sec. 5.5.16 Fig. 5.5-2		
Appendix B (g) (14) (B) (ii)	Surface water bodies; and	Sec. 3.3.3.1		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Water Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (14) (B) (iii)	Water inundation zones, such as the 100-year flood plain and tsunami run-up zones.	Sec. 5.5.4.2.2		
Appendix B (g) (14) (C)	A description of the water to be used and discharged by the project. This information shall include:	Sec. 5.5.2.1, 5.5.3, 5.5.4.1, 5.5.4.2 Table 5.5-5, 5.5-6, 5.5-9, 5.5-10 Appendix M		
Appendix B (g) (14) (C) (i)	Source of the water and the rationale for its selection, and if fresh water is to be used for power plant cooling purposes, a discussion of all other potential sources and an explanation why these sources were not feasible;	Sec. 5.5.4.1, 5.5.2.1		
Appendix B (g) (14) (C) (ii)	The physical and chemical characteristics of the source and discharge water;	Sec. 5.5.2.1 Tables 5.5-5, 5.5-6, 5.5-8 Appendix M		
Appendix B (g) (14) (C) (iii)	Average and maximum daily and annual water demand and waste water discharge for both the construction and operation phases of the project; and	Sec. 5.5.2 Table 5.5-7, 5.5-8		
Appendix B (g) (14) (C) (iv)	A description of all facilities to be used in water conveyance, treatment, and discharge. Include a water mass balance diagram.	Sec. 4.6, 5.5.2.1, 5.5.4.1, 5.5.3.1 Fig. 3.4-5 Appendix B		
Appendix B (g) (14) (D)	A description of pre-, and post-construction runoff and drainage patterns, including:	Sec. 5.5.1, 5.5.4.2.2		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Water Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (14) (D) (i)	Precipitation and storm runoff patterns; and	Sec. 5.5.4.2.2		
Appendix B (g) (14) (D) (ii)	Drainage facilities and design criteria.	Sec. 5.5.4.2.2		
Appendix B (g) (14) (E)	An assessment of the effects of the proposed project on water resources. This discussion shall include:	Sec. 5.5.5		
Appendix B (g) (14) (E) (i)	The effects of project demand on the water supply and other users of this source;	Sec. 5.5.5.2, 5.5.5.4 Table 5.5-11		
Appendix B (g) (14) (E) (ii)	The effects of construction activities and plant operation on water quality; and	Sec. 5.5.4.2.2		
Appendix B (g) (14) (iii)	The effects of the project on the 100-year flood plain or other water inundation zones.	Sec. 5.5.4.2.2		
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	Sec. 5.5.9 Table 5.5-12		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Water Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Sec. 5.5.10 Table 5.5-13		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	Sec. 5.5.9		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Sec. 5.5.10 Table 5.5-13		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Sec. 5.5.10		

5.6 BIOLOGICAL RESOURCES

Midway project is a proposed nominal 120-megawatt (MW) peaking facility consisting of two (2) FT8-3 Swift Pac Gas Turbine Generator units, 25,000 square foot evaporation pond, and other associated facilities such as transmission lines, pipelines, and an access road. The Midway project is to be located on a 5.6-acre site currently utilized as a storage-yard for CalPeak Power. Wellhead Peaker plant is southeast and CalPeak Panoche lies to the southwest of the site. Additionally, an existing PG&E Substation is west of the site (refer to Figure 5.6-1). The site is approximately 2.0 miles east of Interstate 5, and 0.7-mile southwest of the intersection of West Panoche Road and Fairfax Avenue.

The site is adjacent to (specifically 0.2 mile northeast of) the proposed PEC for which an Application for Certification was filed in August 2006 (Docket # 06AFC5). A biological survey was conducted for the PEC AFC. After conferring with CEC staff, it was determined that the information gained from the PEC biological survey and AFC biology section would be sufficient data to use for the Midway AFC. Therefore, the existing biological resources surrounding the proposed PEC site and encompassing the Midway site are the subject of this section. In addition, the potential impacts to biological resources as a result of the proposed project are assessed. Refer to Figure 5.6-2 for a map of the project site and vicinity with identification of any biological resources within a one mile radius of the proposed PEC site in which the Midway site is contained.

5.6.1 Affected Environment

The Midway project vicinity was historically a sagebrush and native grass covered arid landscape. Dense riparian vegetation grew only along the banks of the area's few creeks (JRP Historical Consulting, 2006). As a result of extensive agricultural and industrial use in the area, no native vegetation is currently present within the study area or vicinity. The plant site is located within an area currently utilized as a storage-yard for CalPeak Power. The existing PG&E Substation and CalPeak Panoche are adjacent to the southwestern corner of the Midway site. West Panoche Road and an existing 5-plex are located along the northern edge of the site. The Wellhead Peaker plant is adjacent to the southeast and the remainder of the site is surrounded by agriculture primarily consisting of almond and pomegranate groves.

5.6.1.1 Survey Methods

Biological field surveys were conducted by a URS biologist on April 21, 2006 for the proposed PEC and surrounding area that includes the proposed Midway site. Surveys were conducted according to CEC regulations (CEC, 2000). The "project area" is defined as the area that could potentially be directly disturbed during project construction, and includes the power plant site, electric transmission line, and access road. The "project survey area" includes the proposed PEC project area and a one mile radius buffer area surrounding it where field surveys were conducted for botanical and wildlife resources. The proposed Midway project site falls within the one mile radius survey area for the proposed PEC project.

Prior to conducting field surveys, a review of literature was performed including a search of the California Native Plant Society (CNPS) Inventory of Rare Plants Database and California Natural Diversity Database (CNDDB) in order to determine special-status species known to occur or that could potentially occur within the project survey area. The following USGS 7.5-minute quadrangles were

searched for records of special-status species: Hammonds Ranch, Broadview Farms, Firebaugh, Chounet Ranch, Chaney Ranch, Coit Ranch, Tumey Hills, Monocline Ridge, and Levis quadrangle. The project survey area is within the Chaney Ranch, and all of the surrounding quadrangles were searched (see Figure 5.6-1).

The reconnaissance field survey included walking transects through the proposed PEC plant site and parking areas and visually scanning areas within the one mile buffer (see Figure 5.6-2). All botanical and wildlife species observed were documented, and all plant communities and habitat that could support potentially occurring special-status species listed in Table 5.6-1 were described. All plant and wildlife species observed during the survey within the project and buffer areas are listed in Table 5.6-2. Plant nomenclature follows Hickman (1993). The survey was conducted by URS biologist Johanna LaClaire under the supervision of URS senior biologist Dr. Patrick Mock. Appendix N includes copies of the biologists' resumes.

5.6.1.2 Plant Communities

No native plant communities were present within the PEC project survey area which includes the Midway project site. The only native plant species observed in the area was miner's lettuce *(Claytonia perfoliata)* found on the proposed PEC site. Because the Midway site has been previously graded, it currently supports only sparse growth of annual weeds and grasses. Vegetation within the buffer area had apricot, almond and pomegranate trees. Personnel tending the orchards regularly apply herbicide to manage weeds.

5.6.1.3 Wetlands

No wetlands are present within the project survey area. There is an east west trending drainage ditch west of the PEC site between the proposed Midway project area and the existing PG&E Substation that was dry during the field survey. Another drainage containing water runs north-south parallel to the east side of Davidson Avenue. Only ruderal vegetation is present along these drainages. These drainages were created for agricultural use and are not jurisdictional waters of the U.S./State according to Army Corp of Engineers (ACOE) or California Department of Fish and Game (CDFG). Panoche Creek is approximately two miles north of the project area. The California Aqueduct is approximately 2.7 miles to the east of the project area. The nearest blue line stream is 1.66 miles to the southwest with headwaters at the Tumey Hills.

Table 5.6-1
Special-Status Species Potentially Occurring At the Midway Site

Common Name	Scientific Name	Status[1]	Occurrence
Wildlife			
Blunt-nosed leopard lizard	*Gambelia sila*	FE, SE	Last documented in the area in 1993
Swainson's hawk	*Buteo swainsonii*	FT	Last official documentation in the area in 2005
Short-eared owl	*Aseo flammeus*	CSC	Last official documentation in the area in
			1993, however this species often goes
			undocumented by observers
Horned lark	*Eremophila alpestris*	CSC	Last official documentation in the area in
			1992, however this species often goes
			undocumented by observers
Tulare grasshopper mouse	*Onychomys torridus*	FSC	Last documented in the area in 1955
San Joaquin kit fox	*Vulpes macrotis mutica*	FE, SE	Last documented in the area in 1999

[1] U.S. Fish and Wildlife Service (Federal)

FE = Endangered (In danger of becoming extinct throughout all or a significant portion of its range.)
FT = Threatened (Likely to become endangered in the foreseeable future in the absence of special protection.) FC = Federal Candidate (Candidate for FT or FE listing.)
FSC = Species of Concern (Sufficient information exists which warrants concern over that species' status and warrants study.)

California Department of Fish and Game (State)

SE = Endangered (In danger of becoming extant throughout all or a significant portion of its range.)
SC = State Candidate (Candidate for SE or State Threatened [likely to become endangered in the foreseeable future in the absence of special protection.])
CSC = Species of Concern (Information exists which warrants concern over that species' status and warrants study.)

5.6.1.4 Wildlife Community

The Midway site and adjacent areas provide limited habitat for few wildlife species due to high agricultural use in the area and a lack of native plant communities. Sixteen species of birds were observed during the field survey. Typical species observed include western kingbird *(Tyrannus verticalis)*, red-tailed hawk *(Buteo jamaicensis)*, American goldfinch *(Carduelis tristis)*, and American pipit *(Anthus rubescens)*, but none of the birds detected are sensitive at a state or federal level. Raptors are protected by CDFG. Most of the species detected, such as house finch *(Carpodacus mexicanus)*, brown-headed cowbird *(Molothrus ater)*, killdeer *(Charadrius vociferus)*, European starling *(Sturnus vulgaris)*, house sparrow *(Passer domesticus)*, American crow *(Corvus brachyrhynchos)*, morning dove *(Zenaida macroura)*, cliff swallow *(Petrochelidon fulva)*, Brewer's blackbird *(Euphagus cyanocephalus)*, and Northern mockingbird *(Mimus polyglottus)*, are typically found in disturbed/developed areas. Some breeding activity was observed, including morning doves that were breeding in the pomegranate trees, cliff swallows with nests at the top of a water tank at the southeast corner of the PEC site outside of the project area, and an active red-tailed hawk nest in the transformer towers at the PG&E Substation.

Table 5.6-2
Plant and Wildlife Species Observed
During Field Survey

Common Name	Scientific Name
BIRDS	
Turkey vulture	*Cathartes aura*
Red-tailed hawk	*Buteo jamaicensis*
Killdeer Mourning dove	*Charadrius vociferus Zenaida macro ura*
Western kingbird	*Tyrannus verticalis*
American crow	*Corvus brachyrhynchos*
European starling	*Sturnus vulgaris**
Northern mockingbird	*Mimus polyglottos*
Cliff swallow	*Petrochelidon pyrrhonota*
House sparrow	*Passer domestic us**
American pipit	*Anthus rubescens*
American goldfinch	*Carduelis tristis*
House finch	*Carpodacus mexicanus*
Brewer's blackbird	*Euphagus cyanocephalus*
Brown-headed cowbird	*Molothrus ater*
PLANTS	
Amaranth	*Amaranthus* sp.*
Foxtail chess	*Bromus madritensis**
Pigweed, Lamb's quarters	*Chenopodium album** *Chenopodium murale**
Miner's lettuce	*Cla ytonia perfoliata*
Bind weed	*Convolvulus arvensis** *Conyza* sp.* *Cyperus* sp.*
Redstem filaree	*Erodium cicutarium**
Everlasting	*Gnaphalium luteo-album**
Hare barley	*Hordeum murinum**
Lettuce	*Lactuca* sp.*
Cheeseweed	*Malva parviflora**
Yellow sweetclover	*Melilotus officinalis**
Annual bluegrass	*Poa annua**
Pomegranate tree	*Punica granatum**
Common groundsel	*Senecio vulgaris**

Table 5.6-2
Plant and Wildlife Species Observed
During Field Survey
(Continued)

Common Name	Scientific Name
Prickly sow-thistle	*Sonchus asper**
Common sow-thistle	*Sonchus oleraceus**
Common chickweed	*Stellaria media**
Slender fescue	*Vulpia bromoides**

*Non-native species.

A coyote *(Canis latrans)* was observed moving through the orchard within the proposed PEC project area and two western toads *(Bufo boreas)* were observed in burrows just northwest of the proposed PEC site. A few gopher *(Thomomys bottae)* burrows were observed, but rodent activity was minimal.

5.6.1.5 Special-Status Species

5.6.1.5.1 Plants

No special-status plant species were observed during the field survey and there are no records in the CNDDB within the project survey area. The CNDDB lists the following 11 special-status plant species as historically or potentially present within the project vicinity: Lost Hills crownscale *(Atriplex vallicola)*, hispid bird's-beak *(Cordylanthus mollis* ssp. *hispidus)*, Hall's tarplant *(Deinandra halliana)*, recurved larkspur *(Delphinium recurvatum)*, Temblor buckwheat *(Eriogonum temblorense)*, round-leaved filaree *(Erodium macrophyllum)*, Munz's tidy-tips *(Layia munzii)*, Panoche pepper-grass *(Lepidium jaredii* ssp. *album)*, showy madia *(Madia radiate)*, San Joaquin woollythreads *(Monolopia congdonii)*, and Sanford's arrowhead *(Sagittaria sanfordii)*. In addition, CNPS lists pale-yellow layia *(Layia heterotricha)*. These species are likely to have been extirpated from the project survey area due to the conversion of native vegetation to intensive agriculture. Few native plant species were observed within the project area and these species are not expected to occur in the project survey area.

5.6.1.5.2 Wildlife

No special-status wildlife species were observed during the field survey and there are no records in the CNDDB within the project survey area. The CNDDB lists the following 22 sensitive wildlife species as historically present and potentially occurring in the project vicinity: Ciervo aegilian scarab beetle *(Aegialia concinna)*, tricolored blackbird *(Agelaius tricolor)*, San Joaquin antelope squirrel *(Ammospermophilus nelsoni)*, silvery legless lizard *(Anniella pulchra pulchra)*, short-eared owl *(Asio flammeus)*, burrowing owl *(Athene cunicularia)*, Swainson's hawk *(Buteo swainsoni)*, western yellow-billed cuckoo *(Coccyzus americanus occidentalis)*, San Joaquin dune beetle *(Coelus gracilis)*, giant kangaroo rat *(Dipodomys ingens)*, western pond turtle *(Clemmys marmorata)*, California horned lark *(Eremophila alpestris actia)*, western mastiff bat *(Eumops perotis californicus)*, blunt-nosed leopard

lizard *(Gambelia sila)*, Morrison's blister beetle *(Lytta morrisoni)*, Tulare grasshopper mouse *(Onychomys torridus tularensis)*, San Joaquin pocket mouse *(Perognathus inornatus inornatus)*, California horned lizard *(Phrynosoma coronatum frontale)*, bank swallow *(Riparia riparia)*, American badger *(Taxidea taxus)*, giant garter snake *(Thamnophis gigas)*, and San Joaquin kit fox, *(Vulpes macrotis mutica)*. Most of these sensitive species records are located within the special environmental areas discussed in the next section and are not expected to occur in the project survey area due to lack of suitable habitat. Only a few sensitive wildlife records are located within agricultural areas in the project vicinity and thus have a low potential to occur in the project area. These sensitive species include Swainson's hawk, San Joaquin kit fox, California horned lark, Tulare grasshopper mouse, short-eared owl, and blunt-nosed leopard lizard. These special-status species have a low potential to occur in the project survey area and are discussed further below and listed in Table 5.6-1.

Many sensitive plant and animal species in the southern San Joaquin valley occupy the same habitats: desert scrub, chenopod scrub, grassland, and alkali playa. These rare habitats represent a unique area of endemism in California. More endemic vertebrate species co-occur in the San Joaquin Valley than anywhere comparable in the continental United States (U.S. Fish and Wildlife Service [USFWS], 1998). Farming, urbanization, land reclamation, pest control, and other human disturbance have eliminated up to 95 percent of the habitat that once dominated the vicinity, and many of the plants and animals that once ranged widely throughout the southern San Joaquin Valley have been substantially reduced, and now only occur in a few scattered populations in the remaining natural areas.

Blunt-nosed Leopard Lizard. The blunt-nosed leopard lizard lives in grassland and scrub habitats in the southern San Joaquin Valley. Blunt-nosed leopard lizards eat mostly insects, but opportunistically consume smaller lizards, including young leopard lizards. Leopard lizards are polygamous, with one male mating with several females, and eggs and young are produced during summer and early fall. Predators include snakes, birds, and carnivorous mammals, including the San Joaquin kit fox. Primary threats to the blunt-nosed leopard lizard include habitat fragmentation, disturbance, and destruction. The blunt-nosed leopard lizard is listed as endangered by both the federal government and the State of California (USFWS, 1998). The nearest CNDDB record of blunt-nosed leopard lizard is 2.68 miles southwest of the project area in the Tumey Hills, last seen there in 1979. There are several other records in the project vicinity and the last observation documented in the area was in 1993 in a grassland area in the vicinity of West Panoche Road at Silver Creek and San Benito/Fresno County Line.

Swainson 's Hawk. The Swainson's hawk forages in open country and nests in adjacent tall trees, usually near water. Swainson's hawks eat small rodents and grasshoppers. These hawks often nest in valley oaks and cottonwoods, and are considered among the species that are most threatened by destruction of riparian habitat in the Sacramento and San Joaquin Valleys. Swainson's hawks are divided into several groups based on nesting and wintering range. Most hawks occur in California in two populations, one in the Great Basin and one in the Sacramento and San Joaquin Valleys. Some Swainson's hawks migrate to Argentina, where they spend the Austral summer foraging on grasshoppers laden with DDT and other pesticides, but most Sacramento and San Joaquin Valley birds only fly as far south as Mexico, where they do not run such a high risk of pesticide poisoning. The major threat to Swainson's hawks in California is loss of habitat, including both open habitats used for foraging as well as loss of individual trees used for nesting. Swainson's hawks are listed as threatened by the State of California. The nearest CNDDB record of Swainson's hawk to the project area is 5.24 miles north of the project area along the California

Aqueduct. The last official documentation was in 2005 in a nest tree located on the aqueduct's eastern embankment.

Short-eared Owl. The short-eared owl is a California species of concern that lives in grasslands, shrublands, and marshes. This owl nests on the ground and requires dense vegetation for nest concealment. Short-eared owls are very rare nesting birds in the San Joaquin Valley, but are occasionally recorded as wintering birds. Short-eared owls are primarily threatened by destruction of nesting habitat (http://www.delta.dfg.ca.gov/gallery/shearowl.asp). The nearest CNDDB record of short-eared owl to the project area is 5.73 miles southeast of the project area approximately 4 miles southeast of Manning Avenue exit off Interstate 5. It was last recorded in 1993 in non-native grassland and cultivated weedy fields.

Horned Lark. The horned lark is a bird of shortgrass prairies, seashores, agricultural fields, sparse brushlands, deserts, and other open habitats throughout North America. In California, the horned lark may be common in grazed pastures, bare fields, and other agricultural settings, but nests are extremely vulnerable to destruction from agricultural equipment or trampling. In addition, loss of habitat is a considerable threat to this species. Horned larks eat mainly seeds, but will also eat insects during the breeding season. This is the only true lark native to the Americas. The horned lark is a California species of concern due to widespread, long-term population declines in the state (http://www.mbr-pwrc.usgs.gov/bbs/grass/a4740.htm). The nearest CNDDB record of horned lark to the project area is 8.7 miles southeast of the project area east of Interstate 5 and Mountain View Avenue at Panoche Junction in non-native grassland agricultural fields. It was last observed in 1992.

Tulare Grasshopper Mouse. The Tulare grasshopper mouse lives in arid grasslands, shrublands, and alkali sink habitats in the San Joaquin Valley. Grasshopper mice are carnivorous, eating scorpions, beetles, grasshoppers, pocket mice, western harvest mice, lizards, and frogs, with some seeds taken when there is no other food source available. Young are born in the late spring and summer, and both parents care for the young. Grasshopper mice are territorial, and the males will produce a loud scream to warn other mice that the territory is occupied. Predators of grasshopper mice include badgers, San Joaquin kit foxes, coyotes, and barn owls. Primary threats to Tulare grasshopper mice include habitat destruction and fragmentation as well as pesticide use. This species is currently considered a federal Species of Concern (USFWS, 1998). The nearest CNDDB record of Tulare grasshopper mouse to the project area is 1.24 miles northwest of the project area along Panoche Creek. It was last recorded in 1918 at this location. There are other recorded observations in the project vicinity, the most recent being in 1955 in the Tumey Hills. Given the dates of detection, this species is likely extirpated from the project vicinity where native vegetation is lacking.

San Joaquin Kit Fox. The San Joaquin kit fox historically ranged throughout the San Joaquin Valley from Contra Costa County in the north to northern Santa Barbara county in the south. Currently the kit fox still has a wide distribution, however kit fox numbers are greatly reduced and populations are isolated from one another. Kit foxes primarily live in grassland and to a lesser extent, shrub and agricultural habitats. Kit foxes predominantly eat rodents, ground squirrels, rabbits and hares, and ground-nesting birds. Kit fox pups are born in late winter and early spring, and the male provides most of the food for the female while she is nursing. Kit foxes change dens frequently, and often enlarge existing ground squirrel burrows in order to make new dens. Predation or competitive exclusion of kit foxes may occur in the

presence of coyotes, introduced red foxes, domestic dogs, bobcats, and large raptors. Human threats to kit fox include destruction of habitat, habitat degradation, predator and pest control programs, and accidents caused by proximity to humans such as electrocution, roadkills, and suffocation from accidental burial in dens. Finally, natural factors such as drought, flooding, and rabies cause a significant percent of kit fox deaths. The San Joaquin kit fox is currently listed as an endangered species by both the federal government and the State of California (USFWS, 1998). The nearest CNDDB record of San Joaquin kit fox to the project area is 2.4 miles west of the project area along Panoche Creek in the Tumey Hills west-southwest of the intersection of Interstate 5 and West Panoche Road. It was also seen 7.3 miles southeast of the project area along a drainage ditch in a recently cultivated field along the western embankment of the California Aqueduct in 1997. It was last recorded in the project vicinity in 1999. Kit fox may move through the project vicinity, but there are no special resources present on the Midway project site to attract or support foxes at the Midway site.

5.6.1.6 Special Environmental Areas in the Project Vicinity

Special Environmental Areas within the project vicinity (the nearest of which is approximately 4.4 miles away) include Tumey Hills, Panoche Hills, Ciervo Hills, and Monocline Ridge west of the project area. In addition, Mendocino Lake along the San Joaquin River is approximately 15 miles to the east of the project area. Most of the special-status species records are in these areas. These areas are shown on Figure 5.6-1.

5.6.2 Environmental Consequences

Potential and expected direct and indirect impacts to biological resources are discussed below. Significant impacts are those that would involve the loss of a sensitive plant or wildlife species, or degradation of their habitat. The project would have significant impacts to vegetation and wildlife if it would:

- Cause a fish or wildlife population to drop below self-sustaining levels CEQA Guidelines, Section 15065 (a))
- Threaten to eliminate a plant or animal community (CEQA Guidelines, Section 15065 (a))
- Substantially affect, reduce the number, or restrict the range of unique, rare, or endangered species of animal or plant, or the habitat of the species (CEQA Guidelines, Section 15065 (a), Appendix G (c), Appendix I (II.4.b) and (II.5.b))
- Substantially diminish or reduce habitat for fish, wildlife, or plants (CEQA Guidelines, Section 15065 (a), Appendix G (t))
- Interfere substantially with the movement of resident or migratory fish or wildlife species (CEQA Guidelines, Appendix G (d))
- Change the diversity of species, or number of any species of plants (including trees, shrubs, grass crops, and aquatic plants) or animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, or insects) (CEQA Guidelines, Appendix I (II.4.1) and (II.5.a))
- Introduce new species of plants or animals into an area, or act as a barrier to the normal replenishment of existing species (CEQA Guidelines, Appendix I (II.4.c) and (II.5.c))

- Deteriorate existing fish or wildlife habitat (CEQA Guidelines, Appendix I (II.5.d))
- Conflict with any regional Habitat Conservation Plans (HCPs)

The above criteria are used to evaluate the proposed project's impacts to plant communities and wildlife. The potential impacts associated with the construction and operation of the Midway facility are discussed below.

5.6.2.1 Midway Site

The proposed project would not result in significant impacts to biological resources because it would not:

- Cause a fish or wildlife population to drop below self-sustaining levels
- Threaten to eliminate a plant or animal community
- Substantially affect, reduce the number, or restrict the range of unique, rare, or endangered species of animal or plant, or the habitat of the species
- Substantially diminish or reduce habitat for fish, wildlife, or plants
- Interfere substantially with the movement of resident or migratory fish or wildlife species
- Change the diversity of species, or number of any species of plants (including trees, shrubs, grass crops, and aquatic plants) or animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, or insects)
- Introduce new species of plants or animals into an area, or act as a barrier to the normal replenishment of existing species
- Deteriorate existing fish or wildlife habitat
- Conflict with any regional HCPs

Less-than-significant impacts associated with the proposed project construction and operations are discussed further below.

5.6.2.1.1 Site Preparation and Construction Impacts

The proposed project includes the installation of two (2) FT8-3 Swift Pac Gas Turbine Generator units, 300 feet of transmission line, an evaporation pond, and other associated equipment. Construction of these new facilities, including site grading, would not impact plant species because the site is void of native vegetation. As stated, the site has been previously graded, and the only vegetation present in the vicinity includes sparse weeds and grasses. No significant impacts to wildlife are anticipated.

Air Emissions and Noise. Increase in air emissions (Section 5.2) and noise (Section 5.12) as a result of the construction of the proposed power plant are not expected to cause significant impacts to wildlife. The project survey area provides limited habitat for wildlife due to adjacent existing industrial use and intensive/extensive agricultural use. Most of the wildlife observed in the vicinity of the site are species that are often found in disturbed or developed areas and are expected to adapt to the new noise levels and air emissions.

5.6.2.1.2 Operations and Maintenance Impacts

Potential impacts to biological resources as a result of the operations and maintenance associated with the proposed project include air emissions, noise, and collision hazards. These potential impacts are discussed further below.

Air Emissions. The operational sources of emissions associated with the proposed Midway project include two turbine generator units which will generate emissions from the combustion of natural gas. Impacts to wildlife in the area as a result of these emissions are less than significant because the common wildlife that occurs in the vicinity of the project area is expected to adapt to these conditions. Modeled ground-level concentrations of criteria air pollutants, including particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), volatile organic compounds (VOCs), and carbon monoxide (CO) that would be emitted or form from emissions at the proposed Midway site are below levels that would cause violations of the ambient air quality standards or contribute significantly to existing violations (see Section 5.2, Air Quality). Significance levels for air emissions along with ambient air quality standards are set to protect human health and ecosystems. Since native vegetation is lacking within a one-mile radius of the proposed plant site, no impacts to native vegetation associated with air emissions and subsequent ground deposition are anticipated. Almond and pomegranate orchards in the area are not expected to have a detectable reduction in growth or significant visible damage from the power plant operations.

In the air quality modeling analysis for the proposed Midway project, nitrogen or sulfur deposition was not analyzed, since the Project emissions will not trigger Federal Prevention of Significant Deterioration (PSD) requirements. However, a rough estimate of the maximum incremental deposition of nitrogen and sulfur near the project site was obtained by multiplying the maximum model-predicted annual average concentrations of NO_2 and SO_2 due to the operational Starwood gas turbines by an approximate deposition velocity of 0.02 meter/sec and separating out the elemental nitrogen and sulfur components. The results show that the maximum deposition levels adjacent to the facility would be 0.06 kg nitrogen per hectare per year and sulfur deposition would be 0.01 kg sulfur per hectare per year. Even these very low deposition rates are considered to be highly conservative, because the worst-case-scenario modeling upon which they are based assumes full conversion and deposition of the elemental sulfur and nitrogen in the turbine exhaust plumes would be accomplished within a much shorter distance from the stack than would actually occur.

Noise. The existing PG&E Substation, CalPeak Panoche and Wellhead Peaker plants, and Interstate 5 generate some noise near the Midway site; however, most of the land uses surrounding the project area is agricultural and noise levels are minimal. Operational noise from Midway would generate a greater level of noise than currently exists in the project area. The maximum noise increase (54dBA L_{eq}) is at the closest residences to the north of the site; however, the increase in noise levels was less than 45 decibels "A" scale (dBA) at the other surrounding monitored areas. There are no sensitive wildlife receptors present in the project area. The potential impacts to wildlife are considered less than significant because the area is already disturbed by intense industrial and agricultural uses. Noise mitigation is provided in Section 5.12 for impacts to the residential land use north of the site.

Collision Hazards. The two proposed 50-foot tall CTG units associated with Midway may present a collision hazard for birds. The transmission line structure will be 50 feet tall. Birds that would most likely be affected include migrating waterfowl and other species and some migratory song birds that tend to migrate at night.

Bright lights may be an attractive nuisance for certain migrating birds. Fog or low cloud cover can further add to the problem. The generator units will not be lighted because under FAA guidelines, lighting of structures under 200 feet is not necessary for aviation safety. However, for security purposes, outdoor equipment platforms and walkways and transformer areas will be lighted. Since the area has low quality habitat for birds, the collision hazards in the area of the Midway site are anticipated to be low and less than significant.

5.6.2.1.3 Impacts to Special-status Species

No federally-listed or state-listed threatened or endangered species are expected to occur in the project survey area due to lack of suitable habitat. Therefore, no impacts are expected to occur as a result of the proposed project. Most of the special-status species more recently reported in the vicinity are located near the Tumey Hills, at least 4.2 miles from the project area.

5.6.2.1.4 Impacts to Wildlife Corridors

Substantial wildlife movement through the area is lacking and the project area is not a significant wildlife corridor. In addition, the project area is surrounded by open agricultural lands that could potentially allow for wildlife movement. No significant impacts to wildlife movement are expected with the implementation of the proposed Midway project.

5.6.2.2 Parking, Laydown, and Access Road

The proposed laydown area, parking area and access road are within the project site, so impacts associated with construction and operations are expected to be the same as those discussed for the rest of the proposed project. No impacts to special-status species are expected and less-than significant impacts may occur to common wildlife species in the area.

5.6.2.3 Cumulative Impacts

The purpose of the cumulative impacts discussion for the proposed project is to:

- Identify past, present, and reasonably foreseeable actions within the project vicinity that could affect the same resource(s) as Midway
- Determine if impacts of Midway and the other actions would overlap in time or geographic extent
- Determine if the impacts of the proposed project would interact with, or intensify, the impacts of other actions
- Determine if this AFC overlaps another existing or planned AFC
- Identify any potentially significant cumulative impacts

Projects that could potentially contribute to cumulative impacts with Midway are those within the same geographic area of influence. For this cumulative impact assessment, the area of influence is within a five mile radius of the Midway site. In addition, projects or proposed projects with potential for regional significance are also included in the analysis. Information was gathered on projects that either: 1) have submitted an application for required approvals and permits; 2) have been previously approved and may be implemented in the near future; or 3) are contemplated and reasonably anticipated, but have not been formally proposed. Information for the cumulative impacts assessment was obtained primarily through personal communications. In addition, information from the internet was reviewed. The CEC and County of Fresno also provided information. Table 5.18-1 in Section 5.18 (Cumulative Impacts) shows a list of potential projects considered in the cumulative impact assessment and the timeframe for these projects.

Potential cumulative impacts to biological resources caused by the construction of several power plants in the area may include loss of habitat and disruption of wildlife corridors. Because no sensitive resources were identified, nor are expected to occur within the vicinity of the Midway site, cumulative impacts to biological resources would not be significant. In addition, the area of the proposed Midway project is not identified as being a wildlife corridor. Therefore, no disruptions to wildlife movement are expected to occur.

5.6.3 Avoidance and Minimization Measures

In order to avoid and minimize impacts to common wildlife, the following stipulations must be implemented:

- In order to minimize trapping of common wildlife, set up fences around construction zones and relocate any trapped wildlife. Fenced areas and trenches should be checked regularly by a biological monitor to rescue and relocate any trapped animals.
- Provide biological orientation training for workers onsite to educate them on procedures for minimizing impacts to common wildlife species and any potential rare occurrences of special-status species that have a low potential to occur in the project area.
- An approved, designated biologist shall implement the above measures.

5.6.4 Mitigation Measures

There are no mitigation measures proposed for biological resources because native vegetation is lacking and special-status species are not expected to occur in the project area.

5.6.5 Applicable LORS

LORS that are applicable or potentially applicable for biological resources associated with the proposed project are discussed below. Table 5.6-3 lists all applicable LORS. Construction and operation associated with the proposed project will adhere to the LORS pertinent to biological resources.

5.6.5.1 Federal Authorities and Administering Agencies

5.6.5.1.1 Endangered Species Act of 1973: 16 USC Section 1531 et seq.; 50 CFR Parts 17 and 222

The Endangered Species Act provides for the protection of threatened or endangered plants and animals and their determined critical habitats. The USFWS is the agency responsible for administering the act, designating critical habitat, and determining if a species should have a change in listing status. The proposed Midway project would not impact any federally-listed threatened or endangered plants or animals or their designated critical habitats, and therefore, would not violate the Endangered Species Act.

5.6.5.1.2 National Environmental Policy Act: 42 USC Section 4321 et seq

The National Environmental Policy Act (NEPA) requires an evaluation of the environmental impacts of projects taking place on federal lands or receiving federal funding. The USFWS is the administering agency for the above authority. Evaluation determined that there would be no impacts to biological resources. As a result, the Midway project is in compliance with NEPA.

5.6.5.1.3 Migratory Bird Treaty Act: 16 USC Sections 703 – 711; 50 CFR Subchapter B

The Migratory Bird Treaty Act protects most native birds, their eggs, and their nests, and prohibits any taking not in accordance with federal regulation. The USFWS is responsible for administering this Act. Because the project will not result in the deaths of birds or the destruction of any active nests, Midway will not violate the Migratory Bird Treaty Act.

5.6.5.1.4 Fish and Wildlife Coordination Act: 48 Stat. 401, amended; 16 USC 661 et seq

The Fish and Wildlife Coordination Act requires all federal agencies to coordinate with the USFWS to preserve fish and wildlife when implementing federal actions. The USFWS is responsible for administering this Act. Because no impacts to biological resources would occur with project implementation, Midway will comply with this Act.

5.6.5.1.5 Clean Water Act of 1977: 33 USC Section 1251 – 1376; 30 CFR Section 330.5(a)(26)

The Clean Water Act protects wetlands, regulates discharges of pollutants, requires set water quality standards for individual pollutants, and provides a framework for permitted pollutant discharge from a point source. The administering agencies for the Act are the ACOE and the Regional Water Quality Control Board (RWQCB). Because no impacts to biological resources would occur with project implementation, Midway will not be in violation of this Act.

Table 5.6-3
LORS for Biological Resources

AFC Section	Authority	Administering Agency	Requirements/Compliance
Federal			
Section 5.6.4.1	Endangered Species Act of 1973; 16 USC 1531 et seq.; 50 CFR Parts 17 and 222.	USFWS	Protection and management of federally listed threatened or endangered plants and animals and their designated critical habitats (terrestrial and avian species).
Section 5.6.4.1	National Environmental Policy Act; 42 USC 4321 et seq.	USFWS	Section 7 Endangered Species Act consultation with USFWS (or Section 10A)
Section 5.6.4.1	Migratory Bird Treaty Act; 16 USC 703-711; 50 CFR Subchapter B.	USFWS	Analysis of impacts of Federal action protection of migratory birds
Section 5.6.4.1	Fish and Wildlife Coordination Act; 16 USC 661-666	USFWS	Conservation of fish and wildlife and protection of wetlands.
State			
Section 5.6.4.2	California Endangered Species Act of 1984; California Fish and Game Code 2050-2098	CDFG	Consultation Requirement
Section 5.6.4.2	California Species Preservation Act of 1970; California Fish and Game Code 900-903	CDFG	Protection and enhancement of the birds, mammals, fish, amphibians, and reptiles of California.
Section 5.6.4.2	California Fish and Game Code	CDFG	No taking of mammals listed as fully protected.
Section 5.6.2.1 and 5.6.5.2	California Fish and Game Code 3503	CDFG	No taking or possessing of the nests or eggs of birds.
Sections 5.6.2.2, 5.6.2.3, and 5.6.5.2	CEQA: California Public Resources Code 21000 et seq.	CEC	Protection of environment.
Local			
Section 5.6.4.3	Opens Space Element and Conservation Element of the County of Fresno General Plan	County of Fresno Economic and Development Department	Ensure that proposed development projects demonstrate a high degree of compatibility with any threatened or endangered species and sensitive biological resources.

5.6.5.2 State Authorities and Administering Agencies

5.6.5.2.1 California Endangered Species Act of 1984: California Fish and Game Code Sections 2050 – 2098

The California Endangered Species Act provides for the protection and management of plant and animal species listed as threatened or endangered, or designated as candidates for such listing. This Act requires consultation between the CDFG and other state agencies to ensure that projects do not jeopardize the continued existence of threatened or endangered species or habitats essential for the continued survival of any threatened or endangered species. The administering agency for this act is the CDFG. Because no impacts to any species listed under this Act would occur with project implementation, Midway will not be in violation of this Act.

5.6.5.2.2 California Species Protection Act of 1970: California Fish and Game Sections 900-903

The California Species Protection Act includes provisions for the protection and enhancement of the birds, mammals, fish, amphibians, and reptiles of California. The administering agency for this Act is the CDFG. Because no impacts to biological resources would occur with project implementation, Midway will comply with this Act.

5.6.5.2.3 California Fish and Game Code Section 3503

This code section prohibits the taking and possessing of bird eggs and nests. The administering agency for this is the CDFG. Because there will be no disturbance to nesting birds, Midway will be in compliance with this law by limiting any substantial vegetation clearing to the bird non-breeding season.

5.6.5.2.4 California Fish and Game Code Section 3511, Section 4700, Section 5050 Section 5515

This code section prohibits the taking of birds, mammals, reptiles, and fish listed as fully protected. The administering agency for these is the CDFG. Because there are no listed birds, mammals, reptiles, or fish in the vicinity of the project site, Midway will be in compliance with this law.

5.6.5.2.5 CEQA, Public Resources Code Section 21000 et seq

The CEQA provides for protection of the environment in the state of California. The administering agency for the above authority with regards to this project is the California Energy Commission (CEC). Because there are no natural resources at the project site, Midway is in compliance with the California Environmental Quality Act.

5.6.5.2.6 California Public Resources Code Section 25523(a): 20 CCR Sections 1752, 1752.5, 2300 – 2309, and Chapter 2, Subchapter 5, Article I, Appendix B, Part (i)

These code sections require the CEC to protect environmental quality. The administering agency for the above sections is the CEC with comment by the CDFG. Because there are no rare or endangered species at the project site, Midway will be in compliance with these code sections.

5.6.5.3 Local Authorities and Administering Agencies

The County of Fresno General Plan open space and conservation elements addresses goals and policies related to natural resources. The *Conservation Element* addresses the conservation, development, and use of natural resources including water, forests, soils, rivers, and mineral deposits. Overlapping the Conservation and Safety Elements, the *Open Space Element* details plans and measures for preserving open space for: protection of natural resources such as wildlife habitat; the managed production of resources such as agriculture and timberland; outdoor recreation such as parks, trails, and scenic vistas; and public health and safety such as areas subject to geologic hazards, flooding, and fires. (County of Fresno, 2000).

The Natural Resources component has three main goals (County of Fresno, 2000):

1. To help protect, restore, and enhance habitats in Fresno County that support fish and wildlife species so that populations are maintained at viable levels. Policies in this section seek to protect natural areas and to preserve the diversity of habitat in the county.

2. To conserve the function and values of wetland communities and related riparian areas throughout Fresno County while allowing compatible uses where appropriate. Policies in this section seek to protect riparian and wetland habitats in the county while allowing compatible uses where appropriate.

3. To preserve and protect the valuable vegetation resources of Fresno County. Policies in this section seek to protect native vegetation resources primarily on private land within the county.

The Mendota Wildlife Area just south of the San Joaquin River is designated as open space. The administering agency for the County of Fresno is the Planning and Resources Development Department. Midway is in compliance with these goals and associated policies because it does not cause significant impacts to natural resources.

5.6.5.4 Agencies and Agency Contacts

United States Fish and Wildlife Service
Sacramento Office
2800 Cottage Way
Sacramento, CA 95825

5.6.5.5 Applicable Permits

There are no applicable permits related to biological resources.

5.6.6 References

URS Corporation. 2006. Panoche Energy Center, Application for Certification.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Biological Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Existing site conditions: Sec. 5.6.1, Pgs. 5.6-2 to 5.6-8 Environmental Consequences: Sec. 5.6.2 Cumulative Impacts: Sec. 5.6.2.3, Pg. 5.6-11 Minimization and Mitigation: Sec. 5.6.3, 5.6.4, Pg. 5.6-12		
Appendix B (g) (13) (A)	A regional overview and discussion of biological resources, with particular attention to sensitive biological resources near the project, and a map at a scale of 1:100,000 (or some other suitable scale) showing their location in relation to the project.	Special Status Species: Sec. 5.6.1.5, Table 5.6-1, Pgs. 5.6-5, 5.6-2 Maps: Figure 5.6-1, 5.6-2		
Appendix B (g) (13) (B)	A discussion and detailed maps at a scale of 1:6,000, of the biological resources at the site of the proposed project and related facilities, and in areas adjacent to them, out to a mile from the site and 1000 feet from the outer edge of linear facility corridors. Include a list of the species actually observed and those with a potential to occur. The discussion and maps shall address the distribution of community types, denning or nesting sites, population concentrations, migration corridors, breeding habitats, and the presence of sensitive biological resources.	Maps: Figure 5.6-1, 5.6-2 Affected Environment: Sec. 5.6.1 Species list: Table 5.6-2, Pg. 5.6-4 Special Status Species: Table 5.6-1		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Biological Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (13) (C)	A description of all studies and surveys used to provide biological information about the project site, including seasonal surveys and copies of the California Department of Fish and Game's Natural Diversity Data Base Survey Forms, "California Native Species Field Survey Forms", and "California Natural Community Field Survey Forms", completed by the applicant. Include the dates and duration of the studies, methods used to complete the studies, and the names and qualifications of individuals conducting the studies.	Survey Methods: Sec. 5.6.1.1, Pg. 5.6-1		
Appendix B (g) (13) (D)	A discussion of all permanent and temporary impacts to biological resources from site preparation, construction activities, and plant operation. Discussion of impacts must consider impacts from cooling tower drift, and from the use and discharge of water during construction and operation. For facilities which use once-through cooling or take or discharge water directly from or to natural sources, discuss impacts resulting from entrainment, impingement, thermal discharge, effluent chemicals, type of pump (if applicable), temperature, volume and rate of flow at intake and discharge location, and plume configuration in receiving water.	Discussion of impacts: Sec. 5.6.2.1, STET: Sec. 5.6.2.1.2, Sec. 5.6.2.3		
Appendix B (g) (13) (E)	A discussion of the following:	----------	----------	
Appendix B (g) (13) (E) (i)	All measures proposed to avoid and/or reduce any adverse impacts;	Minimization measures: Sec. 5.6.3, Pg. 5.6-12		
Appendix B (g) (13) (E) (ii)	All measures proposed to mitigate any adverse impacts, including any proposals for off-site mitigation; and	Mitigation measures: Sec. 5.6.4, Pg. 5.6-12		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Biological Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (13) (E) (iii)	Any educational programs proposed to enhance employee awareness in order to protect biological resources.	Educational programs: Sec. 5.6.3, Pg. 5.6-3		
Appendix B (g) (13) (F)	A discussion of compliance and monitoring programs proposed to ensure the effectiveness of mitigation measures incorporated into the project.	Minimization and Mitigation measures: Sec. 5.6.3, 5.6.4, Pg. 5.6-3		
Appendix B (g) (13) (G)	A discussion of native fish and wildlife species of commercial and/or recreational value that could be impacted by the project.	Commercial and/or recreational species:	NA	
Appendix B (g) (13) (H)	For purposes of this section, sensitive biological resources are one of the following:	----------	----------	
Appendix B (g) (13) (H) (i)	Species listed under state or federal Endangered Species Acts;	Species List: Sec. 5.6.1.5, Table 5.6-1, Pg.5.6-3		
Appendix B (g) (13) (H) (ii)	Resources defined in sections 1702 (q) and (v) of Title 20 of the California Code of Regulations; and	Specialist: Sec. 5.6.15, Table 5.6-1		
Appendix B (g) (13) (H) (iii)	Species or habitats identified by legislative acts as requiring protection.	State or federally listed species: Sec. 5.6.1.5, Table 5.6-1		
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	LORS compliance: Sec. 5.6.5, Table 5.6-3, Pgs. 5.6-12, 5.6-14		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Biological Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Agency jurisdiction: Sec 5.6.5, Pg. 5.6-12, Table 5.6-3, Pg. 5.6-14		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	----------	----------	
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Agency contacts: Sec. 5.6.5.4, Pg. 5.6-16		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Permit schedule: Sec. 5.6.5.5, Pg. 5.6-16		

5.7 CULTURAL RESOURCES

This section assesses the potential impact to cultural resources, which includes archaeological and historical objects, sites and districts, historic buildings and structures, cultural landscapes, and sites and resources of concern to local Native Americans and other ethnic groups.

The purpose of this cultural resources study is to inventory cultural resources in the vicinity of the Midway site and identify any potential project-related impacts to cultural resources. Records of correspondence with local Native Americans are included in the Technical Report (Confidential Appendix J). All other information contained in Confidential Appendix J can be found here in Section 5.7.

All cultural resources work for this project was carried out under the direct supervision of an archaeologist who meets the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (National Park Service [NPS], 1983 [36 CFR Part 61]), and is consistent with the procedures for compliance with Section 106 of the National Historic Preservation Act (NHPA), set forth at 36 CFR 800.

Detailed below are descriptions of project components; baseline conditions for prehistory, history, and ethnography; results of coordination with the Native American community; record searches; field surveys; and assessments of potential impacts (direct and indirect) on cultural resources on a component-by-component basis. The results of this study indicate that no adverse project-related effects to significant cultural resources are anticipated for the project. Appropriate mitigation measures are also set forth below to ensure site avoidance and/or proper treatment of cultural resources in the event of discovery.

Cultural resources work was conducted in order to assess potential impacts to cultural resources under the CEQA. Work was also conducted in compliance with the CEC's "Instructions to the California Energy Commission Staff for the Review of and Information Requirements for an Application for Certification" (CEC, 1992) and "Rules of Practice and Procedure and Power Plant Site Regulations" (CEC, 1997).

5.7.1 Affected Environment

5.7.1.1 Study Area

The Midway site is located in Western Fresno County adjacent to the Panoche Hills and east of the San Benito County line. The Midway site is located near Firebaugh, approximately 50 miles west of the City of Fresno and approximately 2.0 miles east of Interstate 5 (I-5). Electrical transmission lines extend north and south of the site. A Wellhead Peaker plant southeast and the CalPeak Panoche plant lies southwest of the site. Additionally, a PG&E electric substation is located to the west. There is a 5-plex immediately north of the site and three singly-family residences are further west of the site near the West Panoche Road/Davidson Avenue intersection. The remainder of the site is surrounded by agriculture use primarily consisting of almond and pomegranate groves. All proposed Midway project components are situated south of West Panoche Road within a site currently utilized as a storage-yard, and the remaining land surrounding the site is entirely given over to agriculture.

5.7.1.2 Natural History

The project area is located in a region characterized today primarily by agricultural development situated near reclaimed land upon what was once marshland connected to the large Tulare Lake. Agricultural development characterizes the vicinity immediately surrounding the project area. Natural habitats for the most part have been displaced by developments associated with the various agricultural activities, primarily orchards. Prior to development, the lake and marsh setting of the general project area would have supported diverse wetland fauna and flora.

5.7.1.3 Soils and Geology

Please refer to Sections 5.3 and 5.4, respectively, for detailed descriptions of regional geology and soil conditions.

5.7.1.4 Disturbance within the Study Area

The primary sources of previous surface and subsurface disturbances in and adjacent to the Midway area are related to:

- Construction and operation of the current PG&E power substation
- Agricultural activity including plowing and planting
- Road construction

5.7.1.5 Prehistory

Northern California, specifically portions of the San Francisco Bay region, has supported a continuous cultural occupation for at least the last 4,000 years (Elsasser, 1978; Nelson, 1909; Gifford, 1916). The cultural occupation of the northern San Joaquin Valley can be divided into three time periods, or horizons, which help to define the practices and subsistence patterns of the people of that region. The designations Early, Middle, and Late Horizons were developed as a chronological sequence by Beardsley (1948, 1954) based upon his work in the Sacramento-San Joaquin Delta region to the San Francisco Bay area (Elsasser, 1978:37).

5.7.1.5.1 The Early Period

The Early Period in California generally refers to the time frame between 10,000 and 7,000 BP (Before Present). Early Period components have been identified along the fossil lakeshores of Tulare Lake and Buena Vista Lake, in the east central and southwestern portions of the San Joaquin Valley, respectively. Lithic (stone) artifact assemblages associated with the Early Period are characterized by the presence of stemmed projectile points. The Witt site, located on the fossil lakeshore of Tulare Lake also featured ‘fluted’ and concave based projectile points, associated with terminal Pleistocene ‘Clovis’ assemblages in other regions of North America (Riddell and Olsen, 1969; Moratto, 1984). The Buena Vista Lake site (CA-KER-1 16), in Kern County, is the other primary San Joaquin Valley site yielding Early Period stemmed points from lower layers in the stratigraphy (Fredrickson and Grossman, 1977; Hartzell, 1991, 1992). Stemmed points have also been recovered from several sites in the foothills at the margins of the

valley, namely at the Skyrocket sites (CA-CAL-629 and -630) in the Calaveras County foothills, and at the Clark's Flat site (CA-STA-S342) in the Stanislaus County foothills. Other Early Period lithic artifacts include cobble core tools (choppers and scrapers) and flake tools, as well as crescentic, leaf-shaped, ovate, and lanceolate bifaces. Groundstone artifacts of this period are typically expedient, showing light use wear, and often exhibit multiple forms of use wear. The characteristics of these types of projectile points indicate the use of spear and *atlatl* as the primary hunting technology.

5.7.1.5.2 The Middle Period

The Middle Period (7,000-2,500 BP) is characterized by an increase in groundstone implements and by 'Pinto' or 'Stanislaus Stemmed' projectile points (Peak and Crew, 1990). These points have been recovered at CA-KER-1 16, the Witt site, the Skyrocket sites, and the Clark's Flat site. While much of the flaked-stone tool assemblage in the Middle Period is similar to that of the Early Period, the presence of more groundstone milling equipment with extensive use wear suggests a greater reliance on plant foods than in the Early Period. The characteristics of these types of projectile points, being smaller than those used for spear and atlatl, indicate the beginning of the use of the bow and arrow in hunting activities.

5.7.1.5.3 The Late Period

The Late Period refers to the time period between approximately 2,500 BP and European contact, at which time Native American lifeways were recorded in the ethnographic/historic record by anthropologists and historians. The material culture patterns observed at contact emerged during the Late Period, and the ethnohistoric record provides a valuable resource for understanding Late Period archaeology (see 5.7.1.7 Ethnography). The archaeological record for the Late Period reveals a significantly different suite of material culture than that seen in Middle Period assemblages. Heavily utilized mortar and pestle technology (associated primarily with acorn processing), and the incorporation of the bow and arrow technology during the Late Period. Large occupation sites, representing semi-permanent and permanent villages, emerge during this time. On the western margins of the San Joaquin Valley, these village sites typically feature dark-colored midden deposits, multiple excavated house pit depressions, and large, excavated communal structures. Other artifacts typical of Late Period deposits include freshwater and marine shell ornaments, ornaments and utilitarian implements of steatite and faunal bone, obsidian from eastern California sources, and notched cobbles thought to be associated with fishing.

5.7.1.6 Ethnography

The Project is located within the boundaries of the Northern Valley Yokuts territory, at the northeastern end of the San Joaquin Valley, near the Little Panoche Creek. Tribal groups throughout the Northern California territories interacted with each other along their tribal boundaries, and as such the tribal boundaries are not considered permanent. Presented below is a discussion of the ethnography of this region.

"Yokuts" is a term applied to a large and diverse number of people inhabiting the San Joaquin Valley and Sierra Nevada foothills of central California. The Northern Valley Yokuts inhabited a 40- to 60-mile-wide area straddling the San Joaquin River, south of the Mokelumne River, east of the Diablo Range, and north of the sharp bend that the San Joaquin River takes to the northeast. The Southern Valley Yokuts inhabited

the San Joaquin Valley south of the bend in the river. Although they were divided geographically and ecologically, they had similar linguistic styles. For the Northern Valley Yokuts, the San Joaquin River and its main tributaries served as a lifeline to the valley (Wallace, 1978:462).

The Northern Valley tribes closely resembled the Yokuts groups to the south, although there were some cultural differences. The northerners had greater access to salmon and acorns, two important dietary resources, than the Southern Yokuts, and some of their religious practices reflected the influences of groups to their north, such as the Miwok. While inhumation was the usual practice in the southern valley, the Northern Valley Yokuts either cremated their dead or buried them in a flexed position (Wallace, 1978:464, 468).

The Northern Valley Yokuts built their riverside villages on mounds along the water's edge to avoid the spring floods, which were a result of heavy Sierra snow melts. Living beside rivers and streams provided plentiful river perch, Sacramento pike, salmon, and sturgeon. Hunting provided waterfowl such as geese and ducks as well as land animals such as antelope, elk, and brown bear; although by all indications fish constituted a majority of the diet. The surrounding woodland, grasslands, and marshes provided acorns, tule root, and seeds.

A chief headed the tribal villages, which averaged around 300 people. Family houses were round or oval, sunken, with a conically shaped pole frame, and covered with tule mats. Each village also had a lodge for dances and other community functions, as well as a sweathouse (Wallace, 1978:462-464).

The Northern Valley Yokuts used bone harpoon tips for fishing, stone sinkers for nets, chert projectile points for hunting, mortars and pestles, scrapers, knives, and bone awl tools to procure and manufacture food. Marine shells, procured from coastal tribes, were used for necklaces and other adornments, and marine shell beads sometimes accompanied the deceased. They used tule reed rafts to navigate the waterways for fishing and fowling. The Yokuts also manufactured a range of intricate baskets for a variety of purposes, including storing, cooking, eating, winnowing, hopper mortars, and the transport of food materials. Very little is known of the Northern Valley Yokuts' clothing, but drawings of their tattoos show that they served not only as a decoration but also as a form of identity (Wallace, 1978:464).

Historic accounts from an unnamed Spanish expedition in 1810 and 1811 recall that the Spaniards named one of the Yokuts' village Pescadero ("fisherman") after seeing the Indians catching fish. During the time of Mexican land grants, Rancho Pescadero north of Tracy was named for the Yokuts village (Hoover *et al.*, 1990). According to early accounts, the Yokuts traded with neighboring tribes and were fairly peaceful. Initially, the Diablo Range served as a natural barrier against heavy recruitment by the coastal Spanish missions. However, by the early 19th century, Spanish, and later, Mexican missionaries began to explore the inner valleys in search of neophytes. The Yokuts became irritated with the intrusion, and soon began fighting back and stealing horses from rancheros and missions in retaliation for intrusion (ibid). Eventually, the Northern Valley Yokuts were decimated by missionization, usurpation of land by rancheros, "49ers," farmers, and epidemics (malaria being the most devastating, in 1833).

5.7.1.7 Historic Setting

The study area can be divided into four historic periods:

- Early European Contact and Missions: 1769 to 1849
- Gold Rush and Agriculture Boom: 1849 to 1900
- The 20th Century Through WWII: 1900 to 1945
- The Late 20th Century: 1945 to present

5.7.1.7.1 Early European Contact and the Missions

The study area is located northwest of the now dry bed of Tulare Lake. Up to the second half of the 19th century, this lake was the largest freshwater lake west of the Great Lakes. This lake was also home to several bands of Yokuts, to whom fugitives from the missions would often flee.

Though the Spanish missions were relegated to the coastal areas of California, Spanish soldiers and priests had made many forays into the San Joaquin Valley. The area surrounding Tulare Lake was a frequent target of Spanish parties searching for fugitives (Cook, 1976; Smith, 2004), and it is likely that fugitive-seeking expeditions also brought back unwilling converts from this area (Cook, 1976).

An 1804 expedition to find land on which to locate a mission met with disinterest and a lack of cooperation on the part of the Tulare Indians. Further unsuccessful attempts to find land for an interior mission were made in 1806 and 1813. Father Zalvidea's journals of an 1806 expedition to capture runaway neophytes in the San Joaquin Valley described the valley as a dry, miserable place, not suitable for settlement. This description helped to discourage attempts at settlement for over a decade (Smith, 2004).

From the 1820s through the 1840s parties from the missions, Anglo-American and French fur trappers, and Russian explorers began to explore the San Joaquin Valley. These explorations caused international tensions, but also increased the American interest in California that had initially been sparked by the belief in Manifest Destiny. In 1848, at the conclusion of the Mexican-American War (1846-1848), California was among the lands ceded to the United States as part of the peace settlement.

Although dangers such as raids by the Yokuts were common, land in the San Joaquin Valley began to be granted by the Mexican authorities in the 1840s, a practice that continued when the U.S. government took possession of California.

5.7.1.7.2 The Gold Rush and Agricultural Boom

John Sutter discovered gold near his mill in Sacramento in 1848. Though he and his men originally tried to keep it secret, word soon got out and the Gold Rush began. The Central Valley (inclusive of both the San Joaquin and Sacramento Valleys) and the Sierra Nevada were soon host to a teeming mass of placer miners and those who sought to make a living either by providing for the needs or making victims of these miners. The city of San Francisco sprang up almost overnight (earning it the nickname "the Instant

City"), and several towns were established throughout California. Many of those already established grew quickly as the population boomed. In 1850, California's population was deemed large enough for it to be eligible for statehood.

Near the study area, the town of Fresno City (west of the current location of the City of Fresno) was established at the head of the Fresno Slough to serve the needs of California's fledgling riverboat industry. Fresno County was formed out of the larger Mariposa County in 1856.

This area was plagued by many of California's worst bandits, reportedly including the notorious Joaquin Murieta (though both the existence and the location of Joaquin Murieta has been questioned), throughout the mid-19th century (California Office of Historic Preservation, 2004).

As many would-be miners found mining too difficult, the competition too fierce, or the payout too small (if not eventually non-existent for those who lacked the equipment to engage in large-scale mining operations), many turned to farming the soils of the Central Valley. This required the draining of many of the swamps and lakes in the San Joaquin Valley, including Lake Tulare near the study area.

Chinese workers, who had originally come to work in the mines, later began work as farmhands draining California's wetlands and lakes to create farmland. In addition to the well-known "Chinatowns" located in most large, and many small, cities in 19th century California, the Chinese workers left behind evidence of their activities in the work camps, the remains of which are still occasionally visible on the landscape.

Chinese workers and migrant workers from other parts of Asia, would be the frequent targets of anti-migrant hostilities, both in the state and federal legislatures, in the streets of California's towns, and in the agricultural community. In the 1890s, Fresno was the site of anti-migrant riots that resulted in the destruction of rural labor camps, possibly leaving archaeological traces of this activity (Takaki, 1998).

Though agriculture began in the 1840s agriculture became possible over a much greater expanse of land with the draining of the lakes and swamps of California's Central Valley., Stock raising became a dominant business in the area during the 1860s. In the 1870s, the establishment of the railroad provided a larger market to farmers and also an easier mode by which settlers could come to California, ushering an era of general farming (County of Fresno, 2006).

Irrigation began in the late 1860s, but remained controversial given the relatively limited water supply of the region. However, as irrigation became more common throughout the late 19th and early 20th centuries, the harsh, dry environment demonized by Zalvidea became a fertile, if still often hot, agricultural powerhouse.

Throughout the remainder of the 19th century, Fresno County's population continued to grow, though it still remained relatively sparse, as befits a primarily agricultural area. Many of the modern cities, including Fresno, Reedley, and Sanger, were either founded or incorporated during this time. Many of the markers of American culture, such as newspapers, the railroad, and public streetcars either were established or expanded during the 19th century (Fresno Historical Society, 2001).

5.7.1.7.3 The 20th Century Through World War Two

Fresno County's population growth rapidly increased during the first half of the 20th century, starting with a population of over 37,000 in 1900 and continuing to grow to 276,515 people by 1950. Canals, dams, and artificial bodies of water, including Hume Lake, were created to supply water to both the people and agriculture of Fresno County. (Fresno Historical Society, 2001). In 1914, Firebaugh, near which the study area is located, was incorporated.

Tumultuous events of the early 20th century included the early growth of the labor movement; World War One (WWI); the Great Depression; conflicts between laborers native to California and migrant laborers from Asia, Central and South America; and, during the Depression, conflicts in the south and Midwest of the United States. Fresno County continued to grow, and even prosper. The founding of new towns, newspapers, educational institutions (including a school and the first junior college in California), and the coming of radio all served to tie Fresno County into the larger United States.

Increases in the price of Fresno's popular crops, such as raisins, raised land prices within the county and the growth of both staple and cash crops brought money to the area. South of the study area, the Kettleman Oil Fields were discovered in 1928, bringing yet another source of income to the area.

With the outbreak of World War Two (WWII), anti-Japanese sentiments led to the establishment of the Japanese internment camps in California and other parts of the western U.S. The establishment of temporary detention camps in eastern Fresno County and the Fresno Assembly Center expanded this region's role in WWII from that of producing food and supplies and providing soldiers.

5.7.1.7.4 The Late 20th Century

As with the rest of California, the post-WWII return of soldiers and growth of families led to even greater population growth. By 1950, Fresno County had a population of 276,515, and more cities continued to be incorporated throughout the 1940s and 1950s. By 1954, Fresno County had become the leading agricultural production county in the nation (Fresno Historical Society, 2001). The presence of major transportation corridors (including State Highway 99, State Highway 152, Interstate 5, a railroad, and an airport converted from military to civilian use) caused non-agriculturally centered industries to grow in and around Fresno, as well.

Fresno County reached a population of 799,407 by 2000 (Umbach, 2002). An increasingly broad ethnic community has led to a rich cultural life in Fresno County, though it has also played a role in racial tension related to labor and to the laws concerning immigration.

Though Fresno County is now home to many different industries, it has maintained its agricultural character, especially outside the major cities.

5.7.1.8 Native American Consultation

The Native American correspondence discussed below, including the Native American Heritage Commission (NAHC) contact letter, NAHC response, Native American mailing list, and consultation letters, is considered proprietary information. Copies of this correspondence are provided in the

confidential technical report (Confidential Appendix J). A Native American sacred sites record search was recently undertaken , which encompassed the proposed project site.

The California NAHC was contacted on October 20, 2006, for a list of local Native American groups and/or individuals with direct or indirect knowledge of cultural resources within or near the project area. These consultations also sought to identify any sacred lands within the area (including a 1-mile radius study area) identified in the NAHC's Sacred Lands File. The NAHC responded on October 20, 2006 indicating that the search of the Sacred Lands File was negative and providing a list of four local Native American contacts for Fresno County.

URS provided a project description and maps of the project site to four Native American contacts identified by the NAHC as appropriate for Fresno County. The letters containing the project information was sent on October 20, 2006by U.S. mail. The letters inquired whether the Native American groups/individuals had any concerns regarding the proposed project, or wished to provide input regarding cultural resources within the proposed project area. No responses have yet been received regarding the proposed project.

5.7.1.9 Key Personnel Qualifications

The key cultural resources personnel who performed an assessment of the potential for cultural resources to be impacted by the proposed project (Confidential Appendix J) and Application for Certification (AFC) Section 7.3 are:

- Diane Douglas, PhD, RPA (URS Principal Investigator for the project)
- Laurie Solis, MA, RPA (URS Archaeologist)
- Dr. Douglas and Ms. Laurie Solis meet the professional standards of the Secretary of the Interior for this work (Standards and Guidelines for Archaeology and Historic Preservation, National Park Service, 1983) and is certified by the Register of Professional Archaeologists.

5.7.1.10 Background Research

5.7.1.10.1 Archaeology

An archaeological records search was conducted to assess potential impacts to cultural resources within the proposed project site. The records search included a review of all recorded sites, surveys, historical listings (CRHR, NRHP, state and local landmarks), and historical maps within the proposed project area. Prior to initiation of the cultural resources inventory, pre-field research was conducted to identify the extent of prior archaeological surveys and known cultural resources within or adjacent to the project area. Bibliographic references, previous survey reports, and archaeological site records were compiled through a records search conducted at the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System (CHRIS), at California State University, Bakersfield.

A review of the existing archaeological survey information indicated that the project area had not previously undergone archaeological survey.

5.7.1.10.2 Previously Conducted Cultural Resource Surveys within Approximately 0.5-Mile

The SSJVIC has four cultural resource studies on file that have been conducted within the 1/2-mile search radius of the proposed project site. Reference and general information on the previous surveys are provided in Table 5.7-1.

TABLE 5.7-1
PREVIOUSLY CONDUCTED CULTURAL RESOURCE SURVEYS

Study Number	Author	Date/Title	Within the Study Area?	Positive or Negative for Cultural Resources?
FR-00320	Canady et al	1992 Archaeological Survey of Right-of-Way Corridor and Extra Work Spaces Construction Spread 5B, California	No Within 0.5-mile of study area	Negative
FR-00321	Moratto and Jackson	1990 Cultural Resources Assessment Report, PGT-PG&E Pipeline Expansion Project Idaho, Washington, Oregon, and California, Phase I Cultural Resources Inventory Atlas	No Within 0.5-mile of study area	Negative
FR-01959	Moratto et al	1994 Archaeological Investigations for PGT-PG&E Pipelines Expansion Project, Idaho, Washington, Oregon, and California	No Within 0.5-mile of study area	Negative
FR-02015	Aspen Environmental Group	2001 Los Banos-Gates 500 kV Transmission Project, Application No. 01-04-01 2 Draft Supplemental Environmental Impact Report	No Within 0.5-mile of study area	Negative

5.7.1.10.3 Previously Recorded Cultural Resources Within Approximately 1/2 Mile

No cultural resources of an archaeological or historic nature have been documented within the approximately 0.5-mile radius study area around the project.

5.7.1.10.4 Built Environment Research

URS conducted background research to arrive at a general understanding of the history of the region and the project area. URS conducted background research utilizing local literature and various websites. The research examined maps, aerial photographs, local and county histories, directories, and historic maps (1922, U.S.G.S topographic quadrangle for Chaney Ranch).

5.7.1.11 Field Survey

The proposed project site was surveyed for the presence of cultural resources on October 18, 2006 by URS staff archaeologist Laurie Solis. The field crew consisted of one person who transected the project site by walking the property in pedestrian transects spaced 15 meters (33 ft) apart. The project site was surveyed in its entirety, as was the dirt access road leading into the property. No archaeological sites were encountered on the proposed project site.

5.7.1.11.1 Survey Methodology and Coverage

METHODOLOGY

Archaeology

As a result of the Phase I Archaeological survey, archaeological resources are not anticipated to occur within the proposed project site. The surface sediments of the project area were significantly disturbed. The project areas appear to have suffered from erosion, bioturbation, modern human activity, the built environment, and frequent watering of the surface soils – most likely to control dust. Much of the area is covered with deposited sediments (sands and gravels) cover the project area. Other disturbances include the modern deposition of household and industrial refuse within the Midway site, that include plastic toys, paper, wire, wood, large unused mechanical equipment, rubber hoses, and one rusted out motorcycle. Little to no vegetation is present within the project area and visibility was near to 90 percent.

CURRENT SURVEY RESULTS

Archaeology

The surface sediments of the project area were significantly disturbed. The project areas appear to have suffered from erosion, bioturbation, modern human activity, the built environment, and frequent watering of the surface soils – most likely to control dust. Much of the area and deposited sediments (sands and gravels) cover the project area. Other disturbances include the modern deposition of household and industrial refuse within the Midway site, that include plastic toys, paper, wire, wood, large unused mechanical equipment, rubber hoses, and one rusted out motorcycle. Little to no vegetation is present within the project area and visibility was near to 90 percent. No archaeological sites were identified during the survey.

Built Environment

No historic structures or resources were observed within the proposed project sites. The property adjacent to the project site at 43946 West Panoche Road consists of a complex of residences that had been occupied by farm laborers. Today the buildings are abandoned and have been neglected, leaving them in poor condition. Their integrity of structure has been compromised, as has their integrity of materials. These buildings are of a well-documented common type, and are not associated with people of historic importance. Therefore, this property is recommended not eligible for federal or state registers. Therefore, no historic structures are anticipated to be impacted by the proposed project.

5.7.2 Environment Consequences

CEC regulations require that Midway undergo various environmental resource assessments (i.e., cultural, paleontological, biological, etc.) as part of this AFC. With few exceptions, the potential impacts of any project upon cultural resources are evaluated under CEQA or the National Environmental Policy Act (NEPA) (see Table 5.7-2). Midway is not a federal undertaking, and therefore the AFC is written in compliance with CEQA and serves as CEQA environmental documentation. Under CEQA, the potential impacts of the project upon cultural resources must be evaluated. Although not considered a federal undertaking, the project has been concurrently assessed with regard to the requirements of Section 106 of NHPA and its implementing regulations set forth as 36 CFR 800.

5.7.2.1 State-level Mandates

Cultural resources include archaeological and historical objects, sites and districts, historic buildings and structures, cultural landscapes, and sites and resources of concern to local Native American and other ethnic groups. The Cultural Resources Technical Report (Confidential Appendix J) is consistent with compliance procedures set forth in CEQA, CCR Sections 15064.5 and 15126.4, and Section 106 of the NHPA, set forth at 36 CFR 800.

In considering impact significance under CEQA and NHPA, the significance of the resource itself must first be determined. At the state level, consideration of significance as an ". . . important archaeological resource" is measured by cultural resource provisions considered under CEQA Sections 15064.5 and 15126.4, and the draft criteria regarding resource eligibility to the CRHR.

Generally, under CEQA, a historical resource (including built environment historic and prehistoric archaeological resources) is considered significant if it meets the criteria for listing on the CRHR. These criteria are set forth in Section 15064.5, and are defined as resource items that:

Are associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage

- Are associated with lives of persons important to our past
- Embody the distinctive characteristic of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values
- Have yielded, or may be likely to yield, information important to prehistory or history

Section 15064.5 of CEQA also assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under PRC 5097.98.

Impacts to "unique archaeological resources" and "unique paleontological resources" are also considered under CEQA, as described under PRC 21083.2. A unique archaeological resource implies an archaeological artifact, object, or site about which it can be clearly demonstrated that (without merely adding to the current body of knowledge) there is a high probability that it meets one of the following criteria:

- The archaeological artifact, object, or site contains information needed to answer important scientific questions and there is a demonstrable public interest in that information
- The archaeological artifact, object, or site has a special and particular quality, such as being the oldest of its type or the best available example of its type
- The archaeological artifact, object, or site is directly associated with a scientifically recognized important prehistoric or historic event or person

A non-unique archaeological resource indicates an archaeological artifact, object, or site that does not meet the above criteria. Impacts to non-unique archaeological resources and resources which do not qualify for listing on the California Register of Historic Resources (CRHR) receive no further consideration under CEQA.

Under CEQA Section 15063.5, a project potentially would have significant impacts if it would cause substantial adverse change in the significance of:

- A historical resource (i.e., a cultural resource eligible to the CRHR)
- An archaeological resource (defined as a unique archaeological resource which does not meet CRHR criteria)
- A unique paleontological resource or unique geologic feature (i.e., would directly or indirectly destroy a site)
- Human remains (i.e., would disturb or destroy burials)

A non-unique archaeological or paleontological resource is given no further consideration, other than the simple recording of its existence by the lead agency.

Criteria for eligibility for the CRHR are very similar to those of the National Register of Historic Places (NRHP), which are the significance assessment tools used under the NHPA. The criteria of the NRHP apply when a project has federal involvement. Note that a property that is eligible for the NRHP is also eligible to the CRHR. On projects with federal involvement, impacts to significant resources are assessed and addressed under the procedures of Section 106 of the NHPA, set forth at 36 CFR 800.

All resources encountered during the mitigation and monitoring phases of Midway, with the exception of isolated artifacts and isolated features that appear to lack integrity or data potential, will be evaluated for significance per CRHR and CEQA criteria described above. If a resource is found to be significant, then it will be avoided through alterations in project design when feasible. In the event that avoidance of cultural resources is not possible via project design modifications, appropriate mitigation measures will be developed, in accordance with appropriate regulations and consultation with the CEC.

The Warren-Alquist Act (WAA) requires that cultural resource studies be performed as an element of the application for certification for power facilities. Section 25520 requires that applications describe the projected impacts of a facility upon historic resources. Section 25527 prohibits the construction of facilities in locations where they may impact historic or aesthetic resources unless the construction of the facility is consistent with the use of said locations, there are no substantial adverse impacts, and

permission of the agency if any having ownership and/or control of the land is obtained. Section 25529 requires that any facilities constructed on lands containing historic or aesthetic resources set aside a portion of the property to allow the continued use of said resource. In addition, the WAA references the Public Utilities Code, section 1002, which states that historical and aesthetic values are to be one of the factors considered by the Public Utilities Commission in granting certifications.

5.7.2.2 Federal Level Mandates

The legal frameworks for addressing cultural resources at the federal and state levels are generally equivalent. The four criteria for evaluation established by the NRHP (listed below) are identified at 36 CFR 60.4 and are in accordance with the regulations outlined in 36 CFR 800 established by the Advisory Council on Historic Preservation (ACHP).

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. Resources that are associated with events that have made a significant contribution to the broad patterns of our history

B. Resources that are associated with the lives of persons significant in our past

C. Resources that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction

D. Resources that have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4)

Hence, these evaluating criteria are used to help determine what properties should be considered for protection from destruction or impairment (36 CFR 60.2).

Midway is not considered a federal undertaking, however, the legal framework for addressing cultural resources at the federal and state levels are generally equivalent and are used somewhat interchangeably herein.

5.7.2.3 Local Mandates

On the local level, compliance with the Fresno County General Plan (FCGP, 2000) may be necessary. According to the plan, a goal of Fresno County is to identify, protect, and enhance important archaeological and historic resources within the county. In order to achieve this goal, a number of policies, measures, and programs targeting the management of cultural resources have been adopted by the county. In general, compliance with CEQA and Section 106 satisfies the county's concerns for cultural resources. Table 5.7-2, details legal and regulatory authorities associated with cultural resource concerns.

TABLE 5.7-2
LEGAL AND REGULATORY AUTHORITIES

AFC Section	Authority	Administering Agency	Requirements/Compliance
5.7.2.2	National Environmental Policy Act (NEPA); 42 USC 4321-4327; 40CFR section 1502.25	Lead Federal Agency	Analysis of federal environmental impacts on federal lands or for projects requiring federal money, assistance, and/or permits.
5.7.2.2	Archaeological and Historic Preservation Act of 1976 (16 USC)	Secretary of the Interior	Provides for coordination with the secretary when a Federally licensed undertaking may cause irreparable damage to significant cultural resources
5.7.2.2	American Indian Religious Freedom Lead Federal Agency Act of 1979 (42 USC 1996)	Lead Federal Agency	Establishes U.S. Government policy to protect and preserve traditional religious beliefs and practices
5.7.2.2	Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001)	Lead Federal Agency	Establishes mechanism for right of American Indian tribes to claim ownership of human remains and certain cultural items
5.7.2.2	Secretary of the Interior's Standards, September 29, 1983.	Lead Federal Agency	Establishes standards for the gathering and treatment of data related to cultural resources
5.7.2.1	The Warren-Alquist Act §§ 25520, 25527, 25529	CEC	Requires that cultural, historic, and aesthetic resources be taken into account in consideration of an application for certification. Requires that a portion of any such resources on public land be set aside for public access
5.7.2.1	California Environmental Quality Act CEC (CEQA) Section 15064.5; California Public Resources Code § 5024, 5024.5, and 21083.2; Title 14, CCR § 15126	CEC	Formal findings by the lead state agency regarding project-related impacts to important cultural resources and unique paleontological resources
5.7.2.1	Cal. Pub. Res. Code §§ 25523(A), CCR §§ 1752, 1752.5, 2300-2309, and Chapter 2, Subchapter 5, Article 1, Appendix B, Part (i)	CEC	Special consideration of unique historical, archaeological, and cultural sites
5.7.2.1	Cal. Health & Safety Code § 7050.5	County Coroner (Medical Examiner)	Determination of origin of human remains and coordination with NAHC

TABLE 5.7-2 (Continued)
LEGAL AND REGULATORY AUTHORITIES

AFC Section	Authority	Administering Agency	Requirements/Compliance
5.7.2.1	Cal. Pub. Res. Code § 5024.1	State Historical Resources Commission	Establishes the California Register of Historic Resources and procedures for nominating sites to the register
5.7.2.1	Cal. Pub. Res. Code § 5097.5	Fresno County Planning Department and Native American Heritage Commission	Prevent unauthorized removal of archaeological resources on public lands
5.7.2.1	Cal. Pub. Res. Code § 5097.94 and 5097.98.21	Fresno County Planning Department and Native American Heritage Commission	Prevent unauthorized removal of archaeological resources on public lands
5.7.2.3	Fresno County Master Plan	Fresno County Planning Department	Calls for adherence to CEQA cultural resources regulations within Fresno County

5.7.2.4 Involved Agencies and Agency Contacts

Unless a federal hook is found, the only official to be contacted for cultural resources is the Fresno County Coroner in the event that human remains are found. If a federal hook is found for the project, then the State Historic Preservation Officer (SHPO) may have to consult to agree that there are no adverse impacts to cultural resources. Otherwise, the contacts for cultural resource issues should be the same as for other environmental issues or else should be indicated by the agency contacts for other environmental issues.

5.7.2.5 Project Impacts

5.7.2.5.1 Archaeology

There are no previously recorded cultural resources located within or adjacent to the Midway site. Therefore, there are no anticipated direct or indirect impacts to archaeological resources.

5.7.2.5.2 Built Environment

No built resources eligible for federal or state registers would be adversely impacted by the proposed project. The area has been previously surveyed by qualified personnel by JRP, and the structures located near the project location are recommended ineligible for state and federal registers. Therefore, there are no anticipated direct or indirect impacts to historic resources.

5.7.2.6 Cumulative Impacts

Section 5.18, Cumulative Impact Analysis, presents information on other projects that could affect resources as Midway. The reader is referred to that section for details regarding each of these projects and their impacts.

Each of the projects discussed in Section 5.18 was assessed in conjunction with Midway to ascertain the potential contribution of Midway to cumulative impacts to cultural resources in the region. This analysis determined that cumulative impacts from Midway on regional cultural resources is limited because mitigation measures shall be implemented to reduce project-related impacts on any newly discovered

resources (i.e. buried archaeological sites) to a less-than-significant level. In the event that a significant buried archaeology site is encountered during construction, data recovery and/or site avoidance would ensure that the information content of site would be retained. These measures would limit the cumulative impacts Midway would have on cultural resources in the region.

5.7.3 Mitigation Measures

5.7.3.1 Mitigation of Construction Related Impacts

The proposed project is not anticipated to impact significant cultural resources; however, mitigation measures have been provided that would reduce the potential impacts to cultural resources to a less than significant level in the event that an archaeological site is identified within the project boundaries during construction. The mitigation measures and procedures described below would apply to any cultural resources within the identified Area of Potential Effect (APE) for the proposed project. These mitigation measures also apply to cultural resources determined not to be significant by the CEC and OHP. With implementation of the Applicant-committed mitigation measures listed below, no significant unavoidable impacts to known cultural resources are expected to occur.

CUL-1: In the event, cultural resources are encountered prior to or during construction activities, including subsurface excavation, construction activities in the immediate vicinity of the identified resource shall be halted and a qualified archaeologist shall identify the nature and boundary of the finds, and assess whether the proposed activities will impinge upon a cultural resource. Routes of any access roads that must be built or graded that are outside of areas previously surveyed for cultural resources will be subjected to archaeological survey prior to construction. In the event the resource is identified as a potentially significant cultural resource, planned construction activities shall be modified to the resource if feasible, or if not feasible, the archaeologist shall identify the proper course of testing, excavation, recovery, and documentation to be undertaken in order to reduce project related impacts to a less than significant level. In the event that archaeological resources are discovered during the course of construction activities related to the proposed project, grading and/or excavation activities within 100 feet of the potentially significant resource shall be monitored by a qualified archaeologist.

CUL-2: In the event that archaeological resources are discovered during the course of construction activities related to the proposed project, a Native American monitor shall be present during archaeological cultural resource testing and/or data recovery operations at archaeological cultural resources that appear

to have a prehistoric or ethnographic component. The Native American monitor shall be retained either directly by the project Applicant, or through the subconsultant conducting the actual fieldwork.

CUL-3: Midway shall ensure that impacts to cultural resources related to the unanticipated discovery of human remains be reduced to below the level of significance by ensuring that, in the event human remains are encountered, construction in the area of finding shall cease and the remains shall stay in-situ pending definition of an appropriate plan. The Los Angeles County Coroner (Coroner) shall be contacted to determine the origin of the remains. In the event the remains are Native American in origin, the Native American Heritage Commission shall be contacted to determine necessary procedures for protection and preservation of remains, including reburial, as provided in the State CEQA Guidelines, Section 15064.5(e), "CEQA and Archaeological Resources," CEQA Technical Advisory Series.[39]

In the event of accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the following steps shall be taken:

There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:

(A) The Coroner must be contacted to determine that no investigation of the cause of death is required, and

(B) If the Coroner determines the remains to be Native American:

1. The Coroner shall contact the Native American Heritage Commission within 24 hours.
2. The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American.
3. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98.
4. Where the following conditions occur, the landowner of his/her authorized representative shall rebury the Native American human remains and associated grave goods, with appropriate dignity, in the property in a location not subject to further subsurface disturbance:

   (a) The Native American Heritage Commission is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 24 hours after being notified by the commission.

   (b) The descendant in identified fails to make a recommendation.

[39] California Resources Agency. 16 September 2004. California Environmental Quality Act, Article 5, §15064.5(e):"Determining the Significance of Impacts to Archaeological and Historical Resources." Available at: http://ceres.ca.gov/topic/env_law/ceqa/guidelines/art5.html

(c) The landowner or his/her authorized representative rejects the recommendation of the descendent, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.

5.7.4 LORS Compliance

Cultural resource LORS are described below.

The archaeological survey described above served to identify cultural resources present within and immediately adjacent to the Midway site and associated project components. The Midway project is considered a state-level undertaking and as such, is subject to state LORS for paleontological and cultural resources. Any cultural resource potentially affected by the project will be subject to compliance with the provisions outlined in CEQA/CRHR and possibly Section 106 of the NHPA. If a cultural resource is discovered during construction, and cannot be avoided, a program of site evaluation will be undertaken to ascertain resource significance under CEQA/CRHR and Section 106 of the NHPA. If such a resource is determined to be significant, mitigation measures will be developed in concert with the CEC, SHPO, and other agencies as appropriate (Section 7.3.3). At this time no specific permit requirements have been identified at the federal, state, or local levels to perform any cultural resources work that may subsequently be required during the construction or operation phases of the project.

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Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 1 Date ____

Technical Area: **Cultural Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Existing conditions: Sec 5.7.1, Pg. 5.7-1 Current Survey Results: Sec. 5.7.1.11.1 Impacts: Sec. 5.7.2.5, 5.7.2.6 Mitigation: Sec. 5.7.3		
Appendix B (g) (2) (A)	A brief summary of the ethnology, prehistory, and history of the region in which the project site and related facilities are located and maps at a scale of 1:24,000, indicating areas of ethnographic occupation. The region may vary depending on the extent of the territory occupied or used by prehistoric cultures indigenous to the area in which the project is located.	Ethnology: Sec. 5.7.1.6 Prehistory: Sec. 5.7.1.5 History: Sec. 5.7.1.7 Map: Figure 5.7-2		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 1 Date ____

Technical Area: **Cultural Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (2) (B)	A description of all literature searches and field surveys used to provide information about known cultural resources in the project vicinity. If survey records of the area potentially physically affected by the project are not available, and the area has the potential for containing significant cultural resources, the applicant shall submit a new or revised survey for any portion of the area lacking comprehensive survey data. A discussion of the dates of the surveys, methods used in completing the surveys, and the identification and qualification of the individuals conducting the surveys shall be included.	Literature search: Sec 5.7.1.10, 5.7.1.11 Surveys: Sec. 5.7.1.11 Appendix J - Confidential Survey dates: 11 Sec. 5.7.1, Table 5.7-1, Pg. 5.7-9 Appendix J - Confidential Survey methods: Sec. 5.7.1.11.1 Appendix J - Confidential Identification and qualifications of those conducting surveys: Sec. 5.7.1.9 Appendix J - Confidential		
Appendix B (g) (2) (C)	A discussion of the sensitivity of the project area described in subsection (g)(2)(A) and the presence and significance of any known archeological sites and other cultural resources that may be affected by the project. Information on the specific location of archeological resources shall be included in a separate appendix to the application and submitted to the Commission under a request for confidentiality pursuant to Title 20, California Code of Regulations, § 2501 et seq.	Area sensitivity: Appendix J - Confidential Site presence and significance: Sec. 5.7.1.10, Sec. 5.7.1.11, 5.7.1.10.3 Confidential filing: Appendix J - Confidential		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 1 Date ____

Technical Area: **Cultural Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (2) (D)	A summary of contacts and communications with, and responses from, Native American representatives who may have an interest in heritage lands and/or resources potentially affected by the proposed project.	Native American contacts: Sec. 5.7.1.8, Appendix J - Confidential		
Appendix B (g) (2) (E)	In the discussion on mitigation and monitoring prepared pursuant to subsection (g)(1), a discussion of any educational programs proposed to enhance awareness of potential impacts to archeological resources by employees and contractors, measures proposed for mitigation of impacts to known cultural resources, and a set of contingency measures for mitigation of potential impacts to previously unknown cultural resources.	Mitigation and monitoring: Sec. 5.7.3.1		
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	Laws, regulations: Sec. 5.7.2.1, Sec. 5.7.2.2, 5.7.2.3, Table 5.7-2, Pg. 5.7-14 LORS compliance: Sec 5.7.4, Table 5.7-2		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Agency jurisdiction: Table 5.7-2, Pg. 5.7-14		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	LORS conformity: Sec. 5.7.4, Pg. 5.7-18		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 1 Date ____

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Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Agency contacts: Sec: 5.7.2.4 Agency Contacts		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	NA		

5.8 PALEONTOLOGICAL RESOURCES

5.8.1 Introduction

Paleontological resources (fossils) are the remains or traces of prehistoric animals and plants. Fossils are important scientific and educational resources because of their use in: 1) documenting the presence and evolutionary history of particular groups of now extinct organisms; 2) reconstructing the environments in which these organisms lived; and 3) in determining the relative ages of the strata in which they occur. Fossils are also important in determining the geologic events that resulted in the deposition of the sediments that entombed them and their subsequent deformation.

This section of the AFC summarizes the potential environmental impacts on paleontological resources that may result from construction of the Midway project. Section 5.8.2 describes the existing environment that could be affected by the proposed project. Section 5.8.3 addresses potential impacts on paleontological resources resulting from construction and operation of the proposed project. Section 5.8.4 addresses the potential for cumulative impacts on paleontological resources from the project, while Section 5.8.5 discusses the issue of mitigation measures. The involved agencies and agency contacts are provided in Section 5.8.6, while Section 5.8.7 lists the federal and state LORS and the professional standards that protect paleontological resources. Section 5.8.8 discusses the status of permits required and permit schedule. Finally, Section 5.8.9 lists the references used in preparing this document.

The paleontological resources inventory and impact assessment was prepared by Dr. Lanny H. Fisk, PhD, PG, a California registered Professional Geologist and Senior Paleontologist of PaleoResource Consultants (refer to Confidential Appendix K). It meets all requirements of the CEC (CEC, 2000) and standard measures for mitigating adverse construction-related environmental impacts to significant paleontological resources established by the Society of Vertebrate Paleontology (SVP, 1995, 1996).

A paleontological resource is considered significant if:

- It provides important information on the evolutionary trends among organisms, relating living organisms to extinct organisms
- It provides important information regarding development of biological communities or interaction between botanical and zoological biota
- It demonstrates unusual circumstances in biotic history
- It is in short supply and in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and is not found in other geographic localities

Under the CEQA guidelines, (PRC 15064.5 (a) (2)), public agencies must treat all historical and cultural resources as significant unless the preponderance of evidence demonstrates that they are not historically or culturally significant. In keeping with significance criteria of the Society of Vertebrate Paleontology (1995), all vertebrate fossils are categorized as having significant scientific value.

5.8.2 Affected Environment

5.8.2.1 Geographic Location

The site proposed for construction of the Midway is located in a rural area in western Fresno County, California. The approximate location of the proposed Midway is latitude 36°39'06"N, longitude 120°35'05"W, in the SW ¼ of Section 5, T. 15 S., R. 13 E. in the U. S. Geological Survey (USGS) Chaney Ranch 7.5-minute (1:24,000 scale) Quadrangle. The site is located on the west-central portion of the San Joaquin Valley, near the geographic center of the State of California. The San Joaquin Valley is a geologic phenomenon that comprises approximately two thirds of the southern half of a north by northwest traversing synclinorium (large valley). The San Joaquin Valley has also been referred to in geologic literature as Valle Grande (Clark, 1929), Great Valley (Fenneman, 1931; Hackel, 1966), Great Interior Valley (Harradine, 1950), Great San Joaquin Valley (Piper et al., 1939; Davis et al., 1957), or California Trough (Piper et al., 1939). The San Joaquin Valley Physiographic Province is located between the Sierra Nevada Physiographic Province on the east and the Coast Ranges Physiographic Province on the west. The general project area is bounded on the west by the upper portion of the gently inclined alluvial fan known as the Panoche Fan (Jennings and Strand, 1958; Miller et al., 1971) or Panoche Creek Fan (Bull, 1964a, 1964b; Lettis, 1982a, 1982b), which lies at the base of the low-lying foothills of the Diablo Range. The Diablo Range is the easternmost ridge of the Coast Ranges. The surrounding terrain to the east of the proposed project site is the continuation of the gently inclined alluvial fan built by Panoche Creek and adjacent smaller streams, such as Silver Creek, which head into the Diablo Range.

Land uses surrounding the project site consists of Wellhead Peaker plant to the southeast, CalPeak Panoche to the southwest, a PG&E substation to the west, West Panoche Road and a 5-plex to the north of the project site. Other nearby land uses consists of irrigated farmland; primarily pomegranates, and three single-family residences southwest of the site near the West Panoche Road/Davidson Avenue intersection.

5.8.2.2 Regional Geologic Setting

The general geology of the San Joaquin Valley has been described in some detail by Hoots et al. (1954), Davis et al. (1957, 1959), Hoffman (1964), Croft and Wahrhaftig (1965), Hackel (1966), Marchand (1977), Lettis (1982a, 1982b), Bartow (1987, 1991), Beyer and Bartow (1988), and Calloway and Rennie (1991), among others. The information in these and other published reports form the basis of the following discussion. Individual publications are incorporated into this report and referenced where appropriate. Older geological literature, such as *"Geological literature on the San Joaquin Valley of California"* by Maher et al. (1973) was also utilized in analyzing paleontological resources within the project site.

The geology in the vicinity of the proposed Midway site has previously been described and mapped by Anderson (1911), Anderson and Pack (1915), Mendenhall et al. (1916), Jennings and Strand (1958), Bull (1964b), Davis et al. (1957, 1959), Miller et al. (1971), Croft (1972), and Chin et al. (1993). Surficial geologic mapping of the Project site and vicinity has been provided at a scale of 1:750,000 by Jennings (1977); at a scale of 1:500,000 by Jenkins (1938) and Bartow (1991); at a scale of 1:250,000 by Jennings and Strand (1958), Bull (1964b), and Chin et al. (1993); and at a scale of 1:125,000 by Anderson and Pack (1915) and Miller et al. (1971). The area immediately to the west of the proposed Midway site was

mapped at a scale of 1:50,000 by Bartow (1996). No 1:24,000-scale geologic maps are currently available for the immediate Project area. The aspects of geology pertinent to this report are the types, distribution, and age of sediments immediately underlying the Project area and their probability of producing fossils during Project construction. The site-specific geology in the vicinity of the Project area is discussed separately below.

The San Joaquin Valley is a great structural depression between the westerly-tilted Sierra Nevada block on the east and the complexly folded and faulted Coast Ranges on the west. The valley is filled with thick Mesozoic and Tertiary marine sediments covered by a relatively thin veneer of Quaternary alluvial sediments (Bailey, 1966). The west margin of the San Joaquin Valley is a discontinuous series of individual and coalescing alluvial fans, with their apices located where streams drain the eastern foothills of the Coast Range. These low relief alluvial fans form a nearly continuous belt between the dissected uplands of the Coast Range and the nearly flat basin plain of the San Joaquin Valley. They are composed of alluvial deposits laid down primarily during the Plio-Pleistocene epoch. Each alluvial fan consists of a mass of coarse to fine rock debris that splays outward from the mouth of its primary stream channel onto the valley floor as a fan-like deposit of well-sorted sand and gravel encased in a matrix of finer sediments, chiefly poorly sorted fine sand and silt deposited away from the stream channels on the alluvial plain. Our current interpretations and understanding of the alluvial deposits of major rivers flowing into the San Joaquin Valley lies in Arkley's (1962, 1964) studies of the Merced, Tuolumne, and Stanislaus River fans, Bull's (1964a) study of alluvial fans along the western margin of the Central Valley, Janda's (1966; Janda and Croft, 1965) study of alluvium of the upper San Joaquin River, Shlemon's (1967, 1972) study of the American River fan, Atwater's (1980) study of the Mokelumne River fan, Lettis' (1982a, 1982b) study of alluvial fans along the west central margin of the San Joaquin Valley, and most recently, the work of Weissman et al. (2002) on the Kings River fan.

The alluvial deposits accumulated on alluvial fans along the western margin of the San Joaquin Valley consist of coarse- to fine-grained sediment eroded from Tertiary and older volcanic, plutonic, and metamorphic rocks in the Diablo Range to the west (Bull, 1 964a; Lettis, 1982a, 1982b). The alluvial fan deposits grade east- or slightly northeast-ward through gradually decreasing grain sizes from coarse gravel at the Coast Range foothills to clay-rich silt on the San Joaquin Valley basin plain. The gravel, sand, silt, and clay that compose these alluvial fans have in the past produced significant fossils, primarily large land mammals such as mammoths, mastodons, camels, bison, and horses. Paleontological resources are discussed below.

5.8.2.3 Resource Inventory Methods

To develop a baseline paleontological resource inventory of the Midway site and surrounding area and to assess the potential paleontological productivity of each stratigraphic unit present, the published as well as available unpublished geological and paleontological literature was reviewed; and stratigraphic and paleontologic inventories were compiled, synthesized, and evaluated (see below). These methods are consistent with CEC (2000) and SVP (1995) guidelines for assessing the importance of paleontological resources in areas of potential environmental effect. No subsurface exploration was conducted for this assessment. Stratigraphy was observed in numerous road cuts, walls of irrigation ditches and ponds, and natural stream banks during site surveys on 08, 09, and 19 June 2006.

Geologic maps and reports covering the bedrock and surficial geology of the Midway site and vicinity were reviewed to determine the exposed and subsurface rock units, to assess the potential paleontological productivity of each rock unit, and to delineate their respective areal distribution in the project area. Available soil surveys (Harradine, 1950; Arroues, 2006) and aerial photographs of the area were also examined to aid in determining the areal distribution of distinctive sediment and soil types. In addition, the logs from geotechnical boreholes drilled in the vicinity of the Midway site were examined and interpreted.

The number and locations of previously recorded fossil sites from rock units exposed in and near the project site and the types of fossil remains each rock unit has produced were evaluated based on published and unpublished geological and paleontological literature (including previous environmental impact assessment documents and paleontological resource impact mitigation program final reports). The literature review was supplemented by an archival search at the University of California Museum of Paleontology (UCMP) in Berkeley, California, for additional information regarding the occurrence of fossil sites and remains in and near the project site.

Field surveys, which included a visual inspection of exposures of potentially fossiliferous strata in the project area, were conducted to document the presence of sediments suitable for containing fossil remains and the presence of any previously unrecorded fossil sites. The field surveys for this assessment were conducted on June 8, 9, and 19, 2006 by Dr. Lanny H. Fisk, PhD PG, Senior Paleontologist with PaleoResource Consultants. During the field survey, stratigraphy was observed in road cuts, stream and ditch banks, and the walls of irrigation ponds. Less than two miles north of the proposed Midway site, the banks of Panoche Creek expose up to twenty five (25) feet (7.5 meters) of stratigraphy. Several irrigation ponds with up to eight feet (2.4 meters) of exposed sediments were present within three miles of the project area.

5.8.2.4 Paleontological Resource Assessment Criteria

SVP (1995) considers, any fossil specimen significant, unless demonstrated otherwise and, therefore, protected by environmental statutes. This position is held because vertebrate fossils are uncommon and only rarely will a fossil locality yield a statistically significant number of specimens representing the same species. In fact, vertebrate fossils are so uncommon that, in most cases, each fossil specimen found will provide additional important information about the characteristics or distribution of the species it represents.

A stratigraphic unit (such as a formation, member, or bed) known to contain significant fossils is considered to be “sensitive” to adverse impacts if there is a high probability that earth-moving or ground-disturbing activities in that rock unit will either disturb or destroy fossil remains. This definition of sensitivity differs fundamentally from that for archaeological resources:

> *It is extremely important to distinguish between archaeological and paleontological (fossil) resource sites when defining the sensitivity of rock units. The boundaries of archaeological sites define the areal extent of the resource. Paleontologic sites, however, indicate that the containing sedimentary rock unit or formation is fossiliferous. The limits of the entire rock formation, both areal and stratigraphic, therefore define the scope of the paleontologic potential in each case.* (SVP, 1995)

Fossils are an integral component of the rock unit below the ground surface and, therefore, are not observable unless exposed by erosion or human activity. Thus, a paleontologist cannot know either the quality or quantity of fossils present before the rock unit is exposed as a result of natural erosion processes or earth-moving activities. The paleontologist can only make conclusions on sensitivity to impact based upon what fossils have been found in that rock unit in the past, along with a judgment on whether or not the depositional environment of the sediments that compose the rock unit was likely to result in the burial and preservation of fossils. Since, the presence or location of fossils within a rock unit cannot be known without exposure resulting from erosion or excavation, under SVP (1995) standard guidelines, an entire rock unit is assigned the same level of sensitivity based on recorded fossil occurrences.

Fossils are seldom uniformly distributed within a rock unit. Most of a rock unit may lack fossils, but at other locations within the same rock unit concentrations of fossils may exist. Even within a fossiliferous portion of the rock unit, fossils may occur in local concentrations. For example, Shipman (1977, 1981) excavated a fossiliferous site using a three-dimensional grid and removed blocks of matrix of a consistent size. The site chosen was known prior to excavation to be richly fossiliferous, yet only 17 percent of the blocks actually contained fossils. These studies demonstrate the physical basis for the difficulty in predicting the location and quantity of fossils in advance of project-related ground disturbance. It is not possible to determine where fossils are located without actually disturbing a rock unit; therefore, monitoring of excavation by an experienced paleontologist during construction-related ground disturbances increases the probability that fossils will be discovered and preserved.

Using SVP (1995) criteria, the paleontological importance or sensitivity (high, low, or undetermined) of each rock unit exposed in a project site or surrounding area is the measure most amenable to assessing the significance of paleontological resources. The paleontological sensitivity of a stratigraphic unit reflects: 1) its potential paleontological productivity, and 2) the scientific significance of the fossils it has produced. This method of paleontological resources assessment is the most appropriate because the areal distribution of each rock unit, and corresponding discrete levels of paleontological importance, can be delineated on a topographic or geologic map.

The potential paleontological productivity of a stratigraphic unit exposed in a project area is based on the abundance/densities of fossil specimens and/or previously recorded fossil sites in exposures of the unit in and near a project site. The underlying assumption of this assessment method is that exposures of a stratigraphic unit in a project site are most likely to yield fossil remains both in quantity and density similar to those previously recorded from that stratigraphic unit in and near the project site.

An individual fossil specimen is considered scientifically important if it is:

- Identifiable
- Complete
- Well-preserved
- Age-diagnostic
- Useful in paleoenvironmental reconstruction
- A type or topotypic specimen

- A member of a rare species
- A species that is part of a diverse assemblage
- A skeletal element different from, or a specimen more complete than, those now available for that species

All identifiable land mammal fossils are considered scientifically important because of their potential use in providing accurate age determinations and paleoenvironmental reconstructions for the sediments in which they occur. Vertebrate remains are comparatively rare in the fossil record. Although fossil plants are usually considered of lesser importance because they are less helpful in age determination, they are actually more sensitive indicators of their environment (Miller, 1971) and, thus, as sedentary organisms, more valuable than mobile animals for paleoenvironmental reconstructions. For marine sediments, invertebrate and marine algal fossils, including microfossils, are scientifically important for the same reasons that land mammal and/or land plant fossils are valuable in terrestrial deposits. The value or importance of different fossil groups varies depending on the age and depositional environment of the stratigraphic unit that contains the fossils.

Rock units underlying the project site were assessed to establish the paleontological importance and sensitivity of each stratigraphic unit exposed in or near the project site:

- The potential paleontological productivity of each rock unit in and/or near the project site was evaluated based on the density of fossil remains and/or previously recorded and newly documented fossil sites.

- The scientific importance of fossil remains recorded from a stratigraphic unit exposed near the project site was assessed.

- The paleontological importance of a rock unit was assessed, based on its documented and/or potential fossil content in the area surrounding the project site.

5.8.2.4.1 Categories of Sensitivity

In its standard guidelines for assessment and mitigation of adverse impacts to paleontological resources, the SVP (1995) established three categories of sensitivity for paleontological resources: high, low, and undetermined.

High Sensitivity Stratigraphic units in which fossils have been previously found have a high potential to produce additional fossils and are therefore considered to be highly sensitive. In the significance criteria of the SVP (1995), all vertebrate fossils are categorized as having significant scientific value and all stratigraphic units in which vertebrate fossils have previously been found have high sensitivity. In areas of high sensitivity, full-time monitoring is recommended during any project-related ground disturbance.

Low Sensitivity Stratigraphic units that are not sedimentary in origin or that have not been known to produce fossils in the past are considered to have low sensitivity. Monitoring is usually not recommended nor needed during excavation in a stratigraphic unit with low sensitivity.

Undetermined Sensitivity Stratigraphic units that have not had any previous paleontological resource surveys or any fossil finds are considered to have undetermined sensitivity. After reconnaissance surveys, observation of artificial exposures (such as road cuts) and natural exposures (such as stream banks), and possible subsurface testing (such as augering or trenching), an experienced, professional paleontologist can often determine whether the stratigraphic unit should be categorized as having high or low sensitivity.

5.8.2.5 Resource Inventory Results

5.8.2.5.1 Stratigraphic Inventory

Regional geologic mapping of the proposed Midway site and vicinity has been provided by Wahrhaftig *et al.* (1993; 1:1,000,000 scale); Jennings et al. (1977; 1:750,000 scale), Jenkins (1938; 1:500,000 scale), Bartow (1991; 1:500,000 scale), Jennings and Strand (1958; 1:250,000 scale), Bull (1964b; 1:250,000 scale), and Chin et al. (1993, 1:250,000 scale). Larger scale geologic mapping of the project site has been provided by Anderson and Pack (1915; 1:125,000 scale) and Miller et al. (1971; 1:125,000 scale). Unfortunately, no 1:62,500- or 1:24,000-scale geologic maps are currently available for the immediate project area. In these geologic maps of the Late Cenozoic deposits of the project area, geologists have not always used formally named stratigraphic units, nor have they consistently used the same map units.

Jennings and Strand (1958, 1:250,000 scale) simply mapped the area in the vicinity of the proposed project as "Recent alluvial fan deposits." Bull (1964b, 1:250,000 scale) mapped the entire Panoche Fan as Pleistocene and Holocene "fan deposits." Chin et al. (1993, 1:250,000 scale) mapped nearly the entire Panoche Creek Fan as "younger alluvium (Holocene)." To the west of the Midway site, Chin et al. (1993) mapped the uppermost portion of the Panoche Creek Fan as "older alluvium (Pleistocene)." In the most detailed geologic map of the area available, Miller et al. (1971, 1:125,000 scale) mapped the entire Panoche Creek Fan simply as Pleistocene and Holocene alluvium. Bartow (1991, 1:50,000 scale) mapped the area immediately west of the proposed Midway site as "younger alluvium (Holocene)", the area northwest and southwest of the "younger alluvium" as "younger alluvial fan deposits (Holocene)", and the uppermost portion of the Panoche Fan as "older alluvial fan deposits (Holocene and Pleistocene)." All that these geologic maps tell us is that in the vicinity of the proposed Midway site the Panoche Creek Fan has exposed at the surface Holocene and/or Pleistocene alluvial fan deposits.

Since geological maps are a depiction of geological materials exposed only at the surface of the Earth, they must be interpreted to determine what geological materials will most likely be found in the subsurface, underlying the surficial deposits. To aid in this interpretation, the stratigraphy exposed in natural stream banks and artificial exposures such in the banks of ponds and ditches is very helpful. In addition, geological materials in wells and boreholes are also helpful. Natural exposures to depths of 25 feet (7.6 meters) are available in the stream banks of Panoche Creek approximately 1.85 miles (3.0 kilometers) north of the proposed site. In addition, logs of boreholes drilled on and near the project site during the geotechnical investigation were available for study and interpretation. The logs of several ground-water test holes in western Fresno County have also been published by Beard and Laudon (1988).

In the project vicinity, the geological materials composing the Panoche Creek alluvial fan have been subdivided into stratigraphic units and named differently by different geologists. Fortunately, the difficulty in assigning a name to a stratigraphic unit does not affect its potential for producing significant paleontological resources. It only makes it more difficult to compare descriptions of fossil sites, which

typically use either formally named stratigraphic units (formations and members) or North American Land Mammal Ages (NALMA), such as Blancan, Irvingtonian, or Rancholabrean.

The task of subdividing alluvial fan deposits into formal stratigraphic units is complicated by the fact that alluvial sediments are often lithologically similar. Bartow (1996) stated the problem as follows: "*the unnamed Quaternary alluvial deposits are lithologically similar and are difficult to differentiate.*" Davis and Hall (1959) addressed this problem by stating:

> "*An important problem in attempting to differentiate geologic units in alluvial areas is that the sediments often are derived from a common source and are deposited in similar environments…. Thus, the formations offer no textural or lithologic bases for subdivision. Nevertheless, the use of the topographic expression of the units in conjunction with the development of their soils makes it possible to define formations.*"

In a doctoral dissertation at the University of California at Berkeley, which was also published as an U. S. Geological Survey Open-File Report, Lettis (1982a, 1982b) described and mapped the Late Cenozoic stratigraphy of alluvial fans along the western margin of the central San Joaquin Valley from just north of the Panoche Creek Fan. He also discussed the geology of the Panoche Creek Fan and compared it to the area he studied in more detail. Lettis' informally named stratigraphic units are well defined, correlated with named stratigraphic units elsewhere, and are also applicable to the sedimentary sequence exposed on the Panoche Creek Fan. Lettis divided the unconsolidated alluvial fan deposits into three stratigraphic units. In order of decreasing age, these are the Middle to Late Pleistocene "Los Banos alluvium", which he correlated with the Riverbank Formation of Marchand and Allwardt (1981); the Late Pleistocene to possibly Early Holocene "San Luis Ranch alluvium", which he correlated with the Modesto Formation of Marchand and Allwardt (1981); and the Holocene "Patterson alluvium." Since the proposed correlations with formally named formations on the east side of the San Joaquin Valley cannot be conclusively demonstrated, Lettis' informally named units were used in describing the site-specific stratigraphy in the vicinity of the Midway site.

Using the criteria of Lettis (1982a, 1982b), unconsolidated and semi-consolidated sediments composing the Panoche Creek alluvial fan can be divided into three informally named stratigraphic units, from oldest to youngest: the Middle to Late Pleistocene "Los Banos alluvium", mapped by various geologists as being exposed on the upper alluvial fan; Late Pleistocene to possibly Early Holocene "San Luis Ranch alluvium"; and a thin veneer of Holocene "Patterson alluvium". These three stratigraphic units overlie each other with increasing thickness on the lower portion of the alluvial fan and in the floodplain of the San Joaquin River. Each of these stratigraphic units has yielded fossil remains at previously recorded localities within the Central Valley.

"Los Banos alluvium" The Middle to Late Pleistocene "Los Banos alluvium" is not easily distinguished from either older or younger alluvial deposits. The principal differences between the "Los Banos alluvium" and the older alluvium of the Tulare Formation are stratigraphic position, degree of consolidation, topographic expression, attitude (tilted versus flat-lying), and fossil content. According to Savage (1951), Lettis (1982a, 1982b), and Bartow (1991), alluvial sediments within and adjacent to the Coast Ranges, which often contain Late Pleistocene and Holocene fossil faunas, can be distinguished from older Plio-Pleistocene sediments, such as the Tulare Formation, by their relatively flat-lying attitude, while, in contrast, the older sediments containing Pliocene (Blancan NALMA) and Early to Middle

Pleistocene (Irvingtonian NALMA) fossil faunas are often tilted. This criterion has also been helpful to others in distinguishing older alluvium from younger alluvium (see for instance, Taliaferro, 1951; Davis et al., 1957; Hall, 1958; Miller, 1971; and Helley et al., 1972). Since alluvial sediments referred to the Tulare Formation are exposed only on the uppermost Panoche Creek alluvial fan and are overlain by an increasing thickness of younger deposits on the middle to lower fan, they are not likely to be impacted by Midway project construction and will not be discussed further in this report.

From the small scale geologic mapping available, it is not at all clear whether the "Los Banos alluvium" will be impacted by Midway project-related excavations. However, there are two lines of evidence that suggest that this stratigraphic unit may be impacted. First, sediments of the "Los Banos alluvium" appear to outcrop in the stream banks of Panoche Creek less than two miles northwest of the proposed Midway site. Second, boreholes in the vicinity of the Midway site appear to have penetrated "Los Banos alluvium." These lines of evidence will be further expanded below.

The stream banks of Panoche Creek expose up to 25 feet (7.6 meters) of stratigraphic section, including in the lower part a poorly sorted, cross-bedded, pebble to cobble sand containing armored mud balls and abundant white to buff-colored clasts of subangular to subrounded diatomite. Lettis (1982a, 1982b) stated that such clasts of diatomite derived from the Kreyenhagen and Moreno Formations were common in the "Los Banos alluvium", but less common in the "San Luis Ranch alluvium." Lettis illustrated the abundance of diatomite clasts with a photograph of the upper member of "Los Banos alluvium" near the mouth of Panoche Creek. Thus, the abundance of diatomite clasts in the pebble to cobble sand exposed in the lower walls of Panoche Creek northwest of the proposed Midway site suggests that this lithotype represents the "Los Banos alluvium." Overlying the pebble to cobble sand referred to as the "Los Banos alluvium" is a 10-12 foot thick, poorly to well bedded silt and sand sequence, which I interpret to be the "San Luis Ranch alluvium." The top of the Panoche Creek stratigraphic section is capped by a 1 to 3 foot thick sandy silt unit, which is interpreted to be "Patterson alluvium."

The second line of evidence supporting the interpretation that the "Los Banos alluvium" underlies the proposed Midway site is the presence of several buried soils (paleosols) in the sediment sequence penetrated by boreholes. The boreholes drilled in the vicinity of the Midway site penetrated unconsolidated sediments of sand, silt, and clay with some gravel. Also included in the sedimentary sequence were several caliche-cemented, discontinuous paleosols. Based on the presence of abundant caliche, iron oxide stained sediments, and the presence of root casts and/or root pores suggest the latter. These are diagnostic features for recognizing buried soils (Lettis 1982a, 1982b). Within the logs of these boreholes, at least three and possibly five paleosols, at depths from 7-10, 18-24, 28-32, 41-46, and 48-50 foot were identified. The paleosol at approximately 48-50 foot depth was also reported by Beard and Laudon (1988) in a well drilled in the NW ¼ of the NW ¼ of Section 8 approximately 4½ miles (7.3 kilometers) north of the Midway site. Lettis (1982a, 1982b) does not describe paleosols within the Holocene "Patterson alluvium", but he does describe laterally persistent, caliche-cemented paleosols in both the underlying "San Luis alluvium" and "Los Banos alluvium", stating that: "*Buried soils commonly separate the alluvial units of different age on the upper fan*." Lettis recognized "*at least 3 poorly to well preserved buried soils*" within the sedimentary sequence he named "San Luis Ranch alluvium" and "Los Banos alluvium." Thus, it is interpreted that the paleosol-bearing sediment sequence underlying the Midway site represents both the "San Luis Ranch alluvium" and "Los Banos alluvium."

"San Luis Ranch alluvium" The Late Pleistocene to possibly Early Holocene "San Luis Ranch alluvium" informally named by Lettis (1982a, 1982b) is composed of interbedded, unconsolidated, and poorly sorted, yellowish brown sands and silts with lesser amounts of pebble to cobble conglomerate. Lettis correlated the "San Luis Ranch alluvium" with the Modesto Formation found on the east side of the San Joaquin Valley. Marchand and Allwardt (1981) gave the age of the Modesto Formation between about 12,000 and 42,400 years BP, Late Pleistocene.

The Quaternary alluvium of the Panoche Creek Fan assigned to the "San Luis Ranch alluvium" is lithologically indistinct from the underlying "Los Banos alluvium" and can be distinguished from it only by stratigraphic position and age. In addition, the top of the "Los Banos alluvium" commonly bears a well developed buried soil (Lettis, 1982a, 1982b).

"Patterson alluvium" The Holocene "Patterson alluvium" forms a thin veneer of primarily sandy silt, clayey silt, and silty clay overlying the "San Luis Ranch alluvium" over most of the Panoche Creek Fan. It varies from only a few inches in thickness on the upper alluvial fan to over four foot on the lower fan and floodplain of the San Joaquin River. The contact of the "Patterson alluvium" with the underlying "San Luis Ranch alluvium" is sometimes sharp but in other places is gradational.

Site Geology The Midway site is underlain by alluvial fan deposits of Pleistocene to Holocene age informally named the "Los Banos alluvium", "San Luis Ranch alluvium", and "Patterson alluvium", from oldest to youngest. This interpretation is supported by the presence of these units in the bluffs along Panoche Creek and their presence in boreholes drilled at and near the Midway site. Each of these stratigraphic units is likely to be impacted by excavations for Midway construction.

Paleontological Resource Inventory An inventory of the paleontologic resources of each stratigraphic unit likely to be impacted at the Midway project site is presented below and the paleontological importance of these resources is assessed. The literature review and UCMP archival records search conducted for this inventory documented no previously recorded fossil sites within the very limited footprint of the actual Midway site. However, a number of fossil sites were documented as occurring in sediments of either the "Los Banos alluvium" or the "San Luis Ranch alluvium" in the project vicinity. In addition, fossil remains were found at several previously unrecorded fossil sites during the field survey of the proposed project site and vicinity conducted for this assessment.

Several vertebrate fossil localities have been reported from Quaternary sediments referable to either the "Los Banos alluvium" or "San Luis Ranch alluvium" in the general vicinity of the Midway site in the San Joaquin Valley. Some of these sites are documented in surveys of Quaternary land mammal fossils made by Stirton (1939, 1951), Hay (1927), Savage (1951), Lundelius et al. (1983), and Jefferson (1991b), or in surveys of Quaternary birds, reptiles, and amphibians made by Miller and DeMay (1953) and Jefferson (1991a).

"Los Banos alluvium" Lettis (1982a, 1982b) reported bone and tooth fragments of a Pleistocene horse from a paleosol in the uppermost "Los Banos alluvium" and bone fragments of bison from the upper member. Beard and Laudon (1988) recorded "root pores" from a depth of 49 feet in a test hole drilled approximately 4½ miles north of the proposed Midway site. At this depth these ichnofossils probably came from the "Los Banos alluvium." Bull (1964b) reported "voids left by disintegration of entrapped vegetation" and "root cavities" in alluvial fan sediments of the Panoche Fan; however, the age of those

sediments is in question. The UCMP lists only one fossil locality from western Fresno County recorded as being from the Riverbank Formation, which following Lettis (1982a, 1982b) is equivalent to the "Los Banos alluvium." This UCMP locality, known as the Laguna Seca Ranch locality (V-81121), produced bones of a Rancholabrean-age horse.

Since vertebrate fossils have been previously reported from the "Los Banos alluvium" and since depositional conditions observed in exposures in the vicinity of the proposed project site appear to be favorable for the preservation of fossils, the "Los Banos alluvium" is judged to have high sensitivity following SVP (1995) criteria. However, since it is uncertain whether or not this formation will be impacted by project ground disturbance, there is a low probability of adverse impacts on paleontological resources in the "Los Banos alluvium." In addition, during a field survey of prospective fossiliferous sediments in the project vicinity, no fossils were found in the very limited exposures of sediments referred to the "Los Banos alluvium" along the bluffs of Panoche Creek.

"San Luis Ranch alluvium" Lettis (1982a, 1982b) reported bone fragments of a horse dated as 16,600 C^{14} years before present from the upper member of the "San Luis Ranch alluvium." He also reported fossil wood with a radiocarbon date of 43,800 years and fossil roots with a radiocarbon date of 31,300 years, both of which would presumably be from the "San Luis Ranch alluvium" since the probable age of this stratigraphic unit was given by Lettis (1982a, 1982b) as 60,000 to about 7,000 C^{14} years. Beard and Laudon (1988) reported charcoalified wood from a depth of five feet in a test hole drilled approximately 4½ miles north of the Midway site. At this depth the fossil wood probably came from the upper member of the "San Luis Ranch alluvium." Since it is possible that additional paleontological resources, including additional vertebrate fossils, could be found in sediments of the "San Luis Ranch alluvium", this stratigraphic unit also has high sensitivity for paleontological resources under the criteria established by SVP (1995).

During a field survey of prospective fossiliferous sediments in the project vicinity on June 8, 2006, fossil plant fragments, including charcoalified seeds, were found in interbedded silt and sandy silt in the bank of an irrigation pond approximately 3.0 miles (4.8 kilometers) north-northwest of the Midway site. The following day rodent bones and charcoalified wood were found in sediments referred to as the "San Luis Ranch alluvium" at a locality in the bluffs of Panoche Creek approximately 1.85 miles northwest of the Midway site. The presence of these fossils indicate that scientifically important fossil specimens could be discovered from the "San Luis Ranch alluvium" during Midway project-related excavations.

"Patterson alluvium" During the geological and paleontological literature review and museum archival records searches for this paleontological resource impact assessment, no previously recorded fossil sites in unnamed Holocene alluvium in western Fresno County were found. During a field survey of prospective fossiliferous sediments on June 8, 9, and 19, 2006, no indications were found that the "Patterson alluvium" might be fossiliferous. Therefore, because the "Patterson alluvium" has not been known to produce fossils in the past, this stratigraphic unit is considered to have low sensitivity under the criteria established by SVP (1995).

5.8.2.5.2 Summary

Although no fossils are known to directly underlie the Midway site, the presence of previously reported fossils in both the "Los Banos alluvium" and "San Luis Ranch alluvium" elsewhere suggests that there is

a possibility that additional similar fossil remains may be uncovered by excavations in these stratigraphic units during project construction. This conclusion is supported by the discovery of two previously unrecorded fossil localities in the vicinity of the proposed project site during the field survey conducted as part of this paleontological resource impact assessment and is also supported by observations that depositional conditions in both the "Los Banos alluvium" and "San Luis Ranch alluvium" appear to be favorable for the preservation of fossils. Under SVP (1995) criteria, both these stratigraphic units are judged to have high sensitivity for producing additional paleontological resources. Identifiable fossil remains recovered from these formations during project construction could be scientifically important and significant. Because the "Patterson alluvium" has not been known to produce fossils in the past, this stratigraphic unit is judged to have low sensitivity under the criteria established by SVP (1995).

Identifiable fossil remains recovered during project construction could represent new taxa or new fossil records for the area or for the State of California. They could also represent either geographic or temporal range extensions. Moreover, discovered fossil remains could make it possible to more accurately determine the age, paleoclimate, and depositional environment of the sediments from which they are recovered. Finally, fossil remains recovered during project construction could provide a more comprehensive documentation of the diversity of animal and plant life that once existed in western Fresno County and could result in a more accurate reconstruction of the geologic and paleobiologic history of the San Joaquin Valley and adjacent foothills of the Coast Ranges.

5.8.3 Environmental Consequences

Potential impacts on paleontological resources resulting from construction of the proposed Midway project can be divided into construction-related impacts and operation-related impacts. Construction-related impacts to paleontological resources primarily involve terrain modification (excavations and drainage diversion measures). Paleontologic resources, including an undetermined number of fossil remains and unrecorded fossil sites; associated specimen data and corresponding geologic and geographic site data; and the fossil-bearing strata, could be adversely affected by (i.e., would be sensitive to) ground disturbance and earth moving associated with construction of the project. Direct impacts would result from vegetation clearing, grading of roads and the generating facility site, trenching for pipelines, augering for foundations for electrical towers or poles, and any other earth-moving activity that disturbed or buried previously undisturbed fossiliferous sediments, making those sediments and their paleontologic resources unavailable for future scientific investigation. The potential environmental effects from construction and operation of the project on paleontological resources are presented in the following subsections.

5.8.3.1 Potential Impacts from Project Construction

The proposed project site is located on fossiliferous Pleistocene and Holocene-age alluvial deposits informally named the "Los Banos alluvium", "San Luis Ranch alluvium", and "Patterson alluvium." Excavations deeper than about four feet at the Midway site, such as those for foundations for turbines, trenching for the natural gas pipeline, the water supply pipeline, and electrical transmission line poles, have the potential to result in adverse impacts to significant paleontological resources. However, the construction of supporting facilities, such as temporary construction offices, laydown areas, and parking areas, have very low potential to cause adverse impacts to significant paleontological resources, as they will involve ground disturbance only to the "Patterson alluvium."

5.8.3.2 Potential Impacts from Project Operation

No impacts on paleontological resources are expected to occur from the continuing operation of the project or any of its related facilities.

5.8.4 Cumulative Impacts

If the project were to encounter paleontological finds during construction, the potential for cumulative impacts would exist. Mitigation measures would be implemented to recover such resources and reduce cumulative impacts to a level that is less than significant. The mitigation measures proposed in Section 5.8.5 would effectively recover the value to science of any significant fossils uncovered during project-related excavations.

5.8.5 Mitigation Measures

This section describes proposed mitigation measures that will be implemented to reduce potential adverse impacts to significant paleontological resources resulting from project construction. The proposed paleontological resource impact mitigation program would reduce, to an insignificant level, the direct, indirect, and cumulative adverse environmental impacts on paleontologic resources that could result from project construction. The mitigation measures proposed below for the project are consistent with CEC environmental guidelines (CEC, 2000) and with SVP standard guidelines for mitigating adverse construction-related impacts on paleontologic resources (SVP, 1995, 1996) to a less than significant level.

PALEO-1 Prior to construction, a qualified paleontologist will be retained to both design a monitoring and mitigation program and implement the program during project-related earth-moving activities at the generating facility site, for deep boring for electrical transmission towers, and for construction of the water and natural gas pipelines, and for all other project-related ground disturbance. The paleontological resource monitoring and mitigation program will include construction monitoring; emergency discovery procedures; sampling and data recovery, if needed; museum storage of any specimen and data recovered; preconstruction coordination; and reporting.

PALEO-2 Prior to the start of construction, the paleontologist will conduct a field survey of exposures of sensitive stratigraphic units within the construction site that will be disturbed. Earth-moving construction activities will be monitored where this activity will disturb previously undisturbed sediment. Monitoring will not be conducted in areas where the ground has been previously disturbed or in areas where exposed sediment will be buried, but not otherwise disturbed.

PALEO-3 Prior to the start of construction, construction personnel involved with earth-moving activities will be informed on the importance of the fossil record, on laws and regulations protecting fossils, on the appearance of fossils and the types of fossils likely to be seen during project construction, and on proper notification procedures should fossils be discovered. This worker training will be prepared and presented by a qualified paleontologist.

5.8.6 Involved Agencies and Agency Contacts

There are no state or local agencies having specific jurisdiction over paleontological resources.

5.8.7 LORS

Paleontological resources are classified as non-renewable scientific resources and are protected by several federal and state statutes (California Office of State Historic Preservation Office, 1983; Marshall, 1976; Fisk and Spencer, 1994), most notably by the 1906 Federal Antiquities Act and other subsequent federal legislation and policies and by the State of California's environmental regulations (CEQA, Section 15064.5). Professional standards for assessment and mitigation of adverse impacts on paleontological resources have been established by the SVP (1995, 1996). Design, construction, and operation of the proposed project, including ancillary facilities, will be conducted in accordance with LORS applicable to paleontological resources.

Federal and state LORS applicable to paleontological resources are summarized in Table 5.8-1 and discussed briefly below, together with SVP professional standards.

5.8.7.1 Federal

Federal protection for significant paleontological resources would apply to the project if any construction or other related project impacts occurred on federally owned or managed lands. Federal legislative protection for paleontological resources stems from the Antiquities Act of 1906 (PL 59-209; 16 United States Code 431 *et seq.;* 34 Stat. 225), which calls for protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal land.

TABLE 5.8-1
LORS APPLICABLE TO PALEONTOLOGICAL RESOURCES

Project LORS	Applicability	AFC Reference	Conformity
Antiquities Act of 1906	Protects paleontological resources on federal lands	Section 8.16.6	Yes
CEQA	Fossil remains may be encountered by earth-moving	Section 8.16.6	Yes
Public Resources Code Sections 5097.5/5097.9	Would apply only if some project land were acquired by the State of California	Section 8.16.6	Yes

5.8.7.2 State

The CEC environmental review process under the Warren-Alquist Act is considered functionally equivalent to that of CEQA (Public Resources Code Sections 15000 et seq.) with respect to

paleontological resources. Guidelines for the Implementation of CEQA, as amended March 29, 1999 (Title 14, Chapter 3, California Code of Regulations: 15000 *et seq.)* define procedures, types of activities, persons, and public agencies required to comply with CEQA, Criterion C – Cultural Resources, indicated in Section 15023, Appendix G, Section XIV, Part a; the following:

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Other state requirements for paleontological resources management are in Public Resources Code Chapter 1.7, Section 5097.5, Archaeological, Paleontological, and Historical Sites. This statute specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources and defines any unauthorized disturbance or removal of a fossil site or remains on public land as a misdemeanor. It would apply to the Midway project if the state or a state agency were to obtain ownership of project lands during the term of the project license or if construction of the project linear features (natural gas pipeline and/or water pipeline) were built on county- or state-owned lands, such as on highway rights-of-way (ROWs).

5.8.7.3 County LORS

Fresno County does not have mitigation requirements that specifically address potential adverse impacts to paleontological resources.

5.8.7.4 Professional Standards

The SVP, a national scientific organization of professional vertebrate paleontologists, has established standard guidelines (SVP, 1995, 1996) that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most practicing professional paleontologists in the nation adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically spelled out in its standard guidelines. Most California state regulatory agencies accept the SVP standard guidelines as a measure of professional practice.

5.8.8 Permits Required and Permit Schedule

No state or county agency requires a paleontological collecting permit to allow for the recovery of fossil remains discovered as a result of construction-related earth moving on state or private land in a project site.

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Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Paleontological Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Sec. 5.8.2 Impacts: Sec. 5.8.3, 5.8.4 Mitigation: Sec. 5.8.5 Appendix K Confidential		
Appendix B (g) (16) (A)	Identification of the physiographic province and a brief summary of the geologic setting, formations, and stratigraphy of the project area. The area may vary depending on the depositional history of the area.	Sec. 5.8.2 Appendix K Confidential		
Appendix B (g) (16) (B)	A discussion of the sensitivity of the project area described in subsection (g)(16)(A) and the presence and significance of any known paleontologic localities or other paleontologic resources within or adjacent to the project.	Sec. 5.8.2.5.1, 5.8.2.5.2 Appendix K Confidential		
Appendix B (g) (16) (C)	A summary of all literature searches and field surveys used to provide information about paleontologic resources in the project area described in subsection (g)(16)(A). Identify the dates of the surveys, methods used in completing the surveys, and the names and qualifications of the individuals conducting the surveys.	Literature searches and surveys: Sec. 5.8.2.3, 5.8.2.5.1, 5.8.2.5.2 Appendix K Confidential		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Paleontological Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (16) (D)	Information on the specific location of known paleontologic resources, survey reports, locality records, and maps at a scale of 1:24,000, shall be included in a separate appendix to the Application and submitted to the Commission under a request for confidentiality, pursuant to Title 20, California Code of Regulations, § 2501 et seq.	Appendix K Confidential		Map
Appendix B (g) (16) (E)	A discussion of any educational programs proposed to enhance awareness of potential impacts to paleontological resources by employees, measures proposed for mitigation of impacts to known paleontologic resources, and a set of contingency measures for mitigation of potential impacts to currently unknown paleontologic resources.	Educational programs: Sec. 5.8.5 Pg. 5.8-13		
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	LORS compliance: Sec. 5.8.7, Table 5.8-1		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Sec. 5.8.6		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Paleontological Resources** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	LORS conformity: Sec. 5.8.7 Pg. 5.8-14		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Agency contacts: Sec. 5.8.6 Pg 5.8-14		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Permit schedule: Sec. 5.8.8 Pg. 5.8-15		

5.9 LAND USE

This section provides an assessment of land use issues and impacts for the Midway project.

An evaluation of Midway's conformance with local plans, land use regulations, and general land use compatibility is provided in this section. Land uses are described within 1 mile of the project site. Off-site improvements associated with the project include an approximate 300-foot electric transmission line to tie into the existing CalPeak Panoche generator tie line, a 1,200-foot underground water pipeline connecting the project to the existing CalPeak Panoche well adjacent to the project site (some portions of which will be on-site) and 50 feet of new gas transmission line and a gas metering set which will tap into the existing PG&E gas trunkline. Therefore, this analysis includes the 1-mile area around the Midway site and the CalPeak Panoche site. Reasonably foreseeable future development within the affected area is discussed in Section 5.9.2.3, Cumulative Impacts.

Land uses in California are regulated using various methods of land use controls. Cities and counties in California are required by law to adopt a comprehensive, long-term General Plan for the physical development of their jurisdictional areas. These plans include a Land Use Element that establishes a pattern of appropriate land uses, as well as policies and guidelines for development of those uses. Local zoning ordinances, Specific Plans, and maps implement the Land Use Element of the General Plan. It is important to note that the Land Use Element reflects the ultimate pattern and that the zoning ordinances and zoning maps reflect current land use designations. Zoning designations may differ from land use designations. Building codes establish requirements for safe and sanitary structures. Subdivision controls and grading requirements regulate the design and improvement of subdivisions.

5.9.1 Affected Environment

The affected environment is defined by the CEC based on the study area boundary. Fresno County has jurisdiction over all of the affected area within 1 mile of the plant site. The proposed Midway site location, along with major jurisdictional boundaries in Fresno County, is shown on Figure 5.9-1.

5.9.1.1 Regional Setting

Midway is located in the unincorporated area of western Fresno County, within the northwestern section of the Westside Valley Area. The City of Mendota is the nearest City and is located approximately 16 miles to the east-northeast of the Midway site.

Existing land uses in the region include a majority of agricultural land, with land designated as rangeland approximately 3 miles to the west.

5.9.1.2 Project Site and Vicinity

The nearest intersections to the Midway site are West Panoche Road and S. Fairfax Ave. approximately one mile to the northeast and West Panoche Rd. and I-5 approximately 2 miles to the southwest. The site is more specifically described as the Southwest Quarter of Section 5, Township 15, Range 13 East, on the USGA Quadrangle map, Figure 3.2-1. The APN is 027-060-78S. Primary access to the site is West Panoche Road via Interstate 5 or Hwy 33.

The land in the general site vicinity is designated for agricultural use. Land use in the immediate site vicinity is power generation related and includes an adjacent PG&E substation, an existing Wellhead Peaker plant, and a CalPeak Panoche site (see Figure 5.9-2). The surrounding properties are predominantly agriculture but include a variety of mixed uses. The non-agricultural uses within a 1-mile radius of the project site include: three single-family dwelling units, a 5-plex, the PG&E substation, the Wellhead Peaker plant, and the CalPeak Panoche site. The Midway site is relatively flat and supports sparse growth of annual, ruderal weeds and grasses.

5.9.1.3 General Plan and Zoning Designation

Midway, as proposed, is consistent with Fresno County's General Plan and zoning designations for the site, with the approval of an Unclassified Conditional Use Permit (CUP). The project site is designated Agriculture by the Land Use Element of the Fresno County General Plan. The existing zoning designation is AE-20, Exclusive Agriculture District. Energy production is an unclassified conditional use in the AE Zone district.

5.9.1.3.1 Conditional Use Permit Process

The Fresno County Zoning Ordinance requires a CUP for certain uses of land or types of businesses which are not allowed as matter of right. Four findings determine whether a CUP is permitted:

1) That the site of the proposed use is adequate in size and shape to accommodate the use including all yards, spaces, walls, fences, parking, loading, landscaping, and other features required by the use
2) That the site for the proposed use relates to streets and highways adequate in width and pavement type to carry the quantity and kind of traffic generated by the proposed use
3) That the proposed use will have no adverse effect on abutting property and surrounding neighborhood or the permitted use thereof
4) That the proposed use is consistent with the Fresno County General Plan

The site is not located within any additional Plan, Designation, or Overlay Districts and is not overseen by any other local governing or legislative body, except for Fresno County.

Existing land uses at the Midway site and the surrounding study area are shown in Table 5.9-1 and are also represented in Figure 3.9-3.

Land uses within a 1-mile radius to the Midway site include:

- North: 5-plex, Agricultural uses, West Panoche Road
- East: Agriculture uses, Farming Structures, Highway-33
- South: Agriculture uses, Energy Production Uses
- West: Energy Production Uses, Agriculture uses, Three single-family residential units, and I-5

TABLE 5.9-1
PROJECT SITE AND SURROUNDING LAND USES
(WITHIN 1 MILE OF PROJECT SITE)

APN #	Zoning	Land Use	Owner	Owner Address
02706079S	AE-20	Agriculture	Barry S Baker Trustee	PO Box 867 Firebaugh CA 93622
02706077S	AE-20	Agriculture	Robert Hansen Trustee of Panoche Farms Sharla Baker Trust	PO Box 867 Firebaugh CA 93622
02706078S (Site)	AE-20	Agriculture/Power Generation - Wellhead Peaker plant & CalPeak Panoche	PAO Investments, LLC	45499 West Panoche Road Firebaugh CA 93622
02706054S	AE-20	Agriculture	Gregory R. Pruett as operation Trustee	2800 W. March Lane #330 Stockton CA 95219
02706056S	AE-20	Residential/ Agriculture	Farmers International. Inc.	1260 Muir Avenue Chico CA 95973
02706053S	AE-20	Residential/Agriculture	Vaquero Farms, Inc.	2800 W. March Lane #330 Stockton CA 95219
02706061SU	AE-20	Power	Pacific Gas & Electric	San Francisco CA 94177

Land Use Element Agriculture is a primary land use designation categorized under the heading *Resource* in the Land Use Element of the Fresno County General Plan. The following is a list of the primary land use designations listed under *Resource*

- **Agriculture.** This designation provides for the production of crops and livestock, and for location of necessary agriculture commercial centers, agricultural processing facilities, and certain nonagricultural activities.

- **Irrigated Agriculture.** This designation provides for the production of crops, necessary agricultural processing facilities, and certain nonagricultural activities. Irrigated agriculture requires a system that delivers at least one (1) acre-foot of water per acre per year.

- **Westside Rangeland.** This designation provides for grazing and other agricultural operations, mining, oil and gas development, wildlife habitat, various recreational activities, and other appropriate open space uses.

- **Eastside Rangeland.** This designation provides for grazing and other agricultural operations, wildlife habitat, various non-intensive recreational activities, and other appropriate open space uses.

- **Open Space.** This designation, which is applied to land or water areas that are essentially unimproved and planned to remain open in character, provides for the preservation of natural

resources, the managed production of resources, parks and recreation, and the protection of the community from natural and manmade hazards.

- **Public Lands and Open Space.** This designation, which is applied to land or water areas that are essentially unimproved and planned to remain open in character, provides for the preservation of natural resources, the managed production of resources, parks and recreation, and the protection of the community from natural and manmade hazards.

The purpose of the Agriculture land use designation is to provide areas within Fresno County to facilitate the production of agriculture goods, services, and employment. In addition, the Agriculture land use designation allows the permitted use of certain oil and gas development activities pursuant to the policies in Section OS-C, Mineral Resources, of the Open Space and Conservation Element. It is the intent of the Land Use Element that agriculture sites be attractive, convenient, and safe, and that they be located so as to benefit both industry and the community.

AE 20 Agricultural District. The Midway site is designated AE-20 pursuant to Chapter 2, Section 816 of the Zoning Ordinance Code of the County of Fresno. No additional zoning designations exist within 1 mile of the project site. The purpose of the Zoning Ordinance is to translate the broad land use categories established by the Fresno County General Plan into detailed land use classifications that are applied to property with much greater precision than the General Plan.

The AE-20, or Exclusive Agricultural District, is intended to be an exclusive district for agriculture and for those uses which are necessary and an integral part of agricultural operation.

This district is intended to protect the general welfare of the agricultural community from encroachments of non-related agricultural uses, which by their nature would be injurious to the physical and economic well-being of the agricultural district. Typical uses prohibited in agricultural areas are residential subdivisions and industrial manufacturing uses which would conflict with agricultural operations.

The General Plan designation of Agriculture is low density (1 DU/20 acres). Land use policies of the General Plan relating to both Land Use, and Open Space and Conservation, are applicable to Agriculture Areas designation. In summary, the area surrounding the plant site in all four directions is predominantly in agricultural production. In the atypical instances where development does exist, the uses are either energy related, low density residential, or farming related structures. Figure 5.9-2 presents the location of land uses with respect to the project area.

Section 5.4, Agriculture and Soils, provides an assessment of Midway's effects on soil resources in the project area.

5.9.1.3.2 Site Control

The Midway site is owned by PAO Investments. The project is owned by Starwood Power-Midway, LLC. The 5.6-acre project site will be leased to Starwood Power-Midway, LLC. The tract of land that includes Midway covers an approximately 128-acre parcel. A Williamson Act contract (#367) covers the 128-acre parcel.

The California Land Conservation Act (Williamson Act) was passed in 1965 to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses. The Act creates an arrangement whereby private landowners contract with counties and cities to voluntarily restrict land to agricultural and open-space uses. The vehicle for these agreements is a rolling term 10-year contract (i.e., unless either party files a "notice of nonrenewal" the contract is automatically renewed annually for an additional year). In return, restricted parcels are assessed for property tax purposes at a rate consistent with their actual use, rather than potential market value.

The approach in regards to the Williamson Act contract on the 128-acre subject parcel is a partial cancellation for the 5.6-acre subject site.

A Notice of Nonrenewal of the Williamson Contract will be filed on Contract #367. Filing a nonrenewal of the contract is the normal process to exit a Williamson Contract and remove the restrictions from the subject property. Once the nonrenewal form is recorded, the nonrenewal period is approximately nine (9) years.

The next procedural step once the Notice of Nonrenewal has been filed, is to petition for Cancellation of the Williamson Act Contract, which requires input from the California Department of Conservation and the Fresno County's Agricultural Land Conservation Committee and Board of Supervisor approval. The petition for Cancellation must meet legal requirements contained in Government Code Section 51280 et. Seq.

The landowner may petition for cancellation of a contract as to all or part of the subject land. In regards to the project area, 5.6 acres of the 128-acre lot will be petitioned for Cancellation of the Williamson Act Contract, the portion that the project will occupy. A petition may be found to be consistent with the limitations of the Williamson Act only after a noticed public hearing where the Board of Supervisors considers and grants tentative cancellation establishing conditions for full cancellation. In reviewing a cancellation petition, the proposed use, alternative use, any comments offered by the Director of the California Department of Conservation, and the recommendation of the Land Conservation Committee must be considered. A cancellation may be supported where the Boards find that:

1) The cancellation is for land on which a notice of nonrenewal has been served.

2) Cancellation is not likely to result in the removal of adjacent lands from agricultural use.

3) Cancellation is for an alternative use that is consistent with the adopted General Plan.

4) Cancellation will not result in discontiguous patterns of urban development.

5) That there is no proximate noncontracted land which is both available and suitable for the use to which it is proposed the contracted land be put, or, that development of the contracted land would provide more contiguous patterns of urban development than development of proximate noncontracted land.

The 5 findings will be made in the Williamson Act Contract Cancellation application when filed with Fresno County. If cancellation is approved, a fee determined by the County Assessor and equal to 12.5% of the market value of the parcel is paid by the applicant and forwarded to the State of California.

The project does not fall within the jurisdiction of the Subdivision Map Act, as the property will be leased, and subdivision of the land will not occur. As stated above, the land will undergo a partial cancellation of the Williamson Act contract, which does not require a subdivision of land.

The Fresno County contact for the partial cancellation will be Margie McHenry. She will confirm that there is no need to develop a parcel for cancellation. Her contact information is as follows:

Margie McHenry
Department of Public Works and Planning
Development Services Division
2220 Tulare Street, Suite B
Fresno, California 93721
(559) 262-4870 Phone
(599) 262-4166 Fax
mmchenry@co.fresno.ca.us

After a petition for cancellation is submitted, the review process is as follows:

1) Once the application has been determined to be complete, a request is sent to the Department of Conservation (DOC) for review of petition for cancellation. This will generally be a 30-day review period.

2) A memo is sent to the Assessor's Office requesting calculation of the cancellation fee for the area covered by the legal description provided. The memo is sent out at the same time as the request to the DOC. The Assessor's Office generally tries to provide a cancellation valuation within 30 days of receiving the request. However, this is not a requirement, and in some cases it may take longer than 30 days.

3) Cancellation request is brought to Fresno County Agricultural Land Conservation Committee (ALCC) for recommendation. This will take place after the comments from the DOC have been received, and the Assessor's Office has provided a cancellation valuation for the property. The ALCC generally meets on the first Wednesday of each month. In order to schedule an item for a given meeting, the DOC comments and cancellation valuation from the Assessor's Office would need to be received no less than 30 days prior to the ALCC meeting date.

   CEQA Section 15271 statutorily allows the AFC to be used to address CEQA compliance for a Williamson Act cancellation, provided it adequately addresses the issue.

4) Cancellation request is brought to Board of Supervisors for consideration. After the ALCC has made a recommendation on the proposed cancellation, the project will be scheduled to go to the Board of Supervisors. If the Board of Supervisors determines that the required findings can be met, they may approve cancellation of the Williamson Act contract on the subject property.

5.9.1.4 Summary of Recent Actions of the Planning Department of Fresno County

Fresno County zoning trends have remained constant since the adoption of the General Plan in 2000. Minor zoning adjustments have been approved that include individual properties, none of which are located in proximity of the project site.

A list of discretionary reviews performed within the past 5 years for Fresno County is included in Table 5.9-2.

5.9.2 Environmental Consequences

The following section discusses the potential effects of site preparation, construction, and plant operation on existing land uses and land use resources of the project area. Potential cumulative impacts are also discussed.

Other issues related to land use are addressed in Sections 5.2, 5.11, 5.12, 5.13, and 5.18 (Air Quality, Traffic, Noise, Visual Resources, and Cumulative).

TABLE 5.9-2
DISCRETIONARY REVIEWS PERFORMED WITHIN THE PAST 5 YEARS
(5-MILE RADIUS: FRESNO COUNTY)

APN	Permit Type	Permit Name	Permit Number	Acceptance Date
02721 039S	019	Variance	VA3803	11/8/2004
02706061 SU	018	Conditional Use-CalPeak	CUP2976	3/22/2001
02706078S	018	Conditional Use-Wellhead	CU2971	2/16/2001
0271 9021S	018	Conditional Use	CU2778	6/7/2000
0271 9024S	018	Conditional Use	CU2778	6/7/2000
0271 9025S	018	Conditional Use	CU2778EXT	3/7/2002
0271 9027S	018	Conditional Use	CU3024	3/28/2002

Potential environmental consequences were analyzed for the study area within 1 mile of the proposed project site. Potential land use impacts relate to both construction and operation of Midway and any ancillary facilities.

5.9.2.1 Plant Facility

5.9.2.1.1 Site Preparation and Construction

As the site has been previously graded and is currently being utilized as a storage yard, the land is relatively flat. Therefore, little earthwork and grading will be necessary. Site preparation would mainly consist of clearing the site of existing storage materials. Any site preparation impacts would be temporary in nature and not considered significant.

Construction activities will include all work on the main site, installation and connection of pipelines and transmission lines, access road improvements, and plant startup. Sequential activities for onsite and offsite work include: site preparation; foundation construction, erection of major equipment and structures; installation of piping, electrical systems, and control systems; and startup/testing. Parking and staging will occur on a 0.25-acre portion of the site.

Land uses located near the project site may experience short-term impacts associated with Midway construction, including visual disruption, increased traffic, dust, increased noise levels, and project equipment and vehicle emissions. Additional information on these issues is provided in 5.13 Visual Resources, Sections 5.11, Traffic and Transportation, 5.12 Noise, and 5.2 Air Quality.

As discussed in Section 5.12, significant adverse noise impacts requiring mitigation are expected to occur at the 5-plex located adjacent to the northern project boundary. Specific mitigation measures are described in the subsequent Sections 5.9.3 and 5.12 (Noise). Significant impacts were not identified for the other residential uses within the 1-mile radius, as long as construction activities take place between 6 a.m. and 9 p.m. on weekdays and 7 a.m. and 5 p.m. on weekends. Construction noise impacts are expected to be insignificant after mitigation.

Overall, construction activities will result in short-term land use impacts. However, due to the compatibility with existing land uses (energy generation, transmission lines, a substation, and agriculture) and few low-density residential units located in the vicinity, short term impacts due to project construction are considered less than significant.

5.9.2.1.2 Operations and Maintenance

There are no changes proposed to the land uses or zoning designations surrounding the Midway project site. The existing character of the immediate area surrounding the project site will remain unchanged by the development of the project. The use of the 5.6-acre site will change from a storage yard to power generation. However, as the site is designated as Prime Farmland, 5.6 acres of designated Prime farmland will be converted to a non-agricultural use. However, the 5.6 acres are challenging to farm because they are surrounded by power generation facilities and generally cut off from the cultivated farmland in the area. At present, the 5.6-acre site is used as a storage yard and has been since 2001.

Power generating facilities are a permitted use in the AE-20, Exclusive Agricultural District with an unclassified CUP. The project site has historically been used as an agricultural production site. During the past five years the site has been utilized as a storage yard by CalPeak Power. The proposed use of the site as a power generating facility is consistent with the General Plan Land Use Element Designation of Agriculture. In addition, both Wellhead Power and CalPeak Power received approval from Fresno County for their CUP requests.

The plant layout is consistent with the Property Development Standards for the AE District. Section 816.5 of the Zoning Ordinance regulates building height to 35 feet with the exception of “non-dwelling structures and other accessory farm buildings.” The proposed gas turbine generator units are non-dwelling structures and are exempt from the 35-foot height limitation.

Plant operation traffic impacts will be minimal. The facility will only have one employee traveling to and from the site on a daily basis and will utilize West Panoche Road.

The site is an appropriate location for the Midway project due to the designated land use and the close proximity of two other energy production sites. Additionally, it puts to better use land that is currently underutilized as a storage yard and challenging to farm due to its lack of continuity with surrounding fields. There is no habitat conservation plan or natural community conservation plan within the Midway site.

5.9.2.1.3 Abandonment/Closure

Planned permanent closure impacts will be incorporated into the facility closure plan and evaluated at the end of the generating station's operating life.

5.9.2.2 Cumulative Impacts

The assessment of cumulative impacts for this project includes a review of other projects where an application has been filed with Fresno County, as well as projects anticipated by the CEC. This project area and the surrounding area have not had any major development projects in the past 18 months, though three potential projects may be considered in the foreseeable future. Refer to Table 5.18-1 in Section 5.18, Cumulative Impacts, for information on these potential projects. No cumulative land use impacts are expected.

5.9.3 Mitigation Measures

Midway minimally diminishes Fresno County's Agricultural Production capacity and economic viability and is consistent with the goals and policies outlined in the Agricultural and Land Use Element of Fresno County's General Plan and zoning ordinances. Additionally, as noise mitigation discussed in Section 5.12, occupants of the 5-plex at the northern site boundary would be relocated to an area not adjacent to or in close proximity of the project site. The 5-plex will no longer be used as a residential land use; therefore, it would no longer be considered a sensitive receptor. Construction noise impacts are expected to be insignificant after mitigation. With the cancellation of the Williamson Act contract for the project site, Midway will not create significant adverse land use impacts and will not conflict with existing land use activities in the area with mitigation incorporated.

5.9.4 Applicable LORS

LORS related to land use and their applicability to the project are summarized in Table 5.9-3. Midway will be constructed and operated in compliance with all applicable land use LORS, as discussed below.

5.9.4.1 Federal

There are no federal LORS related to the land use associated with Midway.

TABLE 5.9-3
APPLICABLE LORS FOR LAND USE

Conformance (Section)	LORS	Jurisdiction	Applicability
Federal	No federal LORS have been identified		
State			
5.9.5.2	California Public Resources Code *25523 (a): 20 CCR **1752, 1752.5, 2300-2309, and Chapter 2, Subchapter5, Appendix B, Part (1) (3) and (4)	CEC	Evaluate compatibility of the proposed project with relevant land use plans
	California State Planning Law, Government Code Section 65300 through 65302 development of the county or city.	Fresno County	Requires each city and county to adopt a comprehensive, general plan for the physical development of the County or City. Requirements identify contents of General Plan. Fresno County has adopted a General Plan. No project action is required
5.9.1.3.1, 5.95.2	California State Planning Law Government code Section 51200 through 51207 (Williamson Act)	Fresno County	Enables local governments to enter into contracts with private landowners to restrict specific parcels of land to agricultural or related open space use. Landowners receive property tax assessments much lower than normal because they are based upon farming and open space uses as opposed to full market value
Local			
5.9.1.3, 5.9.5.3	Fresno County General Plan	Fresno County Public Works & Planning Department	Comply with all applicable land use provisions
5.9.5.3	Fresno County Zoning Ordinance	Fresno county Public Works & Planning Department	Comply with applicable policies, development standards, and specific zoning requirements
	Fresno County Municipal Code	Fresno county Public Works & Planning Department	Comply with all applicable County ordinances
	Fresno county General Plan-2000 Land Use Element: *Agriculture Goals, Objectives, and Policies.* Policy LU-A.3	Fresno county Public Works & Planning Department	Allows, by use of a discretionary permit, certain non-agricultural uses including oil and gas development activities

TABLE 5.9-3
APPLICABLE LORS FOR LAND USE
(CONTINUED)

Conformance (Section)	LORS	Jurisdiction	Applicability
	Fresno County General Plan-2000 Land Use Element: *Agriculture Goals, Objectives, and Policies.* Policy LU-A.13	Fresno county Public Works & Planning Department	Ensure protection for agricultural operations from conflicts with nonagricultural uses by requiring buffers between proposed non-agricultural uses
	Fresno County General Plan-2000 Land Use Element: Open Space & Conservation: Minerals *Goals, Objectives, and Policies,* Policy OS-C.1	Fresno County Public Works & Planning Department	Incompatible land uses within the impact area of existing or potential surface mining areas not permitted
	Fresno County General Plan-2000 Land Use Element: Open Space & conservation: Minerals *Goals, Objectives, and Policies,* Policy OS-C.6	Fresno County Public Works & Planning Department	Ensures the Williamson Act is recognized and adhered to
	Fresno County General Plan-2000 Land Use Element: Open Space & conservation: Minerals *Goals, Objectives, and Policies,* Policy OS-C.10	Fresno County Public Works & Planning Department	Land uses that threaten the future availability of mineral resource or preclude future extraction of those resources not permitted
	Fresno County General Plan-2000 Land Use Element: Open Space & conservation: Minerals *Goals, Objectives, and Policies,* Policy OS-C.12	Fresno County Public Works & Planning Department	Fresno County shall be divided into three areas for the regulation of oil and gas development
	Fresno County General Plan-2000 Health Element: Noise *Goals, Objectives, and Policies,* Policy OS-C.1	Fresno County Public Works & Planning Department	Requires that all proposed development incorporate design elements necessary to minimize adverse noise impacts on surrounding land uses
	Fresno County General Plan-2000 Health Element: Noise *Goals, Objectives, and Policies,* Policy OS-C.6	Fresno County Public Works & Planning Department	Regulates construction-related noise to reduce impacts on adjacent uses in accordance with the County's Noise Control Ordinance
	Fresno County Zoning Ordinance Section 816	Fresno County Public Works & Planning Department	Defines "AE" Exclusive Agriculture District
5.9.5.3	Fresno County Zoning Ordinance Section 816.3	Fresno County Public Works & Planning Department	Defines uses subject to Conditional Use Permit in AE Zone
	Fresno County Zoning Ordinance Section 816.5	Fresno County Public Works & Planning Department	Defines property development standards within AE Zone

TABLE 5.9-3
APPLICABLE LORS FOR LAND USE
(CONTINUED)

Conformance (Section)	LORS	Jurisdiction	Applicability
	Fresno County Zoning Ordinance Section 816.5A	Fresno County Public Works & Planning Department	Provides regulations for lot area
	Fresno County Zoning Ordinance Section 816.5B	Fresno County Public Works & Planning Department	Provides regulations for lot dimensions
	Fresno County Zoning Ordinance Section 816.5C	Fresno County Public Works & Planning Department	Provides regulations for population density
	Fresno County Zoning Ordinance Section 816.5D	Fresno County Public Works & Planning Department	Provides regulations for building height
	Fresno County Zoning Ordinance Section 816.5E	Fresno County Public Works & Planning Department	Provides regulations for yards
	Fresno County Zoning Ordinance Section 816.5F	Fresno County Public Works & Planning Department	Provides regulations for space between buildings
	Fresno County Zoning Ordinance Section 816.5H	Fresno County Public Works & Planning Department	Provides regulations for fences, hedges, and walls
	Fresno County Zoning Ordinance Section 816.6	Fresno County Public Works & Planning Department	Defines what permits are required in the AE Zone
	Fresno County Zoning Ordinance Section 873	Fresno County Public Works & Planning Department	CUP process and authority
5.9.5.3	Fresno County Zoning Ordinance Section 873	Fresno County Public Works & Planning Department	Site plan review

5.9.4.2 State

5.9.4.2.1 California Public Resources Code *25523 (a); 20 CCR **1752, 1752.5, 2300-2309, and Chapter 2, Subchapter 5, Appendix B, Part (I) (3) and (4)

These codes require that the applicant evaluate the compatibility of the proposed project with relevant land use plans. The administering agency for the above is the CEC. This requirement is met via Section 5.9.4.3, below.

5.9.4.2.2 California State Planning Law, Government Code Section 65300 through 65302

This code requires each planning agency to prepare and the legislative body of each county and city to adopt a comprehensive General Plan for the physical development of the county. The General Plan shall address seven mandatory elements including a land use element.

The administering agency for these state requirements is Fresno County. Conformance is discussed in Section 5.9.4.3.

5.9.4.2.3 California State Planning Law, Government Code Section 51200 through 51207 (Williamson Act)

This act enables local governments to enter into contracts with private landowners to restrict specific parcels of land to agricultural or related open space use. Landowners receive property tax assessments much lower than normal because they are based upon the lowest of three values; Williamson Act restricted value, current market value, or factored base year value.

The administering agency for these state requirements is Fresno County.

5.9.4.3 Local

The Fresno County General Plan, adopted in 2000, reflects the values and contains the goals of the community with respect to development. The Plan is general in nature and provides a vision of the future. The General Plan contains an evaluation of existing conditions and provides long-term goals and policies to guide growth and development for the next 15 to 25 years. The General Plan is implemented by the County through its zoning, subdivision ordinances, specific plans, growth management policies, planned development districts, development agreements, development review, code enforcement, land use database, capital improvement programs, environmental review procedures, building and housing codes, and redevelopment plans. The site is designated as Agricultural use.

5.9.4.3.1 Land Use Policy Compatibility

The following General Plan land use policies apply to the Midway site:

- Establishing within County government a framework for analyzing local and regional conditions and needs in order to respond effectively to the problems and opportunities facing Fresno County

- Identifying Fresno County's economic, environmental, and social goals
- Recording the County government's policies and standards for the maintenance and improvement of existing development and the location and characteristics of future development
- Providing Fresno County's citizens with information about their community and with opportunities to participate in the local planning and decision-making process
- Improving the coordination of community development and environmental protection activities among the County, cities, and regional, state, and federal agencies
- Establishing a basis for subsequent planning efforts, such as preparation and updating of community plans, specific plans, redevelopment plans, and special studies to deal with unique problems or areas in the community

5.9.4.3.2 Agricultural Land Use Policies

Applicable agricultural land use policies from Fresno County's General Plan Land Use Element include the following:

Policy LU-A.3. The County may allow by discretionary permit in areas designated Agriculture, special agricultural uses and agriculturally related activities, including value-added processing facilities, and certain non-agricultural uses listed in Table LU-3. Approval of these and similar uses in areas designated Agriculture shall be subject to the following criteria:

- The use shall provide a needed service to the surrounding agricultural area which cannot be provided more efficiently within urban areas or which requires location in a non-urban area because of unusual site requirements or operational characteristics.
- The use should not be sited on productive agricultural lands if less productive land is available in the vicinity
- The operational or physical characteristics of the use shall not have a detrimental impact on water resources or the use or management of surrounding properties within at least 0.25-mile radius

Midway will provide necessary energy supplies to the area. The location of a power generation facility within an urban environment has the potential to impact sensitive receptors, such as schools, hospitals, and a large number of residential land uses. The proposed site has less potential to impact sensitive receptors because of its compatibility with nearby land uses and proximity to other power generating uses. Additionally, the site is currently utilized as a storage yard and is not in agricultural production. Water resources in the project area will not be detrimentally impacted by Midway operation. Midway will utilize low quality groundwater which is not a practical water supply source for the area.

Policy LU-A.13. The County shall protect agricultural operations from conflicts with nonagricultural uses by requiring buffers between proposed non-agricultural uses and adjacent agricultural operations.

Midway will not preclude or negatively impact the continued agricultural use of the surrounding area for agricultural operations. There are no expected conflicts between Midway's power generation and surrounding agricultural operations.

5.9.4.3.3 Open Space and Conservation Policies

Applicable open space and conservation land use policies from Fresno County's General Plan Open Space and Conservation Element include the following

Minerals.

Policy OS-C.1. The County shall not permit incompatible land uses within the impact area of existing or potential surface mining areas.

Policy OS-C.6. The County shall accept Williamson Act contracts on land identified by the State of California as containing significant mineral deposits subject to the use and acreage limitations established by the County.

Policy OS-C.10. The County shall not permit land uses that threaten the future availability of mineral resources or preclude future extraction of those resources.

Oil and Gas.

Policy OS-C.12. Fresno County shall be divided into three areas for the regulation of oil and gas development.

- Urban areas including all land within 0.25 mile of the planned urban boundaries shown on adopted community plans.
- Established oil and gas fields as determined and updated by the California Division of Oil and Gas, excluding urban areas except where specifically included in these policies.
- Non-urban areas including all land not within either established oil and gas fields or urban areas. A non-urban area's designation shall be changed to an established oil and gas field designation upon:
    - Its identification by the Division of Oil and Gas as an oil and gas field
    - Subsequent approval by the County

There are no potential surface mining areas within the vicinity of the Midway site and the future availability of mineral resources will not be lost as a result of site development. Midway is consistent with all of the above described policies.

5.9.4.3.4 Noise Policies

Applicable noise land use policies from Fresno County's General Plan Health Element include the following:

Policy HS-G.1. The County shall require that all proposed development incorporate design elements necessary to minimize adverse noise impacts on surrounding land uses.

Policy HS-G. 6. The County shall regulate construction-related noise to reduce impacts on adjacent uses in accordance with the County's Noise Control Ordinance.

Construction activities would take place in accordance with the County Noise Control Ordinance (between 6 a.m. and 9 p.m. on weekdays and 7 a.m. and 5 p.m. on weekends). Additionally, as noise mitigation discussed in Section 5.12, a confidential signed agreement is in place between PAO Investments, LLC (landowner) and Starwood Power-Midway, LLC to relocate the occupants of the 5-plex to an area not adjacent to or in close proximity of the project site. The 5-plex will no longer be used for residential land use; therefore, it would no longer be considered a sensitive receptor. Construction noise impacts are expected to be insignificant after mitigation.

Policy PF-J.1 The County shall encourage the provision of adequate gas and electric, communications, and telecommunications service and facilities to serve existing and future needs of people in the unincorporated areas of the county.

Policy PF-J.2 The County shall work with local gas and electric companies to design and locate appropriate expansion of gas and electric systems, while minimizing impacts to agriculture and minimizing noise, electromagnetic, visual and other impacts on existing and future residents.

Midway is consistent with providing adequate electrical supplies. Starwood Power-Midway, LLC has a 15-year power purchase agreement with PG&E to provide additional electric output from Midway to the public power grid. This project helps implement the above described policies. Impacts to the surrounding agricultural uses in the area of Midway are minimized by the location of the site near an existing substation and gas supplies. The three off-site linears (transmission lines, gas line and water supply line) required for Midway would extend onto the existing adjacent CalPeak Panoche site and not into any other adjacent agricultural areas, thereby minimizing visual, noise and electromagnetic impacts to the area.

5.9.4.3.5 Fresno County Municipal Code

This code includes the regulatory and penal ordinances as well as the administrative ordinances of Fresno County. A list of applicable Fresno County Municipal and Zoning Code Ordinances is included in Table 5.9-3.

5.9.4.3.6 Conditional Use Permit (CUP) Process

The Fresno County Zoning Ordinance requires a CUP for certain use of land or types of businesses that are not allowed as matter of right. Four findings determine the permitting of a CUP:

1) That the site of the proposed use is adequate in size and shape to accommodate the use and all yards, spaces, walls, fences, parking, loading, landscaping, and other features required by use.

2) That the site for the proposed use relates to streets and highways adequate in width and pavement type to carry the quantity and kind of traffic generated by proposed use.

3) That the proposed use will have no adverse effect on abutting property and surrounding neighborhood or the permitted use thereof.

4) That the proposed use is consistent with the Fresno County General Plan.

The proposed Midway site is zoned as AE-20, Exclusive Agricultural District, and is under a Williamson Act contract. However, Midway meets the four findings described above that determine the permitting of a CUP. With approval of an unclassified CUP, Midway is consistent with zoning designations and the Fresno County General Plan.

In regards to CUP finding one, the site is adequate in size and shape to accommodate the use of the site as an electrical generation facility, thus finding 1 can be made.

In regards to CUP finding two, a URS Senior Transportation Engineer analyzed traffic impacts. Based on the very low expected ADT volume (4 operational and 262 construction trips), it has been concluded that traffic will not be an issue even during project construction. Normal operations after construction will create even less traffic than that created during construction.

There are no long-term project buildout (Year 2020) scenarios; therefore, the approach has been modified accordingly to reflect the actual near-term conditions associated with the project.

Traffic Analysis Scenarios.

- Existing Conditions (June 2006)
- Construction-related Impacts (Year 2008 Peak Project Construction)
- Operations-related Impacts (Year 2009 Project Operations)

It is not necessary to apply a growth factor to the other analysis years, as existing conditions would be largely identical to 2008 No Project conditions due to minimal growth in the area.

Peak Construction Assumptions.

- Schedule (Tentative) => 10 months (June, 2008 to April, 2009)
- Peak Construction Traffic => 110 workers, 9 delivery trucks, 12 heavy vehicles
- Trip Distribution => 50 percent from South Interstate-5 and 50 percent from North Interstate-5 onto West Panoche Road

Plant Operations Assumptions

- Plant Operations Traffic => 1 Maintenance Technician/Operator; one to two Demineralizer Truck Trips a month
- Trip Distribution => 100 percent from West Panoche Road

Given this analysis, the existing streets and highways will be more than adequate for this project. The traffic impacts are considered less than significant. Additionally, the streets and highways in the project area are adequate in width and pavement type to carry the quantity and kind of traffic generated by the proposed use, thus finding 2 can be made.

As for CUP finding three, the proposed use, a natural gas plant/energy generator, will not have an adverse effect on the abutting energy generation facilities. However, to properly mitigate operational noise impacts occupants of the 5-plex will be relocated away from the site. Construction noise impacts are expected to be insignificant after mitigation.

The proposed use is self-contained and will not have any spillover affect or negative impacts on adjacent agriculture operations. Surrounding uses, listed in Table 5.9-1, will not be adversely affected by the construction and operation of the project. Thus finding 3 can be made.

The proposed use is an approved use under the stipulations listed in Fresno County's General Plan, if both the Land Use and Open Space and Conservation Elements' policies are met and an Unclassified Conditional Land Use Permit is obtained. In addition, PG&E, CalPeak Power, and Wellhead Power have set precedents for this type of use. Thus, finding 4 can be made.

5.9.4.4 Involved Agencies and Agency Contacts

Agency contacts for agencies with jurisdiction to issue applicable permits and/or enforce LORS related Land Use regulations are provided in Table 5.9-4. A complete list of applicable Fresno County Municipal and Zoning Code Ordinances are included in Table 5.9-3.

TABLE 5.9-4
AGENCY CONTACTS

Agency	Contact	Title	Telephone
Fresno County, Department of Public Works and Planning	Richard Perkins	Planner & Resource Analyst	559.262.4100

5.9.4.5 Fresno County Permits and Approvals Required

The following permits and approvals are required from Fresno County:

- A building permit and certificate of occupancy would be required prior to commencement of construction proposed for Midway. The 2001 California Building Standards Code has been adopted by the County of Fresno through Ord. 03-001 § 1 (part): Ord. 01-016 (part). Midway would submit the building permit application and plan check fees prior to issuance of building permits. Building permits are non-discretionary and require approximately three weeks to obtain. The certificate of occupancy would be issued after construction is complete and is also a non-discretionary permit.
- The use of the site as a power generation facility would necessitate an unclassified CUP. The findings required for approval are described in Section 5.9.4.3.6 of this document. These findings

were made for both the CalPeak Panoche and Wellhead generating facilities. Based on the assessment in this section the findings can be made for Midway.

Table 5.9-5 lists the permits required.

TABLE 5.9-5
PERMITS REQUIRED

Issuing Agency	Section	Type of Permit
Fresno County	15.08	Building Permit
Fresno County	15.28	Grading
Fresno County	853	Conditional Use Permit

5.9.5 References

California Energy Commission. 2000a. Improvements to the Energy Commission's Energy Facility Licensing Process. March.

2000b. Energy Facility Licensing Process: Developer's Guide of Practices and Procedures. Staff Report/Draft. December 7.

Fresno County. 2000. General Plan.

The Ordinance Code of Fresno County Chapters 1, 2, 3, and 4.

URS Corporation. 2006. Application for Certification, Panoche Energy Center.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 1 Date ____

Technical Area: **Land Use** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Existing conditions: Sec. 5.9, 5.9.1, Pg. 5.9-1 Impacts: Sec. 5.9.2, 5.9.2.2 Mitigation: Sec. 5.9.3, Pg. 5.9-9		
Appendix B (g) (3) (A)	A discussion of existing land uses and current zoning at the site, land uses and land use patterns within one mile of the proposed site and within one-quarter mile of any project-related linear facilities. Include:	Land uses: Sec. 5.9.1.3, Table 5.9-1, Figure 5.9-2, 5.9-3, 3.9-3		
Appendix B (g) (3) (A) (i)	An identification of residential, commercial, industrial, recreational, scenic, agricultural, natural resource protection, natural resource extraction, educational, religious, cultural, and historic areas, and any other area of unique land uses;	Unique land uses: Sec. 5.9.1.3.1, Figure 5.9-1, Table 5.9-1		
Appendix B (g) (3) (A) (ii)	A discussion of any trends in recent zoning changes and potential future land use development;	Sec. 5.9.1.5		
Appendix B (g) (3) (A) (iii)	Identification of all discretionary reviews by public agencies initiated or completed within 18 months prior to filing the application for those changes or developments identified in subsection (g)(3)(A)(ii); and	Discretionary reviews: Sec. 5.9.1.4, Table 5.9-2, PG. 5.9-7		
Appendix B (g) (3) (A) iv)	Legible maps of the areas identified in subsection (g)(3)(A) potentially affected by the project, on which existing land uses, jurisdictional boundaries, general plan designations, specific plan designations, and zoning have been clearly delineated.	Maps: Figure 5.9-1- Figure 5.9-3		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 1 Date ____

Technical Area: **Land Use** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (3) (B)	A discussion of the compatibility of the proposed facilities with present and expected land uses, and conformity with any long-range land use plans adopted by any federal, state, regional, or local planning agency. The discussion shall identify the need, if any, for variances or any measures that would be necessary to make the proposal conform with permitted land uses	Sec. 5.9.1.3, 5.9.1.3.2, 5.9.2, 5.9.4		
Appendix B (g) (15) (B)	A map at a scale of 1:24,000 and written description of agricultural land uses found within all areas affected by the proposed project. The description shall include:	Agricultural land: Sec. 5.9.1.3.1, 5.9.13.2 Figure 5.9-1, 5.9-2		
Appendix B (g) (15) (B) (i)	Crop types, irrigation systems, and any special cultivation practices; and	Sec. 5.9.1.3.1		
Appendix B (g) (15) (B) (ii)	Whether farmland affected by the project is prime, of statewide importance, or unique as defined by the Natural Resource Conservation Service of the California Department of Conservation.	Sec. 5.9.2.1.1, 1.2.1		
Appendix B (g) (15) (C)	An assessment of the effects of the proposed project on soil resources and agricultural land uses. This decision shall include:	Soils and Agricultural Resources: Sec. 5.4, 5.9.1.3.2		
Appendix B (g) (15) (C) (ii)	Direct and indirect effects on agricultural land uses; and	Agricultural effects: Sec. 5.9.1.3.1, 5.9.2.2, 5.4.1.2, 5.4.2		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 1 Date ____

Technical Area: **Land Use** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	LORS compliance: Sec. 5.9.4, Table 5.9-3, Pgs. 5.9-9-5.9-19		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Agency jurisdiction: Sec. 5.9.4, 5.9.4.5, Table 5.9-3, 5.9-5		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	LORS conformity: Sec. 5.9.4, Table 5.9-3, Pgs. 5.9-9-5.9-19		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Agency contacts: Sec. 5.9.4.4, Table 5.9-4, Pg. 5.9-18		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Permit schedule: Sec. 5.9.4.5, Table 5.9-5		

5.10 SOCIOECONOMICS

The socioeconomic section describes the potential impact to the social and economic structure within the project vicinity and region resulting from Midway construction and operation. This discussion considers issues in project-related impacts to population, housing, public services (fire protection, emergency response services, law enforcement, schools, and medical services) and utilities, county tax revenue, and economic benefits from the project. Additionally, this section includes the cumulative impacts on the availability of labor within the area. Permits required for the project, proposed mitigation measures, LORS, and agency contacts relevant to socioeconomics are also discussed in this section.

5.10.1 Affected Environment

The proposed project includes the construction and operation of a generating facility in the unincorporated area of western Fresno County approximately 50 miles west of the City of Fresno. The site is adjacent to the Panoche Hills and east of the San Benito County line. West Panoche Road borders the northern edge of the site. The nearest intersection is the West Panoche Road/S. Fairfax Avenue intersection, approximately one mile to the east (refer to Figure 5.10-1). Fresno County is large, occupying about 6,000 square miles, and is roughly bordered on the west by San Benito and Monterey Counties, on the north by Merced and Madera Counties, on the east by Mono and Inyo Counties, and on the south by Tulare and Kings Counties. Fresno County is located in California's Central Valley, which is about 400 miles long, typically 40-60 miles wide, and covers a span of about 42,000 square miles. The Central Valley contains all or part of 18 counties, with a total of over five million people. These statistics amount to roughly 17 percent of California's population spread across over 40 percent of the land area.

The socioeconomic study area for this project includes the unincorporated area of Fresno County within the project vicinity, the nearby towns of Mendota and Firebaugh, and Fresno County as a whole. The environmental justice analysis evaluates the demographics and poverty for the population located within a 6-mile radius of the site.

5.10.1.1 Economic Base and Employment

The predominant industry in Fresno County and the surrounding regions of the Central Valley is agriculture. As a result of its seasonal orientation, economies in the Central Valley that rely heavily on agriculture are typically characterized by higher rates of poverty, lower median household incomes, and unusually high unemployment rates, compared with California's average.

While the general unemployment trend has improved in the last ten years, like much of the Central Valley, Fresno County historically and currently has higher unemployment rates compared to the state, as shown in Table 5.10-1. However, because of Fresno County's comparative market diversity, the county also serves as the financial, trade, commercial, and educational center for the Central Valley.

Fresno County's relative employment by industry is shown in Table 5.10-2. The top industries by percentage employment are government, trade, transportation and utilities, and agriculture. The non-farm industries are expected to grow nearly 2 percent annually between 2002 and 2012. This growth will add almost 58,000 new jobs and bring non-farm employment from 296,184 in 2006, to an estimated 369,400 people by 2012. Industries forecasted to grow faster than the region's annual rate include construction,

which has shown the highest growth rate in the past 10 years, professional and business services, and education and health services (EDD, 2006).

According to the U.S. Census Bureau, the median household income for Fresno County in 2003 was $35,952, compared to a state average of $48,440. The percentage of the population earning below the poverty threshold was 20.6 percent, versus California's average of 13.8 percent (U.S. Census Bureau, 2006).

TABLE 5.10-1
UNEMPLOYMENT PERCENTAGE, FRESNO COUNTY AND CALIFORNIA

Region	1990	1995	2000	2006
California	5.8	7.9	5.0	4.6
Fresno County	11.7	14.1	10.4	7.9

Source: State of California Employment Development Department, Labor Market Information Division, 2006.

TABLE 5.10-2
FRESNO COUNTY EMPLOYMENT BY INDUSTRY
ANNUAL, BY PERCENTAGE

Industry	1990	1995	2000	2006
Agriculture	19.0	19.3	17.0	14.0
Construction	5.4	3.9	4.6	6.5
Education and Health Services	8.7	9.4	9.4	10.7
Financial Activities	4.6	4.3	4.1	4.2
Government	18.3	19.1	20.0	20.1
Information	1.6	1.5	1.5	1.3
Leisure and Hospitality	6.3	6.8	7.5	7.4
Manufacturing	8.8	8.2	8.5	7.5
Natural Resources and Mining	0.3	0.2	0.1	0.1
Professional and Business Services	6.1	7.2	7.8	8.3
Trade, Transportation, and Utilities	17.7	17.0	16.3	16.2

Source: State of California, Employment Development Department, Labor Market Information Division, Fresno MSA, May 2006.

The Midway site is located in an unincorporated region of Fresno County, in an area of low population. In 2000, 608 people inhabited the area within a six-mile radius of the project site, while between 50 to 100 people inhabited the specific census block in which the project site is located (Figure 5.10-1). The primary industry in the area surrounding the project site is agriculture, as shown on Figure 5.4-1. Figure 5.10-2 shows the percentage of the population in poverty within the County.

Fresno County has undergone overall population growth since the 1980s. According to studies, Fresno County had a total population of 865,620 in 2004, which reflects an approximate 1.1 percent increase from 799,407 in 2000. The majority of the growth takes place in the urbanized cities of Fresno and Clovis.

The specific methodology used to analyze the environmental justice aspects of the project is detailed in legislation and guidelines discussed in Section 5.10.2.4. If project-related impacts were significant, other indirect socioeconomic impacts could occur, such as changes in community interaction patterns, social organizations, social structures, or social institutions, and conflicts with community attitudes, values, or perceptions. This analysis will assess the potential occurrence and significance of socioeconomic impacts for the construction and operation of Midway.

5.10.2 Environmental Consequences

The criteria used in determining whether project-related socioeconomic impacts would be significant are presented in the CEQA Guidelines, Appendix G. Impacts attributable to the project are considered significant if they would:

- Induce substantial growth or reduction of population
- Induce substantial increase in demand for public services and utilities
- Displace a large number of people or existing housing
- Disrupt or divide the physical arrangement of an established community
- Result in substantial long-term disruptions to businesses

5.10.2.1 Employment

According to the Electric Power Research Institute (EPRI)'s report entitled, "*Socioeconomic Impacts of Power Plants,*" construction workers will commute as much as two hours to construction sites from their homes, rather than relocate. Consultation with the Building and Construction Trades Council of Fresno, Madera, Tulare, and Kings County confirms that Fresno County has a large available workforce. Additionally, the Council has reviewed the estimated labor demands (Table 5.10-3), and based on current and historical labor and employment trends, is confident that the supply of workforce within a commuting distance is available for the project needs (Hutson, 2006). Construction is not expected to cause a significant impact to the local employment. The Council will first draw upon a labor pool within Fresno County. In the event that additional workers are required, for instance during the period of the project's peak worker demand, the Council will refer workers within the daily commute distance from the nearby Madera and Merced counties. Given the county's strong growth in the construction industry and the

availability of workers, it is expected that the project will not encounter difficulties finding an available labor force within the daily commute distance to supply the work force associated with construction of the proposed project. Midway will provide approximately $6.5 million (in 2006 dollars) in construction payroll at an average salary of $55 per hour, including benefits.

Plant operations will be directed from an existing and remote control room located in San Diego, California. All system equipment will be controlled through PLC utilizing control integration software and the project controls will be integrated into this proven control system. No additional employees will be required to conduct Midway operations as the remote control room is fully staffed.

Permanent employees will commute as much as one hour to their workplace *(Socioeconomic Impacts of Power Plants,* EPRI). Midway will require one (1) full time maintenance technician/operator at the site. The on-site employee is expected to be hired locally from the Fresno area.

The average salary per employee is expected to be $85,000 per year, including benefits. As Midway will require one full time employee (one maintenance technician/operator) at the site; the annual operation payroll will be approximately $85,000 for the facility.

5.10.2.2 Population

TABLE 5.10-3
LABOR PERSONNEL REQUIREMENTS BY MONTH

Months After Notice to Proceed											
	1	2	3	4	5	6	7	8	9	10	
Discipline	Construction Phase										Total
Carpenters	4	10	10	12	10	2					48
Cement Masons	5	7	10	7							29
Electricians		6	6	12	15	15	15	15	5	2	91
Insulation Workers					10	10	10	10	10	4	54
Ironworkers (rebar structural)	4	8	8	8	8	8					44
Laborers	5	5	16	16	16	10	10	10	6	6	100
Millwrights			6	8	8	8	6	4			40
Mech Equip Erection		6	16	10	10	10	10	10	10	2	84
Operating Engineers	2	2	4	4	4	4	4	4	4	2	30
Painters			2	6	6	6	6	6			32
Pipe fitters		6	6	16	16	20	20	20	16	6	126
Teamsters	1	1	1	2	2	2	2	2	1	1	15
Field Staff	5	5	5	5	5	5	5	5	5	5	50
Total Workforce	26	56	90	106	110	100	88	86	55	26	743

Fresno County's unincorporated regions typically encounter a slower and more intermittent growth compared with Fresno's metropolitan areas and small cities. As shown on Figure 5.10-1, the population within the project vicinity (6-mile radius) is relatively sparse, with 676 inhabitants in 1990, and 608 inhabitants in 2000. In general, populations in the unincorporated areas fluctuate according to the amount of employment available in the region. Table 5.10-4 summarizes historical and projected populations of the cities in the vicinity of the project, relative to Fresno County and the state.

TABLE 5.10-4
HISTORICAL AND PROJECTED POPULATIONS

Area	1980	1990	2000	2004	2010	2020
California[1]	23,667,764	29,760,021	33,871,648	35,893,799	38,067,134	42,206,743
Fresno County[1]	514,621	673,608	799,407	865,620	1,001,600	1,240,427
Mendota[2]	5,075	6,875	8,081	9,310 (2005)	10,676	13,506
Firebaugh[2]	3,740	4,200	5,917	6,046 (2005)	6,190	6,487
Project Vicinity[3]	Not Available	676	608	Not Available	Not Available	Not Available

Sources:
[1] U.S. Census Bureau, Department of Finance, and Bureau of Economic Analysis
[2] Council of Fresno County Governments
[3] Population within a six-mile radius of the project site

Estimated labor personnel requirements during the construction phase of the project are shown in Table 5.10-3. As mentioned in Section 5.10.2.2, labor workers within a commuting distance to the project site will be available to supply the workforce needed for the construction. It has been assumed for this analysis that manual labor staff would be comprised of local workers and contractor staff would be non-local workers temporarily working in the area. This analysis assumes that during an average work week, non-local workers will lodge in local hotels and motels, and then return home for the weekend. Local workers for the project are expected to commute to the project, rather than relocate. In this way, the project is not expected to significantly impact the population in the study area during construction.

As stated, the project will require the hiring of one (1) full-time employee for on-site operations (one maintenance technician/operator). It is anticipated that the maintenance technician/operator would be hired from within Fresno County and would commute, rather than relocate. The one employee may commute as much as one hour to the job from their home. The operational impact of Midway on the population in the study area is not expected to be significant.

5.10.2.3 Housing

As of 2000, there were approximately 270,767 housing units in Fresno County, 1,618 units in the City of Firebaugh, and 1,919 units in the City of Mendota (U.S. Census Bureau, 2000 Census). These totals include single-family, multi-family, and mobile home residences. In 2000, the average vacancy rate in Fresno County was 6.6 percent *(California Statistical Abstract, 2000)*.

As of July 2006, there are four hotel and motel lodgings, with approximately 150 rooms, in Mendota and Firebaugh. Specific occupancy rates were not available; however, Fresno is within commuting distance to the project (approximately 50 miles from the project site), where there are about 400 hotel and motel lodgings, with a total of over 5,000 rooms.

Additionally, there is an existing 5-plex located at the northern edge of the site. Occupants currently living in the 5-plex are agricultural workers employed by the land owner. As part of mitigation measures identified in Section 5.12, for potential noise impacts generated by the proposed project, PAO Investments, LLC (the property owner) will relocate the existing occupants (agricultural workers and their families) from the 5-plex to existing residential housing not adjacent to or in close proximity of the project site. Starwood Power-Midway, LLC would lease the 5-plex from PAO Investments, LLC and convert the building to a non-residential use (see Confidential Attachment A, PAO Investments, LLC - Starwood Power-Midway, LLC Lease Agreement). The project would displace the existing occupants and convert the 5-plex to a non-residential building. Approximately 10 occupants and a 5-plex are not considered a significant number of people or housing. Additionally, as adequate replacement housing would be found for these occupants, no significant impact is anticipated.

In consideration of the available local workforce and the number of non-local contractor workers, the project would not result in significant impacts to the housing in the project vicinity during project construction. Additionally, since the project expects to hire locally for the maintenance technician/operator position to work at the facility, the impacts to local housing will also be insignificant.

5.10.2.4 Environmental Justice

In response to Executive Orders 12250 and 12898, the CEC is required to consider environmental justice claims in the siting process. President Carter signed Executive Order 12250 in 1980, which directed federal agencies to adopt “disparate impact” regulations. “Disparate impacts” may be claimed if a minority community can demonstrate unique, different, and negative effects on their population, as a result of the actions of a state’s permitting agency (Scoll, 2003).

Executive Order 12898 directs each federal agency and state agencies such as the CEC, which receive federal assistance to “make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high or adverse human health effects of its programs, policies, and activities on minority populations and low-income populations…” In this respect, the CEC considers a “high and adverse” environmental or health effect disproportionately falling upon a minority or low-income population in its analysis of environmental justice.

The U.S. Environmental Protection Agency (USEPA)’s published guideline for addressing environmental justice concerns, *Guidance for Incorporating Environmental Justice Concerns in EPA’s NEPA Compliance Analyses* (1998), emphasizes the importance of selecting an analytical approach that is appropriate to the unique circumstances of the community potentially affected by a proposed project. The guidance also encourages the analyst to apply best judgment when drawing conclusions on whether the project may affect a low-income community disproportionately.

5.10.2.4.1 Environmental Justice Screening Analysis

The environmental justice screening analysis assesses whether "the potentially affected community includes minority and/or low income populations." A minority and/or low income population exists when the minority population exceeds 50 percent of the affected area's total population. Additionally, the screening analysis includes comparing the characteristics of the population residing near the proposed project versus the population located within the county area surrounding the proposed project.

As of 2000, the population within the project area was 608, as shown on Figure 5.10-1 and in Table 5.10-4. Of these inhabitants, 591 were found to be of Hispanic or Latino descent, as shown on Figure 5.10-3. Compared to Fresno County, which is 44 percent Hispanic or Latino (U.S. Census, 2000); the project area has 97 percent Hispanic or Latino population. It should be noted however, that the high percentage of Hispanic or Latino inhabitants in the project vicinity applies to a population of low density that is distributed over a large area. Of the 608 inhabitants within a six-mile radius of the project site, between twenty-five to forty-nine percent live below poverty levels (Figure 5.10-2).

The environmental justice screening process analyzes the project effects for a "high and adverse" environmental or health effect falling disproportionately upon a minority or low-income population. The Midway site occurs in a large unincorporated region of Fresno County uniform in its population density and poverty levels. The area within a six-mile radius of the project site exhibits very low population density, and has income levels consistent with the surrounding region, as shown in Figure 5.10-2. As evaluated in detail in Section 5.2, Air Quality, of this AFC, the project will not emit significant emissions of criteria pollutants that could lead to health effects in the project vicinity. Also, the project will not result in significant emission of toxic air contaminants that could increase the ambient cancer risk or result in non-cancer health effects above established thresholds (Section 5.16, Public Health and Safety). Additionally, the project will not involve wastewater discharges that could affect drinking water supplies (Section 5.5, Water Resources). Midway will also be designed to include noise mitigation measures such that there will be no significant noise or health impacts due to the project. These mitigation measures are discussed in Section 5.12, Noise. Lastly, the project includes construction of approximately 300 feet of transmission line. The line will be constructed to mitigate field effects, and will result in no significant impact to sensitive receptors (Section 3.0, Facility Description and Location). In summary, the analysis indicates that Midway will result in no significant environmental or health effects. Accordingly, considering the very sparse population density in the project area, environmental justice impacts from Midway would be less than significant.

5.10.2.5 Public Services

5.10.2.5.1 Fire Protection and Emergency Response

The project site is served by the Fresno County Fire Protection District (FCFPD). The FCFPD protects 2,566 square miles, and consists of 13 permanently staffed stations and 8 stations staffed with Paid Call Firefighters (PCFs). Each permanently staffed station serves an area of approximately 170 square miles.

Midway is within the service area of Station Number 96, in Mendota. Station 96 is located approximately 16 miles northeast of the project site. Station 96 typically has at least three full-time firefighter staff on duty, 24 hours a day. In addition to firefighting, all firefighters are trained emergency medical technicians

(EMTs), hazardous materials responders, and certified to perform confined space rescue. The fire response time to the project site is estimated to approximately 15-20 minutes. Station 96 routinely dispatches units from adjoining fire stations. In the event that additional resources are needed at the Midway site, the fire stations at Tranquility, Huron, Harris Ranch, and Caruthers will be available for support.

During facility operations, fire protection will be provided at the facility through a fixed fire protection system described in Section 3.4.13 (Fire Protection and Safety System). No significant project impacts are anticipated.

5.10.2.5.2 Medical Facilities

Fresno County contracts paramedic services to a private emergency medical service (EMS) provider, American Ambulance. American Ambulance provides basic and advanced life support services, and has at least a paramedic and EMT unit available at all times. The project site is covered under the Mendota station, which is located approximately 16 miles from the site. Once a unit is dispatched, American Ambulance follows an automatic protocol to supply additional units from neighboring stations in Kerman and Los Banos, in order to provide for continuous coverage for all areas. Services are sufficient to respond to emergencies at the project site within an appropriate response time of 30 minutes or less (Escobebo, 2006).

Additionally, American Ambulance is partnered with Skylife, which provides rapid air transportation for the critically injured trauma and medical patient. The helicopter is based at Fresno Yosemite International Airport in Fresno, and is staffed 24 hours/day with a flight nurse, flight paramedic, and EMS pilot.

During the facility construction and operation, American Ambulance and Skylife will transport injured personnel to the Fresno University Trauma Center (City of Fresno), Coalinga Regional Memorial Hospital, Memorial Hospital Los Banos, or Dos Palos Memorial Hospital, depending on the type of injury. Additionally, first aid kits and fire extinguishers will be located throughout the construction areas, and foremen and supervisors will be trained in first aid. First-aid trained safety personnel will comprise part of the construction staff. During project operation, proper worker safety programs will be implemented to minimize potential unsafe work conditions (Section 5.17). No significant project impacts are anticipated.

5.10.2.5.3 Law Enforcement

The Fresno County Sheriff's Department provides patrol services for over 6,000 square miles. The department services four patrol areas, each commanded by a substation located in each of the areas. Midway is located within Area 1, which covers over 2,400 square miles within western Fresno County, and is one of two patrol areas in the Southwest Field Services Bureau. The Area 1 station is located in the City of San Joaquin, and currently has 1 lieutenant, 7 sergeants, 1 office assistant, 4 community service officers, and 34 deputy sheriffs. At any time, at least three personnel are on staff at the station, and at least five or six cars are on patrol.

The Sheriff's Department's Air Support Unit supports ground-based units engaged in all facets of law enforcement activities. The air support unit may provide air support to other law enforcement agencies in the scope of mutual aid during life threatening, emergency situations.

Consultation with the Fresno County Sheriff's Department confirms that law enforcement will be able to respond accordingly to emergency situations without a negative impact to the sheriff's services to the community (Barramond, 2006). Additionally, the project will take steps during construction and operation to minimize the potential for law enforcement impacts. This includes the installation of a security fence around the entire project site and the provision of access gates, as required. No significant project impacts are anticipated.

5.10.2.5.4 Schools

Data from the school districts within the vicinity of the project is compiled in Table 5.10-5. The project site is located within the Mendota Unified School District, and the Firebaugh Unified School District is nearby. Because a sufficient labor pool exists within the commuting distance of the project, it is anticipated that construction and operation workers will commute to the project site rather than relocate. No impacts to schools are expected from the project construction.

TABLE 5.10-5
SCHOOL DISTRICT ENROLLMENT INFORMATION, 2004-2005

School District	Schools Affected	Enrollment
Mendota School District	Washington Elementary	665
	McCabe Elementary	782
	McCabe Junior High	317
	Mendota High School	591
Firebaugh School District	Hazel M. Bailey Elementary	725
	Arthur E. Mills Intermediate	356
	Firebaugh Middle School	629
	Firebaugh High School	724

Source: Fresno County Department of Education, 2006.

Based on the report issued by the Fresno County School District, *The School District Organization in Fresno County* (January, 2006), the Mendota Unified School District is currently at capacity; however, the district has pre-existing plans to grow and add a middle school by 2009. The Firebaugh-Las Deltas School District is currently experiencing low enrollment, based on enrollment trends in the past years.

As stated, one (1) permanent employee will staff the facility during operation. It is expected that either the Mendota or the Firebaugh School District could accommodate the employee's family, if hired from outside the county.

5.10.2.5.5 Utilities

The following subsections summarize the project's approach to evaluate impacts to public utilities. The project will result in no significant impact to the project vicinity.

5.10.2.5.6 Electricity

When Midway is shut down, electricity for the project site will be provided by PG&E by backfeeding from the PG&E transmission system at the PG&E Substation. When Midway is in operation, the balance of the plant will be supplied internally.

5.10.2.5.7 Natural Gas

Midway will tie into the existing 6-inch diameter fuel natural gas supply pipeline for CalPeak Panoche, which in turn ties into the PG&E main gas trunk line running down West Panoche Road. A separate meter and 6-inch line will supply Midway with natural gas.

5.10.2.5.8 Potable Water

The project facility will not require potable water supplies from the Fresno Water District. Instead, the project will provide bottled water for consumption. Other potable water requirements for the facility, including emergency eye wash stations, will be supplied by a production well.

5.10.2.5.9 Sewage System

The project will provide portable restrooms for personnel during construction and operation of the proposed facility. No sanitary system is proposed on-site as operation of the facility will be conducted from an existing and remote control room located in San Diego, California.

5.10.2.6 Fiscal Resources

The total property tax revenue for Fresno County for 2006 was approximately $560.4 million. All secured property (land and structures) in California is taxed at a base factor of 1.0 percent of the total assessed value, not including bonds and special assessments. The disbursement for this 1.0 percent is shown in Table 5.10-6.

TABLE 5.10-6
BASE FACTOR PROPERTY TAX DISBURSEMENT

Beneficiary Agency	Property Tax Allocation Percentage of Base Factor[1]
Fresno County Library	0.01 903
Fresno County Fire District	0.08585
Westlands Water District	0.06386
Fresno West Side Mosquito District	0.03093
Mendota Unified School District	0.4031
West Hills Junior College	0.06631
School Equalization for Fresno County Schools	0.03248
Fresno County	0.29844

[1] County of Fresno Assessor's Office, 2006.

The project will be located on approximately 5.6 acres of an approximately 128-acre area. The property is owned by PAO Investments, LLC, and committed by lease option to Starwood Power – Midway, LLC. This site is located within the County's Tax Rate Area 140-006, and the site tax rate is 1.158972. As the property is included in a Williamson Act contract during the 2005 fiscal year, the annual property tax for the entire 128-acre parcel was $6,114.70, where the tax for the 5.6-acre project site is approximately $268.00.

Midway's initial capital cost is estimated to be between $67 and $70 million. Of this, materials and supplies are estimated at approximately $46 million. To the extent possible, the project will purchase materials locally. Currently the estimated value of materials and supplies purchased within Fresno County during the construction phase is approximately $1,000,000.

Following the completion of construction, Midway will be reassessed for its property value and tax rate. California property tax assessments on electric generation facilities larger than 50 MW are performed at the state level through the California Board of Equalization (BOE). The BOE will determine the Unitary Market Value (UMV) of the facility, based upon the project's cost, revenue, expenses, and land value and then communicate the UMV to Fresno County. Fresno County is then responsible for assessing and collecting the property tax as a percentage of the UMV. According to the Fresno County Assessors' Office, the County will apply the 1.158972 property tax rate to the Midway UMV.

While the UMV determination is an extensive assessment process, the BOE considers the initial capital cost of the project may be conservatively estimated to be $68.5 million in 2009. Based on this estimate, the Midway's property tax for 2009 is expected to be approximately $700,000.

5.10.3 Cumulative Impacts

The potential for cumulative socioeconomic impacts exists where other projects are proposed in the region, construction schedules overlap, and employment opportunities are created. This project area and the surrounding area have not had any major development projects in the past 18 months, though three potential projects may be considered in the foreseeable future. Refer to Table 5.18-1 in Section 5.18, Cumulative Impacts, for information on these potential projects.

As previously discussed, mitigation measures identified for the Midway project in Section 5.12, Noise, include the relocation of existing occupants from the 5-plex to off-site existing residential housing. The proposed PEC project may also require the relocation of occupants, although only one residential unit is affected. Due to the minimal number of occupants affected this cumulative impact is not considered significant because a substantial number of people are not displaced. In addition, Midway will not require the construction of any replacement housing. As previously stated, all affected occupants will be relocated to existing off-site residential housing. Cumulative socioeconomic impacts would be less than significant.

5.10.4 Applicable LORS

Table 5.10-7 summarizes the LORS applicable to the socioeconomic impacts of Midway

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TABLE 5.10-7
LORS APPLICABLE TO SOCIOECONOMICS

LORS	Applicability	Conformance (Section)
Federal		
Executive Order 12250	Federal agencies to adopt disparate impact	5.10.4 regulations, where a minority community may claim a "disparate impact" when it can demonstrate unique, different, and negative effects resulting from the state's permitting agency
Executive Order 12898	Agencies are required to identify and address	5.10.4 disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low income populations
State		
Government Code Sections 65302 et seq.	Each city and county is required to develop a General Plan to guide planning and development within a jurisdiction.	5.10.7.2
Government Code Sections 65995-65997 (Education code Section 17620)	Includes provisions for levies against development projects in school districts	5.10.7.2
Local	None Identified	

5.10.4.1 Federal

5.10.4.1.1 Executive Order 12250

As discussed in Section 5.10.4, Executive Order 12250 requires federal agencies to adopt disparate impact regulations, where a minority community may claim a "disparate impact" when it can demonstrate unique, different, and negative effects resulting from the state's permitting agency. Refer to Section 5.10.4 for environmental justice concerns related to Midway.

5.10.4.1.2 Executive Order 12898

Also discussed in Section 5.10.4, Executive Order 12898 *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations* (1994) requires federal government agencies to identify and address disproportionately high and adverse effects of federal action on the health and environment of minority and low-income populations. The USEPA has adopted the Order, and the California Environmental Protection Agency has established a working group for environmental justice concerns. The CEC receives federal funding and therefore must address environmental justice concerns associated

with projects under its permitting jurisdiction. Refer to Section 5.10.4 for environmental justice concerns related to Midway.

5.10.4.2 State

5.10.4.2.1 Government Code Sections 65995-65997 and Education Code Sections 17620-17626

In the event that new development impacts schools to the extent of requiring new construction or reconstruction, Government Code sections 65995-65997 and Education Code sections 17620-17626 give governing boards the authority to collect developer fees for residential, commercial, and industrial development within a school district. In order to assess a fee, the district must conduct a Fee Justification Study that reasonably demonstrates a relationship between the fee and the type of development to be assessed. The study includes consideration for the number of employees increased as a result of that development and the housing provided for those employees.

5.10.4.2.2 Government Code Sections 65300-65303.4

California State Planning Law (Government Code Sections 65300-65303.4) requires that each city and county adopt a General Plan, consisting of seven mandatory elements, to guide planning and development within the jurisdiction. As with most jurisdictions, the Fresno County General Plan does not have LORS specifically addressing the socioeconomic aspects of a project such as Midway.

5.10.4.3 Local

There are no LORS that are considered to be directly applicable to socioeconomic issues for Midway.

5.10.4.4 Involved Agencies and Agency Contacts

Various public service agencies were contacted in the course of the socioeconomics investigation to check on levels of activity and expected impacts of the project. Table 5.10-8, Involved Agencies and Contacts, lists those agencies.

5.10.4.5 Applicable Permits, Permit Schedule, and Fees

Table 5.10-9 summarizes the socioeconomic permits and fees applicable to Midway. As shown, there are no applicable permits required related to socioeconomic resources.

However, the proposed project will be reviewed by the Mendota Unified School District and assessed a developer fee. This fee is independent of the government and education code stated above (5.10.7.2.1), and applies to all developments located within the Mendota Unified School District. The fee for commercial and industrial developments is calculated by applying $0.36 per square foot of a structural development. Based on current structural and equipment dimensions shown on Figure 3.4-1, Midway expects to pay a developer fee of approximately $8,337 (approximately 23,158.5 square feet of development).

TABLE 5.10-8
INVOLVED AGENCIES AND CONTACTS

Subject	Agency	Contact/Title	Telephone
Fiscal Resources	Assessor's Office	Ruben Coronado, Chief Audit Appraiser	559-488-3514
Fiscal Resources	Fresno Auditor's Office	Kim Lamanuzzi	559-488-3496
Education	Mendota School District	Jose Alcaide, Director of Finance	559-655-4942
Fire Protection Services	Fresno County Fire Protection District, Mendota Station 96	Rusty Souza, Battalion Chief; Phil Gomez, Captain	559-655-4107
Law Enforcement	Fresno County Sheriff's Department	Lieutenant Ian Barramond	559-693-2437
Labor	Building and Construction Trades Council of Fresno, Madera, Tulare, and Kings County	John Hutson, Financial Secretary	559-457-0894
Planning	Department of Public Works and Planning, Fresno County	Bernard Jimenez	559-262-4078

TABLE 5.10-9
APPLICABLE SOCIOECONOMIC PERMITS AND FEES

Jurisdiction	Potential Permit and Fee Requirements
Federal	No permits or fees have been identified
State	No permits or fees have been identified
Local Mendota Unified School District	Developer fees assessed once project plans have been submitted

5.10.5 References

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Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Socioeconomics** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Existing conditions: Sec. 5.10.1 Impacts: Sec. 5.10.2, 5.10.3 Mitigation: Sec. 5.10.3		
Appendix B (g) (7) (A)	A description of the socioeconomic circumstances of the vicinity and region affected by construction and operation of the project. Include:	--	--	
Appendix B (g) (7) (A) (i)	The economic characteristics, including the economic base, fiscal resources, and a list of the applicable local agencies with taxing powers and their most recent and projected revenues;	Sec. 5.10.1.1 Table 5.10-1, 5.10-2		
Appendix B (g) (7) (A) (ii)	The social characteristics, including population and demographic and community trends;	Sec. 5.10.2.2, 5.10.2.3		
Appendix B (g) (7) (A) (iii)	Existing and projected unemployment rates;	Sec. 5.10.1.1, 5.10.2.1 Table 5.10-1		
Appendix B (g) (7) (A) (iv)	Availability of skilled workers by craft required for construction and operation of the project;	Sec. 5.10.2.1		
Appendix B (g) (7) (A) (v)	Availability of temporary and permanent housing; and	Sec. 5.10.2.3		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Socioeconomics** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (7) (A) (vi)	Capacities, existing and expected use levels, and planned expansion of utilities (gas, water and waste) and public services, including fire protection, law enforcement, emergency response, medical facilities, other assessment districts, and school districts. For projects outside metropolitan areas with a population of 500,000 or more, information for each school district shall include current enrollment and yearly expected enrollment by grade level groupings, excluding project-related changes, for the duration of the project construction schedule.	Sec. 5.10.2.5 Table 5.10-5		
Appendix B (g) (7) (B)	A discussion of the socioeconomic impacts caused by the construction and operation of the project, including:	Sec. 5.10.2, 5.10.3		
Appendix B (g) (7) (B) (i)	The number of workers to be employed each month by craft during construction and operation;	Table 5.10-3		
Appendix B (g) (7) (B) (ii)	An estimate of the number and percentage of workers who will commute daily, commute weekly, or relocate in order to work on the project;	Sec. 5.10.2.1, 5.10.2.2		
Appendix B (g) (7) (B) (iii)	An estimate of the potential population increase caused directly and indirectly by the project;	Sec. 5.10.2.2		
Appendix B (g) (7) (B) (iv)	The potential impact of population increase on housing during the construction and operations phases;	Sec. 5.10.2.3		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Socioeconomics** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (7) (B) (v)	The potential impacts, including additional costs, on utilities (gas, water and waste) and public services, including fire, law enforcement, emergency response, medical facilities, other assessment districts, and school districts. For projects outside metropolitan areas with a population of 500,000 or more, information on schools shall include project-related enrollment changes by grade level groupings and associated facility and staffing impacts by school district during the construction and operation phases;	Sec. 5.10.2.5 Table 5.10-5		
Appendix B (g) (7) (B) (vi)	An estimate of applicable school impact fees;	Sec. 5.10.4.5		
Appendix B (g) (7) (B) (vii)	An estimate of the total construction payroll and an estimate of the total operation payroll;	Sec. 5.10.2.1		
Appendix B (g) (7) (B) (viii)	An estimate of the expenditures for locally purchased materials for the construction and operation phases of the project; and	Sec. 5.10.2.6		
Appendix B (g) (7) (B) (ix)	An estimate of the capital cost of the project of the potential impacts on tax revenues from construction and operation of the project.	Sec. 5.10.2.6		
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	LORS compliance: Sec. 5.10.4, Table 5.10-7		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Socioeconomics** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Sec. 5.10.4.5 Table 5.10-8		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	LORS conformity: Sec. 5.10.4 Table 5.10-7		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Sec. 5.10.4 Table 5.10-8		
Appendix (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Sec. 5.10.4.5 Table 5.10-8, 5.10-9		

5.11 TRAFFIC AND TRANSPORTATION

The traffic and transportation section provides a summary of the transportation infrastructure and traffic conditions in the Midway project vicinity, and addresses the direct construction and operating impacts of the proposed development on the surrounding transportation system. It addresses potential impacts associated with traffic and transportation systems in the project area that may result from construction and operation of Midway. The analysis considers the regional and local roadways, current and project-related traffic conditions, access to the project site and transportation of hazardous materials related to construction and operation of the plant.

The project study area for the transportation analysis includes the immediate vicinity of the Midway site and the surrounding local and regional circulation system. This circulation system could be potentially affected by traffic generated by Midway during construction and operations when the project is completed. Figure 5.11-1 shows the Midway project site in context to the regional circulation system.

5.11.1 Affected Environment

This subsection describes the existing conditions of the roadway circulation system within the study area. This section also presents the traffic volume and existing operating conditions of the study roadway segments and intersections. Figure 5.11-2 shows the Midway project study area.

The rural isolation of the project site from major population centers effectively eliminates potential conflicts with infrastructures associated with urban environment including airports, transportation centers, rail lines, bus and bike routes, and other ancillary facilities supporting commerce and industries. Therefore, the focus of the traffic impact analysis is the evaluation of transportation and circulation impacts to the adjacent facilities (West Panoche Road and Interstate 5 [I-5]) during the construction and operation phase of the project.

5.11.1.1 Existing Roadway Network

West Panoche Road serves the Midway project study area with direct ramp connections to I-5 approximately two miles west of the project site. East of the project site, West Panoche Road continues east and connects to the local circulation network of the adjoining cities of Mendota to the north, Firebaugh to the northwest, Kerman to the east and Fresno further east. West Panoche Road transitions eastbound to North Avenue, then to a short north-south stretch of North Avenue, then continues eastbound on California Avenue and Whitesbridge Avenue (SR 180) towards State Route 99 in Fresno.

California Department of Transportation (Caltrans) District 6 staff confirm that there are no major construction activities planned for I-5 within the project study area. Spot repairs of pavement, guardrails and other freeway fixtures will be conducted as part of preventive maintenance and repair.

5.11.1.1.1 Caltrans Vehicle Requirements

From Caltrans' Division of Traffic Operations, the following is a list of requirements for legal, unpermitted vehicles to operate in California.

Vehicle Width. The maximum allowable vehicle width is 102 inches (some exceptions apply).

Vehicle Height. The maximum allowable vehicle height is 14 feet.

Vehicle Length (California Legal). The maximum allowable lengths for vehicles that can travel throughout California are as follows (some exceptions apply).

- Single vehicle length is 40 feet
- Combination length is 65 feet
- Trailer length is not specified
- Kingpin-to-rear-axle (KPRA) length is 40 feet maximum
- Doubles - 75 feet for combination of vehicles consisting of a truck tractor and two trailers, provided neither trailer length exceeds 28 feet 6 inches
- Doubles - 65 feet for combination of vehicles consisting of a truck tractor and two trailers, if one trailer length exceeds 28 feet 6 inches

Vehicle Length Surface Transportation Assistance Act (STAA). The maximum allowable lengths for vehicles that are limited to the National Network and Terminal Access routes are as follows:

- Combination length is unlimited
- Maximum trailer length is 53 feet
- KPRA is unlimited if trailer is no more than 48 feet
- KPRA is 40 feet maximum if trailer is more than 48 feet
- Doubles - unlimited length for combination of vehicles consisting of a truck tractor and two trailers, but *neither* trailer length can exceed 28 feet 6 inches

Vehicle Weight. The maximum allowable weights are as follows:

- Gross combination weight is 80,000 pounds
- Single-axle weight is 20,000 pounds
- Maximum weight on a tandem axle with a four-foot spread is 34,000 pounds
- Gross combination weight is 80,000 pounds
- Single-axle weight is 20,000 pounds
- Maximum weight on a tandem axle with a four-foot spread is 34,000 pounds

Exceptions. For specific exceptions and variances, refer to the California Highway Patrol (CHP) 889, "Vehicle Code Size and Weight Law Summary" or call the Commercial Vehicle Section of the CHP.

5.11.1.1.2 Highways

Interstate 5. I-5 is a major north-south route through the Central Valley and the length of California, extending from San Diego County towards the states of Oregon and Washington. Within the project study area, I-5 provides for two mainline lanes in each direction with wide shoulders and a center median. Current Average Daily Traffic (ADT) volume on the segment of I-5 between Manning Avenue and Russell Avenue is 51,500 vehicles per day with truck traffic ranging from 25 to 30 percent. Within the project study area, the study segment of I-5 generally follows a straight northerly-trending alignment with relatively flat vertical profile. There is adequate median width separating the opposing traveled way and wide shoulders for roadway stops and emergencies. There are no identified geometric features that would affect public safety.

5.11.1.1.3 Local Roads

West Panoche Road. West Panoche Road is a two-lane east-west roadway classified as a Collector in the Fresno County General Plan. West Panoche Road serves as the primary access to the project site. Current ADT volume on the segment of West Panoche Road between I-5 between and the Midway project site is 1,057 vehicles per day with 15 percent truck traffic. Within the project study area West Panoche Road has a generally straight horizontal east-west alignment and level vertical profile. There are no identified geometric features that would affect public safety.

Midway Access Road. The proposed Midway access road will provide the primary access of the Midway site from West Panoche Road. It will be approximately 20 feet wide and 1,400 feet long, providing adequate width for two-way vehicular traffic.

5.11.1.2 Bicycle Facilities

According to the routes defined in the Fresno County Rural Bikeway system, there are no designated bicycle routes within the immediate vicinity of project site.

5.11.1.3 Existing Roadway and Intersection Geometrics

Table 5.11-1 shows the key study area intersections that have been identified for analysis under existing, project construction and operations conditions. Figure 5.11-3 shows the existing intersection geometrics.

Table 5.11-1
Study Intersections

Intersection	Traffic Control
I-5 Southbound Ramp/West Panoche Road	Unsignalized
I-5 Northbound Ramp/West Panoche Road	Unsignalized

5.11.1.3.1 Existing Roadway and Intersection Volumes

Figure 5.11-4 shows existing traffic volume for the key study area intersections. Roadway segment and study area intersection traffic counts were collected in June 2006. The traffic counts are provided in Appendix N.

5.11.1.3.2 Existing Level of Service Analysis

The results of the existing conditions roadway segment and intersection Level of Service (LOS) analysis are discussed separately below. LOS is an indicator of operating conditions on a roadway or at an intersection and is defined in categories ranging from A to F. These categories can be viewed much like school grades, with A representing the best traffic flow conditions and F representing poor conditions. LOS A indicates free-flowing traffic and LOS F indicates substantial congestion with stop-and-go traffic and long delays at intersections.

5.11.1.3.3 Existing Roadway Segment Analysis

Table 5.11-2 displays the LOS analysis results for key study area roadway segments under existing conditions. Two roadway segments of West Panoche Road were selected for evaluation, as they are the locations that would most likely be affected by project traffic during both project construction and operation.

As shown in Table 5.11-2, all study roadway segments are currently operating at acceptable LOS B or better under existing conditions.

5.11.1.3.4 Existing Intersection Analysis

Table 5.11-3 displays the intersection LOS and average vehicle delay results for the key study area intersections using Highway Capacity Manual (HCM) Operations Methodology under existing conditions. Both intersections are currently unsignalized. The LOS calculation worksheets for existing conditions are provided in Appendix N.

As shown in Table 5.11-3, both study intersections are currently operating at acceptable LOS A under existing conditions.

Table 5.11-2
Roadway Segment LOS – Existing Conditions

Roadway	Segment	Cross-Section Classification	Traffic Volume	Level of Service (LOS)
I-5	Manning to Russell	Freeway	51,500[1]	B[3]
West Panoche Road	Between I-5 and Midway Site	2-Lane Collector	41/73[2]	A/A[4]
West Panoche Road	East of Midway Site	2-Lane Collector	52/69[2]	A/A[4]

[1] ADT
[2] Peak Hour Volume
[3] ADT LOS
[4] Peak Hour LOS

Table 5.11-3
Peak Hour Intersection LOS – Existing Conditions

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
I-5 SB Ramps/West Panoche Road [1]	A	2.4	A	2.3
I-5 NB Ramps/West Panoche Road [1]	A	6.6	A	7.5

[1] Unsignalized two-way stop controlled.

5.11.2 Environmental Consequences

This subsection provides the criteria used to determine if the project would have the potential to result in significant traffic-related impacts within the Midway study area.

5.11.2.1 LOS Concept

As introduced in subsection 5.11.1.4, LOS is an indicator of operating conditions on a roadway or intersection and is defined in categories ranging from A to F, with A representing the best traffic flow conditions and F representing poor conditions. Table 5.11-4 provides the level of service definitions as specified in the HCM.

5.11.2.2 Significance Thresholds

The following policy, as cited from the Transportation and Circulation Element Policy Document October 2000, Fresno County General Plan, was used in the assessment of potential construction and operational traffic impacts for the Midway project.

5.11.2.2.1 Policy TR-A.2

"The County shall plan and design its roadway system in a manner that strives to meet Level of Service (LOS) D on urban roadways within the spheres of influence of the cities of Fresno and Clovis and LOS C on all other roadways in the county. Roadway improvements to increase capacity and maintain LOS standards should be planned and programmed based on consideration of the total overall needs of the roadway system, recognizing the priority of maintenance, rehabilitation, and operation of the existing road system. The County may, in programming capacity-increasing projects, allow exceptions to the level of service standards in this policy where it finds that the improvements or other measures required to achieve the LOS policy are unacceptable based on established criteria. In addition to consideration of the total overall needs of the roadway system, the County shall consider the following factors:

- The right-of-way needs and the physical impacts on surrounding properties;
- Construction and right-of-way acquisition costs;
- The number of hours that the roadway would operate at conditions below the standard;

- The ability of the required improvement to significantly reduce delay and improve traffic operations; and
- Environmental impacts upon which the County may base findings to allow an exceedance of the standards.

In no case should the County plan for worse than LOS D on rural County roadways, worse than LOS E on urban roadways within the spheres of influence of the cities of Fresno and Clovis, or in cooperation with Caltrans and the Council of Fresno County Governments, plan for worse than LOS E on State highways in the County."

Table 5.11-4
LOS Descriptions

Average Vehicle Delay per Vehicle	LOS Characteristics
≤ 10	LOS A describes operations with very low delay, up to 10 seconds per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay
>10 and ≤20	LOS B describes operations with delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.
>20 and ≤35	LOS C describes operations with delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
>35 and ≤55	LOS D describes operations with delay greater than 35 and up to 55 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity (v/c) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
>55 and ≤80	LOS E describes operations with delay greater than 55 and up to 80 seconds per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.
>80	LOS F describes operations with delay in excess of 80 seconds per vehicle. This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing cause to such delay levels.

Source: 2000 Highway Capacity Manual, TRB Special Report 209

5.11.2.3 Construction-related Impacts (Year 2008 Peak Project Construction)

Midway project construction is anticipated for completion within a ten-month construction period. The average construction workforce will consist of 75 workers over this time period. During an approximately three-month peak period, the construction workforce may reach up to 110 workers (see Figure 5.5-11).

Based on earlier consultation with Fresno County Public Works Department staff, Year 2008 baseline conditions were developed using the recommended 3.0 percent annual growth factor to account for cumulative projects within the project study area.

During the project construction period, small quantities of hazardous materials and construction waste products will be hauled to and from the project site. More detailed discussion on project waste management and handling of hazardous materials are presented in Section 5.14, Waste Management and Section 5.15, Hazardous Materials, respectively. All applicable laws, ordinances, regulations, and standards (LORS) will be observed during the course of project construction.

5.11.2.4 Operations-related Impacts (Year 2009 Project Operations)

Similar to Year 2008 baseline conditions, Year 2009 baseline conditions were developed consistent with the Fresno County recommended traffic growth assumptions. Upon completion of construction and commissioning of the proposed facility, Midway will generate operations-related trips that are substantially less than during peak construction activities.

During the operational phase of the project, a one-employee workforce will oversee the maintenance of the project. Plant operations will be directed from by one employee at an existing and remote control room located in San Diego California and on-site staff will include one maintenance technician/operator on a daily basis. Occasional deliveries and maintenance-related trips are anticipated as part of plant operations.

Based on the operational needs of Midway, the following sources of vehicular traffic are anticipated:

- Maintenance technician/operator personnel vehicle
- Bottled water deliveries
- Portable sanitary units delivery and maintenance
- Trash pickup
- Chemical (e.g., aqueous ammonia, sulfuric acid, demineralized water treatment) deliveries
- Lubricating oil and filters deliveries
- Hazardous and non-hazardous waste pickups
- Visitor vehicles

During project operations, small quantities of hazardous materials and operational waste products will be hauled to and from the project site. More detailed discussion on project waste management and handling of hazardous materials are presented in Section 5.14, Waste Management and Section 5.15, Hazardous Materials, respectively. All applicable LORS will be observed during the project operations.

5.11.2.5 Future 20-Year Horizon Impacts

In consultation with Fresno County Public Works Department, it was determined that a Future 20-Year Horizon analysis is not warranted as daily project operational trips generated are substantially lower than the 100 daily project trip generation threshold required for a Future 20-Year Horizon analysis.

5.11.2.6 Project Distribution

It is assumed that the majority of the project's construction workforce needs will be met with local labor from within Fresno County. The short-term need for specialty trades that cannot be filled from local labor sources during project construction are assumed to be filled by workers residing elsewhere. It is assumed that construction traffic trips would primarily use I-5. The only on-site long-term maintenance technician/operator is anticipated to be locally sourced and would primarily use West Panoche Road east of the project site.

5.11.2.7 Project Trip Generation

5.11.2.7.1 Peak Project Construction Trip Generation

For analysis purposes, the peak three-month period during the ten-month construction schedule was used in the construction traffic impact analysis for the proposed project. This assumption presents the worst-case scenario and the most conservative estimation of project construction traffic.

In the project area, AM peak hour traffic is between 7:00 AM to 9:00 AM and PM peak hour traffic is between 4:00 PM to 6:00 PM. Typically, construction activity early work starts before the adjacent street peak hour traffic; however, for traffic impact analysis purposes, it was conservatively assumed that construction worker traffic would commute within the adjacent street peak hour traffic windows.

In addition to the construction workforce trips, construction related equipment deliveries and truck traffic would contribute additional trips during the construction period. Truck and heavy equipment traffic was estimated using a passenger car equivalent (PCE) factor of 3 cars per truck.

Table 5.11-5 presents the peak project construction trip generation estimates for the proposed project.

The following breakdown explains in greater detail the methodology used in the estimation of the peak trip generation assumptions.

- Peak Midway Construction Workers – It was conservatively assumed that the peak 110 construction workers would drive alone, resulting in 110 inbound trips and 0 outbound trips during the AM peak hour and 0 inbound trips and 110 outbound trips during the PM peak hour. Based on the AM/PM peak hour directional trips, the resultant daily trips are 110 inbound and 110 outbound trips for a total of 220 daily trips.

- Equipment Deliveries – Based on past experience from similar use projects, the equipment deliveries assumption were conservatively estimated at three deliveries per day rather than based the number of equipment on site. For analysis purposes, two equipment deliveries trips (two

inbound and two outbound trips) were assumed to occur during the AM peak hour. The third delivery (one inbound trip) was assumed to occur between during the off-peak hours, and leave the site (one outbound trip) during the PM peak hour. The resultant daily trips are 3 inbound and 3 outbound trips for a total of 6 daily trips.

As shown in the Table 5.11-5, the PCE adjusted Equipment Delivery trips translate into six inbound and six outbound trips during the AM peak hour, zero inbound and three outbound trips during the PM peak hour. The resultant daily trips accounting for all equipment deliveries are 9 inbound and 9 outbound trips for a total of 18 daily trips.

- Construction Trucks – Similar to the equipment deliveries' background information, Construction Truck trips assumption were conservatively estimated at four trips per day. For analysis purposes, two truck trips (two inbound) were assumed to occur during the AM peak hour with the (two outbound) trips occurring past the AM peak hour. The remaining two trucks (two inbound) are assumed to arrive during the off-peak hours and leave the site (two outbound trip) during the PM peak hour. The resultant daily trips are four inbound and four outbound trips for a total of eight daily trips.

- As shown in the Table 5.11-5, the PCE adjusted construction truck trips translate into six inbound and zero outbound trips during the AM peak hour, zero inbound and six outbound trips during the PM peak hour. The resultant daily trips accounting for all construction truck movements are 12 inbound and 12 outbound trips for a total of 24 daily trips.

As shown in Table 5.11-5, during the peak three-month project construction period, it is conservatively estimated that there will be approximately 262 total daily trips. As discussed above, 15 trips occur outside of the AM and PM peak analyses hours, therefore the trips included in the traffic impact analysis include only 128 AM peak hour and 119 PM peak hour trips respectively. These figures were used as the basis for the peak project construction traffic analysis.

Table 5.11-5
Peak Project Construction Trip Generation

	Daily Trips	AM Peak Hour Trips		PM Peak Hour Trips	
		In	Out	In	Out
Peak Midway Construction Workers [1]	220	110	0	0	110
Equipment Deliveries[2,4]	18	6	6	0 (3)[5]	3
Construction Trucks[3, 4]	24	6	0 (6)[5]	0 (6)[5]	6
Total Trips	262	122	6 (6)[5]	0 (9)[5]	119

1 Worker traffic during 3-month Peak Project Construction period in Year 2008
2 Equipment movement during 3-month Peak Project Construction period in Year 2008
3 Construction truck movement during 3-month Peak Project Construction period in Year 2008
4 3 Passenger Car Equivalent (PCE) per truck
5 Trips in parenthesis occurring during off peak hours

5.11.2.7.2 Project Operations Trip Generation

Upon completion of project construction, plant operations will be directed from an existing and remote control room located in San Diego, California. Therefore, it is anticipated that on-site staff will include one maintenance technician/operator at the site on a daily basis. For analysis purposes, one demineralized water treatment service trip was included as a worst-case project operating conditions scenario.

During normal plant operating hours, occasional visitor trips, maintenance visits and as-needed material and equipment deliveries are anticipated on a non-recurring basis and will most likely be occurring outside of the 7-9 AM and 4-6 PM analysis peak hours.

Table 5.11-6 presents operations trip generation estimates for the proposed project.

Table 5.11-6
Project Operations Trip Generation

	Daily Trips	AM Peak Hour Trips		AM Peak Hour Trips	
		In	Out	In	Out
Operational Workforce [1]	2	1	0	0	1
Demineralized Water Treatment [2]	2	1	0	0	1
Total Trips	4	2	0	0	2

[1] One single maintenance technician/operator (1 employee)
[2] One demineralized water treatment service call were conservatively assumed to commute during the 7-9 AM and 4-6 PM adjacent street peak hour traffic.

5.11.2.8 Year 2008 Conditions Impact Analysis

This section describes Year 2008 traffic conditions for both "with" and "without" the proposed peak project construction. The following scenarios were analyzed under Year 2008 conditions:

- Year 2008 No Project Conditions
- Year 2008 Peak Project Construction Conditions

5.11.2.8.1 Year 2008 No Project Conditions

The Year 2008 No Project baseline conditions builds upon existing traffic volume and includes Fresno County Public Works Department recommended ambient traffic growth of 3.0 percent per year to account for potential related cumulative projects within the project study area. Figure 5.11-6 shows the Year 2008 No Project peak hour traffic volumes at the project study intersections.

5.11.2.8.2 Year 2008 No Project Roadway Segment Analysis

Table 5.11-7 summarizes the results of the Year 2008 No Project roadway segment analysis. The roadway segment LOS calculation worksheets are provided in Appendix N.

Table 5.11-7
Roadway Segment LOS
Year 2008 No Project Conditions

Roadway	Segment	Cross-Section Classification	Traffic Volume	Level of Service
I-5	Manning to Russell	Freeway	54590[1]	B [3]
West Panoche Road	Between I-5 and Midway Site	2-Lane Collector	43/77 [2]	A/A [4]
West Panoche Road	East of Midway Site	2-Lane Collector	55/73 [2]	A/A [4]

[1] ADT
[2] Peak Hour Volume
[3] ADT LOS
[4] Peak Hour LOS

As shown in Table 5.11-7, all study roadway segments are forecast to operate at acceptable LOS B or better under Year 2008 No Project conditions.

5.11.2.8.3 Year 2008 No Project Intersection Analysis

Table 5.11-8 displays the intersection LOS and average vehicle delay results under Year 2008 Peak No Project conditions. The intersection LOS calculation worksheets are provided in Appendix N.

Table 5.11-8
Peak Hour Intersection LOS –
Year 2008 No Project Conditions

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
I-5 SB Ramps/West Panoche Road [1]	A	2.4	A	2.3
I-5 NB Ramps/West Panoche Road [1]	A	6.6	A	7.7

[1] Unsignalized two-way stop controlled.

As shown in Table 5.11-8, both study intersections are forecast to operate at acceptable LOS A under Year 2008 No Project conditions.

5.11.2.8.4 Year 2008 Peak Project Construction Conditions

This scenario includes Year 2008 No Project traffic volumes plus Midway peak project construction activity trip generation. Figure 5.11-7 shows Year 2008 Peak Project Construction peak hour traffic volumes at the project study intersections.

5.11.2.8.5 Year 2008 Peak Project Construction Roadway Segment Analysis

Table 5.11-9 displays the LOS analysis results for the study area roadway segments under Year 2008 with Peak Project Construction conditions.

Table 5.11-9
Roadway Segment LOS – Year 2008 Peak Project Construction Conditions

Roadway	Segment	Cross-Section Classification	Traffic Volume	Level of Service
I-5	Manning to Russell	Freeway	54645[1]	B [3]
West Panoche Road	Between I-5 and Midway Site	2-Lane Collector	119/133[2]	A/A [4]
West Panoche Road	East of Midway Site	2-Lane Collector	107/136[2]	A/A [4]

[1] ADT
[2] Peak Hour Volume
[3] ADT LOS
[4] Peak Hour LOS

As shown in Table 5.11-9, all the study roadway segments are forecast to operate at acceptable LOS B or better under Year 2008 Peak Project Construction conditions. The roadway segment LOS calculation worksheets are provided in Appendix N.

5.11.2.8.6 Year 2008 Peak Project Construction Intersection Analysis

Table 5.11-10 displays the intersection LOS and average vehicle delay results under Year 2008 with Peak Project Construction conditions. The intersection LOS calculation worksheets are provided in Appendix N.

As shown in Table 5.11-10, both study intersections are forecast to operate at acceptable LOS A under Year 2008 with Peak Project Construction conditions. As previously discussed, the Year 2008 Peak Construction activities were analyzed to reflect the worst case traffic analysis scenario during construction of the Midway project.

Table 5.11-10
Peak Hour Intersection LOS – Year 2008 Peak Project Construction Conditions

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
I-5 SB Ramps/Panoche Road [1]	A	3.3	A	2.7
I-5 NB Ramps/Panoche Road [1]	A	6.3	A	7.3

[1] Unsignalized two-way stop controlled.

5.11.2.8.7 Year 2008 Conditions Traffic Impact Summary

Based on the Fresno County Department of Public Works traffic impact threshold criteria, none of the project study intersections would be significantly impacted during peak project construction activity in Year 2008. The existing circulation system including study roadways, freeway segments and intersections have sufficient capacity to accommodate peak Midway project construction traffic.

5.11.2.9 Year 2009 Conditions Impact Analysis

This section focuses on Year 2009 traffic conditions for both "with" and "without" proposed project operations.

The operation of Midway will only require a single maintenance technician/operator onsite. However, non-recurring site visits are anticipated as a result of Midway operations. The following analysis scenarios were conducted under the Year 2009 Conditions analysis:

- Year 2009 No Project Conditions
- Year 2009 Project Operations Conditions

5.11.2.9.1 Year 2009 No Project Conditions

The Year 2009 No Project baseline conditions builds upon the Year 2008 No Project conditions with minor increase in ambient traffic growth to account for background traffic. Figure 5.11-8 shows Year 2009 No Project peak hour traffic volume at the project study intersections.

5.11.2.9.2 Year 2009 No Project Roadway Segment Analysis

Table 5.11-11 displays the intersection LOS and average vehicle delay results under Year 2009 No Project conditions. The roadway segment LOS calculation worksheets are provided in Appendix N.

As shown in Table 5.11-11, all of the study roadway segments are forecast to operate at acceptable LOS C or better under Year 2009 No Project conditions.

Table 5.11-11
Roadway Segment LOS – Year 2009 No Project Conditions

Roadway	Segment	Cross-Section Classification	Traffic Volume	Level of Service
I-5	Manning to Russell	Freeway	56135[1]	C [3]
West Panoche Road	Between I-5 and Midway Site	2-Lane Collector	45/80[2]	A/A [4]
West Panoche Road	East of Midway Site	2-Lane Collector	57/75[2]	A/A [4]

[1] ADT
[2] Peak Hour Volume
[3] ADT LOS
[4] Peak Hour LOS

5.11.2.9.3 Year 2009 No Project Operations Intersection Analysis

Table 5.11-12 displays intersection LOS and average vehicle delay results under Year 2009 No Project Operations conditions. The intersection LOS calculation worksheets are provided in Appendix N.

Table 5.11-12
Peak Hour Intersection LOS –
Year 2009 No Project Operations Conditions

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
I-5 SB Ramps/West Panoche Road [1]	A	2.4	A	2.3
I-5 NB Ramps/West Panoche Road [1]	A	6.6	A	7.7

[1] Unsignalized two-way stop controlled.

As shown in Table 5.11-12, the result of the Year 2009 No Project conditions analysis shows that both study intersections are forecast to operate at acceptable LOS A conditions.

5.11.2.9.4 Year 2009 Project Operations Conditions

This scenario includes Year 2009 Project traffic volume and incorporates the proposed project operation added trips. Figure 5.11-9 shows Year 2009 Project operations AM and PM peak hour traffic volumes at the project study intersections.

5.11.2.9.5 Year 2009 Project Operations Roadway Segment Analysis

Table 5.11-13 displays the LOS analysis results for the key study area roadway segments under Year 2009 Project Operations conditions. The roadway segment LOS calculation worksheets are provided in Appendix N.

Table 5.11-13
Roadway Segment LOS – Year 2009 Project Operations Conditions

Roadway	Segment	Cross-Section Classification	Traffic Volume	Level of Service
I-5	Manning to Russell	Freeway	56135[1]	C [3]
West Panoche Road	Between I-5 and Midway Site	2-Lane Collector	45/80[2]	A/A [4]
West Panoche Road	East of Midway Site	2-Lane Collector	59/77[2]	A/A [4]

[1] ADT
[2] Peak Hour Volume
[3] ADT LOS
[4] Peak Hour LOS

As shown in Table 5.11-13, all of the study roadway segments are forecast to operate at acceptable LOS C or better under Year 2009 Project Operations conditions.

5.11.2.9.6 Year 2009 Project Operations Intersection Analysis

Table 5.11-14 displays intersection LOS and average vehicle delay results under Year 2009 Project Operations conditions. The intersection LOS calculation worksheets are provided in Appendix N.

Table 5.11-14
Peak Hour Intersection LOS – Year 2009 Project Operations Conditions

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
I-5 SB Ramps/West Panoche Road [1]	A	2.4	A	2.3
I-5 NB Ramps/West Panoche Road [1]	A	6.6	A	7.7

[1] Unsignalized two-way stop controlled.

As shown in Table 5.11-14, the result of the Year 2009 Project Operation conditions shows that both study intersections are forecast to operate at acceptable LOS A during both AM and PM peak hour operations conditions.

5.11.2.9.7 Year 2009 Conditions Traffic Impact Summary

As discussed previously, the Year 2008 Peak Construction activities represent the worst case traffic analysis scenario for the proposed Midway project. Upon completion of construction and commissioning of the proposed facility, Midway will generate operations-related trips that are substantially less than peak construction activities. Post-construction background traffic within the project study area is anticipated to be slightly higher than pre-construction levels with minor incremental traffic increase attributed to ambient growth and added trips from plant operations.

Based on the Fresno County Department of Public Works traffic impact threshold criteria, none of the project study intersections would be significantly impacted with the start of project operations by Year 2009. The projected incremental net increase of trips attributed to project operations would not create significant traffic impacts to the surrounding roadway circulation system.

5.11.3 Mitigation Measures (Construction)

The result of project construction traffic analysis showed that no study roadway segment or intersection would be significantly impacted by the proposed project during Year 2008 Peak Construction activities. Based on these findings, the Year 2008 Peak Construction conditions would not require traffic mitigation.

The following mitigations are voluntarily offered by Midway either as part of construction activity requirements, or as pro-active measures initiated by Midway to minimize construction related tripmaking and resultant increases of traffic to the surrounding circulation system.

5.11.3.1 Traffic-1: Construction Traffic Route

During project construction Midway will designate a construction worker, equipment and material delivery/haul route via I-5, the short segment of West Panoche Road, via Midway Service Road and vice versa. Construction traffic on West Panoche Road east of the project site is anticipated to be primarily worker trips and will be minimized to the extent feasible.

5.11.3.2 Traffic-2: Traffic Control Plan

If required, a traffic and transportation control plan will be prepared in coordination with Fresno County and Caltrans to address short-term construction traffic and material deliveries during project construction.

5.11.4 Mitigation Measures (Operations)

None proposed. There are no identified project operational traffic impacts.

5.11.5 Applicable LORS

The project would comply with the applicable traffic and transportation LORS discussed below. Table 5.11-15 summarizes the applicable LORS and Table 5.11-16 lists agency contacts.

Table 5.11-15
Summaries of LORS

Jurisdiction	LORS	Requirements	Conformance Section	Administering Agency	Agency Contact
Federal					
	Title 49, Code of Federal Regulations, Section 171-177	Governs the transportation of hazardous materials, including the marking of transportation vehicles.	Section 5.11.5.1, Federal Authorities and Administering Agencies	California Highway Patrol	2
	Title 14, Code of Federal Regulations, Section 77.13(2)(i)	Requires applicant to notify FAA of any construction greater than height limits defined by the FAA.	Section 5.11.5.1, Federal Authorities and Administering Agencies	Federal Aviation Administration	1

Table 5.11-15
Summaries of LORS
(Continued)

Jurisdiction	LORS	Requirements	Conformance Section	Administering Agency	Agency Contact
State					
	California Vehicle Code, Section 353	Defines the hazardous materials.	Section 5.11.5.12, State Authorities and Administering Agencies	California Highway Patrol	2
	California Vehicle Code, Sections 13369, 15275, 15278	Addresses the licensing of drivers and the classification of license required for the operation of particular types of vehicles. In addition, these sections require the possession of certificates of permitting the operation of vehicles transporting hazardous materials.	Section 5.11.5.12, State Authorities and Administering Agencies	California Department of Motor Vehicles	4
	California Vehicle Code, Section 31303-31309	Requires transporters of hazardous materials to use the shortest route possible.	Section 5.11.5.12, State Authorities and Administering Agencies	California Highway Patrol	2
	California Vehicle Code, Section 32000-32053	Regulates the licensing of carriers of hazardous materials and noticing requirements.	Section 5.11.5.12, State Authorities and Administering Agencies	California Highway Patrol	2
	California Vehicle Code, Section 32100-32109	Transporters of inhalation hazardous materials or explosive materials must obtain a hazardous materials transportation license.	Section 5.11.5.12, State Authorities and Administering Agencies	California Highway Patrol	2
	California Vehicle Code, Section 34000-34100	Establish special requirements for the flammable and combustible liquids over public roads and highways.	Section 5.11.5.12, State Authorities and Administering Agencies	California Highway Patrol	2

Table 5.11-15
Summaries of LORS
(Continued)

Jurisdiction	LORS	Requirements	Conformance Section	Administering Agency	Agency Contact
	California Vehicle Code, Section 34500	Regulate the safe operation of vehicles, including those that are used for the transportation of hazardous materials.	Section 5.11.5.12, State Authorities and Administering Agencies	California Highway Patrol	2
	California Vehicle Code, Section 35550	Imposes weight guidelines and restrictions upon vehicles traveling upon freeways and highways.	Section 5.11.5.12, State Authorities and Administering Agencies	California Department of Transportation	3
	California Vehicle Code, Section 35780	Requires approval for a permit to transport oversized or excessive load over state highways.	Section 5.11.5.12, State Authorities and Administering Agencies	California Department of Transportation	3
	California Streets and Highways Code, Sections 117	Permits for the location in the ROW of any structures or fixtures necessary to telegraph, telephone, or electric power lines or of any ditches, pipes, drains, sewers, or underground structures.	Section 5.11.5.12, State Authorities and Administering Agencies	California Department of Transportation	3
	California Streets and Highways Code, Sections 660, 670, 672, 1450,1460,1470, 1480 et seq.	Defines highways and encroachment. Regulate ROW encroachment and the granting of permits with conditions for encroachment in state and county roads.	Section 5.11.5.12, State Authorities and Administering Agencies	California Department of Transportation and Fresno County	3,5
	California Health and Safety Code, Section 25160 et seq.	Addresses the safe transport of the hazardous materials.	Section 5.11.5.12, State Authorities and Administering Agencies	California Highway Patrol	2
	California Department of Transportation Traffic Manual, Section 5-1.1	Requires traffic control plans to ensure continuity of traffic during roadway construction.	Section 5.11.5.12, State Authorities and Administering Agencies	Fresno County	5

Table 5.11-15
Summaries of LORS
(Continued)

Jurisdiction	LORS	Requirements	Conformance Section	Administering Agency	Agency Contact
Local					
	Fresno County General Plan, Circulation Element, Policy TR-A.2.	Requires LOS D or better operating conditions for rural County roadways	Section 5.11.5.1.3, Local Authorities and Administering Agencies	Fresno County	5
	Fresno County General Plan, Circulation Element, Policy TR-A.3.	New roadways requires conformity with access specifications in the Circulation Diagram and Standards	Section 5.11.5.1.3, Local Authorities and Administering Agencies	Fresno County	5

Notes:
FAA = Federal Aviation Administration
LORS = laws, ordinances, regulations, and standards
ROW = right-of-way

Table 5.11-16
Agency Contact List for LORS

	Agency	Contact	Address	Telephone
1	Federal Aviation Administration Western Pacific Region	Karen McDonald	15000 Aviation Boulevard, Lawndale, CA 90261-1002	310.725.6557
2	California Highway Patrol	Officer Mike Panelli	706 West Pacheco Blvd. Los Banos, CA 93635-3992	209.826.3811
3	Caltrans North Region Permits	Kien Le	Office MS# 41 1823 14th Street Sacramento, CA 942874-001	916.322.6001
4	Department of Motor Vehicles, Licensing Operations Division	Public Inquiry	2415 1st Avenue Mail Station F101 Sacramento, CA 95818	916.657.8698
5	Transportation Planning Division, Fresno County Public Works Department	Stan Nakagawa Principal Engineer/Manager	2220 Tulare Street, 6th Floor Fresno, CA 93721	559.262.4438

5.11.5.1 Federal Authorities and Administering Agencies

5.11.5.1.1 Title 49, Code of Federal Regulations, Parts 171-177

This regulation governs the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of transportation vehicles.

The administering agencies for the above regulation are the CHP, Department of Transportation (DOT), and the Pipeline and Hazardous Materials Safety Administration (PHMSA).

Midway would conform to this law by requiring that shippers of hazardous materials use the required markings on their transportation vehicles.

5.11.5.1.2 Title 14, Code of Federal Regulations, Section 77.13(2)(i)

This title requires an applicant to notify the Federal Aviation Administration (FAA) of construction of structures with a height greater than 200 feet from grade or greater than an imaginary surface extending outward and upward at a slope of 10 to 1 from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet in length.

The administering agency for the above regulation is the DOT FAA.

The proposed facility heights would not exceed 200 feet. Therefore, notification to the FAA would not be required.

5.11.5.2 State Authorities and Administering Agencies

5.11.5.2.1 California Vehicle Code, Section 353

This code defines hazardous materials as any substance, material, or device posing an unreasonable risk to health, safety, or property during transportation, as defined by regulations adopted pursuant to Section 2402.7.

The administering agency for the above statute is the CHP.

Midway would comply with these codes by continuing to classify all hazardous materials in accordance with their clarification.

5.11.5.2.2 California Vehicle Code, Sections 2500-2505

This code authorizes the Commissioner of Highway Patrol to issue licenses for the transportation of hazardous materials including explosives.

The administering agency for the above statutes is the CHP.

Midway would comply with these codes by requiring that contractors and employees be properly licensed and endorsed when operating vehicles used to transport hazardous materials.

5.11.5.2.3 California Vehicle Code, Sections 13369, 15275, 15278

These statutes address the licensing of drivers and the license classification required for the operation of particular types of vehicles. A commercial driver's license is required to operate commercial vehicles. An endorsement issued by the Department of Motor Vehicles (DMV) is required to drive any commercial vehicle identified in Section 15278.

The administering agency for the above statutes is the DMV.

Midway would comply with these codes by requiring that contractors and employees be properly licensed and endorsed when operating such vehicles.

5.11.5.2.4 California Vehicle Code, Sections 31303-31309

This code requires that transportation of hazardous materials be on the state or interstate highway that offers the shortest overall transit time possible.

The administering agency for the above statutes is the CHP.

Midway would comply with this law by requiring that shippers/transporters of hazardous materials use the shortest route possible to and from the project site.

5.11.5.2.5 California Vehicle Code, Sections 31600-31620

This code regulates the transportation of explosive materials.

The administering agency for the above statutes is the CHP.

It must be noted that Midway would not use explosive materials specifically defined in Section 12000 of the Health and Safety Code. However, Midway would comply with this law by requiring that shippers of other potentially explosive materials have the required licenses from the CHP.

5.11.5.2.6 California Vehicle Code, Sections 32000-32053

This code authorizes the CHP to inspect and license motor carriers transporting hazardous materials of the type requiring placards.

The administering agency for the above regulation is the CHP.

Midway would comply with this law by requiring that motor carriers of hazardous materials be properly licensed by the CHP.

5.11.5.2.7 California Vehicle Code, Sections 32100-32109

This code requires that shippers of inhalation hazards in bulk packaging to comply with rigorous equipment standards, inspection requirements, and route restrictions.

The administering agency for the above regulation is the CHP.

If applicable, Midway would comply with this law by requiring shippers of these types of material to comply with all route restrictions, equipment standards, and inspection requirements.

5.11.5.2.8 California Vehicle Code, Sections 34000-34100

This code establishes special requirements for vehicles having a cargo tank and for hazardous waste transport vehicles and containers, as defined in Section 25167.4 of the Health and Safety Code. The commissioner shall provide for the establishment, operation, and enforcement of random on- and off-highway inspections of cargo tanks and hazardous waste transport vehicles and containers and ensure that they are designed, constructed, and maintained in accordance with the regulations adopted by the commissioner pursuant to this code and Chapter 6.5 (commencing with Section 25100) of Division 20 of the Health and Safety Code.

The administering agency for the above regulation is the CHP.

Midway would comply with this law by requiring that shippers of hazardous materials maintain their hazardous material transport vehicles in a manner that ensures the vehicles will pass CHP inspections.

5.11.5.2.9 California Vehicle Code, Section 3500

This CVC regulates the safe operation of vehicles, including those vehicles that are used for the transportation of hazardous materials.

The administering agency for the above regulation is the CHP.

Midway would comply with this law by requiring shippers of hazardous materials to have the necessary permits, inspections, and licenses issued by the CHP for safe operation of the hazardous materials transport vehicles.

5.11.5.2.10 California Vehicle Code, Section 35550

This code imposes weight guidelines and restrictions upon vehicles traveling upon freeways and highways. The section holds that “a single axle load shall not exceed 20,000 pounds. The load on any one wheel or wheels supporting one end of an axle is limited to 10,500 pounds. The front steering axle load is limited to 12,500 pounds.” Furthermore, CVC Section 35551 defines the maximum overall gross weight as 80,000 pounds and adds that “the gross weight of each set of tandem axles shall not exceed 34,000 pounds.”

The administering agency for the above statute is the Caltrans.

Midway would comply with this code by requiring compliance with weight restrictions and by requiring heavy haulers to obtain permits, if required, prior to delivery of any heavy haul load.

5.11.5.2.11 California Vehicle Code, Section 35780

This CVC requires a Single-Trip Transportation Permit to transport oversized or excessive loads over state highways. The permit can be acquired through the Caltrans.

The administering agency for the above statute is Caltrans.

Midway would comply with this code by requiring that heavy haulers obtain a Single-Trip Transportation Permit for oversized loads for each vehicle, prior to delivery of any oversized load.

5.11.5.2.12 California Streets and Highways Code, Section 117

Unless otherwise specifically provided in the instrument conveying title, the acquisition by the department of any right-of-way (ROW) over any real property for state highway purposes, includes the right of the department to issue, under Chapter 3 (commencing with Section 660), permits for the location in the ROW of any structures or fixtures necessary to telegraph, telephone, or electric power lines or of any ditches, pipes, drains, sewers, or underground structures.

The administering agency for the above statute is Caltrans.

If applicable, Midway would comply with this code by acquiring the necessary permits and approval from Caltrans with regard to use of public ROWs.

5.11.5.2.13 The California Streets and Highways Code, Sections 660, 670, 672, 1450, 1460, 1470, 1480 et seq

This policy defines highways and encroachment, requires encroachment permits for projects involving excavation in State Highways, County/City streets. This law is generally enforced at the local level.

The administering agencies for the above regulation are Caltrans and Fresno County Public Works Department.

Midway would apply for encroachment permits for any excavation in state and county roadways prior to construction.

5.11.5.2.14 California Health and Safety Code, Section 25160 et seq

This guideline addresses the safe transport of hazardous wastes, requires a manifest for hazardous waste shipments, requires a person who transports hazardous waste in a vehicle to have a valid registration issued by the Department of Toxic Substances Control (DTSC) in his or her possession while transporting the hazardous waste.

The administering agency for the above regulation is the DTSC.

Midway would comply with this law by requiring that shippers of hazardous wastes are properly licensed by the DTSC and hazardous waste transport vehicles are in compliance with DTSC requirements.

5.11.5.2.15 California Department of Transportation Traffic Manual, Section 5-1.1

This manual requires a temporary traffic control plan be provided for "continuity of function (movement of traffic, pedestrians, bicyclists, transit operations), and access to property/utilities" during any time the normal function of a roadway is suspended.

The administering agencies for the above regulation are Caltrans and Fresno County Public Works Department. The Applicant would file a Traffic Control Plan prior to the start of construction.

5.11.5.3 Local Authorities and Administering Agencies

According to the General Plan Circulation Elements of Fresno County, the following Programs and Policies of the General Plan address traffic and circulation that could be affected by construction of the proposed Midway:

5.11.5.3.1 Fresno County General Plan Circulation Element

Key roadways in Fresno County serve as vital transportation corridors within San Joaquin Valley. Passenger vehicles, motor homes, and trucks cross Fresno County en route to out-of-county and interstate destinations. In addition, rail traffic and pipelines have major routes through Fresno County.

The Fresno Council of Governments (COG) is the regional transportation agency that prepares the Regional Transportation Plan (RTP) to examine long-range transportation issues, opportunities and needs for Fresno County.

5.11.5.3.2 Fresno County General Plan, Circulation Element, Policy TR-A.2

The County shall plan and design its roadway system in a manner that strives to meet LOS D on urban roadways within the spheres of influence of the cities of Fresno and Clovis and LOS C on all other roadways in the county. Roadway improvements to increase capacity and maintain LOS standards should be planned and programmed based on consideration of the total overall needs of the roadway system, recognizing the priority of maintenance, rehabilitation, and operation of the existing road system. The County may, in programming capacity-increasing projects, allow exceptions to the level of service standards in this policy where it finds that the improvements or other measures required achieving the LOS policy are unacceptable based on established criteria. In addition to consideration of the total overall needs of the roadway system, the County shall consider the following factors:

The right-of-way needs and the physical impacts on surrounding properties;

- Construction and right-of-way acquisition costs;
- The number of hours that the roadway would operate at conditions below the standard;
- The ability of the required improvement to significantly reduce delay and improve traffic operations; and
- Environmental impacts upon which the County may base findings to allow an exceedance of the standards.

In no case should the County plan for worse than LOS D on rural County roadways, worse than LOS E on urban roadways within the spheres of influence of the cities of Fresno and Clovis, or in cooperation with Caltrans and the COG, plan for worse than LOS E on State highways in the county.

5.11.5.3.3 Fresno County General Plan, Circulation Element, Policy TR-A.3

The County shall require that new or modified access to property abutting a roadway and to intersecting roads conform to access specifications in the Circulation Diagram and Standards section. Exceptions to the access standards may be permitted in the manner and form prescribed in the Fresno County Zoning and Subdivision Ordinances, provided that the designed safety and operational characteristics of the existing and planned roadway facility will not be substantially diminished.

5.11.6 References

Baymetrics. 2006a. 24-hour ADT and Peak Hour Intersection Traffic Counts.

2006b. Traffic counts collected in West Panoche Road on May 2006. Document provided by Ezam, (714) 997-4498.

2006c. Status of Projects, Central Region, Caltrans District 6 2006d. Transit Map, Fresno County Rural Transit Authority 2006e. Fresno County Rural Bikeway System, Fresno COG

2005. Interstate 5 Transportation Concept Report, Office of Systems Planning, Caltrans District 6

2003. San Joaquin Valley Growth Response Study, Phase I 2000. Fresno County General Plan Circulation Element. 2000. Fresno County General Plan Land Use Element.

California Code. 2005a. Vehicle Code.

2005b. Streets and Highways Code.

California Department of Transportation, District 6. 2006a. Telephone conversation with Kurt Hatton on June 22, 2006, (559) 243-3451.

2006b. 2005 Traffic Volumes. 2005. 2004 Truck Volumes.

City of Mendota Planning Department. 2006. Telephone conversation and facsimile correspondence with Nora Valdez on June 08, 2006, (559) 655-4298.

Code of Federal Regulations. 2002a. Title 14 Aeronautics and Space, Federal Aviation Administration.

2002b. Title 49 Environment, Subtitle B – Other Regulations Relating to Transportation. County of Fresno, 2000. General Plan. October.

Council of Fresno County Governments. 2004. 2004 Regional Transportation Plan.

County of Fresno Public Works Department. 2006. Telephone conversation and e-mail correspondence with Stan Nakagawa on June 16, 2006, (559) 262-4438.

Federal Aviation Administration. 2006. Telephone conversation with Karen McDonald on June 19, 2006, (310) 725-6557.

McTrans Center, University of Florida. 2000. Highway Capacity Software. Version 4.1 a. Transportation Research Board. 2000. Highway Capacity Manual.

URS Corporation. 2006. Application for Certification, Panoche Energy Center.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Traffic and Transportation** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Existing conditions: Sec. 5.11.1 Impacts: Sec. 5.11.2 Mitigation: Sec. 5.11.4		
Appendix B (g) (5) (A)	A regional transportation setting, on topographic maps (scale of 1:250,000), identifying the project location and major transportation facilities. Include a reference to the transportation element of any applicable local or regional plan.	Sec. 5.11.1 Fig. 5.11-1 & 5.11-2		
Appendix B (g) (5) (B)	An identification, on topographic maps at a scale of 1:24,000 and a description of existing and planned roads, rail lines, including light rail, bike trails, airports, bus routes serving the project vicinity, pipelines, and canals in the project area affected by or serving the proposed facility. For each road identified, include the following information, where applicable:	Sec. 5.11.1 Fig. 5.11-1 & 5.11-2		
Appendix B (g) (5) (B) (i)	Road classification and design capacity;	Sec. 5.11.1.1.2, 5.11.1.3, 5.11.1.1.3		
Appendix B (g) (5) (B) (ii)	Current daily average and peak traffic counts;	Sec. 5.11.1.3 Tables 5.11-2, 5.11-3		
Appendix B (g) (5) (B) (iii)	Current and projected levels of service before project development, during construction, and during project operation;	Sec. 5.11.1 All tables in Section 5.11		
Appendix B (g) (5) (B) (iv)	Weight and load limitations;	Sec. 5.11.1.1.1		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Traffic and Transportation** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (5) (B) (v)	Estimated percentage of current traffic flows for passenger vehicles and trucks; and	Sec. 5.11.1, 5.11.2		
Appendix B (g) (5) (B) (vi)	An identification of any road features affecting public safety.	Sec. 5.11.1, 5.11.2		
Appendix B (g) (5) (C)	A description of any new, planned, or programmed transportation facilities in the project vicinity, including those necessary for construction and operation of the proposed project. Specify the location of such facilities on topographic maps at a scale of 1:24,000.	NA		
Appendix B (g) (5) (D)	An assessment of the construction and operation impacts of the proposed project on the transportation facilities identified. Include anticipated project-specific traffic, estimated changes to daily average and peak traffic counts, levels of service, and traffic/truck mix, and the impact of construction of any facilities identified in subsection (g)(5)(C).	Sec. 5.11.2 Tables 5.11-2 - 5.11-14		
Appendix B (g) (5) (E)	A discussion of project-related hazardous materials to be transported to or from the project during construction and operation of the project, including the types, estimated quantities, estimated number of trips, anticipated routes, means of transportation, and any transportation hazards associated with such transport.	Sec. 5.11.2, 5.15		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Traffic and Transportation** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	LORS compliance: Sec. 5.11.5, Table 5.11-15		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Sec. 5.11.5, Table 5.11-15		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	LORS conformity: Sec. 5.11.5, Table 5.11-15		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Table 5.11-16		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	NA		

5.12 NOISE

In accordance with CEC regulations, the objectives of this section are to characterize the existing noise environment and assess potential noise impacts associated with the future operation of the proposed Midway project.

5.12.1 Affected Environment

Figure 5.12-1 is a vicinity map showing the 5.6-acre site for the Midway project and surrounding. Midway is proposed on a site currently utilized by CalPeak Power as a storage-yard. Land uses within the study area are predominantly agricultural.

Measured and perceived noise sources were: (1) industrial noise from mechanical/electrical equipment and processes at the existing Wellhead Peaker plant, CalPeak Panoche, and the PG&E substation; (2) traffic on West Panoche Road including agricultural vehicles; (3) barking dogs; and (4) wind-induced noise from vegetation. The natural earth material consists of layers of silt, lean clay and sand. There are three residential properties of concern (ML1, ML2 and ML3), the first of which is a 5-plex apartment building on a property adjoining the proposed Midway project to the north.

5.12.1.1 Fundamentals of Acoustics

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound typically associated with human activity and interferes with or disrupts normal activities. Noise levels vary with time and distance. A representative noise level is the ambient noise level. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response that is a known factor with regard to evaluating the effects of environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, perceived importance of the noise and its appropriateness in the setting, time of day and type of activity during which the noise occurs, and sensitivity of the individual.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by several variables, including frequency content and amplitude at each frequency. Frequency describes the sound's pitch and is measured in cycles per second, or Hertz (Hz), whereas intensity describes the sound's loudness and is measured in decibels (dB). Decibels are measured using a logarithmic scale. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal conversation heard at 5 ft from a typical speaker has a sound level of approximately 60 dB. Sound levels above about 120 dB begin to be felt inside the human ear as discomfort and can be painful for some people. The minimum change in the sound pressure level of individual events that an average human ear can detect is about 3 dB. The average person perceives a positive change in sound level of about 10 dB as a doubling (or halving, if the change is negative) of the sound's loudness; this relation holds true for sounds of any loudness. Sound levels of typical noise sources and environments are provided in Table 5.12-1.

TABLE 5.12-1
SOUND LEVEL OF TYPICAL NOISE SOURCES AND NOISE ENVIRONMENTS

Noise Source (at Given Distance)	Noise Environment	A-Weighted Sound Level (dB)	Human Judgment of Noise Loudness (Relative to Reference Loudness of 70 dB)
Military Jet Takeoff with Afterburner (50 ft)	Carrier Flight Deck	140	128 times as loud
Civil Defense Siren (100 ft)		130	64 times as loud
Commercial Jet Take-off (200 ft)		120	32 times as loud Threshold of Pain
Pile Driver (50 ft)	Rock Music Concert	110	16 times as loud
Ambulance Siren (100 ft) Newspaper Press (5 ft) Gas Lawn Mower (3 ft)		100	8 times as loud Very Loud
Motorcycle (25 ft) Propeller Plane Flyover (1,000 ft) Diesel Truck, 40 mph (50 ft)	Boiler Room Printing Press Plant	90	4 times as loud
Garbage Disposal (3 ft)	Higher Limit of Urban Ambient Sound	80	2 times as loud
Passenger Car, 65 mph (25 ft) Living Room Stereo (15 ft) Vacuum Cleaner (10 ft)		70	Reference Loudness Moderately Loud
Normal Conversation (5 ft) Air Conditioning Unit (100 ft)	Data Processing Center Department Store	60	1/2 as loud
Light Traffic (100 ft)	Private Business Office	50	1/4 as loud
Bird Calls (distant)	Lower Limit of Urban Ambient Sound	40	1/8 as loud Quiet
Soft Whisper (5 ft)	Quiet Bedroom	30	1/16 as loud
	Quiet Rural Nighttime Broadcast and Recording Studio	20	1/32 as loud Just Audible
		10	1/64 as loud
		0	1/128 as loud Threshold of Hearing

Source: URS Corporation 2006

Because of the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. A simple rule is useful, however, in dealing with sound levels: if sound pressure is doubled, the level increases by 3 dB, regardless of the initial sound level. Thus, for example, 60 dB + 60 dB = 63 dB, and 80 dB + 80 dB = 83 dB.

The normal human ear generally detects sound over the frequency range of 20-20000 Hz. However, all sounds in this wide range of frequencies are not heard equally well by the human ear, which is most sensitive to frequencies from 1000-4000 Hz. This frequency dependence can be taken into account by applying a frequency-dependent filtering of the sounds to account for this variation of sensitivity. For instance, the A-weighted sound pressure level (dBA) is the result after application of an A-weighted filter to a measurement or similarly to a calculation. Another common filter or weighting network, C, uses much smaller reductions in the low frequency range, which causes C-weighted sound pressure level to be essentially controlled by the low-frequency content of the sound.

Because community noise fluctuates over time, a single measure called the Equivalent Sound Level (L_{eq}) is often used to describe the time-varying character of community noise. The L_{eq} is the energy-averaged A-weighted sound level during a measured time interval, and is equal to the level of a continuous steady sound containing the same total acoustic energy integrated over the averaging time period as the actual time-varying sound. Additionally, it is often desirable to know the dynamic range of the measurement that is a result of both the physical environment and the characteristics of the measurement equipment. The L_{max} and L_{min} represent the root-mean-square (RMS) maximum and minimum noise levels obtained during a measurement interval.

To describe the time-varying character of environmental noise, the statistical noise descriptors L_{10}, L_{50}, and L_{90} are commonly used. They are the noise levels equaled or exceeded during 10, 50, and 90 percent of the time over a given interval. Sound levels associated with L_{10} typically describe transient or short-term events, whereas levels associated with L_{90} characterize the background noise conditions that contribute to the overall ambient noise level.

Finally, another sound measure known as the Community Noise Equivalent Level (CNEL) is defined as the A-weighted average sound level for a 24-hour day. It is calculated by adding about a 5-decibel penalty to sound levels during the evening period (7:00 p.m. to 10:00 p.m.) and a 10-decibel penalty to sound levels during the night period (10:00 p.m. to 7:00 a.m.) to compensate for the increased sensitivity to noise during the quieter evening and nighttime hours. The Day-Night Average Sound Level (L_{dn} or DNL) also represents the average sound level for a 24-hour day and is calculated by adding a 10-decibel penalty only to sound levels during the night period (10:00 p.m. to 7:00 a.m.). The CNEL and L_{dn} are used by the State of California and Fresno County to define acceptable land use compatibility with respect to noise. Because of the time-of-day penalties associated with the CNEL and L_{dn} descriptors, the L_{eq} for a continuously operating sound source during a 24-hour period will be numerically less. Thus, for a power plant operating continuously for periods of 24 hours, the L_{eq} will be 6 dB lower than the L_{dn} value and 7 dB lower than the CNEL value.

5.12.1.2 Ambient Noise Survey

An ambient noise survey was not specifically conducted for this project. However, an ambient noise survey was conducted for the proposed PEC, located west of the proposed Midway project. The results of

the survey were used for the proposed Midway project. Figure 5.12-1 shows the Midway project and surrounding properties with three receivers identified at which noise measurements were performed.

The ambient noise survey was conducted from Monday, June 19, 2006 to Tuesday June 20, 2006 at the three residential locations in the vicinity of the project. The purpose of the measurements was to quantify the existing noise environment in the vicinity of the proposed project. Two types of measurements were conducted: long-term (25 hours in duration) and short-term (1 hour in duration). A Larson Davis Model 820 American National Standards Institute (ANSI) Type I integrating sound level meter (SLM) was used to conduct the long-term measurements and a Larson Davis Model 720 ANSI Type II integrating SLM was used to conduct the short-term measurements. The meters were field calibrated before and after measurements.

Weather conditions during the survey period were warm with clear skies and no precipitation with sampled conditions such as air temperatures ranging from 71-98°F; relative humidity from 16–43%; and wind directed to the southeast with speeds from 0-5 miles per hour. Table 5.12-2 summarizes the results of the long-term measurements at ML1 and Table 5.12-3 summarizes the results of the short-term measurements at ML2 and ML3.

TABLE 5.12-2
SOUND LEVEL MEASUREMENTS AT ML1 OVER 25 HOURS (dBA)

Time	Leq	Lmax	L10	L50	L90	Lmin
13:00 – 14:00	65	86	67	61	53	44
14:00 – 15:00	64	80	68	61	52	44
15:00 – 16:00	64	78	67	62	54	44
16:00 – 17:00	62	80	66	58	50	43
17:00 – 18:00	60	76	62	55	49	40
18:00 – 19:00	60	78	64	56	50	42
19:00 – 20:00	62	75	66	59	51	41
20:00 – 21:00	65	76	70	60	47	41
21:00 – 22:00	58	78	61	49	45	42
22:00 – 23:00	57	78	53	48	45	44
23:00 – 00:00	51	74	49	46	45	44
00:00 – 01:00	48	72	48	45	44	43
01:00 – 02:00	51	73	48	45	44	42
02:00 – 03:00	52	80	47	43	42	41
03:00 – 04:00	50	74	45	43	42	40
04:00 – 05:00	55	79	50	44	42	40
05:00 – 06:00	69	78	74	66	57	47
06:00 – 07:00	64	78	68	61	54	46
07:00 – 08:00	64	75	68	62	54	49

TABLE 5.12-2
SOUND LEVEL MEASUREMENTS AT ML1 OVER 25 HOURS (dBA)
(CONTINUED)

Time	Leq	Lmax	L10	L50	L90	Lmin
08:00 – 09:00	64	78	68	61	54	46
09:00 – 10:00	65	78	68	63	57	49
10:00 – 11:00	65	79	68	62	55	46
11:00 – 12:00	62	81	66	59	52	46
12:00 – 13:00	63	79	66	61	53	46
13:00 – 14:00	62	80	64	57	50	43

Measurements were conducted on June 19–20, 2006; CNEL = 68 dBA.

TABLE 5.12-3
SHORT-TERM SOUND LEVEL MEASUREMENTS (dBA)

Measurement Location	Time	Leq	Lmax	L10	L50	L90	Lmin
ML2	14:00 – 15:00	46	61	49	43	40	38
	21:05 – 22:00	43	64	40	38	37	37
	00:35 – 01:35	41	51	43	41	39	38
ML3	15:30 – 16:30	55	81	52	43	41	40
	19:00 – 20:00	49	70	47	42	40	39
	01:40 – 02:40	47	73	41	41	41	40

Measurements conducted on June 19–20, 2006

ML1 - The measurement location is approximately 460 feet north from the center of the Midway project site. The 5-Plex is located on the south side of West Panoche Road, approximately ¾ mile southwest of the intersection with South Fairfax Avenue. The measurement was conducted in the front yard of the western-most unit. The meter was placed in the branches of a tree approximately 10 feet above ground level to minimize interference from occupants. The location was monitored continuously from 1:00 p.m. on June 19, 2006, to 2:00 p.m. on June 20, 2006. Noise sources consisted of vehicular traffic on West Panoche Road that included agricultural vehicles, barking dogs, children playing, wind in the trees, and mechanical noise and industrial noise from equipment and processes at the existing Wellhead Peaker plant and PG&E substation.

The hourly L_{eq} ranged from 48-69 dBA (arithmetic average 60 dBA) and the hourly L_{90} ranged from 42-57 dBA (arithmetic average 50 dBA). The lowest four contiguous average hourly L_{90} during the nighttime period was 42 dBA (2 a.m. to 5 a.m.). Refer to Table 5.12-2 for further details.

ML2 - The measurement location is approximately 1,600 feet west from the center of the Midway project site. There are three single-family, detached residential structures on the property, aligned in a row from

east to west. The center building is inhabited; the other two appear to be uninhabited. The buildings are located on the north side of West Panoche Road, approximately 1.1 miles southwest of the intersection with South Fairfax Avenue. No street address was visible at the property. There is a commercial building on the property, north of the residential area that is on property owned by the occupant of the habitable residence. The measurement was conducted within the side yard of the residence. The location was monitored for one hour in each of the daytime, evening, and nighttime periods during the time frame of 2:00 p.m. on June 19, 2006 to 3:00 a.m. on June 20, 2006. Noise sources consisted of vehicular traffic on West Panoche Road (including agricultural vehicles), wind in the trees, and industrial noise from mechanical equipment and processes at the existing Wellhead Peaker plant and PG&E substation.

The hourly L_{eq} ranged from 41-46 dBA (arithmetic average 43 dBA). The hourly L_{90} data ranged from 37-39 dBA (L_{90} background 37 dBA). Refer to Table 5.12-3 for further details.

ML3 - The measurement location is approximately 1,300 feet northeast from the center of the Midway project site. The street address of the property is 43405 West Panoche Road. There is one single-family residential structure, located on the northeast corner of the property, which is otherwise used for commercial purposes. The measurement was conducted in the side yard near the residence. The location was monitored for one hour in each of the daytime, evening, and nighttime periods during the time frame of 2:00 p.m. on June 19, 2006 to 3:00 a.m. on June 20, 2006. Noise sources consisted of vehicular traffic on West Panoche Road (including agricultural vehicles), wind in the trees, and industrial noise from mechanical equipment and processes at the existing Wellhead Peaker plant and PG&E substation.

The hourly L_{eq} ranged from 47–57 dBA (arithmetic average 50 dBA). The hourly L_{90} ranged from 40–41 dBA (L_{90} background 40 dBA). Refer to Table 5.12-3 for further details.

5.12.2 LORS

The LORS applicable to noise for the proposed project are summarized in Table 5.12-4.

5.12.2.1 Federal

There are no federal laws, ordinances, or regulations that directly affect this project with respect to noise. However, there are guidelines at the federal level that direct the consideration of a broad range of noise and vibration issues as listed below:

- National Environmental Policy Act (42 USC 4321, et seq.) (40 CPR 1506.4)
- Noise Control Act of 1972 (42 USC 4910)

The U.S. Environmental Protection Agency (USEPA) has not promulgated standards or regulations for environmental noise generated by power plants. However, the USEPA has published a guideline containing recommendations for noise levels affecting residential land use of L_{dn} 55 dBA outdoors and L_{dn} 45 dBA indoors. The agency is careful to stress that the recommendations contain a factor of safety and do not consider technical or economic feasibility issues, and therefore should not be construed as standards or regulations.

5.12.2.2 State of California

5.12.2.2.1 California Energy Commission

CEC has been delegated the authority to act as the lead agency for purposes of compliance with CEQA (Public Resources Code Division 13, Environmental Protection, Section 21000 et. seq.).

The CEC has stated that increases in the background noise lower than 5 dBA at a sensitive receptor are clearly not significant or adverse, increases in the background noise over 10 dBA at sensitive receptors are clearly significant and adverse, and increases in background noise between 5 and 10 dBA may or may not be significant and adverse, depending on the circumstances.

The CEC defines the area impacted by the project as that area where operation of the project potentially increases the noise level by 10 dBA or more over existing background noise levels. The CEC defines the background noise level as the lowest four-consecutive-hour arithmetic average L_{90} at a 25-hour measurement site and the lowest L_{90} at a short-term measurement site.

TABLE 5.12-4
APPLICABLE LORS

LORS	Applicability	Section
Federal		
EPA 1974 Noise Guidelines	Guidelines for state and local governments	N/A
Noise Control Act (1972) as amended by the Quite Communities Act (1978); (42 USC 4901-4918)	Separate noise-sensitive areas are encouraged	N/A
State		
Cal-OSHA Occupational Noise Exposure Regulations (8 CCR, General Industrial Safety Orders, Article 105, Control of Noise Exposure, § 5095, et seq.)	Sets employee noise exposure limits. Equivalent to Federal OSHA standards.	Section 5.12.2.2.2
Local		
County of Fresno General Plan	This requirement is applicable to stationary noise sources such as the proposed project. It refers to the Fresno County Ordinance Code for limits.	Section 5.12.2.3.1
County of Fresno Ordinance Code, Section 8.40.040	This requirement is applicable to noise generated during operation of the proposed project. It sets sound level limits at residences and other outdoor activity areas.	Section 5.12.2.3.2
County of Fresno Ordinance Code, Section 8.40.060	This requirement is applicable to noise generated during construction of the proposed project. It restricts the hours of the day that construction is permitted.	Section 5.12.2.3.2

5.12.2.2.2 Cal-OSHA

Protection against the effects of noise exposure shall be provided when sound levels exceed 90 dBA over an 8-hour exposure period. Protection shall consist of feasible administrative or engineering controls. If

such controls fail to reduce sound levels to within acceptable levels, personal protective equipment shall be provided and used to reduce exposure to the employee. A "Hearing Conservation Program" must be instituted by the employers whenever employee noise exposure equals or exceeds the "Action Level" of 85 dBA for an 8-hour, time-weighted average (TWA). The Hearing Conservation Program requirements consist of periodic area and personal noise monitoring, performance and evaluation of audiograms, provision of hearing protection, annual employee training, and record keeping.

5.12.2.3 Local

5.12.2.3.1 Fresno County General Plan

The Fresno County General Plan Health and Safety Element (2000) established noise guidelines according to land use compatibility, as shown on Figure 5.12-2. A partial listing of County goals and policies with regard to noise is given below. Based on this chart, the proposed project would be considered a significant impact if project noise levels exceed 60 dBA CNEL at residential land uses.

Goal HS–G	To protect residential and other noise-sensitive uses from exposure to harmful or annoying noise levels; to identify maximum acceptable noise levels compatible with various land use designations; and to develop a policy framework necessary to achieve and maintain a healthful noise environment.
Policy HS–G.4	So that noise mitigation may be considered in the design of new projects, the County shall require an acoustical analysis as part of the environmental review process where: Noise sensitive land uses are proposed in areas exposed to existing or projected noise levels are "generally unacceptable" or higher according to Chart HS-1: "Land Use Compatibility for Community Noise Environments". Proposed projects are likely to produce noise levels exceeding the levels shown in the County's Noise Control Ordinance at existing or planned noise-sensitive uses.
Policy HS–G.5	Where noise mitigation measures are required to achieve acceptable levels according to land use compatibility or the Noise Control Ordinance, the County shall place emphasis of such measures upon site planning and project design. These measures may include, but are not limited to, building orientation, setbacks, earthen berms, and building construction practices. The County shall consider the use of noise barriers, such as soundwalls, as a means of achieving the noise standards after other design-related noise mitigation measures have been evaluated or integrated into the project.
Policy HS–G.6	The County shall regulate construction-related noise to reduce impacts on adjacent uses in accordance with the County's Noise Control Ordinance.
Policy HS–G.8	The County shall evaluate the compatibility of proposed projects with existing and future noise levels through a comparison to Chart HS–1, "Land Use Compatibility for Community Noise Environments".

5.12.2.3.2 Fresno County Ordinance Code

The Fresno County Ordinance Code (2000) has established noise guidelines for fixed noise sources at residential land uses, as shown on Table 5.12-5. A partial listing of County goals and policies with regard to noise is given below. Based on these goals, the proposed project would be considered a significant impact if operational noise levels exceed 45 dBA L_{eq} at residential land uses. Project construction noise

would be considered a significant impact if it occurred before 6 a.m. or after 9 p.m. on any day except Saturday or Sunday, or before 7 a.m. or after 5 p.m. on Saturday or Sunday.

Section 8.40.030 Noise Measurement Criteria [Excerpt]	The exterior noise levels shall be measured within 50 feet of the affected residence, school, hospital, church or public library.
Section 8.40.040 Exterior Noise Standards [Excerpt]	A. It is unlawful for any person … to create any noise … which causes the exterior noise level when measured at any affected single- or multiple-family residence, school, hospital, church or public library … to exceed the [exterior] noise level standards as set forth [Table 5.12-5]:
	B. In the event the measured ambient noise level exceeds the applicable noise level standard … the applicable standard shall be adjusted so as to equal the ambient noise level.
	C. Each of the noise level standards specified … shall be reduced by five [5] dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.
	D. If the intruding noise source is continuous and cannot be reasonably be discontinued or stopped for a time period whereby the ambient noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the noise level standards.
Section 8.40.060 Noise Source Exemptions [Excerpt]	A. Any mechanical device, apparatus or equipment used, related to or connected to emergency activities or emergency work.
	B. Noise sources associated with construction, provided such activities do not take place before 6 a.m. or after 9 p.m. on any day except Saturday or Sunday, or before seven a.m. or after five p.m. on Saturday or Sunday.
	C. Noise sources associated with agricultural activities on agricultural property.
	D. Noise sources associated with work performed by private or public utilities in the maintenance or modification of its facilities.
	E. Noise sources associated with the drilling or re-drilling of petroleum, gas, injection or water wells.
	F. Noise sources associated with the collection of waste or garbage from a property devoted to commercial or industrial uses.
	G. Any activity to the extent regulation thereof has been preempted by state or federal law.
Section 8.40.090 Electrical Substations [Excerpt]	Notwithstanding the provisions of Section 8.40.040, noise sources associated with the operation of electrical substations shall not exceed fifty [50] dBA when measured as provided in Section 8.40.030.

TABLE 5.12-5
FRESNO COUNTY ORDINANCE CODE NOISE LIMITS (dBA)

Category	Cumulative Number of minutes in any one-hour time period	Noise Level Standards, dBA Daytime 7 a.m. to 10 p.m.	Noise Level Standards, dBA Nighttime 10 p.m. to 7 a.m.
1	30 [L50]	50	45
2	15 [L25]	55	50
3	5 [~L08]	60	55
4	1 [~L02]	65	60
5	0 [Lmax]	70	65

L50 above is the level exceeded 50% of the time for a 1-hour measurement.
L25 above is the level exceeded 25% of the time for a 1-hour measurement.
L08 above is the level exceeded 8% of the time for a 1-hour measurement.
L02 above is the level exceeded 2% of the time for a 1-hour measurement.
Lmax above is the maximum RMS level for a 1-hour measurement.

5.12.2.4 Involved Agencies and Agency Contacts

No Agencies were contacted.

5.12.2.5 Permits Required

No permits are required.

5.12.3 Environmental consequences

This section identifies and discusses the environmental noise impacts resulting from the proposed project. The proposed project could affect ambient noise levels during both construction and operational phases. Construction activities would generate noise as a result of equipment operation at the project site and by adding construction-related vehicular traffic to the roadway network serving the project site. Operation of the proposed Midway project could increase noise levels at residential properties.

5.12.3.1 Thresholds of Significance

CEQA guidelines relevant to this project indicate a potentially significant noise impact for a project if it would result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project

- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

Based on the LORS previously discussed, noise impacts as a result of construction would be considered significant if:

- They take place during hours that are prohibited by the Ordinance Code (before 6 a.m. or after 9 p.m. on any day except Saturday or Sunday, or before 7 a.m. or after 5 p.m. on Saturday or Sunday),
- The construction activity is not temporary.
- Noise from construction equipment is not controlled using all feasible abatement measures to reduce noise for noise-sensitive receptors (i.e. residences).

Proposed project operations are considered potentially significant if:

- Noise levels exceed thresholds recommended in the Fresno County General Plan Health and Safety Element. This threshold is 60 dBA CNEL for outdoor activity areas at noise-sensitive receptors (i.e., residences).
- Noise levels due to the project exceed thresholds recommended in the Fresno County Ordinance Code. This threshold is 45 dBA L_{eq} at residential areas.
- Based on CEC guidelines, noise levels from the project that increase the existing background noise levels at residential receptors by 10 dBA is a significant and adverse impact. In this case, the background noise levels at the receptors were 42 dBA at ML1, 37 dBA at ML2, and 40 dBA at ML3. Therefore, noise levels exceeding 52 dBA L_{eq} at ML1, 48 dBA L_{eq} at ML2, and 50 dBA L_{eq} at ML3 would be considered significant.

Generally, the design basis for noise control is the minimum, or most stringent, noise level required by any of the applicable LORS. Therefore, the design goal of operational noise would be 45 dBA L_{eq} at all residential receptors (ML1, ML2, and ML3).

5.12.3.2 Construction Noise

5.12.3.2.1 On-Site Construction

Noise impacts from construction would result from the operation of on-site construction equipment. These are going to cause temporary increases of the ambient noise level during the construction activity. The magnitude of impact would depend on the type of construction activity, the noise level generated by various pieces of construction equipment, the number of sources operating concurrently, the duration of the construction phase, the distance between the noise source and receptor, and the presence or absence of noise barriers, including topographical features that will change as project construction activity progresses. Sites and activities of concern include the three residential properties (ML1, ML2 and ML3).

During construction phase of the project, many activities will be taking place, including construction of

foundations, installation of piping and equipment, connection of major site interfaces, erecting major structures and commissioning. During these activities, a varying number of construction equipment and personnel will be in the area of the project, resulting in varying levels of construction noise. The project will utilize conventional construction techniques and equipment including excavators, bulldozers, heavy trucks (water truck, dump truck) and similar heavy construction equipment. A limited amount of specialized construction using pile-driving equipment may also be needed.

5.12.3.2.2 Conventional Construction Noise

Conventional construction activities at the project would result in a short-term, temporary increase in the ambient noise level resulting from the operation of construction equipment. Figure 5.12-3 shows maximum noise levels generated by typical construction equipment. Sound levels of typical construction equipment range from approximately 65 dBA to 95 dBA at 50 feet from the source, with an average level of 89 dBA at 50 feet during the noisiest activities. This analysis uses 89 dBA at 50 feet as the reference noise level for conventional construction noise.

Acoustical calculations were performed to estimate noise from conventional construction activities at the closest residences. Noise from the activity was assumed to have point source acoustical characteristics. Strictly speaking, a point source sound decays at a rate of 6 dB per doubling of distance from the source. This is a logarithmic relationship describing the acoustical spreading of a pure, undisturbed spherical wave in air. The rule applies to the propagation of sound waves with no ground interaction.

Approximately one decibel per 1000 feet is also deducted for air absorption and anomalous excess attenuation. The closest offsite residential uses to the project consist of residences approximately 460 feet north (ML1), residences 1,600 feet west (ML2), and residences 1,300 northeast (ML3) from the center of the Midway site. Based on the distance from the project components to be constructed, sound levels at the residences to the north will average 70 dBA, 58 dBA at residences to the west, and 60 dBA at residences to the northeast, as summarized in Table 5.12-6. Because of the intermittent nature of construction work, the average sound level for an 8-hour working day would be expected to be substantially less than the calculation predicts.

The Fresno County Noise Ordinance permits construction between 6 a.m. and 9 p.m. weekdays and between 7 a.m. and 5 p.m. on weekends. All construction work would take place between these hours. There would be no impact at residences as a result of conventional Project construction activities.

5.12.3.2.3 Special Construction Noise

Portions of the Project’s construction (e.g., the foundations under the CTG) may require driven piles. Noise from pile-driving activity is different in character from the typical, conventional "construction phase" noise and its potential noise impact is, therefore, analyzed separately. Also, because the primary source of noise from pile drivers is somewhat elevated, it does not typically benefit from attenuation due to intervening buildings and structures. The noise attenuation from other factors such as air absorption with distance still applies to noise from pile driving.

Maximum noise levels at 50 feet from a pile driver can range from 89 dBA to 114 dBA L_{max}, depending on many factors (e.g., driver power, driver type, pile size, soil characteristics) with a typical maximum

level range of 101 to 105 dBA produced at 50 feet. The typical L_{eq} produced during pile driving ranges from 82 to 100 dBA at 50 feet. The higher typical noise level values of 100 dBA L_{eq} and 105 dBA L_{max} at 50 feet for the pile driver noise source were selected for calculation purposes.

Allowing for point-source divergence and excess attenuation, the maximum and average sound levels that might occur in noise-sensitive areas during pile driving activity were calculated. The resulting Leq and Lmax sound levels expected at the sensitive receptors are summarized in Table 5.12-6.

The noise from pile driving would result in substantial noise at ML1 and would be audible at ML2 and ML3. Although there are no CEC or local guidelines restricting construction noise levels, an average 8-hour L_{eq} of 80 dBA is recommended by the Federal Transit Administration (FTA) to assess adverse community reactions from construction noise at residential receptors. Therefore, based on these criteria, there would be a significant impact at ML1 from pile driving; however, no significant impacts are expected to occur at ML2 and ML3, as long as it takes place within the specified time period as indicated in the Fresno County Noise Ordinance.

TABLE 5.12-6
ACOUSTICAL CALCULATIONS FROM CONSTRUCTION NOISE

Receptor	Distance to Receptor from Center of Site	Calculated Level from Conventional Construction Activities (Leq dBA)	Calculated Level from Special Construction Activities (Leq dBA, Lmax dBA)
ML1	460 ft	70	81, 86
ML2	1,600 ft	58	69, 74
ML3	1,300 ft	60	71, 76

5.12.3.2.4 Off-Site Construction Traffic

Noise impacts from construction would result from the movement of construction equipment onto and away from the construction site. These are going to cause temporary increases of the ambient noise level during the construction activity. The construction workforce will typically arrive and depart by private vehicles. The number of round-trip worker trips per day will average about 150, with a peak of approximately 220 round trips. Equipment deliveries will peak at about 18 round trips per day. Construction trucks will peak at about 24 round trips per day. Existing truck percentages are about 15% and for year 2008 conditions this can reasonably be assumed to remain the same. For year 2008 conditions with the project the percentages of trucks added to West Panoche Road are about 16%. As such, the relative increase in noise emissions levels from West Panoche Road are expected to increase by 2-4 dBA depending on whether the peak hour is during AM or PM times and whether the road segment is west or east of the Midway project site.

5.12.3.3 Commissioning

Most noise emissions during commissioning will be similar to those occurring during normal project operations with the exception of a short-term elevation of sound pressure level due to equipment checks with no enclosures or with sound enclosures kept open to allow for access. Commissioning will consist

of frequent starting and stopping of all equipment including air compressors, pumps, other motorized equipment, and work required as part of a performance and emissions compliance testing program. Commissioning of the project, according to the Applicant, does not involve safety relief valve releases, steam venting, air venting or other similar processes that can generate impulsive and perhaps tonal noises.

5.12.3.4 Operational Noise

Project operation would involve the introduction of noise-generating equipment. The overall noise level would depend on the physical layout of the facility, noise generation of equipment, numbers of individual equipment units, and the noise control measures incorporated into the facility design.

The CADNA/A model, version 3.5, is used to calculate the project-generated sound level at the three residential receptors (ML1, ML2 and ML3). The calculations account for wave-front divergence, attenuation factors resulting from meteorology, reflections from surfaces such as ground of potentially varying types, and line of sight obstructions such as topography, structures and barriers. Air absorption was assumed to be a "standard" condition of 59°F and 70% relative humidity that are representative of typical conditions during nighttime hours when thresholds of significance are expected to be the controlling factors limiting noise for "steady" facility operation. For the Midway project, the site and surrounding areas were assumed to be a flat, absorptive ground with no intervening topographical barriers. Major buildings, on-site storage tanks, and large equipment structures were included as barriers. The A-weighted emissions of all plant sources have been modeled at the receivers.

Table 5.12-7 shows the sound power level (SWL) re: 1 picoWatt for the noise sources that were considered as part of the evaluation of operational noise by the proposed Midway project. The data show the SWL for each octave band from 31.5 Hz to 8000 Hz and the A-weighted SWL of each noise source.

From the center of the Midway site, ML1 is approximately 460 feet north, ML2 is approximately 1,600 feet west, and ML3 is approximately 1,300 feet northeast. There are scattered structures that could provide acoustical shielding near both ML1 and ML3. Project-related noise contours are depicted in 5-dBA increments on the project site (Figure 5.12-4).

TABLE 5.12-7
MODELED EQUIPMENT SOUND POWER LEVELS

	Sound Power Level (dB) at Octave Band Center Frequency (Hz)									
Noise Source	31.5	63	125	250	500	1000	2000	4000	8000	dBA
Air Compressor Skid	80	75	75	74	77	80	80	78	75	86
Ammonia Injection Skid Fan	59	64	76	81	87	85	83	77	69	90
Combustion Exhaust Cooling Fan	99	105	111	103	97	96	90	85	83	100
Combustion Turbine Inlet	98	89	85	84	56	58	76	72	62	81
Generator Inlet	99	100	106	92	92	91	88	84	76	97
Generator Exhaust	93	93	103	92	82	87	89	85	77	94
Combustion Turbine Side Walls	106	101	97	92	88	90	90	94	84	99
Combustion Turbine End Walls	99	97	91	88	76	75	79	82	72	87
Generator Step Up Transformer (13.8 kV / 115 kV)	108	111	105	105	100	94	91	88	88	102
480 V Auxiliary Transformer	91	97	99	94	94	88	83	78	71	94
De-ionized Water Pump	75	79	82	83	82	81	80	79	74	87
Selective Catalytic Reduction Unit	112	107	98	95	85	78	77	72	63	90
Combustion Exhaust Stack with Silencer, Flow Noise & SCR Losses	107	98	90	82	76	73	71	69	65	81

Source: Energy Services, Inc.

Table 5.12-8 shows estimated noise levels generated by the proposed Midway project of 54 dBA L_{eq} (61 dBA CNEL) at the 5-Plex to the north (ML1), 42 dBA L_{eq} (49 dBA CNEL) at the residential building to the west (ML2), and 44 dBA L_{eq} (51 dBA CNEL) at the residences to the northeast (ML3). Project-noise levels are considered a significant impact when they are in excess of an hourly L_{eq} 45 dBA at all residential receptors. Based on calculated operational noise levels attributable to the proposed Midway project, there would be a significant noise impact at ML1.

TABLE 5.12–8
COMPARISONS OF NOISE LEVELS

Receptor	Distance from Proposed Midway to Receptor	L90 Background Level	Midway Generated Noise Level, Leq	Panoche Energy Center Generated Noise Level, Leq	Cumulative Projects Noise Level, Leq
ML1	460 ft	42 dBA	55 dBA	51 dBA	56 dBA
ML2	1600 ft	37 dBA	42 dBA	58 dBA	58 dBA
ML3	1300 ft	40 dBA	44 dBA	40 dBA	45 dBA

The electric effects of the high voltage lines fall into two categories: corona effects and field effects. Corona is a the ionization of the air that occurs at the surface of the energized conductor and suspension hardware due to very high electric field strength at the surface of the metal during certain conditions. Corona may result in radio and television reception interference, audible noise, light, and production of ozone. A transmission line's field effects are the voltages and currents that may be induced in nearby conduction objects.

The corona effect is the ionization of the air that occurs at the surface of the energized conductor and suspension hardware due to very high electric field strength that typically takes places at the surface of the conductor during certain conditions. Corona may result in certain radio and television reception interference, audible noise, light, and production of ozone, which are described in further detail below. The effects of corona are greatest at locations on the conductor where the field is enhanced by protrusions, such as nicks, insects, or drops of water (for instance during wet weather).

Well-maintained transmission lines will produce minimal corona effects. As previously noted, the project transmission line will be designed according to CPUC and California code, which will also serve to keep noise and interference effects from reaching undesirable levels. Any complaints will be logged, investigated, and to the degree possible, mitigated.

Audible Noise. Corona-generated audible noise from transmission lines is generally characterized as a cracking/hissing noise. The Electric Power Research Institute (EPRI) has conducted several transmission line studies1 which measure the sound levels for several line sizes with wet conductors, and found that the noise produced by a conductor attenuates by two to three decibels (dB) for each doubling of the distance from the source.

Radio and Television Interference. Corona-generated radio interference is most likely to affect the amplitude modulation (AM) broadcast band (535 to 1,605 kilohertz); frequency modulation (FM) radio is

rarely affected. Only AM receivers located very near to transmission lines have the potential to be affected by interference.

Visible Light. Corona may be visible at night as a bluish glow or as bluish plumes. On the transmission lines in the area, the corona levels are so low that the corona on the conductors usually is observable only under the darkest conditions with the aid of binoculars.

Photochemical Reactions. When coronal discharge is present, the air surrounding the conductors is ionized and many chemical reactions take place producing small amounts of ozone and other oxidants. Approximately 90 percent of the oxidants are ozone, while the remaining 10 percent are composed principally of nitrogen oxides.

5.12.4 Cumulative Impacts

Significant and adverse noise impacts have been identified for the Midway project. The cumulative projects noise level due to the combined operation of the proposed Midway and proposed PEC is 56 dBA L_{eq} (63 dBA CNEL) at ML1, 58 dBA L_{eq} (65 dBA CNEL) at ML2, and 45 dBA L_{eq} (52 dBA CNEL) at ML3. As such, the cumulative condition indicates significant and adverse noise impacts at ML2 that are controlled by noise attributable to the PEC that will result independent of the operation of the proposed Midway project. No impacts are indicated for ML3.

5.12.5 MITIGATION

5.12.5.1 Construction Noise

Adverse noise impacts are expected to occur at ML1 during pile driving activities. However, a signed agreement is in place between the landowner of the 5-Plex at ML1 and Starwood-Power Midway, LLC to relocate the current residences. The 5-Plex will no longer be used for residential land use; therefore, it would no longer be considered a sensitive receptor. No further mitigation would be required. Significant impacts were not identified for ML2 or ML3, as long as construction activities take place between 6 a.m. and 9 p.m. on weekdays and 7 a.m. and 5 p.m. on weekends. According to the Applicant no steam blows will occur during construction and commissioning.

5.12.5.2 Operational Noise

As discussed, there would be a significant impact as a result of operational noise at ML1. However, a signed agreement is in place between the landowner of ML1 and Starwood-Power Midway, LLC to relocate the current residences. The 5-Plex will no longer be used for residential land use; therefore, it would no longer be considered a sensitive receptor. No further mitigation would be required.

No impacts were identified at ML2 and ML3; therefore, no further mitigation would be required.

5.12.6 References

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Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Noise** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Introduction Sec: 1.1 5.12.1, 5.12 Impacts: Sec. 5.12.4, 5.12.3 Mitigation: Sec. 5.12.5		
Appendix B (g) (4) (A)	A land use map which identifies residences, hospitals, libraries, schools, places of worship, or other facilities where quiet is an important attribute of the environment within the area impacted by the proposed project. The area impacted by the proposed project is that area where there is a potential increase of 5 dB(A) or more, during either construction or operation, over existing background levels.	Fig. 5.9-2, Fig. 5.9-3 Fig. 5.16-1, 5.12-4		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Noise** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (4) (B)	A description of the ambient noise levels at those sites identified under subsection (g)(4)(A) which the applicant believes provide a representative characterization of the ambient noise levels in the project vicinity, and a discussion of the general atmospheric conditions, including temperature, humidity, and the presence of wind and rain at the time of the measurements. The existing noise levels shall be determined by taking noise measurements for a minimum of 25 consecutive hours at a minimum of one site. Other sites may be monitored for duration at the applicant's discretion during the same 25-hour period. The results of the noise level measurements shall be reported in L_{eq} (equivalent sound or noise level), L_{dn} (day-night sound or noise level) or CNEL (Community Noise Equivalent Level) in units of dB(A). The L_{10}, L_{50}, and L_{90} values (noise levels exceeded 10 percent, 50 percent, and 90 percent of the time, respectively) shall also be reported.	Sec: 5.12.1.2 Tables 5.12-2, 5.12-3, 5.12-5		
Appendix B (g) (4) (C)	A description of the major noise sources of the project, including the range of noise levels and the tonal and frequency characteristics of the noise emitted.	Construction Noise Sec: 5.12.3.2, 5.12.3 Commissioning Sec. 5.12.3.3 Operation Noise Sec: 5.12.3.4 Tables 5.12-6, 5.12-7, 5.12-8		
Appendix B (g) (4) (D)	An estimate of the project noise levels, during both construction and operation, at residences, hospitals, libraries, schools, places of worship or other facilities where quiet is an important attribute of the environment, within the area impacted by the proposed project.	Sec. 5.12.3 Tables 5.12-6, 5.12-7, 5.12-8		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Noise** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (4) (E)	An estimate of the project noise levels within the project site boundary during both construction and operation and the impact to the workers at the site due to the estimated noise levels.	Tables 5.12-6, 5.12-7 Figure 5.12-4		
Appendix B (g) (4) (F)	The audible noise from existing switchyards and overhead transmission lines that would be affected by the project and estimates of the future audible noise levels that would result from existing and proposed switchyards and transmission lines. Noise levels shall be calculated at the property boundary for switchyards and at the edge of the rights-of-way for transmission lines.	Sec. 3.6.3.3, 3.6.3.3.3		
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	Tables 5.12-4 Sec. 5.12.2 Pg. 8.12-6		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Sec. 5.12.2.4 Table 5.12.4		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	Sec: 5.12.3, 5.12.2		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Noise** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Sec 5.12.2.4		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Sec. 5.12.2.5		

5.13 VISUAL RESOURCES

This section discusses the potential for the construction, operation, and maintenance of the Midway project to cause significant impacts to aesthetic values within the project vicinity. The section addresses the inventory of existing visual considerations of the affected environment, the assessment of the environmental consequences of Midway on visual resources, and the LORS pertaining to the aesthetic effects of Midway.

The visual resource studies were conducted in conformance with CEC guidelines for the inventory and assessment of visual impacts for an AFC. The study methods used (described in more detail in the inventory and impact assessment sections below) were based upon those established by the Bureau of Land Management (BLM) *Visual Resource Management Inventory and Contrast Rating System* (BLM, 1986), the Federal Highway Administration (FHWA) *Visual Impact Assessment* (FHWA, 1981) and *U.S. Forest Service Visual Management System* (USFS, 1974, 1995), previous methodologies used in other CEC studies (e.g., AFC for San Joaquin Valley Energy Center Power Plant Project (01-AFC-22)), and other energy related projects. Additionally, the methodology has been tailored to meet the specific issues and regulatory requirements associated with Midway.

5.13.1 Affected Environment

This section describes the inventory of visual resources within the vicinity of Midway. A description of the regional landscape setting, the anticipated visual sphere of influence (VSOI) of the project, and the inventory methods and results are included.

5.13.1.1 Regional Landscape Setting

The plant site (Figures 5.13-2 and 5.13-3) will be located on 5.6 acres within a 128-acre parcel. Currently used as a storage-yard, the site contains several large pieces of electric generating equipment and related items. Wellhead Peaker plant is southeast and CalPeak Panoche lies to the southwest. The PG&E Panoche Substation is to the west. The land surrounding these electric facilities is agricultural and W. Panoche Rd. is north of the site. The Site is relatively flat and supports sparse growth of annual, ruderal weeds and grasses. Midway includes the plant site, construction laydown area, and all of the described offsite improvements. Immediately adjacent land uses include two existing peaker power generation facilities (CalPeak Panoche and Wellhead) and the existing Panoche substation. Existing power lines cross the area toward the northern edge of the site. Other nearby landuses are predominantly agricultural in nature.

Site Topography, shown in Figure 3.3-1, is generally flat, allowing for open, expansive views of several mountain ranges to the west of the valley. These include: the Panoche Mountains and Panoche Hills to the west; Ciervo Mountain and Tumey Hill to the south; and Sugarloaf and Ortigalita peaks to the northwest. The elevation ranges from approximately 400 feet above mean sea level at the northwest corner of the site closest to West Panoche Road and gently slopes to the southeast where the elevation is approximately 395 feet above mean sea level. The natural earth material consists of layers of silt, lean clay and sand.

The California Aqueduct runs about 2 miles northeast of the Midway site and is the dominant water feature in this region. Other water features in the project area include Panoche Creek, which runs 1 mile

north to 2 miles west to of the project site where it connects to Silver Creek. Other significant features within the project area include the Panoche Hills Wilderness Study Areas (North and South) which lie about 5-10 miles west of the project area. These and other BLM-owned lands form a patchwork across the western region surrounding the project area.

In general, the area comprises industrial facilities, agricultural lands, ranch lands, and semi-urban developed areas. Two census tracts cover the project vicinity, and account for approximately 2,000 residents within the region. However, these two tracts cover a large area, including one semi-urban community, Panoche Junction. Panoche Junction, located approximately 10 miles southeast of the project, is characteristic of the semi-urban development in the area with a population of approximately 900 and an area of one half square mile. In addition, several other semi-urban communities surround the project region, although each is located over five miles away from the project site. Those nearest include: Three Rocks, Firebaugh, Mendota, Tranquility, and San Joaquin. The only large incorporated city in the area is Fresno, which lies approximately 40 miles to the east of the project area and contains the largest population in the nearby region, about 430,000.

Fruits and nuts (39 percent) are the predominant crop for Fresno County (Fresno County Agricultural Commissioner Crop Report, 2004), followed by vegetables (27 percent) and livestock and poultry (20 percent). The project area landscape is highly engineered in that its use for intensive agricultural production has been made possible by land clearing and leveling and development of drainage channels, irrigation canals, roads, transmission lines, and electric power facilities. The infrastructure facilities that support the landscape's agricultural use are highly visible components of the landscape pattern. For example, two peaker power plants and a substation are adjacent and therefore highly visible to the site. In addition, transmission lines pass through the area along West Panoche Road.

As mentioned previously, cultural modifications within the VSOI include, but are not limited to, storage-yard, agricultural crops, ranch-like development, two existing peaker plants, the existing Panoche Substation, agricultural and/or storage buildings, and other large industrial facilities. Several transmission lines that support electricity transmission also traverse the landscape within the VSOI.

5.13.1.2 Visual Sphere of Influence

The VSOI for Midway (Figure 5.13-4) represents the area within which the project could be seen and potentially result in significant impacts to visual resources. The furthest distance at which potentially significant visual impacts could occur was identified as five miles. This distance was based primarily on the project description regarding the potential visibility of major project components (e.g., two (2) 75,000 gallon DI and one (1) 75,000 gallon raw water tanks, step-up transformer, and two (2) FT8-3 SwiftPac Combustion Turbine Generator unit stacks) from sensitive viewing areas (see Figure 3.4-1 for a general layout of the project components and Figure 3.4-2 for site elevations). In addition, the distance was based upon the guidelines established in the *U.S. Forest Service Visual Management System* (USFS, 1974, 1995). Based upon USFS distance definitions, the project was reviewed for sensitive resources within the following view ranges:

Foreground – 0 to 0.5 mile from the observer's position. At this distance, the observer can view details of trees, shrubs, wildflowers, and animals.

Middleground – 0.5 to 5 miles from the observer's position. At this distance, the observer can see forest stands, natural openings, masses of shrubs, and rock outcrops.

Background – 5 miles to horizon from the observer's position. At this distance, the observer can view mountain peaks, ridgelines, and patterns of forest stands and openings.

Based on a five-mile distance limit, the VSOI boundary was refined to account for local viewing conditions, primarily topographic and vegetative screening. Computer viewshed analyses were conducted (using 10-meter-grid cell resolution, generated from 1:24,000 Digital Elevation Model [DEM] data from the USGS) to map the boundaries of the VSOI within the five-mile limit. USGS DEM files were imported into an ArcView 9.1-based geographical information system (GIS) using the spatial analysis extension. Once in GIS, the DEMs are mosaiced. From the combined DEM, a triangulated irregular network (TIN) was created. This TIN was used to run viewshed analyses in relation to the Midway components in Universal Transverse Mercator, Zone 11, Units Meters, Clarke 1866 Spheroid, North American Datum 83 (UTM 83).

For Midway, the centroid of the 6.5-acre plant site was used (at 6 feet above existing grade) to run an "existing" viewshed map. Next, a centroid of the plant site's tallest structure, the two stacks at a height of 50 feet, were input and the viewshed model was re-run. The results represent a "typical" viewshed for the project area, since final transformer location had not yet been determined. Next, a second viewshed model was run using the entire site area raised to a proposed height of 40 feet. This second viewshed model was meant to represent a "worst-case" viewing scenario. Since exact location of the tallest component had not yet been determined, this "worse-case" scenario reflected viewing conditions if the transformer was placed anywhere within the project site area.

Overall, the project site is clearly visible from several nearby residents and nearby roadway users (within 0.5 mile), middleground/background views from I-5 (within 2 miles) and sporadic locations within the valley and surrounding mountains (5 miles and beyond). Beyond the mapped VSOI, Midway would be either not visible due to topography/screening, or of such a small size in the background field of view that significant impacts would not be expected.

The VSOI also takes into account the visibility of the existing industrial development (substation, large transmission lines, and peaker plants), as well as the visibility of Midway facilities (e.g. the most visible components). Other variables affecting potential visibility of the project include: orientation of the viewer, duration of view, atmospheric conditions, lighting (daylight versus nighttime), and visual absorption capability (VAC). VAC is defined as the extent to which the complexity of the landscape can absorb new elements without changing the overall visual character of the area.

The VSOI was mapped to identify the maximum potential area for significant impacts of Midway in views from visually sensitive areas. Within the VSOI, varying levels of project visibility have been identified. The highest level of project visibility exists when the viewer is adjacent to the Midway site, is a permanent stationary viewer and there is no screening. Conversely, the lowest level of visibility exists, for example, when the viewer is located at greater distances from the site, the viewer is traveling at a high rate of speed and in partial to fully screened conditions.

Sensitive viewing areas were identified and inventoried within the 5-mile radius of Midway site. The identification of sensitive viewing areas within the VSOI was conducted through review of existing land use data, agency contacts, and during field reviews. The following is a representative list of sensitive viewing areas that were considered during the inventory:

- Residential Areas (e.g., the nearby 5-Plex of local agricultural workers),
- Parks, recreation areas, wildlife areas, visitors centers; or areas used for camping, picnicking, bicycling, boating (e.g., Mendota Wildlife Area), or other recreational activities
- Travel routes: major roads or highways used primarily by origin/destination travelers and designated scenic roads

During field surveys conducted within the immediate project vicinity, it was estimated that several attached and detached homes are present and may have views of Midway site (Figure 5.13-5). Five attached homes lie adjacent to and just to the north of the site. These viewers will have direct, unobstructed views to the project site. In addition, there are three detached homes across the street and to the west of the site. Two have vegetative screening blocking current views to the site. The third has obscured, mostly screened views through the existing Panoche substation. Agricultural crops (pomegranate trees to the west f the substation) also provide partial screening to the site from this third residence.

In addition to the residential viewers, a nearby recreational area (a flat agricultural field which has been converted by local users to a soccer field/park area) lies approximately 1 mile west of the project site. Views from this location are limited and screened. Additionally, traffic flow was examined for major and secondary travel routes within the VSOI. Road counts are approximately 51,500 average daily trips (ADT) along I-5 (although views are distant, often screened, and sporadic).

Travelers along West Panoche Road will have indirect and direct views of the site. Agricultural crops, the substation and the 5-Plex adjacent to the road will block portions of the site; however water tanks and other highly visible features of the plant will clearly be visible from this roadway. In addition, for areas where the topography gives a more direct view to the project site (e.g., the intersection of West Panoche Road and I-5), travelers will have a clear, albeit distant, view to the site.

Levels of potential impact on sensitive viewing areas were established through an analysis of the following two primary components:

- Impact susceptibility: the degree to which a sensitive viewpoint would be impacted by changes within its viewshed
- Impact severity: the degree of change to the landscape created within a specific viewshed

Character photos of the areas surrounding the project site (Figures 5.13-6 through 5.13-9) show sensitive viewing areas and sensitive visual resources within the surrounding project area. Some of these character photos do not have views to the project; however have been included to help identify potentially sensitive visual resources within the region. These photos also help the reader understand the general visual character of the surrounding area and the land uses within the region. The results of the viewshed analysis and the field photo survey indicated that most sensitive viewing areas within the VSOI were from those

areas immediately adjacent to Midway site (foreground viewers) and from the overpass on I-5 at West Panoche Road which has middleground/background views to the project.

5.13.1.3 Visual Study Inventory Components

The following sections detail the visual study inventory components used in the assessment of potential impacts. Three primary components that were inventoried include: 1) an evaluation of scenic attractiveness; 2) consideration of Existing Scenic Integrity Levels (ESILs); and 3) the identification of sensitive viewing areas.

5.13.1.3.1 Scenic Attractiveness

When evaluating scenic attractiveness, both natural and the manmade components within the VSOI were considered as they relate to either adding to or detracting from the overall landscape character within a specific setting. Scenic attractiveness levels are established by evaluating the distinctiveness and diversity of a particular landscape setting in relation to the following elements:

- Landform
- Vegetation
- Water
- Color
- Effects of adjacent scenery
- Scarcity of the landscape
- Cultural modifications

The inventory and evaluation of the above elements assist with the characterization of scenic attractiveness within the VSOI. In general, landscapes are characterized by three levels: A through C.

Class A areas have outstanding diversity or interest; characteristic features of landform, water, and vegetation are distinctive or unique in relation to the surrounding region. These areas contain considerable variety in form, line, color, and texture. Class B areas have above-average diversity or interest, providing some variety in form, line, color, and texture. The natural features are not considered rare in the surrounding region but provide adequate visual diversity to be considered of value. Class C areas have minimal diversity or interest; representative natural features have limited variation in form, line, color, or texture in the context of the surrounding region. Discordant cultural modifications (e.g., power plants, transmission lines, and pipelines) can be highly noticeable, which can reduce the inherent value of the natural setting.

The VSOI for the project area was characterized at the C level for scenic attractiveness. No landscapes were considered to have distinctive characteristics as defined for Class A levels. Most landscapes within the VSOI were identified as Class C or as landscapes lacking significant natural amenities.

Scenic Attractiveness Classification Evaluation Forms (Figures 5.13-10 through 5.13-12) were developed for key view areas within the VSOI. The values underlined in the scenic attractiveness rating box on the forms illustrate the assigned values (H – high, M – moderate, L – low) for each natural feature (e.g., landform, vegetation, water, etc.) or negative/positive cultural modification. The combined value of these elements is used to determine in which class the landscape should be characterized. The Visual Resource Management (VRM) system is designed to separate the existing landscape and the proposed project into their features and elements and to compare each part to the other to identify parts that are incompatible (BLM, 1986). The resulting landscape classifications are:

Class I – The objective of this class is to preserve the existing character of the landscape. Changes to the landscape character should not be evident.

Class II – The objective of this class is to retain the existing character of the landscape. Changes to the landscape character may attract slight attention but should be subordinate to the visual setting.

Class III – The objective of this class is to partially retain the existing character of the landscape. Changes to the landscape character may begin to attract attention but should not dominate the visual setting.

Class IV – The objective of this class is to allow for activities that modify the existing character of the landscape. Changes to the landscape character may attract attention and dominate the visual setting. However, these activities should minimize changes to the landscape where possible.

5.13.1.3.2 Existing Scenic Integrity Levels

The ESILs of a specific landscape setting can be defined as the extent to which natural features have been modified by human actions to the point of degrading the natural setting. An inventory of the ESILs within the VSOI was conducted and varying cultural modifications were documented. Varying cultural modifications included, but were not limited to, existing power plants and associated transmission lines, pipelines, substations, and other large industrial facilities. The following ESIL criteria were used to evaluate degrees of modifications:

- **High –** The landscape character appears intact. Deviations are present but repeat form, line, color, texture, and patterns common to the landscape character so completely and at such a scale that they are not evident.
- **Moderate –** The landscape character appears slightly altered. Noticeable deviations remain visually subordinate to the landscape character being viewed.
- **Low –** The landscape character appears heavily altered. Deviations strongly dominate the landscape character. Deviations do not borrow from attributes such as size, shape, edge effects, vegetative type changes, or architectural styles within or outside the landscape being viewed.

Most areas within the VSOI were classified as retaining low existing scenic integrity.

5.13.1.3.3 Viewer Sensitivity and Sensitive Viewing Areas

Viewer Sensitivity. While conducting this study, no attempt was made to model for varying levels of viewer concern of change within their landscape. Because of the difficulty in inventorying for every individual's sensitivity level, it was determined that all viewers may have a high level of concern related to changes occurring in landscapes within the VSOI. Generally, a viewer's concern level is associated with, but not limited to, the following factors:

- Viewing location, orientation of view, and duration of view
- Activity in which the viewer may be engaged (e.g., water-related recreation activities, bird-watching)
- Visual acuity related to the intensity of visual detail within a landscape setting
- State of mind or attitude
- Preconceived expectations related to scenic quality
- Inherent values related to scenic quality and familiarity within specific landscape settings

Sensitive Viewing Areas. After discussions and a field review with CEC visual staff, and a review of surrounding land uses, it was determined that sensitive viewing areas within the VSOI consisted primarily of adjacent residential areas and travelers along I-5. The nearest residents to Midway site are located approximately 100 feet from the northern boundary of the Midway site and approximately 0.15 mile northwest of Midway site (just west of the existing Panoche Substation across West Panoche Road). I-5, located approximately 2 miles west of Midway site, also maintains distant potentially sensitive views to Midway. I-5 is not considered a Designated Scenic Highway by federal (FHWA) or state (Caltrans) standards. However, I-5 is considered by the County of Fresno to be a Scenic Highway. No other travel routes within the VSOI are designated as federal, state, or county scenic highways or travel routes subject to aesthetic management goals or objectives.

5.13.1.4 Inventory Results

5.13.1.4.1 Scenic Attractiveness

The VSOI is composed primarily of Class C and marginal Class B landscapes. This is because of the high degree of human modifications present within the VSOI and the absence of distinctive natural amenities (e.g., diverse and distinctive natural elements). Areas inventoried along I-5 possess a slightly higher degree of scenic attractiveness because of the elevations in topography allowing large expansive views of the valley and mountains in the area. However, the natural amenities of the area adjacent to I-5 have been visually impacted because of the presence of numerous power plants, transmission lines, agricultural development, pipelines, canals, and other industrial facilities.

Within the VSOI, agricultural lands add to the general continuity of the visual setting. Checkerboard parcels of an assortment of crops add to the distinctiveness of the rural setting and openness of the landscape. Background views of several large mountain ranges add variety within the background-viewing threshold.

5.13.1.4.2 Existing Scenic Integrity Levels

Most landscapes inventoried within the VSOI can be classified as retaining primarily low ESILs because of the presence of manmade development including: agricultural crops, livestock and farming lands, large ranch developments, agricultural/industrial facilities, power plants, transmission lines, substations, and the California Aqueduct within 5 miles surrounding Midway site. Areas adjacent to Midway site were also identified as low ESIL because of the existing substation, transmission lines, two peaker power plants and agricultural crops that characterize the area.

5.13.1.4.3 Sensitive Viewing Areas and Key Observation Points

Key observation points (KOPs) are viewing locations chosen to be representative of the most visually sensitive areas that would view the project. The inventory of KOPs included three components: 1) identification and photo-documentation of viewing areas and potential KOPs; 2) classification of visual sensitivity of KOPs; and 3) description of Midway visibility from KOPs. KOPs were identified based on review of available land use data, field inspection, and discussion with CEC staff responsible for the evaluation of visual resources.

Viewer sensitivity is a measure of the degree of concern for change in the visual character of a landscape. Viewer sensitivity considers type of use, user attitude, volume of use, adjacent land use, visual quality, and special classifications. Three levels of viewer sensitivity (high, moderate, and low) were used to describe the sensitivity of viewers within the study area. High-sensitivity viewpoints identified in the study area include existing and future residences, recreation areas, and existing and future scenic roads/parkways. Moderate-sensitivity viewers identified in the study area consist of commercial areas, as well as existing and future primary (major arterial) roads. Low-sensitivity viewers include industrial areas and are not evaluated in detail for this study because these are considered to be a compatible use with the facility, and therefore would not result in significant visual impacts.

Visibility determines how the project would be seen from a particular viewing area or KOP. The inventory of project visibility documented the distance from the viewpoint to the project. Perception of details (e.g., form, line, color, and texture) diminishes with increasing distance. The distance zones were: foreground (0 to 0.5 mile), middleground (0.5 to 5 miles), and background (beyond 5 miles). In addition, the inventory evaluated if views were open, partially screened (filtered), or screened (e.g., presence of hillside terrain, vegetation, and/or buildings).

Three sensitive viewing areas were identified as representative of viewers who would be most susceptible to visual impact within their viewshed as a result of Midway. A brief characterization of these areas follows:

Sensitive Viewing Area and Key Observation Point No. 1. This image was taken of the backyard view from the closest of five adjoining residences along West Panoche Road, adjacent to (approximately 100 feet from) the northern perimeter of the Midway site (Figure 5.13-13, see also Figure 5.13-4 for photo location). The photo from this location represents these five residences as well as typical views from travelers along West Panoche Road. All viewers have essentially the same unimpeded backyard view (i.e., they are absent of backyard vegetative screening). However, these residences currently have a backyard view of the two existing peaker power plants, the site itself (an existing fenced storage-yard)

and the adjacent Panoche Substation. The project, especially the most visually dominant components of the project (the water tanks, step-up transformer and swiftpac units), will be clearly visible from this location. In addition, potential visible plumes and nighttime project lighting added to the area will be clearly visible from this KOP. This view is also consistent with longer viewing durations (i.e., from residential views) of Midway, as well as a high degree of severity because of the close distance. Midway, in the absence of screening, would be highly visible because of the flat, open viewing conditions. The ESIL from this area can be characterized as low.

Sensitive Viewing Area and Key Observation Point No. 2. This image was taken from one of three residences close to Midway site along West Panoche Road (Figure 5.13-14, see also Figure 5.13-4 for photo location), approximately 0.15 mile northwest of the Midway site. The photo from this location represents residential views as well as traveler views along West Panoche Road. Although two of the three residences in this area are actually partially or completely screened from view by existing mature vegetation, this residence has the most unobscured view to Midway site and therefore was chosen as a representative KOP. The Midway site is located approximately 0.10 mile southeast of West Panoche Road, just east of the existing Panoche substation. This KOP will have intermittent views (through the crop rows an substation) to the project. In addition, visible plumes and nighttime project lighting added to the area will be visible from this KOP location. This view is also consistent with longer viewing durations (i.e., from residential views) of Midway. Midway, in the absence of screening, would be visible, albeit semi-obstructed (because of the existing Panoche substation). It should be noted however, the viewshed has already been modified with the presence of the substation, existing transmission lines, storage-yard, and existing peaker power plants in the immediate vicinity. The ESIL from this area can be characterized as low.

Sensitive Viewing Area No. 3. This image was taken from the overpass of I-5 and West Panoche Road (Figure 5.13-15, see also Figure 5.13-4 for photo location), approximately 2 miles west of Midway site. Fresno County has designated I-5 within Fresno County as a Scenic Highway. Views from this roadway have therefore been considered sensitive and are included as a KOP for this project. The photo from this location represents traveler views from I-5 and West Panoche Road. Portions of I-5 are elevated allowing large expansive views to the valley (and potentially to the project area). In addition, lack of vegetative screening in some areas adjacent to I-5 allows for some unobstructed views. The photo is taken from the overpass to help represent “worst-case” views to Midway. This location represents the closest unscreened elevated view to Midway from I-5. Although the view is clearly a middleground/background view, the project is visible. In addition, nighttime lighting and potential plume emissions will draw the viewer’s attention to the area and Midway. Overall, most views from I-5 will not have a view to Midway. From this distance (2 miles and beyond) most views to the Midway site will be screened, either by topography or vegetation. This view is consistent with short viewing durations (i.e., from traveler views focusing on the road) and will have a low degree of severity because of distance. It should be noted that the most distinct visual characteristic of the area as you are traveling along I-5 is the patchwork of various agricultural crops. Each crop varies by color and size and the patchwork of patterns and lines along I-5 is more noticeable than facilities within the region. The ESIL from this area can be characterized as moderate.

5.13.2 Environmental Consequences

5.13.2.1 Significance Criteria and Assessment Methodology

The visual resources study included the assessment of impacts on scenic attractiveness and sensitive viewing areas within the VSOI related to the construction, operation, maintenance, and long-term presence of Midway.

The consideration of significant visual impacts was based predominantly on the requirements of CEQA. Appendix G of the CEQA guidelines states that potential impacts to visual resources would be significant if a proposed project results in:

- A substantial adverse effect on a scenic vista
- Substantial damage of scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings
- Substantial degradation of the existing visual character or quality of the site and its surroundings
- Creation of a new source of substantial light or glare that would adversely affect day or nighttime views in the area

Additionally, the CEC requires that consideration be given to the following:

- Compliance with LORS
- Level of viewshed alteration and ground form manipulation
- Regional effects to visual resources
- Magnitude of impact related to light and glare
- Magnitude of back-light scatter during nighttime hours
- Level of sunlight reduction or increase in shadows in areas used by the public

The matrix presented in Table 5.13-1 aids in the assessment of visual impact significance.

TABLE 5.13-1
VISUAL IMPACT SIGNIFICANCE MATRIX – SENSITIVE VIEWING AREAS

Visual Impact Severity	High Susceptibility	Moderate Susceptibility	Low susceptibility
High Impact Severity	Significant	Less Than Significant	No Impact
Moderate Impact Severity	Less Than Significant	No Impact	No Impact
Low Impact Severity	No Impact	No Impact	No Impact

5.13.2.1.1 Visual Simulations

A comparison of existing views with visual simulations, depicted in Figures 5.13-13 through 5.13-15 aided in verifying project-related impacts. The simulations served to present a representative sample of the existing landscape settings contained within the VSOI, as well as an illustration of how Midway may look from specific key viewing locations.

To ensure a high degree of visual accuracy in the visual simulations, computer-aided design (CAD) equipment, GIS, and the use of global positioning systems (GPS) allow for life-size modeling within the computer. This translates to using real world scale and coordinates to locate facilities, other site data, and the actual camera locations corresponding to three-dimensional (3D) simulation viewpoints. The degree of accuracy of the CAD and GIS equipment is absolute; the accuracy for the GPS location data is to within approximately 1 meter, or 3.28084 feet.

A GIS site map is imported as a background reference. CAD drawings of proposed facilities are placed on top of the site map in GIS. GPS locations of sensitive viewing areas are also input into GIS. The GPS camera positioning information is then referenced to the 3D data set. The 3D massing models of both the proposed plant and all ancillary facilities are generated in real-world coordinates, scaled, and input into GIS.

An electronic camera lens matches the camera lens that was actually used in the field. A Nikon 4200 digital camera set to take a 50-mm lens image was used consistently throughout the process. This lens setting selection allows for viewing of the computer-generated model in the same way that Midway would be viewed in the field.

Next, the photograph is imported into the 3D database and loaded as an environment within which the view of the 3D model is generated. To generate the correct view relative to the actual photograph, the electronic camera is placed at a location (within the computer) from where the photograph was taken. This is supported by the GPS location. From there, the 3D wire frame model is displayed on top of the existing photo so that proper alignment, scale, angle, and distance can be verified. When all lines of the wire frame model exactly match the photograph, the camera target position is confirmed.

It should be noted that final simulations were created using CAD files obtained from Energy Services Inc. (the plant designer) to remain consistent with general plant development engineering. Once field KOP location photos and GPS coordinates for photo locations were gathered in the field, these were incorporated into the final simulation production. The processes described above relate to general simulation construction and are included for reader understanding of the procedures. Accuracy levels should also be verified with Energy Services Inc. if needed.

The visual simulations developed for Midway have been designed to be viewed 18 inches from the viewer’s eye. This distance will portray the most realistic life-size image from the location of the sensitive viewing area.

5.13.2.1.2 Assessing Visual Impact Susceptibility on Sensitive Viewing Areas

As stated previously, in Section 5.13.1.2, visual impact susceptibility is the degree to which a sensitive viewpoint would be impacted by changes within its viewshed. Following the identification of the three most sensitive viewing areas within the VSOI, the degree of impact on each area was determined through the analysis of the following components:

- Existing Scenic Integrity Level – The degree of existing disturbance within the natural setting
- Viewer Sensitivity – All identified viewers with foreground views were considered high-sensitivity viewers
- Project Visibility – An assessment of the viewing angle, potential screening, lighting conditions, and time of day
- Viewer Exposure – An assessment of the distance from the proposed project, number of viewers, and duration of views

Table 5.13-2 illustrates the level of visual impact susceptibility anticipated for each sensitive viewing area based on an evaluation of the previously stated factors.

TABLE 5.13-2
VISUAL IMPACT SUSCEPTIBILITY – SENSITIVE VIEWING AREAS

Viewing Areas	Existing Scenic Integrity Level	Viewer Sensitivity	Project Visibility	Viewer Exposure	Visual Impact Susceptibility
Sensitive Viewing Area and KOP No. 1 (Figure 5.13-13, see also Figure 5.13-4 for KOP location) – from unobscured backyard view of adjacent 5-Plex along West Panoche Road, adjacent to the existing Panoche Substation.	Low	High	High	Moderate	High
Sensitive Viewing Area and KOP No. 2 (Figure 5.13-14, see also Figure 5.13-4 for KOP location) – from partially screened residence of three along West Panoche Road.	Low	High	Moderate	Moderate	Moderate
Sensitive Viewing Area and KOP No. 3 (Figure 5.13-15, see also Figure 5.13-4 for KOP location) – from overpass of I-5 and West Panoche Road	Moderate	Moderate	Moderate	Moderate	Moderate

5.13.2.1.3 Assessing Visual Impact Severity on Sensitive Viewers

The severity of the impact (high to low) on sensitive viewers was assigned a severity level proportionate to the amount of anticipated change to the landscape created within a specific viewshed. The primary criteria for project impacts include:

- The degree of project contrast (e.g., form, line, color, and texture)
- Scale and spatial dominance
- Extent of view blockage/screening (topographic and/or vegetative) and night lighting

Table 5.13-3 describes levels designated to each variable above as they relate to the degree of visual impact severity anticipated on representative sensitive viewing areas.

The final evaluation conducted in the impact assessment was the assignment of potential impact levels on representative sensitive viewing areas by combining viewer susceptibility and impact severity levels at key and characteristic viewing locations.

5.13.2.2 Visual Impact Assessment Results

This section discusses the affected visual resources for Midway. A description of the potential impacts on scenic attractiveness and on sensitive viewers is provided. A detailed description of Midway is in Section 3.0 (Project Description). The following are some of the more important project features related to the visual impact assessment:

- Three (3) 75,000 gallon water tanks (two for DI water, one for raw water),
- Two (2) SwiftPac Combustion Turbine Generator units including exhaust stacks (50 feet tall),
- A proposed 15-foot tall step-up transformer with a 50-foot tall dead end structure,
- An approximately two-third acre evaporation pond,
- The plant buildings will include two (2) primary control enclosures (one for each SwiftPac unit) and one (1) secondary control enclosure. Building dimensions are shown in Table 3.4-1. All of the enclosures will be supported on mat foundations or individual spread footings
- Visible plumes may occur (please see Section 5.2, Air Quality, for more information on emissions),
- The power plant is immediately adjacent to the existing Panoche Substation. As such, the plant switchyard will tie in directly with this site minimizing necessary transmission lines,
- The property is a disturbed industrial storage area. The property is relatively flat sloping gently down to the southeast,
- Surrounding site development includes two existing peaker power plants in addition to the existing Panoche Substation,
- Transmission line corridors currently exist (Figure 5.13-4) within the immediate and surrounding project vicinity,

TABLE 5.13-3
VISUAL IMPACT SEVERITY – SENSITIVE VIEWING AREAS

Viewing Areas	Form Contrast	Line Contrast	Color Contrast	Texture Contrast	Scale Dominance	Spatial Dominance	View/Blockage/ Night Lighting	Visual Impact Severity
Sensitive Viewing Area and KOP NO. 1 (Figure 5.13-13, see also Figure 5.13-4 for KOP location) – from unobscured backyard view of adjacent 5-Plex along West Panoche Road, adjacent to the existing Panoche Substation.	High	High	High	High	Dominant	Dominant	Moderate/High	High
Sensitive Viewing Area and KOP No. 2 (Figure 5.13-14, see also Figure 5.13-4 for KOP location) – from partially screened residence of three along West Panoche Road.	Moderate	Moderate	Moderate	Low	Subordinate	Subordinate	Low/Moderate	Moderate
Sensitive Viewing Area and KOP No. 3 (Figure 5.13-15, see also Figure 5.13-4 for KOP location) – from overpass of I-5 and West Panoche Road	Low	Moderate	Moderate	Moderate	Subordinate	Subordinate	Low/Moderate	Moderate

The site preparation earthwork includes surface grading to level and maintain the existing natural gradient. In addition, surface grading will occur to create.

- There will be approximately 9,500 cubic yards of site grading associated with the Midway project.
- Stormwater will continue to run from the site as sheet flow. Existing drainage patterns will try to be maintained the greatest extent possible.
- The access road network serving the project will consist of a graded gravel entrance road extending for approximately 250 feet and an 1,150-foot asphalt turn-around adjacent to the plant.
- A security fence will enclose the plant site. Access gates will be provided, as required. In addition to the perimeter security fence, the substation and transformer area will be fenced and provided with access gates.

5.13.2.2.1 Direct Impacts

The following sections describe direct impacts related to the project.

Visual Impact Significance on Scenic Attractiveness. Given the lack of significant topographic features and degree of existing modification and landscape degradation (e.g., substation, peaker power plants, storage-yard, and transmission lines) within the VSOI, less than significant impacts on scenic attractiveness would occur. Ground-disturbing activities at Midway site would occur in areas previously disturbed (agricultural crop rows) or with degraded landscapes and within areas classified as retaining low distinctive or diverse natural amenities or lacking substantial positive cultural modifications. Therefore, less than significant impacts would occur relative to existing scenic attractiveness.

Visual Impact Significance on Sensitive Viewing Areas. Tables 5.13-2, 5.13-3, and 5.13-4 illustrate the visual impact susceptibility, visual impact severity, and resultant visual impact significance on sensitive viewing areas, respectively. Significant impacts will occur only to those residences immediately across the street from Midway site and to potential travelers along West Panoche Road. As mentioned previously, current views from these residences are degraded due to exiting development. Although the project would be consistent with the land uses within the area, there is found to be a significant visual impact to identified sensitive viewers, and less-than-significant impacts to the majority of sensitive viewers within the region from with the construction, operation, maintenance, or long-term presence of Midway.

TABLE 5.13-4
VISUAL IMPACT SIGNIFICANCE – SENSITIVE VIEWING AREAS

Viewing Area	Description of Impact	Visual Impact Susceptibility	Visual Impact Severity	Visual Impact Significance
Sensitive Viewing Area and KOP No. 1 (Figure 5.13-13, see also Figure 5.13-4 for KOP location) – from unobscured backyard view of adjacent 5-Plex along West Panoche Road, adjacent to the existing Panoche Substation.	This KOP will have unobstructed direct backyard views to Midway and therefore, will have clear unobstructed views to the structures of the project (e.g., water tanks, step-up transformer and SwiftPac units and corresponding exhaust stacks). In addition, potential visible plumes and nighttime project lighting added to the area will be clearly visible from this KOP location. This view is also consistent with longer viewing durations (i.e., from residential views) of Midway, as well as the highest degree of severity because of the close distance. Midway, in the absence of screening, would be highly visible because of the flat, open viewing conditions. It should be noted however, the viewshed has already been modified with the presence of existing transmission lines, substation, and peaker power plants in the immediate vicinity.	High	High	Significant Impact
Sensitive Viewing Area and KOP No. 2 (Figure 5.13-14, see also Figure 5.13-4 for KOP location) – from partially screened residence of three along West Panoche Road.	This KOP will have intermittent views (through the substation) to Midway. In addition, potential visible plumes and nighttime project lighting added to the area will be clearly visible from this KOP. This view is also consistent with longer viewing durations (i.e., from residential views) of Midway, as well as a moderate degree of severity because of the close distance. Midway, in the absence of screening, would be visible because of the flat, open viewing conditions, although the existing Panoche substation will provide view blockage to some project features. The KOP will not be significantly impacted because Midway will be sufficiently absorbed into the existing modified visual environment.	Moderate	Moderate	Less Than Significant
Sensitive Viewing Area and KOP No. 3 (Figure 5.13-15, see also Figure 5.13-4 for KOP location) – from overpass of I-5 and West Panoche Road	Fresno County has designated I-5 within Fresno County as a Scenic Highway. Views from this roadway have therefore been considered sensitive. This location represents the closest unscreened elevated view to Midway from I-5. Although the view is clearly a middleground/background view, the project is visible. In addition, nighttime lighting and potential plume emissions will draw the viewer's attention to the area and Midway. Overall, most views from I-5 will not have a view to the project. From this distance (2 miles and beyond) most views to Midway site will be screened, either by topography or vegetation. This view is consistent with short viewing durations (i.e., from traveler views focusing on the road) and will have a low degree of severity because of distance.	Moderate	Moderate	Less Than Significant

5.13.2.2.2 Lighting

Lighting will be required for safe and efficient operation in a number of areas. These include:

- Outdoor equipment platforms and walkways
- Transformer areas

To avoid intrusion on sensitive areas, outdoor lighting will be directed downwards and towards the interior of the plant.

Emergency lighting from DC battery packs will be provided in areas of normal personnel traffic to permit safe egress from the area in case of failure of the normal lighting system. In major control equipment areas and electrical distribution equipment areas, emergency lighting will be sufficient to allow equipment operation and to facilitate reestablishment of auxiliary power.

FAA Advisory Circular 70/7460-1K requires that all airspace obstructions over 200 feet in height or in close proximity to an airfield have obstruction lighting. The Midway exhaust stacks are elevated 50 feet above grade. Since the stacks are below the 200 feet limit and there is no airfield in close proximity to the site, the exhaust stacks will not require obstruction lighting.

Night Lighting and Light Glare. Direct impacts resulting from night lighting and glare are considered to be less than significant for the majority of sensitive viewers in the area. Only travelers on West Panoche Road and those 5-Plex residences immediately adjacent to the Midway site will be significantly affected by the night lighting and potential glare from the project structures. Nighttime lighting conditions will be visible to I-5 travelers, although there is much topographic and vegetative screening in the area. Thus, impacts from night lighting will be distinguishable yet intermittent and are therefore considered to be less than significant. In addition, night lighting and light glare is produced by the existing Panoche Substation, immediately adjacent to Midway site. Safety night lighting for the substation and nearby peaker power plants also exist in the area. Overall, the addition of Midway would not significantly increase the impact from night lighting, back-scatter light, or glare that a viewer would experience when looking toward the site. The only exception would be for the 5-Plex residences immediately adjacent to Midway and for those travelers along West Panoche Road. Although the project site will be set back behind the 5-Plex, nighttime lighting and glare conditions are considered to be a significant impact to these select viewers.

Visible Plumes. It should be noted that since there are no cooling towers associated with this project. There are only two operational sources of emissions for this project, the two SwiftPac Combustion Unit exhaust stacks. Please see Section 5.2 (Air Quality) for detailed information on emissions. The frequency, visibility, and size of potential visible plumes are dependent on the atmospheric conditions during viewing. Specifically, visible plume formation depends on local ambient temperature, humidity conditions, and wind patterns. A location with higher temperature and lower humidity (i.e., Fresno's climate) would have fewer extended visible plumes compared to the same tower operation at a cooler, more humid site. Further, Midway would be in peak operation during the summer months, at which time the temperature at the Panoche site is generally too high for long plumes to occur. Also important to note is the fact that the prevailing winds at Midway site are from the northwest and would carry any potential

plumes away from West Panoche Road. They would likely dissipate before they reach another main road. Therefore, the potential for visible plumes from Midway is highly variable and indeterminate. In the event that atmospheric conditions are conducive to visible plumes, the potential plumes could be visible from residences and travelers within and outside the VSOI. During these occasions people at those residences and travelers within 0.5 mile of Midway (i.e., foreground viewers) would see a significant impact due to the effects of visible plumes. Middleground to background viewers (0.5 mile to the horizon) would experience significant to less than significant impacts. Currently there are few to no visible plumes within the existing viewshed. Although the addition of plumes to the area would create a change to existing conditions, most viewers will be at such distances that impacts from visible plumes are considered to be less than significant. Notably, due to the fact that plume formation depends upon highly variable atmospheric conditions, peak operation of Midway would be during hot, summer months not conducive to plume formation, and the proximity of most viewers would be at such distances that any potential plumes would be remotely visible.

5.13.2.2.3 Landscaping

Landscaping will not be incorporated into the project description so as not to add incrementally to the overall change in viewsheds.

5.13.2.2.4 Indirect and Construction-related Impacts

Project site preparation includes 9,500 cubic yards of site grading. Construction will be at one to three feet above existing grade, which is fairly level; therefore major cuts and fills are not anticipated. Excavation work will consist of the removal, storage, and/or disposal of earth, sand, gravel, vegetation, organic matter, loose rock, boulders, and debris to the lines and grades necessary for construction. Materials suitable for backfill will be stockpiled at designated locations using proper erosion protection methods. Excess material will be removed from the site and disposed of at an acceptable location. See also Section 3.5.9 for more information relating to earthwork relating to potential construction impacts.

The construction period is expected to last 10 months. The workforce is expected to average roughly 74 construction workers, with 110 workers in the peak month. The workforce will come from the Fresno area, with an average roundtrip commute distance of 45 miles.

Construction access is from West Panoche Road along the existing access road shown on Figure 3.4-1. Construction trailers will be located in the eastern portion of the project site, within the access road area. The construction laydown and parking areas will be located to in this same location.

Indirect impacts associated with the construction, operation, and long-term presence of Midway and ancillary facilities may include impacts associated with fugitive dust plumes, night lighting, and presence of construction equipment. These impacts were considered temporary and insignificant.

5.13.3 Cumulative Impacts

The following projects have been identified within the cumulative impacts assessment in relation to Midway (see Section 5.18, Cumulative Impacts):

- Panoche Energy Center (PEC)
- Convenience Store
- Existing CalPeak Panoche

The areas within the VSOI and greater Fresno County are generally characterized by cultivated farmlands of the valley, foothill grasslands and high mountain peaks supported by small towns and other sparsely populated communities. Accordingly, the number, size, and scale of cumulative projects in the area are substantially less than in other more-urbanized portions of California.

Midway will contribute to the industrial nature of the immediate project vicinity. The VSOI has already experienced a significant amount of cultural modifications, and the addition of any of these projects, when considered with Midway, will not significantly affect the visual setting within the VSOI. Based on a review of the projects listed, no significant cumulative impacts have been identified as a result of the construction, operation, maintenance, or long-term presence of Midway. The addition of Midway does alter the existing landscape and visual setting. However, because the immediate visual setting is industrial in nature (including two peaker power plants, an existing substation, transmission lines and industrial storage facilities), Midway will not create a substantial additive impact to the general character of the area.

5.13.4 Mitigation Measures

Midway design inherently includes mitigation measures, although none are required. For example, the site location was chosen because of its proximity to the existing Panoche Substation and existing CalPeak Panoche Peaker power plant. By locating Midway immediately adjacent to the existing substation, the project can tie directly in via the proposed step-up transformer. This will limit unnecessary transmission lines and prominent transmission poles traversing the area. In addition, by placing the site in close proximity to the existing CalPeak Panoche Peaker power plant, the Midway site can take advantage of routing water from CalPeak's existing well, thereby minimizing impacts relating to water transmission line impacts. In addition, the site location has been placed on an existing storage-yard, thereby minimizing impacts to adjacent agricultural lands. Finally, project features have been designed to help minimize visual impacts. These include, but are not limited to, shielding light sources and using non-reflective materials for project components (especially more prominent project features like the water tanks).

5.13.4.1 Underground Pipelines

After construction, areas stripped of vegetation will be returned to current uses. No areas proposed for underground pipelines are currently vegetated. All areas where underground pipelines are proposed are currently disturbed unvegetated areas.

5.13.4.2 Transmission Lines

Structures and conductors will be treated to reduce sun reflectivity. New or replacement transmission lines will parallel existing linear features and will be constructed of like materials to the extent practicable, for most of their overall lengths. Transmission lines will tie directly through the step-up

transformer to the adjacent Panoche Substation. Thus, minimal transmission lines will be necessary for this project.

5.13.5 Applicable LORS

Applicable visual resources LORS are summarized in Table 5.13-5 and described below. Agency contacts are provided in Table 5.13-6.

5.13.5.1 Federal and State

Midway is located on property under the jurisdiction of Fresno County; however BLM public domain lands (approximately 5 miles away) may have distant views to the project site. Therefore, VRM guidelines were considered for this project. VRM methodology categorizes impacts based upon changes to scenic quality, sensitivity levels, and distance zones. These are all discussed in detail in Section 5.13.1. Overall, the project is consistent with all federal aesthetic LORS.

State-designated scenic highways or highways eligible for designation were not identified within the VSOI. Further, no other area managed by the state for which Midway would be required to adhere to aesthetic LORS was identified. Therefore, compliance with state aesthetic LORS is inapplicable.

5.13.5.2 Local

Midway is located on unincorporated land within Fresno County. In addition, San Benito County is approximately five miles west and may have distant views to the project site. Merced, Kings, and Madera counties are all within 15 to 40 miles but have no views to the project site. Therefore, local LORS were only considered for Fresno and San Benito counties. Prior to Midway project visual section development, CEC staff confirmed that Fresno County and San Benito County would be the only local LORS to be addressed for the project.

The property is zoned A-E 20 (Agriculturally Exclusive – 20-acre minimum) by Fresno County. Allowable uses within A-E 20 zoning include the existing substation and power facilities adjacent to the site. However, a Conditional Use Permit was required.

The Fresno County General Plan (2000) contains several goals and policies relating specifically to aesthetics and minimizing impacts to visual resources. In addition, the San Benito County General Plan (1980) has a Scenic Roads and Highways Element with several objectives and policies outlined relating to the preservation of scenic resources. Finally, San Benito County has a Dark Sky Ordinance in place, regulating light pollution in the county. These local LORS, and the project's conformance to these LORS, are summarized in Table 5.13-5.

In addition, project design elements have been incorporated into the project description that will be effective in minimizing visual impacts (see Project Description, Section 3.0). Midway will conform to all applicable local LORS related to the preservation of areas identified as retaining high scenic value. Based on the inventory of scenic attractiveness and ESILs, areas retaining high scenic value were not identified within the VSOI. Therefore, compliance with local aesthetic LORS will be maintained.

Table 5.13-5
Summary of LORS

Jurisdiction	LORS	Requirements	Conformance to Requirements	Administering Agency	Agency Contact
Federal					
	Application for Certification Requirements	Rules of Practice and Procedure & Power Plant Site Certification Regulations, Appendix B.	See Data Adequacy Worksheet	California Energy Commission (CEC)	1
	Visual Resource Manual	To manage public lands in a manner which will protect the quality of the scenic (visual) values of these lands	BLM public domain lands and the Panoche Hills Wilderness Study Areas lie five miles west and may have distant views to the project site. See Section 5.13.1.5 for a description of these views. In summary, changes to these views will be indiscernible to minimal.	Bureau of Land Management (BLM)	2
State					
	State Scenic Highway Requirements	Requirements are applicable to state designated scenic highways. There are none in the project area.	There are no Designated or Eligible State Scenic Highways in the VSOI. Therefore, compliance with state aesthetic LORS is inapplicable.	California Department of Transportation (Caltrans)	3
Local					
Fresno County	Fresno County General Plan/Public Facilities and Services – *Goal PF-J*	To provide efficient and cost-effective utilities that serves the existing and future needs of people in the unincorporated areas of the County.	See Project Objectives, Section 2.0.	Fresno County Planning Department	4
Fresno County	Fresno County General Plan/Public Facilities and Services - *Goal PF-J.2*	The County shall work with local gas and electric utility companies to design and locate appropriate expansion of gas and electric systems, while minimizing impacts to agriculture and	The proposed site is adjacent to an existing substation and two peaker power plants. By containing power sources to this already disturbed localized area, impacts to visual resources are minimized.	Fresno County Planning Department	4

Table 5.13-5
Summary of Laws, Ordinances, Regulations, and Standards
(Continued)

Jurisdiction	LORS	Requirements	Conformance to Requirements	Administering Agency	Agency Contact
		minimizing noise, electromagnetic, visual, and other impacts on existing and future residents.			
Fresno County	Fresno County General Plan/Public Facilities and Services - *Goal PF-J.3*	The County shall require all new residential development along with new urban commercial and industrial development to underground utility lines on-site.	The proposed site is adjacent to an existing substation. Necessary transmission lines will go a minimal distance (approximately 300 feet from switchyard to substation)	Fresno County Planning Department	4
Fresno County	Fresno County General Plan/Open Space and Conservation - *Goal OS-K*	To conserve, protect, and maintain the scenic quality of Fresno County and discourage development that degrades areas of scenic quality.	There are no scenic resources within the VSOI. The proposed site lies adjacent to an existing substation and two peaker power plants. By containing the power development to this localized area, changes to visual resources will be minimized. Furthermore, by focusing development within this area, scenic areas within the County can be maintained.	Fresno County Planning Department	4
Fresno County	Fresno County General Plan/Open Space and Conservation - *Goal OS-K. 1*	The County shall encourage the preservation of outstanding scenic views, panoramas, and vistas whenever possible. Methods to achieve this may include encouraging private property owners to enter into open space easements for designated scenic areas.	There are few scenic views, panoramas, and vistas within the VSOI. The County of Fresno does consider I-5 to be a locally designated Scenic Highway. Views from I-5 to the project site are minimal and short in duration due to vegetative screening and topography within the area. Scenic views and vistas from this roadway will change only slightly by the addition of the project.	Fresno County Planning Department	4

Table 5.13-5
Summary of Laws, Ordinances, Regulations, and Standards
(Continued)

Jurisdiction	LORS	Requirements	Conformance to Requirements	Administering Agency	Agency Contact
Fresno County	Fresno County General Plan/Open Space and Conservation - *Goal OS-K.4*	The County should require development adjacent to scenic areas, vistas, and roadways to incorporate natural features of the site and be developed to minimize impacts to the scenic qualities of the site	The site does incorporate natural features of the site including the use of vegetative screening already in the area. In addition, other design features have been incorporated to help minimize impacts to scenic quality as described in the project description, Section 3.0.	Fresno County Planning Department	4
Fresno County	Fresno County General Plan/Open Space and Conservation - *Goal OS-L*	To conserve, protect, and maintain the scenic quality of land and landscape adjacent to scenic roads in Fresno County.	I-5 is designated a Fresno County Scenic Highway and lies approximately two miles west of the project site. Views from this roadway to the project are described in Section 3.0. In summary, the scenic quality of land and landscape adjacent to the highway will not change as a result of this project. Traveler views from the highway will change slightly, but the change will be indiscernible to minimal.	Fresno County Planning Department	4
San Benito County	San Benito County General Plan/Scenic Roads and Highways Element - *Goal*	Preserve scenic qualities of San Benito County. Enhance and preserve the visual qualities of the designated scenic corridors within San Benito County.	San Benito County will have only distant views to the project.	San Benito County Planning Department	5

Table 5.13-5
Summary of Laws, Ordinances, Regulations, and Standards
(Continued)

Jurisdiction	LORS	Requirements	Conformance to Requirements	Administering Agency	Agency Contact
San Benito County	San Benito County - *Dark Sky Ordinance*	Encourage lighting practices and systems which will: minimize light pollution, glare, light trespass, conserve energy and resources while maintaining night-time safety, utility, security and productivity; and curtail the degradation of the night time visual environment.	San Benito County is approximately 10 miles to the west of the project site but project lighting from the project could affect San Benito County. Therefore, mitigation measures have been incorporated into the project description (see Section 3.0), which will minimize impacts due to project lighting and glare. These include but are not limited to, shielded lighting sources and use of non-glare materials.	San Benito County Planning Department	5

TABLE 5.13-6
AGENCY CONTACT LIST FOR LORS

Agency	Contact Information
Federal	
California Energy Commission Systems Assessment and Facilities Siting Division Environmental Protection Office (1)	1516 9th Street, MS 40 Sacramento, CA 95814-5512 Dale B. Edwards, Supervisor (916) 654-5139
Bureau of Land Management Hollister Field Office (2)	20 Hamilton Court Hollister, CA 95023 (831) 630-5000
State	
California Department of Transportation (Caltrans) Guidelines for the Official Designation of Scenic Highways, Office of Landscape (3)	2800 Gateway Oaks Drive, Suite 100, Sacramento, CA 95833 Ken Murray, L.A. #4345, Senior Landscape Architect (916) 274-6138
Local	
Fresno County Department of Public Works & Planning Development Services Department (4)	2220 Tulare Street, 6th Floor Fresno, CA 93721 Roy Jimenez, Jr., Planning & Resource Analyst (559) 262-4343
San Benito County Planning & Building Department (5)	3224 Southside Rd., Hollister, CA 95023-91 74 Rob Mendiola, Director of Planning (831) 637-5313

5.13.5.3 Permits Required and Permit Schedule

No permits are required pertaining to visual resources.

5.13.6 References

Application for Certification for San Joaquin Valley Energy Center Power Plant Project 01 -AFC-22).

Bureau of Land Management. 1986. Visual Resource Management Inventory and Contrast Rating System.

California Department of Transportation Website – California Scenic Highway System: List of Eligible and Officially Designated Routes.

California Department of Transportation. 1992. AFC, p. 5.9-1.

California Energy Commission, Systems Assessment and Facilities Siting Division, Environmental Protection Office, personal correspondence. 2005-2006.

Federal Highway Administration (FHWA). 1981.

Fresno County Agricultural Commissioner Crop Report. 2004. http://www.co.fresno.ca.us/ 401 0/CROP04/index.html.

Fresno County General Plan. 2000. http://www.co.fresno.ca.us/45 10/43 60/General_Plan/ general_plan.htm.

San Benito County General Plan. 1980.

Salton Sea Unit 6 Geothermal Power Plant AFC, URS Corp., 2004.

URS Corporation. 2006. Application for Certification, Panoche Energy Center.

U.S. Department of Agriculture, Forest Service

(USFS). 1995. Landscape Aesthetics – A Handbook for Scenery Management. USDA Handbook.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Visual Resources** Project: Midway Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Existing conditions: Sec. 5.13.1 Impacts: Sec. 5.13.2, 5.13.3 Mitigation: Sec. 5.13.4		
Appendix B (g) (6) (A)	Descriptions of the existing visual setting of the vicinity of the project, the region that can be seen from the vicinity of the project, and the proposed project site. Include:	Setting: Sec. 5.13.1.1		
Appendix B (g) (6) (A) (i)	Topographic maps at a scale of 1:24,000 of the areas from which the project may be seen, identification of the view areas most sensitive to the potential visual impacts of the project, and the locations where photographs were taken for (g)(6)(E);	VSOI: Sec. 5.13.1.2, Figure 5.13-4		
Appendix B (g) (6) (A) (ii)	Elevations of any existing structures on the site; and	Elevations: Sec. 3.0, Figure 3.4-2		
Appendix B (g) (6) (A) (iii)	The visual properties of the topography, vegetation, and any modifications to the landscape as a result of human activities.	Visual properties: Sec. 5.13.1.1		
Appendix B (g) (6) (B)	An assessment of the visual quality of those areas that will be impacted by the proposed project.	Quality assessment: Sec. 5.13.1.4.3, Figures 5.13-13, 5.13-14 , 5.13-15		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Visual Resources** Project: Midway Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (6) (C)	After discussions with staff and community residents who live in close proximity to the proposed project, identify the scenic corridors and any visually sensitive areas potentially affected by the proposed project, including recreational and residential areas. Indicate the approximate number of people using each of these sensitive areas and the estimated number of residences with views of the project. For purposes of this section, a scenic corridor is that area of land with scenic natural beauty, adjacent to and visible from a linear feature, such as a road, or river.	Sensitive areas: Sec. 5.13.1.2, 5.13.1.3.3, 5.13.1.4.3		
Appendix B (g) (6) (D)	A description of the dimensions, color, and material of each major visible component of the project.	Component description: Sec. 5.13.2.2, Table 5.13-3, Sec. 3.0		
Appendix B (g) (6) (E)	Full-page color photographic reproductions of the existing site, and full-page color simulations of the proposed project in the existing setting from each location representative of the view areas most sensitive to the potential visual impacts of the project.			
Appendix B (g) (6) (F)	An assessment of the visual impacts of the project, including light and glare, and visible plumes.	Impact assessment: Sec. 5.13.2.2, 5.13.2.2.1, 5.13.2.2.2, 5.13.2.2.3, 5.13.2.2.4, 5.13.3		
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	LORS compliance: Sec. 5.13.5, Table 5.13-5		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Visual Resources** Project: Midway Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Agency jurisdiction: Table 5.13-5		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	LORS conformity: Sec. 5.13.5., Table 5.13-5		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Agency contacts: Table 5.13-6		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Permit schedule: Sec. 5.13.5.3		

5.14 WASTE MANAGEMENT

This section presents a discussion of potential impacts from the generation, storage, and disposal of hazardous and non-hazardous wastes from the proposed Midway project. Included in the discussion are descriptions of waste streams generated during construction and operation, descriptions of applicable waste disposal sites to be used by the facility, proposed waste mitigation methods to minimize impacts to the environment, and applicable LORS.

5.14.1 Affected Environment

Midway is located in an area zoned for agriculture uses as specified in the Fresno County General Land Use Plan. Surrounding land uses include agricultural land, residential property, and other power plant facilities. The project site is located in the unincorporated area of western Fresno County, adjacent to the Panoche Hills, and east of the San Benito County line, approximately 50 miles west of the City of Fresno.

A Phase I Environmental Site Assessment (ESA) for the proposed Midway site has been prepared in accordance with ASTM Practice E 1527-00. The objective of the Phase I ESA was to identify "Recognized Environmental Conditions" (RECs) that may exist on the project site. A site reconnaissance was conducted on March 23, 2006. No RECs were identified on the Midway site. An environmental database review was conducted to identify sites within a one-mile radius of the Midway site for potential environmental concerns. No surrounding properties of potential concern were noted. The results of the Phase I ESA are included as Appendix P of this document.

As described in more detail below in Section 5.14.2, Midway will generate hazardous and non-hazardous wastes during the construction and operational phases of the project that are typical of a natural gas-fired combustion turbine power plant.

Natural gas will be supplied by PG&E. The project will tie into an existing 6-inch diameter natural gas supply pipeline for the CalPeak Panoche, which in turn, ties into the PG&E main gas trunk line running along Panoche Road. A separate meter and 6-inch line will supply the proposed facility with natural gas as shown on Figure 3.4-1.

Worker parking and material and equipment staging areas during the construction period will be provided within the site boundary. The construction laydown area is shown in Figure 3.4-1. Some grading and placement of gravel or pavement may be required at one or more of the construction laydown and worker parking areas, but these activities are not expected to generate wastes that will require management.

5.14.1.1 Non-Hazardous Solid Waste Disposal

Existing non-hazardous solid waste disposal facilities in the general area of the Midway site are listed in Table 5.14-1. Several available Class III landfills are listed in Table 5.14-1. These landfills accept non-hazardous and inert solid wastes, including construction/demolition wastes. Liquid wastes are not accepted by these landfills. Industrial process solid waste is accepted on a case-by-case basis.

There are several soil treatment and recycling facilities in California that accept hydrocarbon-impacted soil. Hydrocarbon-impacted soil is classified by the generator as a non-hazardous waste per the Resource

Conservation and Recovery Act (RCRA) and the CCR Title 22. Acceptable levels for treatment or recycling are established by the individual facilities. Three soil treatment and/or recycling facilities listed in Table 5.14-1 are located in Lynwood (American Remedial Technologies), Adelanto (TPS Technologies, Inc.), and Azusa (Thermal Remediation Systems), California.

5.14.1.2 Hazardous Solid Waste Disposal

Hazardous waste generated at the Midway site will be taken offsite for recycling or disposal by a permitted hazardous waste transporter to a permitted treatment, storage, and disposal facility or Class I landfill. There are two Class I landfills located in California: Clean Harbors' Buttonwillow Landfill in Kern County and Chemical Waste Management's Kettleman Hills Landfill in Kings County. The permitting, operating, and remaining capacities of these landfills are described in Table 5.14-1. Hazardous waste generated during construction and operational phases of the proposed project is not expected to significantly impact available landfill capacity.

5.14.1.3 Hazardous and Non-Hazardous Wastewater (Non-Effluent Waste Streams)

One California wastewater treatment and recycling facility is listed in Table 5.14-1 that may accept RCRA hazardous, non-RCRA hazardous, and non-hazardous wastewater. The DeMenno/Kerdoon facility, located in Compton, California, receives an average of 82,200 gallons per day of wastewater. The operating capacity is approximately 4.6 million gallons per month of waste oil and oily water. The permitted capacity is 123 million gallons per year of waste oil and 84.1 million gallons per year of oily water. Oil is recovered and recycled at DeMenno/Kerdoon.

5.14.2 Environmental Consequences

The analysis of impacts related to waste management from the Midway is based on significance criteria summarized as follows:

- Non-hazardous solid wastes must not significantly alter available landfill, recycling, or treatment program capacities.
- Non-hazardous liquid wastes must not cause a publicly owned treatment system to violate any applicable waste discharge requirements.
- Hazardous solid wastes must not significantly alter available Class I landfill capacity. The facility must comply with all applicable laws regarding the handling of hazardous wastes.

TABLE 5.14-1
WASTE RECYCLING/DISPOSAL FACILITIES

Solid Recycling Waste Disposal Site	Title 23 Class	Permitted Capacity	Operating Capacity	Remaining Capacity	Estimated Closure	Enforcement Action Taken?
City of Clovis Landfill 16679 Auberry Road Fresno, CA 93626	Class III	2.6 million cubic yards per year	354 Ton per day	2.2 million cubic yards	2017	No
Coalinga Disposal Site 30825 Lost Hills Road Coalinga, CA 93210	Class III	3.3 million cubic yards per year	200 tons per day	1.9 million cubic yards	2029	No
American Avenue Disposal Site 18950 W. American Ave. Tranquility, CA 93688	Class III	32.7 million cubic yards per year	2,200 tons per day	29.3 million cubic yards	2031	No
Thermal Remediation Solutions (Solids Recycling) 1211 West Gladstone Avenue Azusa, CA 91702	Class III	200,000 tons per year	2,000 tons per day	Not Applicable	Not Applicable	No
American Remedial Technologies (Solids Recycling) 2680 Seminole Avenue Lynwood, CA 90262	Class III	200,000 tons per year	19,900 tons per month	Not Applicable	Not Applicable	One Notice of Violation pertaining to odor in Year 2000
TPS Technologies, Inc. (Soil Recycling) 12328 Hibiscus Avenue Adelanto, CA 92301	Not Applicable	Not Applicable	350,000 tons per year	Not Applicable	Not Applicable	No

TABLE 5.14-1
WASTE RECYCLING/DISPOSAL FACILITIES
(CONTINUED)

Solid Recycling Waste Disposal Site	Title 23 Class	Permitted Capacity	Operating Capacity	Remaining Capacity	Estimated Closure	Enforcement Action Taken?
Chemical Waste Management Kettleman Hills (Solids Disposal) 36251 Old Skyline Road Kettleman City, CA 93239	Class I	10.7 million cubic yards per year	200,000 cubic yards per year	6-7 million cubic yards	2037-2038	No
Clean Harbors Buttonwillow Landfill (Solids Disposal) Lokern Road Kern County, CA	Class I	13.25 million cubic yards per year	130,000-150,000 cubic yards per year	10.9 million cubic yards	2068-2078	No
TPS Technologies, Inc. (Soil Recycling) 12328 Hibiscus Avenue Adelanto, CA 92301	Not Applicable	Not Applicable	350,000 tons per year	Not Applicable	Not Applicable	No outstanding previous violations
Liquid Recycling Waste Disposal Site DeMenno/Kerdoon (Liquids Recycling) 2000 N. Alameda Street Compton, CA 90222	Not Applicable	84.1 million gallons per year of oily water and 123 million gallons per year of waste oil	Approximately 30 million gallons per year	Not Applicable	Not Applicable	No outstanding previous violations

Additionally, according to the CEQA Appendix G Guidelines, a project has a significant impact when it:

- Breaches standards relating to solid waste or litter control.
- Creates a potential public health hazard or involves materials which pose a hazard.
- Results in a need for new systems or substantial alterations to waste disposal facilities.

The following sections describe the wastes that are expected to be generated during construction and operation of Midway, and how non-hazardous solid waste, wastewater, and hazardous solid and liquid wastes will be disposed of.

5.14.2.1 Construction

5.14.2.1.1 Plant Construction

Midway construction will generate wastes typical for the construction of gas turbine power plants. Table 5.14-2 summarizes the anticipated waste streams generated during construction, along with appropriate management methods for treatment or disposal.

Non-Hazardous Waste. Solid waste generated from construction activities may include: paper, wood, glass, plastics from packing material, waste lumber, insulation, concrete, and empty non-hazardous containers. The management of these wastes will be the responsibility of the construction contractor(s). Typical practices required for contractor waste include segregation, where practical, for recycling. Non-recyclable wastes will be placed in covered dumpsters and removed on a regular basis by a certified waste handling contractor for disposal at a Class III landfill. If contaminated soils are encountered during installation, these soils will need to be managed in accordance with applicable LORS. Soil sampling will likely be required to characterize the waste. Soil may be recycled or disposed as a non-hazardous waste at a Class III landfill or soil recycling facility, or disposed as hazardous waste at a Class I landfill. The disposal option will depend on the characterization of the waste per RCRA and CCR Title 22 criteria.

Hazardous Waste. Small quantities of hazardous wastes will likely be generated over the course of construction. These wastes may include waste paint, spent construction solvents, waste cleaners, waste oil, oily rags, and waste batteries. Hazardous wastes generated during facility construction and operation will be handled and disposed of in accordance with applicable LORS. Hazardous wastes will be either recycled or disposed of in a licensed Class I disposal facility, as appropriate.

Table 5.14-2
Summary of Construction Waste Streams and Management Methods

Waste Stream	Waste Classification	Quantity	Duration	On-site Treatment	Disposal Method
Paper, wood, glass, and plastics from packing materials, waste lumber, insulation, and empty non-hazardous containers	Non-hazardous	10 cubic yards/ week	Intermittent	None	Weekly collection for recycling and/or disposal at a Class III Landfill
Empty hazardous material containers-drums	Hazardous Recyclable	<1 cubic yard/ week	Every 90 days	Store for < 90 days	Recondition, recycle, or waste disposal at Class I Landfill
Used and waste lube oil during Combustion Turbine Generator (CTG) Lube Oil Flushes	Hazardous Recyclable	1000 gallons	Every 90 days	Store for < 90 days	Recycle
Spent batteries; lead acid	Hazardous	1/year	Every 90 days	Store for < 90 days	Recycle
Spent batteries; alkaline type, sizes AAA, AA, C, and D	Recyclable	100/year	Every 90 days	Store for < 90 days	Recycle
Sanitary waste-portable chemical toilets and construction office holding tanks	Sanitary	50 gpd	Periodically pumped to tanker truck by licensed contractors	None	Collection by licensed contractor (minimum) for offsite treatment/disposal
Waste oil including used motor oil, transmission fluid, hydraulic fluid, antifreeze Waste paint, thinners, and solvents. Oily rags. Oil Absorbents.	Hazardous	40 gallons/ every 90 days?	Every 90 days	Store for < 90 days	Hazardous waste disposal facility or recycle

With employee training and BMPs specified in Section 5.14.3, these wastes will not cause significant environmental or health and safety impacts. Most of the hazardous waste generated during construction can be recycled. The small quantities of hazardous waste that cannot be recycled are not expected to significantly impact the capacity of the Class I landfills in California.

Wastewater. Wastewater generated during construction of the new plant will include stormwater runoff. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared prior to construction of Midway. This plan will be implemented at the Midway site to control and minimize contamination of stormwater during construction of the facility. The plan will employ best management practices such as stabilized construction entrances, silt fencing, berms, hay bales, and evaporation ponds to control runoff from all construction areas and in accordance with all applicable LORS.

5.14.2.2 Operations and Maintenance

5.14.2.2.1 Plant Operations

Operation of the facility will generate wastes resulting from processes and routine facility maintenance activities typical of a natural gas-fueled power plant. The operating waste streams and management methods are summarized in Table 5.14-3 and are described in more detail below. The primary non-hazardous waste stream is water (RO discharge washdown) generated and discharged as part of normal plant operations. Non-hazardous and hazardous solid wastes will be generated on a smaller scale. Non-hazardous wastes during operation of the facility will be recycled to the greatest extent practical, and the remainder removed on a regular basis by a certified waste-handling contractor. Operation of the natural gas pipeline will not generate a material amount of waste. The types of waste and their estimated quantities are shown in Table 5.14-3.

Table 5.14-3
Operating Waste Streams and Management Methods

Waste Stream	Waste Classification	Quantity	Duration	On-site Treatment	Off-Site Treatment
Paper, wood, plastic, cardboard	Non-hazardous	<1 cubic yard/ month	Intermittent	None	Weekly collection for recycling and /or disposal at a Class III Landfill
Empty hazardous material containers	Hazardous	<1 cubic yard/ month	Every 90 days	Store for < 90 days	Recondition or recycle
Used hydraulic fluids, oils, grease, oily filters from CTG and other equipment using hydraulic actuators and lubricants	Hazardous	<1 gpd	Every 90 days	Store for < 90 days	Recycle
Used Air Filters from the CTG	Non-hazardous	700	Every 5 years	None	Recycle
Spent batteries; lead acid	Hazardous	1/year	Every 90 days	Store for < 90 days	Recycle
Spent batteries; alkaline type, sizes AAA, AA, C, and D	Recyclable	100/year	Every 90 days	Store for < 90 days	Recycle
Spent batteries	Hazardous	1/year	Intermittent	Store for < 90 days	Recycle
Spent selective catalytic reduction (SCR) catalyst	Hazardous	1	Every 3 to 5 years	Store for < 90 days	Recycle
Oily rags from CTG and other equipment using hydraulic actuators and lubricants	Hazardous	180/year	Intermittent	Store for < 90 days	Hazardous waste disposal facility or recycled
Oily Absorbent from CTG and other equipment using hydraulic actuators and lubricants	Hazardous	40 lbs/ year	Intermittent	Store for < 90 days	Recycle or hazardous waste disposal facility
Sanitary waste-portable chemical	Sanitary	50gpm/ month	Continuous	Continuous	Collection by licensed contractor (minimum) for offsite treatment/disposal
CTG periodic operational chemical cleaning	Hazardous	<1gpd	Every 90 days	Store for < 90 days	Hazardous waste disposal facility (by licensed subcontractors)
RO evaporation pond residue	Non-hazardous	302 cubic yards	Once every 5 years	NA	Landfill

Non-hazardous Solid Waste. Midway will produce maintenance and plant wastes typical of power generation operations. The following types of non-hazardous solid waste may be generated: paper, wood, plastic, cardboard, empty non-hazardous containers, used air filters, rags and other miscellaneous solid wastes including the typical refuse generated by workers.

Non-hazardous waste material will be segregated and recycled to the extent practical, and the remainder will be removed on a regular basis by a certified waste-handling contractor for disposal at a Class III landfill.

Liquid Wastes. Industrial wastewater may contain wastes such as cleaning chemicals, oils, metals, oil-water separator effluent, and utility water used for washdown and other purposes. Skim oil collected from equipment drains and other liquids drained from equipment will generally be treated as hazardous due to possible heavy metals content.

The Midway will utilize two different systems to manage wastewater; one for the treatment and disposition of liquid process wastes from the RO unit and another to contain and dispose of waste for the plant drains and washdown process.

Oils and chemicals that could drain from the gas turbine exhaust floor drains, the generator floor drains, the transformer containment area, the equipment wash down areas, and the ammonia storage area would flow into a sump. Oil leakage from equipment is expected to be minimal. Composition will be similar to standard parking lot impacts. Nonetheless, all equipment that has potential for significant leakage of oil or hazardous chemicals, such as glycol coolants, will be located within spill containment basins which would also flow into the sump. A sump pump will convey this oily wastewater/chemical drain water to an on-site 4,700 gallon storage tank. The ST waste will be pumped out and moved offsite. The ST will include level and leak detection instrumentation.

Wastewater generated by the RO process will be conveyed by gravity to an evaporation pond (which can accommodate 30 acre-feet per year) on the east side of the Midway site. The average wastewater generation rate that will require disposal is expected to be approximately 25 gpm. This on-site, lined surface impoundment, in which the wastewater would evaporate via atmospheric drying, will result in a residue that must be disposed of in a landfill system.

Stormwater and rainfall from the project site will be predominantly drained by sheet flow. Efforts will be made to maintain the integrity of the existing drainage patterns, wherever possible. Based on the final site-grading plan, some isolated areas may require underground stormwater collection and drainage piping which would be developed in accordance with all applicable LORS. Wastewater and wastewater system wastes are further discussed in the Water Resources Section (Section 5.5) of this application.

Hazardous Wastes. Hazardous wastes generated will include spent catalyst from the SCR, used oils from equipment maintenance, and oil-contaminated materials such as spent oil filters, rags, or other cleanup materials. Spent catalyst will be returned to the manufacturer for metals reclamation and/or disposal. Used oil generated will be recycled, and oil or heavy metal contaminated materials (e.g. filters) requiring disposal will be disposed of in a Class I waste disposal facility. Other occasional waste streams include alkaline or acid cleaning solutions used during chemical cleaning of the CTG. Table 5.14-3 summarizes the hazardous waste to be generated from operation of the plant.

Hazardous wastes will be collected by a licensed hazardous waste hauler and disposed of at a hazardous waste facility. Hazardous wastes will be transported offsite using a hazardous waste manifest. Copies of manifest reports, waste analysis, exception reports, destruction certifications, etc., will be kept onsite and accessible for inspection for three years. Land disposal restriction notices/certificates will be kept onsite and accessible for inspection for five years.

With implementation of training and BMPs specified in Section 5.14.3, impacts related to solid, liquid and hazardous waste would be less than significant.

5.14.2.3 Abandonment/Closure

Premature closure or unexpected cessation of plant operations will be outlined in the facility's closure plan. The plan will outline steps to secure hazardous and non-hazardous materials and wastes. Such steps will be consistent with best management practices and the Hazardous Materials Business Plan and according to applicable LORS. The plan will include monitoring of vessels and receptacles of hazardous material and wastes, safe cessation of processes using hazardous materials or hazardous wastes, and inspection of secondary containment structures.

Planned permanent closure impacts will be incorporated into the facility closure plan and evaluated at the end of the generating station's economic operation. The facility closure plan will document non-hazardous and hazardous waste management practices including: the inventory, management, and disposal of hazardous materials and wastes, and permanent closure of permitted hazardous materials and waste storage units.

5.14.2.4 Cumulative Impacts

The Class I and Class III landfills and soil and water recycling facilities in the area of the project site have adequate recycling and disposal capacities to handle wastes generated by the proposed project in addition to existing facilities. Therefore, cumulative impacts from the project site and other projects in the region are not expected to be significant.

5.14.3 Mitigation Measures

5.14.3.1 Construction

WM-1: Prior to the initiation of the project construction phase, construction employees will receive hazardous waste-related training, focusing on the recognition of potentially hazardous building materials and subsurface soil contamination and contingency procedures to be followed to protect worker safety and the public.

WM-2: A waste management plan for all waste generated during construction will be prepared at least 60 days prior to rough grading to assure proper storage, labeling, packaging, recordkeeping, manifesting, waste minimization principles, and disposal of all hazardous materials and waste. A waste management plan will also be prepared for operation of Midway. The waste management plan will include:

- A description of each hazardous waste stream;
- Handling, storage, transport, treatment, and disposal procedures for each waste;
- Preparedness, prevention, contingency, and emergency procedures;
- Personnel training.

WM-3: All hazardous wastes will be stored onsite for fewer than 90 days (or other accumulation periods as allowed by 22 CCR, Section 66262.34 for hazardous waste generators) and will be managed in accordance with state and federal hazardous waste generator requirements. Hazardous wastes, as well as hazardous materials that are spilled or otherwise become unsuitable for use, will be stored in appropriately segregated hazardous waste storage area surrounded by a containment structure to control leaks and spills. The containment area will be constructed according to local codes and requirements. The hazardous waste storage areas will be inspected and maintained at least weekly, as required.

WM-4: Hazardous wastes will be collected by a licensed hazardous waste hauler and disposed of at a hazardous waste facility. Hazardous wastes are transported offsite using a hazardous waste manifest. Copies of manifest reports, waste analysis, exception reports, destruction certifications, etc., will be kept onsite and accessible for inspection for three years. Land disposal restriction notices/certificates will be kept onsite and accessible for inspection for five years.

WM-5: Spill control and management procedures will be included in the emergency response procedures developed for the proposed project prior to operation. The purpose of the spill control and management procedures is to avoid accidental mixing of incompatible chemicals and spills during transfer of chemicals. The design of spill control and management procedures will include the containment, collection and treatment systems. The spill response procedures are further discussed in Section 5.15, Hazardous Materials.

WM-6: Facility employees will receive hazardous materials training as required by the OSHA, Hazard Communication Standard. Additionally, employees will be trained in hazardous waste procedures, spill contingencies, and waste minimization procedures in accordance with CCR Title 22. Hazardous waste training includes the following subjects:

- Hazardous waste characteristics;
- Use and management of containers;
- Waste packing;
- Marking and labeling;
- Accumulation/storage areas;
- Inspections;
- Emergency equipment preparedness and prevention;

- Contingency plan;
- Emergency response procedures;
- Spill response and containment;
- Hazardous waste manifesting and transportation requirements;
- Waste minimization practices;

WM-7: Procedures to minimize hazardous waste generation will be established. Employees will be trained in procedures to reduce the volume of hazardous wastes generated at Midway. The procurement of hazardous materials will be controlled to minimize surplus materials onsite and to prevent unused materials from becoming "off-spec." Non-hazardous materials will be used in lieu of hazardous materials whenever possible. Hazardous materials will be reused whenever possible. Hazardous wastes will be recycled whenever possible.

Implementation of the above waste management procedures for handling demolition and construction-related debris, and hazardous wastes, where encountered will mitigate demolition and constructed-related impacts to a less-than-significant level. No further mitigation is proposed.

5.14.3.2 Operations and Maintenance Phase Mitigations

5.14.3.2.1 Plant Site.

The Applicant will update the waste management procedures for construction of the site and implement them for operations at Midway. In addition the Applicant will develop and implement procedures and requirements as outlined in the Hazardous Materials Business Plan. These procedures and programs will minimize potential plant operations-related impacts.

Periodic inspection and maintenance of the natural gas supply pipeline in accordance with applicable LORS will mitigate potential operations related impacts associated with the pipeline.

5.14.3.3 Monitoring Program

Waste management impacts caused by construction and operation of Midway are expected to be minimal. Therefore, extensive monitoring programs are not required. Monitoring of generated waste volumes and characteristics during construction and operation of Midway will be conducted in accordance with monitoring and reporting requirements in the appropriate permits that will be obtained for construction and operation.

5.14.4 Applicable LORS

Table 5.14-4 summarizes the applicable LORS which govern the handling of non-hazardous and hazardous wastes. The LORS applicable to the handling of waste at the project site are also summarized in Section 5.15, Hazardous Materials.

Table 5.14-4
LORS Applicable to Waste Management

LORS	Applicability
Federal	
RCRA Subtitle C and D, 42 USC §§ 6901 to 6992k, and Section 6.12.2.1.	Regulate non-hazardous and hazardous wastes. Laws implemented by the state
40 CFR 260, et seq.	Implementing regulations for RCRA Subtitle C law. Implemented by USEPA by delegating to the state.
Federal Clean Water Act,	Regulates wastewater discharges to surface waters of the U.S. The NPDES program is administered at the stated level.
State	
California Integrated Waste Management Act, Public Resources Code § 40000 et seq.	Implements RCRA regulations for non-hazardous waste.
Porter-Cologne Water Quality Control Act of 1998, Water Code § 13000 et seq.	Regulates wastewater discharges to surface and groundwater of California. NPDES program implemented by SWRCB.
22 CCR § 66262.34	Regulates accumulation periods for hazardous waste generators. Typically hazardous waste cannot be stored onsite for more than 90 days.
California Hazardous Waste Control Law, California Health and Safety Code § 251 00 et seq.	Regulates hazardous waste handling and storage. Implemented by the County of FCDCH, Environmental Health Division.
Local	
Fresno county Department of Community Health (FCDCH), Environmental Health Division	Regulates enforcement responsibility for the implementation of Title 23, Division3, Chapters 16 and 18 or the CCR, as it relates to hazardous material storage and petroleum UST cleanup.
FCDCH, Environmental Health Division	Regulates hazardous waste generator permitting, and hazardous waste handling and storage.
Fresno County General Plan Public Facilities Element	Will ensure all new development complies with applicable provisions of County Integrated Solid Waste Management Plan

5.14.4.1 Federal

The RCRA, 42 USC, Section 6901 to 6992k, provides the basic framework for federal regulation of non-hazardous and hazardous waste. RCRA's Subtitle D establishes state responsibility for regulating non-hazardous and hazardous wastes, while Subtitle C controls the generation, transportation, storage and disposal of hazardous waste through a comprehensive "cradle to grave" system of hazardous waste management techniques and requirements. The United States Environmental Protection Agency (USEPA) is responsible for implementing the law, and the implementing regulations are set forth in 40 CFR 260, et seq. The law allows USEPA to delegate the administration of the RCRA programs to various states provided that state programs meet the federal requirements. California's program was authorized by USEPA on August 1, 1992, and the California USEPA's Department of Toxic Substances Control (DTSC) is responsible for administering the program.

The Clean Water Act (CWA) 33 USC, Section 1251 et seq. provides the regulatory framework for managing the discharge of wastewater to surface waters of the U.S. USEPA has nationwide authority to implement the CWA, but states may be authorized to administer various aspects of the National Pollutant Discharge Elimination System (NPDES) as well as pretreatment programs. California is authorized under the CWA to administer the NPDES program, implement publicly owned treatment works' pretreatment programs, oversee federal facilities, and issue general permits.

5.14.4.2 State

Non-hazardous solid waste is regulated by the California Integrated Waste Management Act, Public Resources Code, Section 40000 et seq. The law provides a solid waste management system to reduce, recycle, and reuse solid waste generated in the state to the maximum extent feasible in an efficient and cost-effective manner to conserve natural resources, to protect the environment, and to improve landfill safety. Local agencies are required to develop and establish recycling programs, reduce paper waste, purchase recycled products, and implement integrated waste management programs that conform to the state's requirements. The Fresno County Department of Community Health (FCDCH) Local Enforcement Agency (LEA) has the authority to assure the proper storage and disposal of solid waste in Fresno County.

Wastewater is regulated under California's Porter-Cologne Water Quality Control Act, which established a statewide system for water pollution control, Water Code Section 13000 et seq. The State Water Resources Control Board and the nine Regional Water Quality Control Boards are the principal agencies responsible for control of water quality and issuing permits under the NPDES program.

Accumulation of hazardous waste onsite is regulated under the CCR, Section 66262.34. Hazardous waste cannot be stored onsite for more than 90 days, so any hazardous waste stored onsite at Midway would have to be appropriately transferred within that time period.

As stated previously, RCRA allows states to develop their own programs to regulate hazardous waste. California has developed its own program by passage of the California Hazardous Waste Control Law, California Health and Safety Code, § 25100 et seq. It should be noted that California's Hazardous Waste Control Law includes non-RCRA hazardous wastes. In addition, the law specifies two hazardous waste

criteria (Soluble Threshold Limit Concentration and total Threshold Limit Concentration) that are not required under RCRA. Primary authority for the statewide administration and enforcement of California's Hazardous Waste Control Law rests with the DTSC. However, the FCDCH, Environmental Health Division, provides most regulatory functions covering hazardous waste generators.

5.14.4.3 Local

For hazardous waste, the designated Certified Unified Program Agency for Midway site area is the FCDCH, Environmental Health Division. They have delegated authority to administer state and federal programs. The FCDCH, Environmental Health Division regulates the storage of hazardous materials in underground storage tanks and cleanup of petroleum releases from USTs under Ordinance No. 617.4. the FCDCH, Environmental Health Division as well as the Fresno County Fire Protection Division will be contacted in the event of a release of hazardous wastes or materials to the environment. The FCDCH, Environmental Health Division assumes enforcement responsibility for the implementation of Title 23 of the CCR and regulates the generation, and storage of hazardous waste for the proposed project area.

5.14.4.4 Agency Contacts

Agencies with jurisdiction to issue applicable permits or enforce LORS related to waste management are shown in Table 5.14-5 and are provided in Section 5.15, Hazardous Materials.

5.14.4.5 Applicable Permits

The Midway facility will apply for a USEPA hazardous waste generator identification number from the DTSC and a hazardous waste generator permit from the FCDCH, Environmental Health Division.

A summary of applicable permits is presented in Table 5.14-6.

Table 5.14-5
Agency Contacts

Agency	Contact	Title	Telephone
Department of Toxic substances Control	Noell Averty	DTSC Duty officer Clovis field Office	(916) 255-3618 (559)-297-3901
FCDCH, Environmental Health Division	Gustavo Gomez or Specialist on Call	Hazardous Materials Specialist	(559) 445-3271
FCDCH, Environmental Health Division	Specialist On Call	Solid Waste Specialist	(559) 445-3271
Fresno County Fire Protection Division, Station #96	Fire Station Captain	Fire Station Captain	(559) 655-4107

Table 5.14-6
Applicable Permits

Jurisdiction	Potential Permit Requirements
Federal	No federal permits are required
State	No state permits are required
Fresno County Department of Community Health	Hazardous Waste Generator Program Permit
(FCDCH), Environmental Health Division	Hazardous Materials Business Plan

5.14.5 References

Barclays Law Publishers. ND. Barclays Official California Code of Regulations.

California Stormwater Quality Association. 2004. *Stormwater Best Management Practice Handbook, Industrial and Commercial.*

Environmental Data Resources Database Report. May 2006.

Office of the Federal Register. 1997. code of Federal Regulations, Title 40, Parts 260 to 265, Revised July 1.

Burns & McDonnell. 2006 Findings and Conclusions Phase I Environmental Site Assessment.

URS Corporation. 2006. Application for Certification, Panoche Energy Center.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Waste Management** Project: Midway Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (b) (1) (C)	A detailed description of the design, construction and operation of the facilities, specifically including the power generation, cooling, water supply and treatment, waste handling and control, pollution control, fuel handling, and safety, emergency and auxiliary systems, and fuel types and fuel use scenarios; and	Facility Description and Location: Sec. 3		
Appendix B (e) (2)	A discussion of how facility closure will be accomplished in the event of premature or unexpected cessation of operations.	Abandonment/Closure: Sec. 5.14.2.3		
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Environmental Consequences: Sec. 5.14.2 Mitigation Measures: Sec. 5.14.3		
Appendix B (g) (12) (A)	A Phase I Environmental Site Assessment for the proposed power plant site using methods prescribed by the American Society for Testing and Materials (ASTM) document entitled "Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process" (Designation: E 1527-93, May 1993), which is incorporated by reference in its entirety; or an equivalent method agreed upon by the applicant and the CEC Staff that provides similar documentation of the potential level and extent of site contamination.	Appendix O		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Waste Management** Project: Midway Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (12) (B)	A description of each waste stream estimated to be generated during project construction and operation, including origin, hazardous or nonhazardous classification pursuant to Title 22, California Code of Regulations, § 66261.20 et seq., chemical composition, estimated annual weight or volume generated, and estimated frequency of generation.	Tables 3.4-7 & 3.4-8 Tables 5.14-2 & 5.14-3 Construction: Sec. 5.14.2.1 Operations and Maintenance: Sec. 5.14.2.2		
Appendix B (g) (12) (C)	A description of all waste disposal sites which may feasibly be used for disposal of project wastes. For each site, include the name, location, classification under Title 23, California Code of Regulations, § 2530 et seq., the daily or annual permitted capacity, daily or annual amounts of waste currently being accepted, the estimated closure date and remaining capacity, and a description of any enforcement action taken by local or state agencies due to waste disposal activities at the site.	Non-Hazardous Solid Waste Disposal: Sec. 5.14.1.1. Hazardous Solid Waste Disposal: Sec. 5.14.1.2 Hazardous and Non-Hazardous Wastewater (Non-Effluent Waste Streams): Sec. 5.14.1.3 Table 5.14-1		
Appendix B (g) (12) (D)	A description of management methods for each waste stream, including methods used to minimize waste generation, length of on- and off-site waste storage, re-use and recycling opportunities, waste treatment methods used, and use of contractors for treatment.	Construction: Sec. 5.14.2.1 Operations and Maintenance: Sec. 5.14.2.2 Mitigation Measures: Sec. 5.14.3 Tables 5.14-2 & 5.14-3 Tables 3.4-7 & 3.4-8		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Waste Management** Project: Midway Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	Applicable LORS: Sec. 5.14.4 Table 5.14-4		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Applicable LORS: Sec. 5.14.4 Sec. 5.14.4.5 Tables 5.14-4, 5.14-5		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	Applicable LORS: Sec. 5.14.4, 5.14.4.1, 5.14.4.2, 5.14.4.3		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Table 5.14-5		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Table 5.14-6		
Appendix B. (i) (1) (B)	A discussion of any measures proposed to improve adverse site conditions.	Mitigation Measures: Sec. 5.14-3		
Appendix B (i) (1) (D) (v)	The waste disposal system and on-site disposal sites;	Plant Operations: Sec. 5.14.2.2.1 Table 5.14-3		

5.15 HAZARDOUS MATERIALS HANDLING

This section presents a discussion of the potential impacts from the storage and use of hazardous materials during the construction and operational phases of the proposed Midway project. Features have been incorporated into Midway's design regarding the use of hazardous materials, specifically chemical storage facilities and procedures that will keep maximum potential impacts below defined thresholds of significance. Hazardous waste generation and management is further discussed in Section 5.14, Waste Management.

The discussion below includes applicable LORS and evaluates potential health impacts resulting from the storage and handling of hazardous materials. A list of known chemicals associated with the project is provided, as well as descriptive information on the storage facilities and handling equipment for hazardous materials that have been designed to ensure that potential impacts will be below designated thresholds of significance, even in the unlikely event of an accidental release of a hazardous material.

To minimize the risks and offsite consequences from hazardous materials, a federal program was established in 1990 as described in Section 112 (r) of the federal Clean Air Act. The California Office of Emergency Services established the California Accidental Release Prevention (CalARP) Program to prevent accidental releases of regulated substances. The CalARP Program specifies regulated substances, oversees the federal and state requirements, and determines the requirements for the preparation of a Risk Management Plan (RMP) and offsite accidental release consequence analysis.

The CalARP Program defines three program levels with differing requirements depending upon the complexity, accident history, and potential impact of releases of regulated substances. The program requires that the owner or operator coordinate closely with the local administering agency to determine the appropriate level of documentation required for an RMP.

The construction and operation of Midway requires a number of hazardous materials to be handled and stored on-site. Only aqueous ammonia will be present in amounts greater than the CalARP State Threshold Quantity, but below the Federal RMP Threshold Quantity. Thorough analysis of ammonia impacts is evaluated by means of an offsite consequence analysis (OCA). To fulfill the CalARP requirements for a RMP, the following actions are required:

- Analyze the two release scenario and include it in the RMP.
- Document that the nearest public receptor is beyond the distance to a toxic or flammable endpoint.
- Document, and submit with the RMP, any hazardous material accidents in the past 5 years.
- Ensure that response actions have been coordinated with local emergency planning and response agencies.
- Certify in the RMP that "no additional measures are necessary to prevent offsite impacts from accidental releases."

Additional requirements will apply if the facility triggers a Program 2 or Program 3 RMP, including:

- Describe the site's accidental release prevention program and chemical specific prevention steps. (Ensure that response actions have been coordinated with local emergency planning and response agencies.)
- Develop and describe the facility's prevention program, including the facility's safety program, facility hazard review program, operating procedures, training program, maintenance program, compliance, and facility incident investigation program.
- Describe the site's emergency response program.

Beneficial design aspects of the proposed project that will minimize impacts below a level of significance include monitoring equipment to detect releases from the ammonia unloading, storage and piping systems, with alarms and automatic shut-off valves throughout the ammonia piping system and an underground containment basin that will have the capacity to contain the contents of both storage tanks plus the maximum expected 24-hour rainfall. Any spills of aqueous ammonia from either the storage tank or tanker truck areas will drain into this containment basin through two drain holes beneath the storage tanks and 1 drain hole from the unloading area. All aqueous ammonia piping will be below grade or double-walled to minimize the potential of a pipe rupture and ammonia release.

A summary of hazardous materials that will be used and stored onsite during construction and operation of Midway is provided in Table 5.15-1. The locations within the facility corresponding to the lettered entries in this table are also shown on Figure 5.15-1.

5.15.1 Affected Environment

Midway is located in an area designated for agriculture uses, as specified in the Fresno County General Land Use Plan. Surrounding land uses include agricultural land, residential property, and West Panoche Road to the north; agricultural lands and the existing Wellhead Peaker plant to the south; agricultural lands, farming structures, and Highway-33 to the east; and the existing PG&E substation, the CalPeak Panoche Peaker plant and agricultural land to the west. Future residential development in the immediate vicinity of the site is not anticipated. The closest sensitive receptors are located approximately 100 feet from the northern boundary of the Midway site. However, the occupants of this 5-plex will be relocated as a noise mitigation measure (see Section 5.12, Noise). The next closest existing sensitive receptors are located approximately 600 meters to the north-west of the facility across from the site of the proposed PEC. See Section 5.16 (Public Health) for additional information on sensitive receptors. The closest industrial/commercial facility to the proposed project is the Wellhead Peaker plant located 27 meters to the south of the Midway project site.

According to the Federal Emergency Management Agency (FEMA), a portion of the Midway site is within the 100-year flood plain. The project site will be raised in conformance with the Fresno County Ordinance Title 15, Flood Hazard Areas, to ensure that the site and equipment will not be subjected to any flood damage in the event of a 100-year storm.

TABLE 5.15-1
ANTICIPATED HAZARDOUS MATERIALS USED AT THE OPERATIONAL MIDWAY PROJECT

Material	Label on Figure 5.15-1	CAS Number	Location/ Application	Hazardous Characteristics	Maximum Quantity On Site	Regulatory Thresholds (lbs)			
						Cal-ARP	Federal RQ	Federal TPQ	Federal TQ
Aqueous Ammonia 19.5 wt%	A	7664-41-7	NO_X Emissions Control	Acute, chronic, fire, pressure	24,000 US gal	500	100	500	20,000
Carbon Dioxide gas	B	124-38-9	CEMS	Acute, chronic, pressure	25,000 scf	-	-	-	-
Heat Transfer Oil Diala Oil A	C	None	Electrical Transformers	Acute, chronic, fire	25,000 US gal	-	-	-	-
Hydraulic Fluid – Mobil DTE 13M	D	None	Mechanical Equipment	Acute, chronic, fire	7,500 US gal	-	-	-	-
Lubricating Oil –Mobil DTE Oil Light	E	None	Mechanical Equipment	Acute, chronic, fire	7,500 US gal	-	-	-	-
Hydrochloric Acid	F Stored off site	7647-01-0	Chemical Cleaning	Acute, chronic	Temporary Only	-	5,000	-	15,000
Citric Acid	G Stored off site	77-92-9	Chemical Cleaning	Acute, chronic	Temporary Only	-	-	-	-
EDTA Chelant	H Stored off site	62-33-99	Chemical Cleaning	Acute	Temporary Only	-	100	-	-
Sodium Nitrate	I Stored off site	7632-00-0	HRSG Chemical Cleaning	Acute	Temporary Only	-	-	-	-
Sulfuric Acid 29.5 wt%	J	7664-93-9	Station and Gas Turbine Batteries	Acute, chronic, reactive	1,500 US gal	1,000	1,000	1,000	-
Natural Gas	K	None	Gas Turbine Generator and Duct Burner Fuel	Acute, fire, pressure	1,600 lbs Temporary	-	-	-	-

The project construction and design will be compliant with the latest building codes designed for Seismic Zone 4.

5.15.2 Environmental Consequences

The criteria used to determine the significance of potential impacts from hazardous materials used at Midway were based on the Environmental Checklist Form of the CEQA Guidelines and on standards and thresholds adopted by the agencies with jurisdiction over the proposed project activity. Under CEQA Guidelines, an impact may be considered significant if the project would:

- Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of a hazardous material into the environment.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or wastes within one-quarter mile of an existing or proposed school.
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, would create a significant hazard to the public or the environment.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Operational procedures for the safe transport, use and disposal of hazardous materials will avoid or minimize significant impacts from the potential release of hazardous materials.

An accidental release can only occur if hazardous materials are handled improperly, or if a catastrophic event occurs. Although the probability of such events occurring is extremely low, passive design features have been included in the project to minimize potential impacts in the event of a release (see Section 5.15.3, Mitigation Measures).

The Offsite Consequence Analysis (OCA) evaluates potential offsite impacts in terms of the predicted maximum ground-level concentration of each hazardous material that qualifies as a state-regulated substance under the CalARP Program, or a federal-regulated substance under Section 112(r) of the Clean Air Act. For the proposed project, aqueous ammonia is the only substance that will be stored and used on site in sufficient quantity to qualify as a state regulated substance. Thus, an OCA will be required for aqueous ammonia. The model simulations of the atmospheric dispersion of ammonia during the modeled scenarios will partially determine which RMP Program level will be required.

In the analysis of potential offsite consequences of hypothetical accidental releases of aqueous ammonia, a significant impact would occur if a concentration of ammonia were predicted to equal or exceed the toxic endpoint at the distance of the nearest public receptor. The toxic endpoint is designated by the U.S. EPA in 40 CFR Part 68 Appendix A as 200 parts per million by volume (ppm) averaged over one hour. This concentration was formerly equivalent to the Emergency Response Planning Guideline Level 2 (ERPG-2) concentration. The current ERPG-2 concentration limit has since been reduced to 150 ppm. The CEC routinely uses a more stringent significance criterion for ammonia, specifically a concentration

equal to or greater than 75 ppm (averaged over 30 minutes, which corresponds to the Short-Term Public Emergency Limit (STPEL) established by the National Research Council).

Fresno County Community Health Department is the designated Certified Unified Program Agency (CUPA) for the project area, and will be responsible for approving the RMP for the aqueous ammonia unloading, storage and handling systems of the proposed project. The CEC is the lead agency for the project's AFC, which includes the OCA presented in this section for potential aqueous ammonia releases from the project.

5.15.2.1 Construction Phase

5.15.2.1.1 Anticipated Hazardous Materials Introduced by Project Construction

Hazardous materials that will be used during construction of the project include gasoline, diesel fuel, oil, lubricants, solvents, adhesives, paints and coatings. There are no feasible alternatives to these materials for typical construction activities and maintenance of construction vehicles and equipment. No storage of hazardous materials is planned outside the plant site.

In general, construction contractors will be considered the generators of hazardous construction wastes during construction of Midway. The contractors will be responsible for assuring that the use, storage and handling of these materials will be in compliance with applicable federal, state, and local LORS, including licensing, personnel training, accumulation limits, reporting requirements and recordkeeping. Further, site security, construction site testing (e.g. soil, concrete), and trash collection and disposal services will be provided through each contractor or through a subcontractor.

Small quantities of spilled fuel oil and grease leakage from construction equipment may occur during construction. These spills would be immediately cleaned up and materials containing hazardous substances would be properly disposed of, although such materials generally have a low relative risk to human health and the environment. If a large spill occurs, the spill area will be bermed or controlled as quickly as is practical to minimize the footprint of the spill. Contaminated soil materials that may result from larger sized spills will be placed into drums for offsite disposal at a permitted hazardous waste, transfer, storage, and disposal facility. In the event a spill or leak into the environment involves hazardous materials in amounts equal to or greater than their specific reportable quantities, federal, state, and local reporting requirements will be adhered to. In particular, the Fresno County Fire Protection Division will be notified. Construction contractors will be expected to implement best management practices with respect to hazardous materials storage, handling, emergency spill response, and reporting. Impacts associated with the use of hazardous materials during construction will be insignificant as a result of implementation of the above procedures.

5.15.2.2 Operations Phase

5.15.2.2.1 Anticipated Hazardous Materials Introduced by Midway Operation

The only chemicals proposed for use during operation of Midway, which is a regulated substance subject to the requirements of the CalARP Program and process safety management (PSM), is aqueous ammonia (approximately 19.5 percent water solution by weight), which will be transported and stored onsite in two 12,000-gallon above-ground storage tanks. A list of all known hazardous materials to be stored and/or used at the site during plant operations is provided in Table 5.15-1, including the maximum quantities expected to be stored onsite, Chemical Abstract Service (CAS) number, anticipated usage quantity, location, nature of the associated hazard, and state/federal threshold quantities. Figure 5.15-1 shows the locations where the listed hazardous materials would be stored on the Midway site.

A Hazardous Materials Business Plan (HMBP) which outlines hazardous materials handling, storage spill response, and reporting procedures will be prepared for the proposed project and submitted to the responsible agencies prior to the commencement of project operations. The procedures to be documented in this Plan would include a notification checklist with contact information for Midway qualified individuals, emergency response agencies, police, fire, hospital, and ambulance services.

Waste lubricating materials will be periodically generated during the operation and maintenance of the generating units. These materials will be collected and stored in appropriately designed and labeled storage containers. Waste lubricants will be recycled by an approved contractor in compliance with applicable regulations.

Solvents may be used for parts cleaning and other maintenance activities. The use of solvents onsite will be minimized. All solvents will be stored in labeled areas in appropriate containers. Spent solvents will be recycled, if practical, or will be disposed of in an appropriate manner.

Curbs, berms, and concrete pits will be used where accidental releases of hazardous and acutely hazardous materials could occur. All containment areas will be constructed in accordance with the applicable laws, ordinances, regulations, and standards (LORS). Containment areas will be drained to appropriate collection basins for recycling or offsite disposal. Piping for the ammonia system will be constructed underground to the extent feasible.

To minimize impacts from accidental releases, workers will be trained in the safe handling of hazardous materials, use of response equipment, procedures for mitigation of releases, and coordination with local emergency response organizations. More importantly, to avoid or minimize impacts from the accidental releases of hazardous materials, non-hazardous or less hazardous materials will be used where possible and engineering controls will be implemented. For example, aqueous ammonia was selected for the selective catalytic reduction (SCR) system over anhydrous ammonia, because it is less hazardous.

The most probable accidents involving hazardous materials may include small-scale spills of waste oil or other chemicals from product or satellite storage areas. To avoid potential impacts, all spills will be cleaned up immediately.

The only acutely hazardous material that will be stored onsite is aqueous ammonia. Aqueous ammonia will be used in the SCR process to reduce emissions of nitrogen oxide compounds from the exhaust gases

of the gas turbine units. The aqueous ammonia will be stored onsite in two identical aboveground storage tanks, one for each SwiftPac unit, which will each hold a maximum of 12,000 gallons. The tanks will be situated in a containment area which will drain through 2 holes into an underground containment basin. In the event of a tank failure, ammonia will drain into this underground basin and be contained for disposal. The tanks will be located adjacent to the truck unloading pad, which will be sloped and designed to drain to the same underground containment basin.

5.15.2.2.2 Offsite Consequence Analysis (OCA)

This section discusses the conduct of an OCA to provide information on the maximum potential offsite consequences that could occur as a result of an upset release of aqueous ammonia at the Midway site. This chemical will be the only hazardous substance present in sufficient quantity to be a regulated substance subject to the requirements of the CalARP program.

Midway will use and store onsite, aqueous ammonia at an average concentration of 19.5 percent by weight in water solution for use in the selective catalytic reduction (SCR) technology to control nitrogen oxide (NO_x) emissions from the project combustion turbine exhaust. The ammonia will be stored in two 12,000 gallon, above-ground storage tanks.

The OCA was performed for two hypothetical accidental release scenarios: “Scenario 1” and “Scenario 2”. Both scenarios represent release situations that have the potential to result in the greatest potential health impact associated with Midway operations, but the actual occurrence of either scenario is highly improbable, indeed, nearly impossible in practice.

For each scenario, the distance to the specified threshold concentrations (end points) for ammonia was estimated through calculation of emission rates and use of a computer model to predict airborne dispersion and the resulting ground-level concentrations. If a concentration equaling or exceeding a “specified level of concern” was predicted to reach off site, then the corresponding potential short-term health effect would be evaluated.

Four levels of concern are used to evaluate potential public health impacts associated with a hypothetical release of aqueous ammonia:

1. Lethal. The lethal concentration is 2,000 parts per million by volume (ppmv) averaged over 30 minutes.

2. Immediately Dangerous to Life and Health (IDLH). The IDLH concentration is 300 ppmv, averaged over 30 minutes (National Institute of Occupational Safety and Health [NIOSH], 1997). This concentration was chosen by NIOSH to ensure that workers can escape without injury or irreversible health effects from an IDLH exposure. Exposure to ammonia at or above the IDLH poses a threat of death or immediate or delayed permanent adverse health effects, or prevents escape from the impacted environment.

3. EPA/CalARP Toxic Endpoint. The CalARP concentration, based on EPA 40CFR68, is 200 ppmv averaged over 1 hour. This concentration was formerly equivalent to the ERPG-2 concentration, and is the maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other

serious health effects or symptoms that could impair an individual's ability to take protective action.

4. CEC Significance Value. The CEC uses a more stringent significance value of 75 ppmv ammonia averaged over 30 minutes, based on public short term limits set by the National Research Council. The CEC uses this concentration as a screening guideline to determine the potential for significant impact. CEC has determined that exposure above this level poses a potentially significant risk of adverse health impacts on sensitive members of the general public.

The potential offsite impact of an accidental release of ammonia is considered to be less than significant if the CEC significant concentration (75 ppmv) does not reach a public receptor. If concentrations at the CalARP endpoint level (200 ppmv) do not extend off site, significant concentrations cannot reach any public receptors. In this case a Program 1 RMP is most likely appropriate and the impact is considered to be less than significant. If concentrations greater than the CalARP level are determined to be off site, a Program 2 RMP must be considered.

The OCA includes four components. The first is to describe the feasible release scenarios, including passive features designed to minimize emissions, in enough detail to allow quantitative analysis. The second component of the OCA is to estimate emission rates associated with each scenario. The third component is to use atmospheric dispersion modeling to predict the maximum distances to the concentration levels of concern in each scenario. The fourth component assesses the potential degree and extent of offsite consequences of the concentrations computed by means of dispersion modeling.

The following subsections describe: (1) the assumptions used to characterize each release scenario; (2) the development of input parameters for modeling these scenarios; (3) the selected atmospheric dispersion modeling methodology; and (4) the results of the modeling analysis, including an exposure assessment for potential receptors in the vicinity of the project site.

Scenario 1

Potential accidental releases of aqueous ammonia at Midway could involve a spill from one of the storage tanks, or a spill during the unloading and transfer of ammonia from a tanker truck to a storage tank.

An ammonia spill from a storage tank with a capacity of 12,000 gallons would potentially cause a greater quantity of ammonia to be released than spills during the unloading of a tanker truck, and is analyzed as Scenario 1. A release resulting from spills during the unloading of a tanker truck is analyzed as Scenario 2.

Even though Scenario 1 would potentially release a greater quantity than Scenario 2 (12,000 gallons for a total tank failure versus 8,000 gallons for loss of an entire tanker cargo), both events would actually have the same effective release rate and subsequent effects, due to the fact that both events drain into the same containment basin. In either scenario, the ammonia spill is effectively instantaneous and the entire contents of either the storage tank or the tanker truck would drain rapidly through two 32-inch drain holes into the underground containment basin below the ammonia storage tanks. Ambient air can only reach the spilled ammonia through the two drain holes below the storage tanks and the one drain hole from the unloading area, thus limiting the volatilization of an accidental aqueous ammonia release to the atmosphere. The evaporation pond area within the basin will be the same whether the spill is from a

tanker truck or a storage tank and, accordingly, emission rates and subsequent impacts resulting from these two release scenarios will be the same.

The containment area will be sized 19.5 feet wide, 80 feet long, and 4.3 feet high and will have the capacity to contain the entire contents of both storage tanks plus the maximum rainfall in 24 hours for the entire period of record (2.37 inches, WRCC 1948-2005). For this analysis, the impacts associated with the failure of one tank are the same as those associated with the failure of both tanks, therefore the more likely scenario of one tank failing is analyzed. The aqueous ammonia would be completely contained in the underground basin with the drain holes as the only area the ambient air could access the spill. The area of these drain holes will limit the evaporative loss to the atmosphere of any ammonia spilled in the underground containment basin. The release rate of the ammonia from either a tank rupture or truck unloading spill is estimated as the rate of evaporation from the exposed areas of ammonia.

Scenario 2

Scenario 2 is considered to be a "more realistic" accidental release event compared with Scenario 1. Scenario 2 would involve a spill of aqueous ammonia during the unloading of a tanker truck. It is assumed that a tanker truck can transport up to 8,000 gallons of aqueous ammonia. A 2-inch hose will deliver aqueous ammonia from the tanker truck to the storage tanks. If this hose were to break during the unloading of aqueous ammonia, the material spilled on the sloped containment pad under the truck would drain immediately from the unloading area through a 26-inch drain hole into the same underground containment basin below the storage tanks. The assumption that the entire contents of the truck would be lost in such an event is extremely unlikely as the ammonia delivery trucks are equipped with apparatus for shutting off the flow of ammonia from several locations around the truck. In reality, only a catastrophic event sufficient to cause complete failure of the tanker cargo compartment could lead to the release of the full tanker load.

In this scenario, the ammonia would flow from the tanker truck line or from a rupture of the tanker cargo compartment would spill onto the sloped containment pad under the tanker truck, and drain into the underground containment basin through a 26-inch drain hole. The ammonia emissions from this scenario are limited by the area of the three drain holes to the underground containment basin. Thus, emission rates are the same as for Scenario 1. Assumptions and detailed calculations used to characterize both release scenarios for the OCA are described below.

Model Parameters

The calculations to determine the emission rate of ammonia vapor from an aqueous solution used the following equation, as recommended by the U.S. EPA in the *RMP Guidance for Offsite Consequence Analysis* (1999):

$$QR = \frac{0.284U^{0.78}MW^{2/3}A \times VP_{T_S}}{82.05T_s} \qquad \text{(Equation 5.15-1)}$$

where QR = emission rate of ammonia (pounds per minute)
U = wind speed (meters per second)
MW = molecular weight of ammonia (grams per gram-mole)
A = surface area of spilled liquid pool (square feet)
VP_{Ts} = vapor pressure of ammonia above solution at standard temperature (millimeters of mercury)
T_s = temperature of liquid at standard temperature (degrees Kelvin)

This equation is valid for analysis at 25 degrees Celsius. In order to adjust for the parameters given in the analyzed scenarios, a temperature correction equation is used for the emission rate of ammonia:

$$QR_c = QR * TCF \qquad \text{(Equation 8.12-2)}$$

The temperature correction factor (TCF) is determined by the following equation:

$$TCF = \frac{VP * T_S}{VP_{T_S} * T} \qquad \text{(Equation 8.12-3)}$$

where VP_{Ts}= vapor pressure of ammonia at standard temperature(millimeters of mercury)
VP= vapor pressure of ammonia at temperature analyzed (millimeters of mercury)
T_s= standard temperature (degrees Kelvin)
T = Temperature at which given scenario is analyzed (degrees Kelvin)

This equation determines the emission rate of the ammonia alone; the evaporative rate of the water in the solution is ignored. The emission rate per unit area required for the selected dispersion model was calculated using the following equation:

$$E = \frac{QR}{A} \qquad \text{(Equation 5.15-4)}$$

where E = emission rate of ammonia (grams second^{-1} meter^{-2})
QR = emission rate of ammonia (grams second^{-1})
A = surface area of spilled liquid pool (square meters)

For the scenarios evaluated in this analysis, the exposed surface area of the spilled pool in Equations 5.15-1 and 5.15-4 is combined areas of the two 32-inch drain holes below the storage tanks and the area of the 26 inch drain hole in the unloading area for both Scenarios 1 and 2.

The wind speed used in Equation 5.15-1 is taken from CalARP RMP guidance to be 1.5 m/s for both scenarios. Low wind speed results in a relatively low volatilization rate, according to Equation 5.15-1, but also results in a low rate of dispersion of the vapor as it is carried downwind.

The temperature of the released aqueous ammonia is assumed to be 9°F warmer than the air temperature to compensate for the maximum potential increase of temperature within the tank. The CalARP guidance requires the use of the maximum air temperature observed in the project area within the previous three years; however to be conservative, the mean monthly maximum temperature over the entire period of record at the National Service weather station Fresno at the Fresno-Yosemite International Airport (1970-2000) was used. The highest mean monthly maximum (101.2°F recorded in July, 1996) was used for modeling both scenarios (WRCC, Fresno WSO AP Meteorological Station 1970-2000).

Atmospheric stability is an important meteorological parameter used in modeling the dispersion of the ammonia vapor that vaporizes from the liquid. To maintain a certain level of conservatism, both scenarios were modeled with the assumption of stability class F, which is the most stable classification. In a stable atmosphere there is little turbulent motion, hence very little mixing occurs, so the ammonia concentration in the plume from a spill would remain high as the vapor is carried downwind under these conditions.

The combination of the maximum observed temperature and extreme atmospheric stability that was assumed for modeling Scenarios 1 and 2 is so conservative that it never actually occurs. Maximum temperature occurs during the mid-afternoon hours when the air is typically unstable or neutral (stability classes A through D). In contrast, F stability occurs during nighttime or early morning before sunrise, when temperatures are generally lower

Table 5.15-2 shows the parameters used to model the ammonia dispersion for Scenario 1 and Scenario 2 release scenarios. Appendix P shows detailed calculations of the model input parameters.

Table 5.15-2
Dispersion Model Parameters

Parameter	Scenarios 1 & 2
Ambient Temperature (°F)	101.2
Aqueous Ammonia Release Temperature (°F)	110.2
Atmospheric Stability Class[a]	F
Wind Speed (meters per second)	1.5
Ammonia Gas Release Area (square feet)[b]	14.86
Calculated Ammonia Emission Rate Per Unit Area (g / s / m^2)	0.455
Calculated Ammonia Mass Emission Rate (g/s)	6.76

Note:
[a] Atmospheric Stability Class F = Stable
[b] Area of the 2 drains below the storage tanks and 1 drain from the unloading area.

Modeling Methodology

To examine the impacts from a hypothetical spill of aqueous ammonia, the U.S. EPA-approved atmospheric dispersion model SCREEN3 was employed. SCREEN3 is a Gaussian plume model that incorporates continuous source and meteorological parameters.

An accidental aqueous ammonia release will pool in the underground basin where ammonia gas will evaporate via laminar mass transfer through the exposed drain hole for either Scenario 1 or Scenario 2. The evaporated ammonia gas is lighter than air (molecular weight of 17.03 g/g•mole, whereas air has a molecular weight of about 29 g/g•mole). Thus, for the ammonia release scenarios examined, a dense gas model, such as SLAB or DEGADIS, would be inappropriate. Only one worst-case meteorological condition, a single stability class and wind speed, was examined for the selected scenarios. The greatest potential distance to the toxic endpoint under this scenario must be determined, regardless of wind direction; hence, SCREEN3 is an appropriate model for the required analysis.

In the SCREEN3 model the ammonia source resulting from a storage tank rupture or release from a tanker truck is represented by a rectangular area, the size of which is the total effective area of the exposed ammonia to the atmosphere. This area would be comprised of the area of the two 32-inch drain holes below the storage tanks and the 26-inch drain hole in the unloading area. The effective area of ammonia exposed to the atmosphere is approximately 15 square feet.

Modeling Results

It is assumed that the ammonia has an equal probability to disperse in any direction. Thus, the model results presented in Figure 5.15-2 for both Scenario 1 and 2, show the distances predicted to the ammonia concentrations of concern around the source, regardless of direction. The radii of the circles are the predicted distances to the various "levels of concern", i.e., the concentrations that are used as public health effects thresholds.

The distance predicted by SCREEN3 to the four levels of concern discussed in Section 5.15.2.2.2 are:

1. 8.3 meters to the lethal concentration of 2,000 ppmv.
2. 20.6 meters to the IDLH concentration of 300 ppmv.
3. 26.4 meters to the CalARP Toxic Endpoint of 200 ppmv.
4. 47.1 meters to the CEC significance level of 75 ppmv.

Output from the SCREEN3 model is included in Appendix P. Table 5.15-3 summarizes the modeling results with regard to the nearest offsite public receptor and residence.

Table 5.15-3
Offsite Consequence Analysis Results

Scenario	Nearest Public Receptor (Wellhead Peaker Plant)	Nearest Resident (Agricultural Housing)
Scenario 1 Ammonia Concentration (spill from failure of storage tank)	188.9 ppmv	0.9 ppmv
Scenario 2 Ammonia Concentration (spill from ammonia unloading of tanker truck)	188.9 ppmv	0.9 ppmv
Distance from ammonia storage facility	27 meters	600 meters

The OCA model results predict that the CalARP toxic endpoint concentration of 200 ppmv is never exceeded offsite for either scenario. Although the CEC significance level is predicted to be exceeded in part of the nearest public receptor, the Wellhead Peaker Plant, this facility is normally unmanned. Thus, the probability of such an accident occurring, combined with the chance that staff might be at the Wellhead Peaker Plant at the same time, are so small that they may be considered negligible.

The concentration at the nearest resident is predicted to be well below the CEC significance level (75 ppmv) and the CalARP toxic endpoint (200 ppmv).

Since the toxic endpoint is not offsite, this facility is expected to be able to conduct a Program 1 RMP, per CUPA consultation.

No significant health impacts are expected to occur at offsite receptors from either accidental aqueous ammonia release scenarios, due to the design features of the proposed project which reduce the likelihood and potential consequences of accidental ammonia releases. Workers at the Midway facility would be trained to avoid and respond to accidental releases of hazardous materials, including aqueous ammonia. Hence, proposed project design and worker training would limit the safety hazard due to an accidental ammonia release to an acceptable level and the potential impact is considered less than significant.

5.15.2.3 Fire and Explosion Risks

Natural Gas. Natural gas, which will be used as the exclusive fuel for the four Midway combustion turbines, poses a fire and/or explosion risk as a result of its flammability. While natural gas is used in significant quantities, it will be continuously delivered to the generating plant site through a new pressurized natural gas pipeline, and will not be stored onsite. The new pipeline will be routed from an existing natural gas pipeline already located on the CalPeak Panoche Peaker facility; therefore, impacts to the affected environment will not change. The risk of a fire and/or explosion will be minimized through adherence to applicable codes and design requirements, including isolation valves, and the continued implementation of effective safety management practices.

Other Gases. Other gases expected to be stored and used at Midway include those typically used for maintenance activities such as shop welding and emissions monitoring. These gases include small amounts of acetylene, argon, carbon monoxide, nitric oxide, nitrogen, and oxygen. The potential impacts presented by the use of these gases are not considered to be significant based on the following:

- A limited quantity of each gas will be stored at the facility.
- The gases will be stored in DOT-approved safety cylinders and secured to prevent upset and physical damage.
- Incompatible gases (e.g., flammable gases and oxidizers) will be stored separately.
- The gases will be stored in multiple standard-sized portable cylinders, in rather than larger cylinders, generally limiting the quantity released from an individual cylinder failure to less than 200 cubic feet.

There will be no significant changes resulting from the proposed Midway project. Therefore, the potential impacts presented by the use of these gases at the facility are considered insignificant.

5.15.3 Cumulative Impacts

The Fresno County Planning Department was contacted regarding future projects with the potential to handle hazardous materials in quantities that would create a potential cumulative impact in combination with Midway. There is one project proposed, the proposed Panoche Energy Center (PEC), that may contribute to cumulative impacts, assuming approval of the application and subsequent installation and startup of the PEC. In addition, the Midway site is within the vicinity of the existing CalPeak Panoche plant, PG&E Substation, and Wellhead Peaker plant. All of these sites will store and utilize aqueous ammonia on-site for NOx emission control. However, only a natural disaster such as a major earthquake could cause multiple, simultaneous accidental releases at one or more of the proposed or existing facilities. Nominal quantities of oils, cleaners, gases, and other hazardous materials are stored onsite in buildings at all of the facilities. Enclosed storage of these materials would provide containment in the event of a release.

It was determined in this analysis that no significant offsite impacts would occur from potential aqueous ammonia releases at Midway. Due to the negligible risk of a simultaneous release from any of the existing facilities, there is virtually no potential for hazardous materials from multiple facilities to cause combined impacts to neighboring areas.

5.15.4 Mitigation Measures

The passive mitigation features included in the project design include monitoring equipment for the ammonia system with automatic shut off, stop safety valves throughout the ammonia piping system, underground construction of ammonia system piping, double-walled ammonia system pipes for portions above ground, and an underground containment area to store and minimize exposure of an accidental release from the ammonia storage tank or ammonia unloading areas. These passive design features will reduce offsite impacts in the event of an accidental ammonia release to a less-than significant level; therefore, additional mitigation measures will not be required.

5.15.5 Applicable LORS

The LORS applicable to the handling of hazardous materials at Midway are discussed in this section. Construction and operation of Midway will be in accordance with all applicable LORS pertaining to hazardous materials.

Federal, state, and local laws govern the storage and use of hazardous materials and acutely hazardous materials at Midway. Applicable laws and regulations address the use and storage of hazardous materials to protect the environment from contamination, and facility workers and the surrounding community from exposure to hazardous and acutely hazardous materials. The applicable LORS related to hazardous materials handling are summarized in Table 5.15-4.

5.15.5.1 Federal Requirements

The Superfund Amendments and Reauthorization Act of 1968 (SARA) Title Ill (Sections 302, 304, 311, and 313) and regulations pursuant to the Clean Air Act of 1990 (40 CFR 68) established a nation-wide emergency planning and response program, and imposed reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials. The Acts require the states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility (see 40 CFR, Section 68.115). The requirements of these Acts are reflected in the California Health and Safety Code, Section 25531 et seq.

Title 49, Code of Federal Regulations, Parts 171-177, govern the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of the transportation vehicles.

Table 5.15-4
LORS Applicable To Hazardous Materials Handling

LORS	Applicability	Section
Federal		
Clean Air Act (40 CFR 68)	Requires an RMP is listed hazardous materials are stored above threshold quantities (TQ).	Section 5.15.4.1
SARA Title III, Section 302	Requires certain planning activities when hazardous materials are present in excess of TQ.	Section 5.15.4.1
SARA Title III, Section 304	Requires notification if there is a release of hazardous materials in excess of TQ	Section 5.15.4.1
SARA Title III, Section 311	MSDSs to be kept onsite for each hazardous material. Required to be submitted to the Fresno County Fire Department District Medota Station 96.	Section 5.15.4.1
SARA Title III, Section 313	Requires annual reporting of releases of hazardous materials.	Section 5.15.4.1
29 CFR, Section 191 0.120, Occupational Safety and Health Administration (OSHA); Cal/OSHA	Describes worker safety and health procedures and safe handling of hazardous materials and wastes.	Section 5.15.4.1 and 5.15.4.2
U.S. DOT Regulations, 49 CFR 171-177	Governs the transportation of hazardous materials, including the marking of the transportation vehicles.	See Section 5.15.4.1 Traffic and Transportation
State		
Health and Safety Code Section 25500, et seq. (Waters Bill)	Requires preparation of an Hazardous Materials Business Plan where hazardous materials are handled or stored in excess of TQs.	Section 5.15.4.2
Health and Safety Code Section 25531, et seq. (La Follette Bill)	Requires registration of facility with local authorities and preparation of a Risk Management Plan where if hazardous materials stored or handled in excess of TQs.	Section 5.15.4.2
CCR, Title 8, Section 5189	Facility owners are required to implement safety management plant to ensure safe handling of hazardous materials.	Section 5.15.4.2
California Uniform Building Code	Requirements regarding the storage and handling of hazardous materials	Section 5.15.4.2
California Government Code Section 65850.2	Restricts issuance of COD until facility has submitted an RMP.	Section 5.15.4.2

Table 5.15-4(Continued)
LORS Applicable To Hazardous Materials Handling

LORS	Applicability	Section
Local		
Fresno County Department of Community Health, Environmental Health Division	Requires new/modified businesses to complete a hazardous materials business, and RMP prior to final plan/permit approval.	Section 5.15.4.3
Industry Standards		
Uniform Fire Code, (Articles 79 and 80)	Requirements for secondary containment, monitoring, etc. for extremely hazardous materials.	Section 5.15.4.4

5.15.5.2 State Requirements

The California Health and Safety Code, Section 25500, requires companies that handle hazardous materials in sufficient quantities to develop a Hazardous Materials Business Plan (HMBP). The HMBP includes basic information on the locations, types quantities, and health risks associated with hazardous materials handled, stored, used, or disposed of that could be accidentally released into the environment. It also includes a plan for training new personnel, and for annual training of all personnel in safety procedures to be followed in the event of a release of hazardous materials. It also includes an emergency response plan and identifies the business representative able to assist emergency personnel in the event of a release. Midway will develop a HMBP prior to construction and operation of Midway.

The California Health and Safety Code, Section 25531, directs facility owners storing or handling acutely hazardous materials in reportable quantities to develop a Risk Management Plan (RMP) and submit it to appropriate local authorities, the USEPA, and the designated local Administering Agency for review and approval. The RMP includes: an evaluation of the potential impacts associated with an accidental release; the likelihood of an accidental release occurring; the magnitude of potential human exposure in the event of a release scenario; any pre-existing evaluations or studies of the stored hazardous materials; the likelihood of the substance being handled in the manner indicated; and the accident history of the material. This program supersedes the California Risk Management and Prevention Plan and is known as the CalARP program. Midway will develop and submit an RMP prior to operation of Midway.

The CCR, Title 8, Section 5189, requires facility owners to develop and implement effective Safety Management Plans to 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 RMP process.

California Government Code Section 65850.2, states that a city or county shall not issue a final certificate of occupancy unless there is verification that the applicant has met the applicable requirements of Health and Safety Code, Section 25531 and requirements, if any, for a permit from the air pollution control district.

The California Uniform Building Code contains requirements regarding the storage and handling of hazardous materials, including protection against release of such materials due to seismic activity. The Chief Building Official must inspect and verify compliance with these requirements prior to issuance of an occupancy permit.

5.15.5.3 Local Requirements

The designated certified unified program agency (CUPA) for the Midway site area is the Fresno County Department of Community Health, Environmental Health Division (FCDCH), which is responsible for 1) the implementation of the HMBP and emergency response plan, and 2) the cleanup of petroleum releases. The FCDCH, Environmental Health Division will be contacted in the event of a release of hazardous wastes or materials to the environment. The agency also assumes enforcement responsibility for administration of the RMP and CCR, Title 23.

5.15.5.4 Industry Standards

The Uniform Fire Code (UFC) contains provisions regarding the storage and handling of hazardous materials. These provisions are contained in Articles 79 and 80. Article 80 was extensively revised in the latest edition (1994). These articles contain requirements that are generally similar to those contained in the California Health and Safety Code Section 25531 et seq. The UFC does, however, contain unique requirements for secondary containment, monitoring, and treatment of toxic gases emitted through emergency venting. These unique requirements are generally restricted to extremely hazardous materials.

5.15.5.5 Agencies and Agency Contacts

A number of federal and state agencies regulate hazardous materials in California, including the USEPA at the federal level and the California/EPA at the state level. However, local agencies are the primary enforcers of hazardous materials laws. For the Midway site, the local agency is the FCDCH, Environmental Health Division and the contact is shown in Table 5.15-5.

Table 5.15-5
Involved Agencies and Agency Contacts

Agency	Contact/Title	Telephone
Fresno County Department of Community Health (CUPA agency)	Tim Casagrande or Vince Mendes	(559) 445-3271
Fresno County Department of Community Health (FCDCH), Environmental Health Division	Gustavo Gomez/ Hazardous Material Specialist	(559) 445-3271

5.15.5.6 Permits Required and Permit Schedule

Midway will develop a Hazardous Materials Business Plan prior to construction activities. Prior to storage of aqueous ammonia at the project site, the applicant will also be responsible for completing a Risk Management Plan, as described by CalARP guidelines, and submitting the completed Plan to the

Certified Unified Program Agency (CUPA) for Fresno County and to the United States Environmental Protection Agency. See Table 5.15-6 for a list of potential permit requirements.

Table 5.15-6
Permit Table for Hazardous Materials

Responsible Agency	Permit/Approval	Schedule
Fresno County Community Health Department	Hazardous Materials Business Plan Risk Management Plan	To be obtained before all hazardous materials have arrived on site

5.15.6 References

California Office of Emergency Services. 1998. *California Code of Regulations, Title 19. Public Safety, California Accidental Release Prevention Program*, November 1998

Fresno County. 2000. General Plan. www.co.fresno.ca.us/4510/index.htm, Accessed 10/18/06

Lees, Frank P. 1980. *Loss Prevention in the Process Industries, Hazard Identification, Assessment and Control*. Vol. 3, 2nd Ed., Butterworth Heinmann.

NIOSH (National Institute of Occupational Safety and Health). 1997. *NIOSH Pocket Guide to Chemical Hazards. DHHS (NIOSH) Publication No. 97-140*. U.S. Government Printing Office. Washington, D.C.

URS Corporation. 2006. Application for Certification, Panoche Energy Center.

U.S. EPA (U.S. Environmental Protection Agency). 1999. *Risk Management Program Guidance for Offsite Consequence Analysis*, April 1999, EPA 550-B-99-009.

U.S. EPA (U.S. Environmental Protection Agency). 1998. *Chemical Accident Prevention Provisions, Appendix A 40 CFR part 68*, July 1, 1998, 59 FR 4493.

U.S. EPA (U.S. Environmental Protection Agency). 1998. *Emergency Planning and Notification, Appendix A 40 CFR part 355*, July 1, 1998, 52 FR 13395.

U.S. EPA (U.S. Environmental Protection Agency). 1996. *Federal Register, Part III Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act Section 112(r)(7)*, June 20, 1996, 40 CFR Part 68, FRL-5516-5.

U.S. Geological Survey. 2003. Earthquake Probabilities in the San Francisco Bay Region: 2002-2031, http://quake.usgs.gov/research/seismology/wg02/. Accessed 11/06/06

WRCC (Western Regional Climate Center), 1948-2005. Climate Historical Summaries, Daily Records for Fresno WSO AP Meteorological Station.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Hazardous Materials Handling** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Existing conditions: Sec. 5.15.1, Pg. 5.15-2 Impacts: Sec. 5.15.2, 5.12.3 Mitigation: Sec. 5.15.4, Pg. 5.15-14		
Appendix B (g) (10) (A)	A list of all materials used or stored on-site which are hazardous or acutely hazardous, as defined in Title 22, California Code of Regulations, § 66261.20 et seq., and a discussion of the toxicity of each material.	Materials: Sec. 5.15.2.1, 5.15.2.2, Table 5.15-1, Pg. 5.15-3		
Appendix B (g) (10) (B)	A map at a scale of 1:24,000 depicting the location of schools, hospitals, day-care facilities, emergency response facilities and long-term health care facilities, within the area potentially affected by any release of hazardous materials.	Figure 5.16-1		
Appendix B (g) (10) (C)	A discussion of the storage and handling system for each hazardous material used or stored at the site.	Storage and Handling: Sec. 5.15, 5.15.2.1, 5.15.2.2, Table 5.15-1, Figure 5.15-1		
Appendix B (g) (10) (D)	The protocol that will be used in modeling potential consequences of accidental releases that could result in off site impacts. Identify the model(s) to be used, a description of all input assumptions, including meteorological conditions. The results of the modeling analysis can be submitted after the AFC is complete.	Modeling: Sec. 5.15.2.2.2, Table 5.15-2, 5.15-3		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Hazardous Materials Handling** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (10) (E)	A discussion of whether a risk management plan (Health and Safety Code § 25531 et seq.) will be required, and if so, the requirements that will likely be incorporated into the plan.	Risk Management: Sec. 5.15, 5.15.2., 5.15.5.2		
Appendix B (g) (10) (F)	A discussion of measures proposed to reduce the risk of any release of hazardous materials.	Reduce Risk: Sec. 5.15, 5.15.2		
Appendix B (g) (10) (G)	A discussion of the fire and explosion risks associated with the project.	Fire and Explosion: Sec. 5.15.2.3		
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	LORS compliance: Sec. 5.15.5, Table 5.15-4, Pgs. 5.15-15-5.15-18		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Agency jurisdiction: Sec. 5.15.5.5, 5.15.5.6, Table 5.15-5, Table 5.15-6		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	LORS conformity: Sec. 5.15.5, Table 5.15-4, Pgs. 5.15-15-5.15-18		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Hazardous Materials Handling** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Agency contacts: Table 5.15-5, Pg. 5.15-18		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Permit schedule: Sec. 5.15.5.6, Table 5.15-6		

5.16 PUBLIC HEALTH AND SAFETY

This section describes the health risk assessment (HRA) that was conducted to assess the potential health impacts of the Midway project. This section describes the methodology and results of the HRA for the project. The purpose of the HRA is to evaluate potential public exposure to toxic air pollutant emissions from routine operations. Exposure to criteria pollutants, NO_2, SO_2, CO, VOC, and PM_{10}, is examined in Section 5.2, Air Quality. A limited number of hazardous materials will be used during normal operations at Midway. These are discussed further in Section 5.15, Hazardous Materials Handling. Only aqueous ammonia will be stored on site in sufficient quantity to require a hazardous material offsite consequence analysis, which is also discussed in Section 5.15, Hazardous Materials Handling. The details of the Public Health analysis are contained in the following sections:

- Section 5.16.1, Affected Environment, describes the local environment surrounding the project site. Topographical information is provided. Sensitive receptors within a 3-mile radius of the project site are identified on Figure 5.16-1.
- Section 5.16.2, Environmental Consequences, discusses the potential public health consequences of the project. The HRA approach is described. The project's emissions of toxic air pollutants are discussed, and the potential impacts of these emissions are evaluated. The results of the HRA show that the maximum incremental offsite cancer risk from the project will be 0.062 in 1 million. This is well below the accepted cancer risk significance threshold for new sources of 10 in 1 million. The results of the assessment also show that the chronic total hazard index (THI) and the acute THI are 0.001 and 0.022, respectively, which are both well below the significance criteria of 1.0.
- Section 5.16.3, Cumulative Impacts, addresses the cumulative impacts of the project with the existing CalPeak Panoche Peaker plant and other nearby sources of toxic air contaminants.
- Section 5.16.4, Mitigation Measures, discusses mitigation measures to minimize the impacts of the project's emissions of toxic air contaminants.
- Section 5.16.5, LORS, describes all applicable laws, ordinances, regulations, and standards pertaining to the public health aspects of the project.
- Section 5.16.6, Involved Agencies and Agency Contacts, lists the agency contacts consulted in conducting the public HRA.
- Section 5.16.7, Permits Required and Permit Schedule, lists the permits required and provides the permit schedule.
- Section 5.16.8, References, lists the references used to conduct the public HRA.

5.16.1 Affected Environment

The project area is located in the unincorporated area of western Fresno County approximately 50 miles west of the city of Fresno. For the purposes of analysis, Midway is identified as a modification to the existing CalPeak Panoche Peaker plant. Thus, the existing proposed Midway site will be extended approximately 500 feet to the east to include the CalPeak Panoche Peaker plant. The site lies just east of

the Panoche Hills and east of the San Benito County line. West Panoche Road passes to the north of the site, with the nearest intersections being West Panoche Road and South Fairfax Avenue approximately one mile to the northeast and West Panoche Road and I-5 approximately 2 miles to the southwest. The site abuts the existing Pacific Gas & Electric (PG&E) Substation to the west and the Wellhead Peaker plant to the south. Land use within 10 miles of the site is dedicated almost exclusively to the cultivation of agricultural crops, and is considered rural for the purposes of conducting the air quality modeling within the HRA.

The nearest communities include Mendota, El Porvenir, Firebaugh, Tranquility, Cantua Creek, and San Joaquin. These communities are between 13 and 22 miles from the Midway site. The project site is at an elevation of approximately 395 to 400 feet above mean sea level. Terrain elevations as high as the proposed gas turbine generator units (CTGs) of the project are found within about 2 miles of the project site to the southwest and south and the elevation rise continues in this direction to the Ciervo Hills (foothills of the Diablo Range Mountains) about 6 miles away. Topography within a 6- and 10-mile radius of the project site is shown on Figure 5.2-1 of the Air Quality section of this document.

For purposes of this analysis, sensitive receptors are defined as the locations occupied by groups of individuals that may be more susceptible to health risks from a chemical exposure. Schools (public and private), day care facilities, convalescent homes, parks, and hospitals are of particular concern. Nearby residences are also included in the sensitive receptor analysis.

The closest existing sensitive receptors are located approximately 100 feet from the northern boundary of the Midway site. However, the occupants of this 5-plex will be relocated as a noise mitigation measure (see Section 5.12, Noise). The next closest existing sensitive receptors are located approximately 600 meters to the north-west of the facility across from the site of the proposed PE. All sensitive receptors located within a 3-mile radius of the project site are shown in Figure 5.16-1; however, the HRA approach treated all receptors as sensitive receptors.

5.16.2 Environmental Consequences

This section describes the potential public health risks due to the construction and operation of Midway, and the methodology and results of the HRA. A potentially significant carcinogenic risk is indicated when the predicted maximum cancer risk is greater than 10 in one million. Non-cancer risk is typically reported as a total hazard index or “THI”, which is a ratio calculated for each target organ. Specifically, the maximum predicted acute or chronic exposure due to the project is expressed as a fraction of the corresponding maximum acceptable exposure level for a pollutant. The acceptable exposure level is generally the level at (or below) which no adverse health effects are expected. Thus, significant non-cancer risk impacts occur when a chronic or acute THI above 1.0 is predicted.

Also, uncertainties in the HRA are discussed and other potential health impacts are described.

5.16.2.1 Public Health Impact Assessment Approach

The potential human health risks posed by the project’s emissions were assessed using procedures consistent with the Office of Environmental Health Hazard Assessment (OEHHA) *Air Toxics Hot Spots*

Program Risk Assessment Guidelines – The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA, 2003). The OEHHA guidelines were developed to provide risk assessment procedures, as required under the Air Toxics Hot Spots Information and Assessment Act of 1987, Assembly Bill 2588 (Health and Safety Code Sections 44360 et seq.). The Hot Spots law established a statewide program for inventorying emissions of toxic air contaminants from individual facilities, as well as requirements for risk assessment and public notification of potential health risks.

The HRA was conducted in four steps using the Hotspots Analysis and Reporting Program (HARP):

- Hazard Identification and Emission Quantification
- Exposure Assessment
- Dose-response Assessment
- Risk Characterization

Step 1 – The purpose of this step was to identify whether pollutants emitted from the plant include known or suspected human carcinogens, or have been linked by health effects specialists to other types of adverse health effects. The OEHHA guidelines provide lists of pollutants with potential cancer and non-cancer health effects that are potentially emitted by various categories of sources. The pollutants that are listed for the specific types of equipment that will be present at the operational project are presented in Table 5.16-1.

Step 2 – An exposure assessment was conducted to estimate the extent of potential public exposure to the project emissions. Public exposure is evaluated in terms of the predicted short- and long-term ground-level concentrations resulting from project emissions, the pathway(s) of exposure, and the duration of exposure to the emissions. Dispersion modeling was performed using the ISCST3 model within HARP to estimate the ground-level concentrations near the project site. The methods used in the dispersion modeling were consistent with the approach described in Section 5.2, Air Quality, and the modeling protocol that was submitted for the project for review by the California Energy Commission (CEC) and the San Joaquin Valley Unified Air Pollution Control District (SJVAPCD) (URS, 2006).

TABLE 5.16-1
TOXICITY VALUES USED TO CHARACTERIZE HEALTH RISKS

Compound	Sources of Emissions	Inhalation Cancer Potency Factor (mg/kg-day)	Chronic REL (µg/m³)	Acute REL (µg/m³)
Ammonia	gas turbines	--	2.0E+02	3.2E+03
Acetaldehyde	gas turbines	1.0E-02	9.0E+00	--
Acrolein	gas turbines	--	6.0E-02	1.9E-01
Benzene	gas turbines	1.0E-01	6.0E+01	1.3E+03
Ethylbenzene	gas turbines	--	2.0E+03	--
Formaldehyde	gas turbines	2.1E-02	3.0E+00	9.4E+01
Hexane	gas turbines	--	7.0E+03	--
Propylene	gas turbines	--	3.0E+03	--
Toluene	gas turbines	--	3.0E+02	3.7E+04
Xylenes	gas turbines	--	7.0E+02	2.2E+04
Polycyclic Aromatic Hydrocarbons	gas turbines	3.9E-01	--	--
Naphthalene	gas turbines	1.2E-01	9.0E+00	--

Notes:
-- = not applicable
mg/kg-day = milligrams per kilogram per day
REL = reference exposure levels
µg/m³ = micrograms per cubic meter

Step 3 – A dose-response assessment was performed using the HARP model to characterize the relationship between pollutant exposure and the potential incidence of an adverse health effect in exposed populations. The dose-response relationship is expressed in terms of potency factors for cancer risk and reference exposure levels (RELs) for acute and chronic non-cancer risks. The OEHHA guidelines provide potency factors and RELs for an extensive list of toxic air contaminants. Potency factors and RELs are constantly being revised by the OEHHA, and the most recent values were applied in this HRA (Cal-EPA/OEHHA, 2005). All exposure pathways available in HARP were included in this analysis, except for drinking water and fish. For the calculation of cancer risk, the duration of exposure to project emissions was assumed to be 24 hours per day, 365 days per year, for 70 years, at all receptors. The cancer risk was calculated in HARP using the "Derived (Adjusted) Method" and the chronic THI was calculated in HARP using the "Derived (OEHHA) Method."

Step 4 – Risk characterization was performed to integrate the health effects and public exposure information and provide quantitative estimates of health risks from project emissions. Risk modeling was

performed using HARP to estimate cancer and non-cancer health risks for the project. The HARP model utilizes OEHHA equations and algorithms to calculate health risks, based on input parameters that include emission rates, "unit" ground-level concentrations, and toxicological data.

Detailed descriptions of the model input parameters and results of the HRA are presented later in this section.

5.16.2.2 Construction-phase Emissions

Due to the relatively short duration of the project's construction phase (i.e., approximately 10 months), significant long-term public health effects are not expected. To ensure worker safety during actual construction, safe work practices will be followed. A detailed analysis of the potential environmental impacts due to criteria pollutant emissions during construction and control of these emissions is discussed in Section 5.2, Air Quality.

5.16.2.3 Operational-phase Emissions

Facility operations were evaluated to determine whether particular substances will be used or generated that may cause adverse health effects if released to the air. The primary sources of potential emissions from facility operations are the two SwiftPac. Each SwiftPac contains two simple-cycle CTGs burning exclusively natural gas fuel. The toxic air contaminants emitted from these sources (with associated toxicological information) are shown in Table 5.16-1.

Upon the specific recommendations of SJVAPCD staff (SJVAPCD, 2006), emission factors for the identified air toxic substances emitted from internal combustion natural gas turbines were obtained from data provided by the Ventura County Air Pollution Control District (VCAPCD, 1995). In addition, ammonia slip emissions from the CTG SCR system were calculated based on stack parameters provided by the turbine vendor and a Best Available Control Technology (BACT) limit of 10 ppmvd at 15 percent O_2, as described in Section 5.2, Air Quality. There is one SCR system per Swiftpac stack.

Annual CTG emissions were estimated by assuming that all four CTGs would operate simultaneously under full-load conditions (100% load) for 4,000 hours per year, including startups, shutdowns, and maintenance operations. Stack parameters (i.e., exit temperature and velocity) for the full-load condition were used in the model simulations to assess the hourly and annual ground-level impacts and health risks.

For calculation of both maximum hourly and annual project emission rates, the maximum natural gas consumption rate of 311.2 MMBtu/hr (HHV) per CTG was assumed for all operating hours.

Emission factors for the CTGs were obtained from the Ventura County Air Pollution Control District's AB2588 emission factors for internal combustion natural gas turbines (1995). These emission factors are expressed in units of pounds per million cubic feet (lb/MMcf) of natural gas fuel usage, which were divided by the higher heating value of the natural gas (1024 Btu/scf) to arrive at emission factors for individual pollutants in units of pounds per million British thermal unit (lb/MMBtu). These factors were then multiplied by the Btu equivalent of the maximum hourly CTG gas consumption rate to obtain

maximum toxic air contaminant emission rates in units of pounds per hour. The emission factors and estimated maximum hourly and annual CTG emissions are summarized in Table 5.16-2.

5.16.2.4 Model Input Parameters

The HRA was conducted using worst-case emissions (short- and long-term) from the four new CTGs for the operational Midway project. Each Swiftpac consists of two turbines with one stack. Each stack contains one SCR and one CO catalyst. Emissions from the existing CalPeak Panoche Swiftpac are considered in the cumulative analysis later in this section. Cancer and chronic non-cancer health effects were estimated using the annual emissions estimate in pounds per year for each Swiftpac. Acute non-cancer health effects were estimated using the worst-case maximum hourly emissions for both Swiftpac in pounds per hour. These were used as direct input to the HARP model.

TABLE 5.16-2
EMISSION RATES FROM NORMAL OPERATION OF EACH NATURAL-GAS-FIRED COMBUSTION TURBINE

Chemical Species	Emission Factor (lb/MMBtu)	Emission Factor (lb/MMcf)	Maximum Hourly Emissions per CTG[1]	Annual Emissions Per CTG[1,2]
			(lb/hr)	(lb/yr)
Ammonia	10 ppm[3]	10 ppm[3]	7.3	2.92E+04
Acetaldehyde	3.61E-05	0.037	1.12E-02	4.50E+01
Acrolein	8.79E-06	0.009	2.74E-03	1.09E+01
Benzene	1.10E-05	0.0113	3.43E-03	1.37E+01
Ethylbenzene	1.29E-05	0.0132	4.01E-03	1.60E+01
Formaldehyde	9.18E-05	0.094	2.86E-02	1.14E+02
Hexane	1.71E-03	1.75	5.32E-01	2.13E+03
Propylene	1.03E-03	1.0522	3.20E-01	1.28E+03
Toluene	7.09E-05	0.0726	2.21E-02	8.83E+01
Xylenes	2.82E-05	0.0289	8.78E-03	3.51E+01
PAHs	1.95E-07	0.0002	6.08E-05	2.43E-01
Naphthalene	7.81E-07	0.0008	2.43E-04	9.73E-01

Notes:

1 See Appendix Q Public Health and Safety Data, for detailed emission calculations. Natural gas fuel heat rate assumed at 1,024 Btu/scf.

2 Annual emissions calculations based on 4,000 operating hours per year for each CTG, including startups, warm-ups, shutdowns and maintenance operations.

3 Based on estimated ammonia slip from NO_x control (10 ppmvd ammonia at 15% oxygen).
lb/hr= pounds per hour
lb/yr= pounds per year
lb/MMBtu= pounds per million British thermal units
b/MMcf= pounds per million cubic feet
PAH = polycyclic aromatic hydrocarbons

Dispersion modeling was performed using the ISCST3 model in HARP and methods consistent with the approach (e.g., building downwash, meteorological data, etc.) described in Section 5.2, Air Quality, and the modeling protocol submitted for the project (URS, 2006).

The ISCST3 model uses the two Swiftpac stack parameters to calculate the concentration per unit emissions. HARP then uses this information along with the emission rates (provided in the input file as described above) to calculate ground-level concentrations for each chemical species. Meteorological data for the years 1987-1991 (the same years used in the air quality analysis in Section 5.2, Air Quality) were used in the HRA.

Risk values were modeled for all sensitive receptors within 3 miles of the project and all grid, boundary, and census receptors within 6 miles of the project, to assess potential health effects at all these locations. Boundary receptors were placed every 25 meters along the property fence line. Note that because Midway will be permitted as a modification to the existing CalPeak Panoche Peaker plant facility, the boundary defined in the HRA modeling encompasses the combined sites for both plants. Grid receptors were spaced every 100 meters out to 10 kilometers from the site in every direction. Any risks calculated by the HARP model at on-site receptor locations were ignored.

Toxicological data, cancer potency factors and RELs for specific chemicals are built into the California Air Resource Board's (CARB) HARP model. The pollutant-specific cancer potency factors and RELs used in the HRA were listed in Table 5.16-1. The HARP model uses the toxicological data in conjunction with the other input data described above to perform health risk estimates based on OEHHA equations and algorithms.

5.16.2.5 Calculation of Health Effects

Adverse health effects are expressed as cancer or non-cancer health risks. Cancer risk is typically reported as "lifetime cancer risk." Lifetime cancer risk is the maximum estimated increased risk of contracting cancer caused by long-term exposure to a pollutant suspected of being a carcinogen. Cancer risk is calculated by assuming that an individual is exposed continuously to pollutants at the computed long-term average concentration 24 hours per day for a period of 70 years. Although this continuous lifetime exposure is unlikely, the goal of the approach is to produce a worst-case estimate of potential cancer risk. Non-cancer risk is typically reported as a "THI." The THI is calculated for each target organ as a fraction based on the maximum acceptable exposure level to a pollutant. The acceptable exposure level is generally the level at (or below) which no adverse health effects are expected. THI values are calculated for both short- (acute) and long-term (chronic) exposures.

Both cancer and non-cancer risk estimates provided in this HRA represent incremental risks (i.e., risks due to project sources only) and do not include potential health risks posed by existing background concentrations. This approach is consistent with the significance criteria used to evaluate predicted impacts, which are also based on the incremental contributions to risk by project sources. The HARP model performs all of the necessary calculations to estimate the potential lifetime cancer risk and THI resulting from project emissions.

5.16.2.6 Health Effects Significance Criteria

Various state and local agencies use different significance criteria for cancer and non-cancer health effects. For carcinogenic health effects, an exposure to a new emissions source is normally considered potentially significant when the predicted incremental lifetime cancer risk of the source exceeds 10 in 1 million (10×10^{-6}). For non-carcinogenic health effects (chronic or acute), an exposure that affects each target organ is considered potentially significant when the THI exceeds a value of one.

5.16.2.7 Estimated Lifetime Cancer Risk

Based on the risk assessment methodology described in the foregoing subsections, the maximum incremental cancer risk resulting from project emissions based was estimated to be 0.062 in 1 million. The maximum cancer risk was located at a grid receptor approximately 9 kilometers west of the facility (receptor located at UTM North American Datum [NAD] 83 coordinates 707,522 m east, 4,057,149 m north). This receptor is located in an unpopulated area of the foothills of the Panoche Hills. The sensitive receptor with the highest predicted cancer risk is a residence located approximately 6 kilometers south-southeast of the facility at the intersection of South Hudson Avenue and West Manning Avenue (718,925 m east, 4,053,861 m north); the maximum incremental cancer risk at this location was estimated to be 0.031 in 1 million. Table 5.16-3 presents the results of the HRA for the project operations for cancer, chronic, and acute health risks. All HARP model files, along with all air quality modeling files are provided electronically on a DVD that is supplied separately with this AFC.

TABLE 5.16-3
ESTIMATED CANCER RISK AND ACUTE AND CHRONIC TOTAL HAZARD INDICES

Cancer Risk at Point of Maximum Impact		Chronic Risk at Point of Maximum Impact		Acute Risk at Point of Maximum Impact	
0.062 excess risk in 1 million		0.001 total hazard index		0.022 total hazard index	
Location of PMI		Location of PMI		Location of PMI	
UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
707522	4057149	707522	4057149	710822	4053549

The estimated cancer risk at all locations is well below the significance criteria of 10 in 1 million. Thus, it is concluded that the project's emissions will not pose a significant cancer risk to any populations potentially exposed to these emissions.

5.16.2.8 Estimated Chronic and Acute Total Hazard Indices

The maximum chronic THI resulting from project emissions was estimated to be 0.001. The location of the maximum estimated chronic THI is approximately 9 kilometers west of the site (the receptor is located at UTM coordinates of 707,522 m east, 4,057,149 m north). This receptor is located in an unpopulated area of the foothills of the Panoche Hills. The sensitive receptor with the highest chronic THI

is a residence located approximately 6 kilometers south-southeast of the facility at the intersection of South Hudson Avenue and West Manning Avenue (718,925 m east, 4,053,861 m north); the maximum chronic THI at this receptor was estimated to be 0.0003.

The maximum acute THI resulting from project emissions was estimated to be 0.022 located approximately 8 kilometers southwest of the site in an unpopulated area of the Panoche Hills (UTM coordinates 710,822 m east, 4,053,549 m north). The sensitive receptor with the highest predicted acute THI impact is a residence located approximately 1 kilometer northeast of the facility at the corner of South Fairfax Avenue and West Panoche Road (at 717,380 m east, 4,059,947 m north); the maximum acute THI at this location was estimated to be 0.005. Table 5.16-3 presents the detailed non-cancer results of the HRA for the project operations.

The estimated chronic and acute THIs are both well below the significance criterion of one. Thus, it is concluded the project's emissions will not pose a significant non-cancer health risk to any populations potentially exposed to these emissions.

5.16.2.9 Uncertainty in the Public Health Impact Assessment

Sources of uncertainty in HRAs include emissions estimates, dispersion modeling, exposure characteristics, and extrapolation of toxicity data in animals to humans. For this reason, assumptions used in HRAs are designed to provide sufficient health protection to avoid underestimation of risk to the public. Some sources of uncertainty applicable to this HRA are discussed below.

The CTG emission rates of individual toxic air contaminants were derived using vendor data for ammonia slip and from emission factors (VCAPCD, 1995) for the other air toxics. Both the short- and long-term CTG emissions were developed assuming all four CTGs would operate at the maximum load for the maximum number of annual operating hours requested in this application. Under actual operating conditions, the CTGs may operate less and the average loads will be lower than 100 percent of capacity. Consequently, the emissions used for this HRA are likely to be higher than those that would occur under normal operation of the proposed project.

The dispersion models used in HRAs contain assumptions that tend to lead toward over-prediction of ground-level contaminant concentrations. For example, the modeling performed in the HRA assumed a conservation of mass (i.e., all of the pollutants emitted from the sources remained in the atmosphere while being transported downwind). During the transport of pollutants from sources to receptors, none of the material was assumed to be converted or removed through chemical reaction or lost at the ground surface through reaction, gravitational settling, or turbulent impaction. In reality, these mechanisms work to reduce the level of pollutants remaining in the atmosphere during plume travel.

The exposure characteristics assessed in the HRA included the assumption that all receptors (including residents) were continuously exposed to the emissions from the CTGs at the same location for 24 hours per day, 365 days per year, for 70 years. It is extremely unlikely that any resident would actually be subject to such continued, long-term exposure. This conservative exposure assumption tends to cause risks to be over estimated by the HRA methods used in this analysis.

The toxicity data used in the HRA contain uncertainties resulting from the extrapolation of health effects data from animals to humans. Typically, safety factors are applied when doing the extrapolation. Furthermore, the human population is much more diverse both genetically and culturally than bred experimental animals. The intraspecies variability among humans is expected to be much greater than in laboratory animals. With all of the uncertainty in the assumptions used to extrapolate toxicity data, significant measures are taken to ensure that there is sufficient health protection built into the health effects criteria used in assessments such as this one.

The conservatism introduced at each step in the HRA to compensate for all of these sources of uncertainty is compounded in the predicted health risks. Therefore, the actual risks resulting from exposure to emissions from the project are expected to be well below the values presented in this analysis.

5.16.2.10 Criteria Pollutants

Emissions of the criteria pollutants (NO_2, CO, SO_2, and PM_{10}) from the project were modeled and an evaluation of their impacts on air quality is presented in Section 5.2, Air Quality. The federal and state NAAQS specify allowable levels of specific air pollutants that should not be exceeded in order to protect the public health. The results presented in Section 5.2, Air Quality, show that the project will not cause or significantly contribute to exceedances of any state or federal AAQS. Thus, no significant adverse health effects are anticipated to result from the project's criteria pollutant emissions.

5.16.3 Cumulative Impacts

CEC requirements specify that an analysis must be conducted to determine the cumulative impacts of the project and other projects within a 6-mile radius that have received construction permits but are not yet operational or that are in the permitting process or can be expected to do so in the near future. Information requests have been made to SJVAPCD to obtain data on new projects planned within six miles from the proposed site. The resulting list of projects will be submitted to CEC for final determination of which new projects, if any, need to be evaluated by cumulative modeling. It is understood that the cumulative HRA will need to include, at a minimum, the emissions from the existing CalPeak Panoche and Wellhead Peaker plants, as well as the proposed Panoche Energy Center that is being proposed at a site just west of Midway.

Additional HRA will be submitted as an addendum to this Application at a later date. Such a cumulative HRA would use the HARP model with the same five-year meteorological input data set and receptor grids used for modeling Midway impacts. Decisions regarding which other sources are to be included and the manner in which these sources will be represented for modeling will be made in consultation with CEC and SJVAPCD.

5.16.4 Mitigation Measures

The criteria pollutant emissions from the project will be mitigated by the use of BACT and through emissions offsets. A complete discussion of these measures is included in Section 5.2, Air Quality. The toxic pollutant emissions from the proposed CTGs will also be mitigated by the exclusive use of natural gas fuel. In addition, pollution control technologies employed to control criteria pollutants, specifically,

the CO oxidation catalysts on the CTGs, will also have the effect of significantly reducing organic toxic air contaminants, including those listed in Table 5.16-1, Toxicity Values Used to Characterize Health Risks.

The HRA presented in the foregoing subsections shows that the health effects impacts of the project as proposed will be well below the significance thresholds identified in Section 5.16.2.6, Health Effects Significance Criteria. Therefore, no further mitigation of emissions from the project is required to protect public health.

5.16.5 LORS

The relevant LORS that have been established to protect public health are identified in Table 5.16-4. This table also summarizes the agencies that are principally responsible for public health, as well as the general category(ies) of public health concerns regulated by each of these agencies. The conformity of the project to each of the LORS applicable to public health is also presented in this table, as well as references to the locations in this document where each relevant issue is addressed. Points of contact with the primary agencies responsible for public health are identified in Section 5.16.6, Involved Agencies and Agency Contacts.

5.16.6 Involved Agencies and Agency Contacts

Agency contacts regarding public health assessment of the project are as listed in Table 5.16-5.

5.16.7 Permits Required and Permit Schedule

The Permit to Operate (PTO) to be issued by the SJVAPCD and the CEC's Final Decision Document on this Application will serve as the principal approvals required to ensure that the project's impacts to public health will be within acceptable levels. Award of the Authority to Construct (ATC) permit is expected to occur at roughly the same time as the Final Decision is issued by CEC.

TABLE 5.16-4
SUMMARY OF COMPLIANCE WITH PUBLIC HEALTH LORS

Authority	Administering Agency	Requirement	Midway Project Compliance
Clean Air Act (CAA)	USEPA CARB SJVAPCD	Protect public from unhealthful exposure from air pollutants	Based on the results of the risk assessment, air toxics do not exceed acceptable levels (5.16, Public Health and Safety) Emissions of criteria pollutants will be minimized by applying BACT to the facility. Increases in emissions of nonattainment pollutants and their precursors will be fully offset (Section 5.2, Air Quality)

TABLE 5.16-4
SUMMARY OF COMPLIANCE WITH PUBLIC HEALTH LORS
(CONTINUED)

Authority	Administering Agency	Requirement	Midway Project Compliance
California Public Resource Code § 25523(a); 20 CCR § 1752.5, 2300-2309, and Division 2 Chapter 5, Article 1, Appendix B, Part(1)	CEC	Assure protection of environmental quality, requires quantitative HRA	The HRA in 5.16, Public Health and Safety, of this Application satisfies this requirement
California Clean Air Act, TAC Program, H&SC § 39650, et seq.	SJVAPCD with CARB oversight	Requires quantification of TAC emissions, use of BACT, and preparation of an HRA	The project will not cause unsafe exposure to TACs based on results of HRA (Section 5.16, Public Health and Safety), and has performed a BACT assessment (Section 5.2, Air Quality)
H&SC, Part 6, § 44300 et seq. (Air Toxics "Hot Spots")	SJVAPCD with CARB/OEHHA oversight	Regulates public exposure to air toxics. Requires inventory of TACs and HRA	The HRA presented in Section 5.16, Public Health and Safety, of this application satisfies this requirement
H&SC § 41700	SJVAPCD with CARB oversight	Prohibits emissions in quantities that adversely affect public health, other businesses or property	Section 5.2, Air Quality, and the HRA (Section 5.16, Public Health and Safety) presented in this application satisfy this requirement
Integrated Air Toxic Program	SJVAPCD	Integrates the all state and federal TAC requirements, primarily "Hot Spots" and California Airborne Toxic Control Measures (ATCM)	Section 5.16, Public Health and Safety and Section 5.2, Air Quality presented in this application satisfy this requirement
SJVAPCD Rule 3110	SJVAPCD	Requires annual fees for the Air Toxic "Hot Spots" (AB2588)	The HRA presented in 5.16, Public Health and Safety, of this application and the payment of fess to SJVAPCD satisfy these requirements
SJVAPCD Rule 4102	SJVAPCD	No source shall cause injury, detriment, nuisance or annoyance to the public, which could endanger their comfort, repose, health and safety, or property	Section 5.2, Air Quality, and the HRA (5.16, Public Health and Safety) presented in this application satisfy this requirement

Notes:
BACT = Best Available Control Technology
CARB = California Air Resources Board
CEC = California Energy Commission
HRA = Health Risk Assessment
OEHHA = Office of Environmental Health Hazard Assessment
SJVAPCD = San Joaquin Valley Air Pollution Control District
TAC = Toxic air contaminant
USEPA = United States Environmental Protection Agency

TABLE 5.16-5
AGENCY CONTACTS FOR PUBLIC HEALTH ASSESSMENT

Agency	Contact/Title	Telephone
California Energy Commission	Keith Golden Air Quality Specialist 1516 Ninth Street Sacramento, CA 95814	(916) 654-4287
California Air Resources Board	Mike Tollstrup 1001 I Street, Sacramento, CA 95814	(916) 322-6026
San Joaquin Valley Air Pollution Control District	Ester Davila Permitting Specialist 1990 E. Gettysburg Avenue Fresno, CA 93726-0244	(559) 230-6000

5.16.8 References

California Environmental Protection Agency (Cal-EPA) & Office of Environmental Health Hazard Assessment (OEHHA). 1999. Air Toxics Hot Spots Risk Assessment Guidelines, Part I. Technical Support Document for the Determination of Acute Reference Exposure Levels for Airborne Toxicants.

2003. Air Toxics Hot Spots Program Risk Assessment Guidelines – The Air Toxics Hot Spots Program Guidance Manual for EPA Preparation of Health Risk Assessments

2003. Air Toxics Hot Spots Risk Assessment Guidelines, Part II: Technical Support Document for the Determination of Non-cancer Chronic Reference Exposure Levels.

2005. Air Toxics Hot Spots Risk Assessment Guidelines, Part II: Technical Support Document for Describing Available Cancer Potency Factors

San Joaquin Valley Air Pollution Control District (SJVAPCD. 2006. Telephone conversation between modeling specialist Esther Davila of SJVAPCD and Julie Mitchell of URS Corporation, June 15, 2006.

URS Corporation. 2006. Air Quality Modeling Protocol for the Starwood Power-Midway Project. Prepared by URS on behalf of Midway, LLC for submittal to the San Joaquin Valley Air Pollution Control District and the California Energy Commission. October. 2006.

Ventura County Air Pollution Control District. 1995. Ventura County Air Pollution Control District AB2588 Emission Factors.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Public Health** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Existing conditions: Sec. 5.16.1 Impacts: Sec. 5.16.2, 5.16.3 Mitigation: Sec. 5.16.4		
Appendix B (g) (9) (A)	A list of all toxic substances emitted by the project under normal operating conditions, which may cause an adverse public health impact as a result of acute, chronic, or sub-chronic exposure and to which members of the public may be exposed. This list should include, at a minimum, any pollutants emitted by the project that are listed pursuant to Health and Safety Code § 25249.8.	Sec. 5.16.2. Table 5.16-1, 5.16-2		
Appendix B (g) (9) (B)	A protocol describing the analysis which the applicant will conduct to determine the extent of potential public exposure to substances identified in subsection (g)(9)(A) resulting from normal facility operation. The analysis itself can be submitted after the AFC is complete.	Sec. 5.16.2		
Appendix B (g) (9) (C)	A map at a scale of 1:24,000, showing all terrain areas exceeding the elevation of the stack within a 10 mile radius of the facility.	Fig. 5.16-1		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. ____ Date ____

Technical Area: **Public Health** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (9) (D)	A map at a scale of 1:24,000, showing the distribution of population and sensitive receptors within the area exposed to the substances identified in subsection (g)(9)(A).	Sec. 5.16 Fig. 5.16-1		
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	LORS compliance: Sec. 5.16.5 Table 5.16-4		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Agency jurisdiction: Sec. 5.16.5, Table 5.16-5, 5.16-4		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	LORS conformity: Sec. 5.16.5, Table 5.16-4		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Agency contacts: Table 5.16-5 Pg 5.16-13		
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Permit schedule: Sec. 5.16.7		

5.17 WORKER SAFETY

This section addresses safety and health issues and describes or outlines systems and procedures that will be implemented to provide occupational safety and health protection for the Midway workers in accordance with all applicable worker health and safety LORS. All applicable elements of the Title 8 California Code of Regulations (CCR), General Industry Safety Orders (GISO), Construction Safety Orders (CSO), and Electrical Safety Orders (ESO), with special attention paid to Section 3203, Injury and Illness Prevention Program, are addressed below. Section 5.17.1 describes the affected environment relative to worker health and safety. An outline of the principal components of the health and safety programs to be implemented during construction and operation is presented in Section 5.17.2, Environmental Consequences. Mitigation measures are discussed in Section 5.17.3. Section 5.17.4 addresses compliance with LORS and Section 5.17.5 presents references.

5.17.1 Affected Environment

The Midway project includes the construction and operation of a simple-cycle natural gas fired facility with ancillary facilities such as transmission lines, pipelines, and an access road. Maps depicting the physical plant layout are presented as Figures 3.4-1 and 3.4-2. Descriptions of the facility fire protection and safety systems are presented in Section 3.4.13, *Fire Protection and Safety System* and Section 3.11.1.2, *Emergency Systems.* Descriptions of hazardous material and wastes to be used and stored on the Midway site are discussed in Section 5.15, Hazardous Materials Handling, and Section 5.14, Waste Management.

The facility will be operated remotely and manned by an operator/technician during normal working hours with both an onsite control panel and a remote control room located in San Diego, California. All system equipment will be controlled through PLC utilizing control integration software and the project controls will be integrated into this proven control system. The remote control room in San Diego will be staffed at all times. Operators will be responsible for monitoring the status of operations at the facility, responding quickly to any operational issues, and for initiating emergency response actions should they become necessary.

5.17.2 Environmental Consequences

5.17.2.1 Occupational Health and Safety

Construction, operation, and maintenance activities may expose workers to the hazards identified in Table 5.17-1. Exposure to these hazards can be minimized through adherence to appropriate engineering design criteria and administrative controls, use of applicable personal protective equipment (PPE), and compliance with all applicable health and safety LORS. The programs, regulations, and preventive measures intended to control potential worker health and safety impacts associated with these hazards are described in the remainder of this section. This encompasses a comprehensive health, safety, and fire prevention program and an accident/injury prevention program intended to ensure healthful and safe operations at the facility.

5.17.2.1.1 Construction Health & Safety Program

To protect the health and safety of workers during construction, the applicant (or construction contractor) will ensure compliance with the Construction Health & Safety Program, and all federal, state, and local health standards that pertain to worker health and safety.

TABLE 5.17-1
POTENTIAL WORKER HAZARDS DURING
FACILITY CONSTRUCTION AND OPERATION

Activity	Potential Hazard
Facility Construction	
Elevated Work	Slips/trips/falls
Welding	Flash burns, explosion, thermal burns, toxic welding fumes
Excavations	Excavation/trench wall collapse, spoil movement, oxygen deficiency, buildup of toxic gases, fumes, vapors, dusts or mists, wet exposures, crushing hazards, confined spaces, potentially contaminated soil/waste
Cement/forms work	Slips/trips/falls, protruding objects, caustics, punctures, and lacerations
Equipment operation	Noise exposure, vehicle accidents, load hazards, induced current
Transmission lines/transformer station	Slips/trips/falls, electrocution, flash burns
Painting	Paint solvents, paint vapors, chemical burns, fire/explosion, slips/trips/falls
Abrasive blasting	Dust, flying particles, pressure vessels, noise
Powered hand tools	Noise, dust, flying particles, cuts, amputation, crushing
Fueling	Fire, explosion, environmental contamination
Facility Operations	
Generation enclosure	High voltage
Operations building	High voltage, repetitive trauma
Transformer	Electrocution, flash burns
Chemical storage	Chemical splashes, burns, reactions, gasses, vapors, fumes
Machinery, general	Noise, temperature extremes, rotating equipment, electrocution

Construction Injury and Illness Prevention Program The Construction Safety Program will meet the California Occupational Safety and Health Administration's (Cal-OSHA) Injury and Illness Prevention Program (IIPP) requirements. The IIPP will include:

- A written Code of Safe Practices that relates to construction operations.
- Posting of the Code of Safe Practices at a conspicuous location at each job site office or providing it to each supervisor who shall have it readily available.
- Periodic meetings of supervisors and management to discuss past safety incidents and identify and implement corrective actions, as required.
- A system ensuring employee and subcontractor compliance.
- Procedures for promptly correcting unsafe conditions.
- Identification of the person or persons responsible for implementing the program.
- The system for identifying workplace hazards, including inspections.
- "Tool box" or "tailgate" meetings conducted for employees by supervisors emphasizing safety.
- Methods of communicating with employees encouraging employees to identify unsafe activities
- Procedures for correcting unsafe conditions

When workers are first employed they will be given instructions regarding the hazards and safety precautions applicable to the type of work in question and directed to read the Code of Safe Practices. When employees are subject to known job site hazards they shall be instructed in the recognition of the hazard, the procedures for protecting themselves from injury and in the first aid procedure in case of injury.

Construction Written Health & Safety Programs: Written safety programs that will be implemented in conjunction with the Code of Safe Practices may include:

- Accident/incident Reporting Procedures
- Blood-borne Pathogens Exposure Control Program
- Compressed Air Systems
- Confined Space Entry Procedures
- Contractor Safety Program
- Electrical Safety Procedures
- Emergency Action Plan
- Emergency Response Procedures
- Excavation, Trenching, and Shoring Program
- Fall Protection Program
- Fire Protection and Prevention Plan
- Hand Tools and Equipment Guarding Safety Procedures

- Hazard Communication Plan (Including Proposition 65 requirements)
- Hazardous Materials Handling Procedures
- Hazardous Waste Awareness Training
- Hearing Conservation Program
- Heat Stress/Cold Stress Prevention
- Heavy Equipment Procedures
- Hoist/Chain/Wire Rope/Webs/Rope Slings/Crane Procedures
- Hot Work Program (Welding, Cutting, and Brazing)
- Industrial Hygiene Program
- Industrial Truck (Forklifts) Safety
- Ladders, Scaffolds, and Work Platforms
- Lock Out/Tag Out Procedure
- Motor Vehicle Safety
- PPE Program
- Portable Electric and Pneumatic Tools
- Preventing Slips, Trips, and Falls
- Repetitive Stress Injuries/Ergonomics/Lifting Hazards
- Respiratory Protection Program
- Safety and Housekeeping Inspection Program
- Safety Committee and Toolbox/Tailgate Safety Meetings
- Security Program
- Signs, Tags, and Barricades
- Tools, Power- and Hand-operated

Construction Personal Protective Equipment Program Employees will be required to use the required PPE during construction. Required PPE will be approved for use and distinctly marked to facilitate identification. PPE will be used in accordance with the manufacturer's instructions. The PPE will be of such design, fit, and durability as to provide adequate protection against the hazards for which it is designed. The type of PPE required for each job task will be described in the job analysis for that task. The use of PPE for site activities includes, but is not limited to, the items specifically described in Table 5.17-2, and will comply with Cal-OSHA requirements. When protective-insulating equipment is used, it will comply with the Electrical Safety Codes.

TABLE 5.17-2
BASIC PROTECTIVE EQUIPMENT GUIDE

Body Area	Hazards	Recommended Protection
Eyes/Face	Low-velocity flying particles	Safety glasses with side shields
	High-velocity chips and sparks	Impact goggles or safety glasses with full face shield
	Corrosive liquid splash during transfer	Splash-proof goggles and face shield
	Breaking into an acid storage system	Acid hood
	Welding-injurious light rays	Welding hood with appropriate eye filter lenses
Head/Ears	General wear, overhead rigging, material handling, maintenance, and general construction processes	Hard hat
	High noise level	Ear plugs or muff
Respiratory System	Low-hazard inert dusts	Dust mask
	Low concentration solvent vapors	Cartridge-type organic vapor respirator
	Acid mists	Cartridge-type acid mist respirator
	High-concentration dusts or vapors	Air line respirator
Hand and Arms	Handling rough or sharp objects	Leather gloves
	Handling hot objects	Insulated gloves
	Using solvents	Impervious synthetic gloves
Feet and Legs	General wear for light handling	Safety toe shoes
	Handling heavy objects	Metatarsal safety shoes
	Using brush hooks or scythes	Shin guards
	Working with corrosive liquids	Safety toe boots
	Underground work	Safety toe synthetic boots
Trunk and Full body	Hot or corrosive liquids	Synthetic apron
	Punctures, impact, or cuts	Canvas or leather kickback apron or metal mesh apron
	Breaking acid containers	Full body suit made of appropriate materials
Fall Protection/Rescue	Working from elevated structure or platform without standard railings	Safety belt and lanyard
	Vessel entry	Harness and lifeline or wristlets and lifeline
	Suspended Scaffolds	Lifeline, safety belt/lanyard

A respiratory protection program complying with 8 CCR, Section 5144 and GISO requirements will be developed, including respirator training, fit testing, monitoring, selection, etc. The work atmosphere will be tested/sampled per established protocols.

Fire Protection and Prevention Plan The Midway will rely on both onsite fire protection systems and local fire protection services. A Fire Protection and Prevention Plan will be developed and followed throughout all phases of construction. The specified firefighting equipment will be provided to site personnel.

During construction, the permanent facility fire protection systems will be placed in service as early as practicable. An interim fire protection system will be in place during construction until the permanent systems are completed. The fire protection systems for the Midway site are described in Section 3.4.13, *Fire Protection and Safety System* and Section 3.11.1.2, *Emergency Systems*. Construction fire regulations in 8 CCR, Section 1620 et seq. will be followed as necessary to prevent construction fires. Applicable local fire requirements include:

- 1998 Edition of California Fire Code and all applicable National Fire Protection Association (NFPA) standards (24 CCR Part 9)
- Uniform Fire Code Standards
- California Building code Title 24, California Code of Regulations (24 CCR § 3, et seq.)

Special attention will be paid to operations involving open flames, such as welding, and use of flammable materials. Personnel involved in such operations will have appropriate training. A fire watch utilizing appropriately classed extinguishers or other equipment will be maintained during hot work operations. Site personnel will not be expected to fight fires past the incident stage. The local responding fire officials will be given information on the site hazards and the location of these hazards, and the information will be included in the emergency response planning.

Materials brought onsite must conform to contract requirements, insofar as flame resistance or fireproof characteristics are concerned. Specific materials in this category include fuels, paints, solvents, plastic materials, lumber, paper, boxes, and crating materials. Specific attention will be given to compressed gas, fuel, solvent, and paint storage. Electrical wiring and equipment located in inside storage rooms used for Class I liquids will be stored in accordance with ESOs. Outside storage areas will be graded to divert possible spills away from buildings and will be kept clear of vegetation and other combustible materials. Precautions will be taken to protect storage areas against tampering where necessary.

Onsite fire prevention during construction will consist of portable and fixed fire fighting equipment. Portable firefighting equipment will consist of fire extinguishers and small hose lines in conformance with Cal-OSHA and the NFPA for the potential types of fire from construction activities. Periodic fire prevention inspections will be conducted by the contractor's safety representative.

Fire extinguishers will be inspected routinely and replaced immediately if defective or in need of recharge. All firefighting equipment will be conspicuously located and marked with unobstructed access. A water supply of sufficient volume, duration, or pressure to operate the required firefighting equipment

will be provided onsite. Designated, approved storage areas and containers for flammable materials shall be used with adequate fire control services.

5.17.2.1.2 Plant Operational Safety Program

The locations of potential worker hazards during the operational phase are listed in Table 5.17-3. Programs that address these hazards will include:

- Regular employee education and training in safe work practices for general and particular task areas
- Communication of hazards in accordance with federal and state standards
- Accident and incident evaluations
- Administrative safety procedures
- Emergency response
- Fire prevention and fire response
- Security
- Maintenance of safety performance data

All operations personnel will be provided with written safety guidance. All construction safety programs and procedures that apply to facility operations will be incorporated into the plant operational safety program.

TABLE 5.17-3
LOCATION OF POTENTIAL WORKER HAZARDS AT THE MIDWAY SITE (OPERATIONAL PHASE)

Location	Acid[1]	Flammable Material	Hazardous Material	High Voltage	Noise[2]	Pressure Vessel	Pressurized Gas Cylinders	Rotating Equipment	High Temperature
Control Room				X					
Maintenance		X	X	X	X	X	X	X	X
*Switchyard			X	X					
Stacks									X

1 Acid - Areas containing acids (sulfuric acid in batteries or sulfuric acid and hydrochloric acid for pH control).
2 Noise - Area requiring noise protection.
3 CTG – gas turbine generator.
*Note: Switchyard is on PG&G Substation site

Operations Injury Illness Prevention Program The primary mitigation measures for worker hazards during operation are contained in the IIPP, which is required by 8 CCR, Section 3203. The written IIPP contains the following information:

- Identity of the person(s) with authority and responsibility for implementing the program
- A system for ensuring that employees comply with safe and healthy work practices
- A system for communicating with employees in a readily understandable form
- Procedures for identifying and evaluating workplace hazards including inspections to identify hazards and unsafe conditions
- Methods for correcting unhealthy/unsafe conditions in a timely manner – when the hazard is discovered and/or when there is an imminent danger
- A training program for:
    - Establishing the program initially
    - New, transferred, or promoted employees
    - New processes and equipment
    - Supervisors
- Methods of documenting inspections and training and maintaining records for 3 years

The IIPP designates a safety representative who is responsible for implementing the program. It also describes safety training for new employees and procedures for tracking safety training. The IIPP provides job hazard assessments (JHAs) for each job. The JHA will identify safety hazards related to each work task and establish procedures for avoiding, correcting, reporting, and notifying employees of these hazards.

Operational Written Safety Programs The IIPP is used in conjunction with other written safety programs. These programs may include the following:

- Accident/Incident Reporting Procedures
- Blood-borne Pathogens Exposure Control Program
- Chemical Hygiene Plan
- Code of Safe Practices for Equipment and Operation
- Compressed Air Systems
- Confined Space Entry Procedures
- Electrical Safety Procedures
- Emergency Action Plan
- Emergency Response Procedures
- Fall Protection Program
- Fire Protection and Prevention Plan
- Hand Tools and Equipment Guarding Safety Procedures

- Hazard Communication Plan (Including Proposition 65 Requirements)
- Hazardous Materials Handling Procedures
- Hazardous Waste Awareness Training
- Hearing Conservation Program
- Heat Stress/Cold Stress Prevention
- Heavy Equipment Procedures
- Hoist/Chain/Wire Rope/Webs/Rope Slings/Cranes
- Hot Work Program (Welding, Cutting, and Brazing)
- Industrial Hygiene Program
- Industrial Truck (Forklifts) Safety
- Ladders, Scaffolds, and Work Platforms
- Lock Out/Tag Out Procedure
- Motor Vehicle Safety
- PPE Program
- Portable Electric and Pneumatic Tools
- Preventing Slips, Trips, and Falls
- Repetitive Stress Injuries/Ergonomics/Lifting Hazards
- Respiratory Protection Program
- Safety and Housekeeping Inspection Program
- Safety Committee and Toolbox/Tailgate Safety Meetings
- Security Program
- Stop Work Authority
- Signs, Tags, and Barricades
- Tools, Power - and Hand – operated

These programs will be reviewed annually to determine if they are affected by any new regulations and to determine the effectiveness of their implementation. Other written programs or plans may relate to worker safety in that they enable work to be performed in a safe manner. These include standard operating procedures, worker qualifications programs, and site security.

Operations Safety Training Programs All Midway operators, employees, and contractors will be given instructions at the time the employee is first hired (before working at the facility or in the control room) and as an ongoing training program of hazard recognition and avoidance.

Operators will be instructed in the safety regulations pertinent to their employment tasks. Safe working conditions, work practices, and protective equipment requirements will be communicated in the following manner:

- New, promoted, or transferred employees receive safety training orientation.
- Weekly safety meetings are held with employees
- Safety meetings are conducted periodically. General safety topics and specific hazards that may be encountered will be discussed. Comments and suggestions from all employees will be encouraged.
- Regularly scheduled safety meeting will be held for supervisors.
- Hazard communication training, including California Proposition 65 warnings and discharge prohibitions, will be conducted as new hazardous materials are introduced to the workplace.
- Material Safety Data Sheets (MSDs) will be provided for all appropriate chemicals.
- A bulletin board with required postings and other information will be maintained at the plant site.
- Warning signs will be posted in hazardous areas.

Safety training will be provided to each new employee as described below:

- A list of safe work rules for Midway will be explained to each new employee.
- A copy of the applicable Safe Work Practices will be given to each new employee. The provisions will be incorporated into training for the qualifications programs so that employees may fully understand what the protective provisions mean.
- The Hazard Communication Program and other applicable training and requirements for personal protection for the types of hazards that may be encountered at the Midway site will be explained to employees. This training will be documented.
- Unusual hazards that are found onsite will be explained in detail to each new employee, including any specific requirements for personal protection.
- Safety requirements for the new employee's specific job assignment will be explained by the Shift Supervisor upon initial assignment and upon any reassignment.

Operations Personal Protective Equipment Program Personal protective clothing and equipment will be used during specified work operations. Each employee will be provided the following information pertaining to the protective clothing and equipment:

- Proper use and maintenance
- When the protective clothing and equipment are to be used
- Benefits and limitations
- When and how the protective clothing and equipment are to be replaced
- Each employee is checked for proper fit and to see if they are medically capable of wearing the equipment.

All safety equipment meets National Institute of Occupational Safety and Health (NIOSH) or American National Standards Institute (ANSI) standards and has all required markings, numbers, or certificates of approval. Table 5.17-2 contains a list of the basic protective equipment that will be used at the Midway site.

Hazardous Materials Handling and Storage Various hazardous materials will be stored and used during construction and operation of Midway. The storage, handling, and use of all chemicals will follow applicable LORS to minimize risks to workers. All hazardous materials will be appropriately labeled and stored in hazardous materials storage facilities. Bulk hazardous materials will be stored in aboveground storage tanks. Other hazardous materials will be stored in their delivery containers. Hazardous materials storage and chemical feed areas will be surrounded by containment or curbing to contain leaks and spills. The containment areas will be sized to hold an appropriate volume (considering the potential for the local hazard contingencies) as designated by a California registered Professional Engineer. At a minimum, this volume equals the full contents of the largest single tank plus sufficient capacity for precipitation from a 25-year, 24-hour storm event in the case of outdoor storage tanks. A Risk Management Plan (RMP) will be developed for the storage and use of aqueous ammonia onsite. This plan will be similar to the RMP developed for CalPeak Panoche (see Attachment A).

Eyewash stations will be provided in or adjacent to corrosive chemical storage areas and in required areas in accordance with regulatory requirement. PPE and spill response equipment for the exposure and cleanup will be readily available for use during spill containment and cleanup activities. A hazardous material emergency response team, trained in the handling of these emergencies and accidental releases of spill incidents, will be available to Midway through contract. Emergency contact numbers will be available for spill response contractors and for notification to local agencies of spill incidents. These and other procedures will be detailed in the Midway Emergency Plan. In addition, a SPCC Plan similar to the one prepared for CalPeak Panoche (see Attachment B) will be developed.

Operations Emergency Action Plan/Emergency Response Plan In addition to the incorporation of various safety and environmental features and design measures to minimize emergencies and their effects on public and worker safety, Midway will develop a site-specific Emergency Action Plan/Emergency Response Plan. A typical Emergency Action Plan/Emergency Response Plan outline is provided in Table 5.17-4. The Emergency Action Plan/Emergency Response Plan is designed to address potential emergencies, including hazardous materials releases, fires, bomb threats, pressure vessel ruptures, and other catastrophic events. It describes evacuation routes, warning devices, points of contact, assembly areas, responsibilities, and other actions to be taken in the event of an emergency. The plan has a layout map and a fire extinguisher list, and describes arrangements with local emergency response agencies for responding to emergencies.

TABLE 5.17-4
SAMPLE EMERGENCY ACTION/EMERGENCY RESPONSE PLAN OUTLINE

Section Number	Description
1.0	Introduction
1.1	Purpose
1.2	Scope
2.0	Responsibilities
2.1	Incident Command System
	Emergency Response Coordinator
	Alternate
	Safety Coordinator
2.2	Position Description Assignments
	Construction /Facility Manager
	Construction/Facility Supervisor
	Operators
	Health and Safety Manager
	Security
3.0	Response and Notification Plan (Points of Contact)
3.1	Supervisor/Emergency Coordinator
3.2	Health and Safety Manager
4.0	Response Procedures
4.1	Evacuation Routes and Procedures
4.2	Accidents Involving Serious Injury and /or Death
4.3	Fire
4.4	Hazardous Waste or Chemical Spills
4.5	Earthquake
4.6	Bomb Threat
4.7	Emergency Plant Shutdown
4.8	Site Security
4.9	Emergency Medical Treatment and First Aid
4.10	Decontamination
4.11	Documentation and Recordkeeping
4.12	News Media

TABLE 5.17-4 (CONTINUED)
SAMPLE EMERGENCY ACTION/EMERGENCY RESPONSE PLAN OUTLINE

Section Number	Description
4.13	Emergency Notification List
4.14	Emergency Telephone Numbers List
5.0	Reference Procedures
5.1	Evacuation Plan
5.2	Emergency Equipment Locations
5.3	Fire Extinguisher Locations
5.4	Security
5.5	Accident Reporting and Investigation
5.6	Lockout/Tagout
5.7	Hazard Communication
5.8	Spill Containment and Reporting
5.9	First Aid and Medical Response
5.10	Respiratory Protection
5.11	Personal Protective Equipment
5.12	Sanitation
5.13	Work Site Inspections

Fire Prevention Plan Fire protection at the Midway site will include measures relating safeguarding human life, preventing personnel injury, preservation of property, and minimizing downtime due to fire or explosion (National Safety Council, 1992). It involves an alarm and detection system, local building fire pull boxes, audible alarms and/or flashing lights in high noise areas, and portable fire extinguishers. Fire protection measures include fire prevention measures to prevent the inception of fires. Of concern are adequate exits, fire-safe construction, reduction of ignition sources, and control of fuel sources.

The Fire Prevention Plan provides for fire protection practices including routine inspections of the Midway plant by the designated safety representative. It requires prompt action to correct situations deemed to be a fire hazard. It identifies firefighting equipment and systems at the plant as well as methods to safely store flammable and combustible materials. Facilities have been designed by a California Registered Fire Protection Engineer and fire protection equipment is installed and maintained in accordance with all applicable NFPA standards and recommendations (NFPA, 1994). A fire reporting protocol (depending on the size of the fire) and an investigation protocol are detailed in the Fire Protection and Prevention Plan.

The comprehensive onsite fire protection system and procedures will be designed and implemented to protect both personnel and property. A Program Fire Protection Station Order will be developed to address:

- Names and/or job titles responsible for maintaining equipment and accumulation of flammable or combustible material control
- Procedures in the event of fire
- Fire alarm and protection equipment
- System and equipment maintenance
- Monthly inspections
- Annual inspections
- Firefighting demonstrations
- Housekeeping practices
- Training

Fire Suppression The following fire suppression systems are proposed:

- **Carbon Dioxide Fire Protections System** This system protects the gas turbine.
- **Fire Shut-Off Valve** The GT Units are protected by a fire shut-off valve in the fuel line to each engine, outside each GT enclosure. This valve is wired directly into the CTG unit fire protection panel in the Control House and closes upon a fire trip.
- **Fire Protection System Panel** An automatic CTG unit fire protection system panel will monitor and display the status of all fire system inputs and provide outputs to activate audible and visual alarms, discharge suppression systems, close fuel fire safety valves, and signal turbine and unit control systems for required responses. The CTG fire protection system shall provide automatic notification to the control room station in San Diego that is continuously manned during operation.
- **Smoke Detectors (Control House), Combustible Gas Detectors (Gas Turbine Enclosures), Audible and Visual Alarms, and Fire Extinguishers** These will be provided at all locations having potential fire hazards due to the presence of combustible liquids, solids, or other highly flammable materials, and where major property damage could result. CO_2 and dry chemical extinguishers will be strategically located at code-approved intervals throughout the facility and selected for the appropriate class of service.

The Midway onsite fire suppression systems will be backed up by fire suppression support from the Fresno County Fire Protection Division (FCFPD). Both fire and emergency service will be provided out of Station #96, The Mendota Station, located at 101 McCabe, Mendota, with an estimated response time of 15 to 20 minutes.

5.17.3 Mitigation Measures

Environmental consequences related to worker safety are not foreseen at this time; therefore additional measures beyond those proposed herein are not considered necessary. No significant unavoidable adverse

impacts to worker safety are anticipated from the proposed project. Additional measures may be necessary should the proposed project change in a manner that impacted worker safety.

5.17.4 Applicable LORS

The following LORS are applicable or potentially applicable to the proposed project in the context of the public and occupational safety and health protection measures addressed in this section and in Section 5.16, Public Health and Safety. LORS applicable to worker safety are summarized in Table 5.17-5.

TABLE 5.17-5
LORS APPLICABLE TO WORKER SAFETY

LORS	Applicability	Conformance (Section)
Federal		
Occupational Health & Safety Act of 1970 (OSHA), 29 USC 651 et seq.; 29 CFR 191 0 et seq.; and 29 CFR 1926 seq.	Meet employee health and safety standards for general industry and the construction industry	5.17.4.1
Department of Labor, Safety and Health Regulations for Construction Promulgated Under Section 333 of the Contract Work Hours and Safety Standards Act, 40 USC 327 et seq.	Meet employee health and safety standards for construction activities. Requirements addressed by CCR Title 8, General Construction Safety Orders	5.17.4.1
National Fire Protection Association (See Table 7.4-1 for list of standards)	Meet standards necessary to establish a reasonable level of safety and property protection from the hazards created by fire and explosion	5.17.4.1
State		
California Code of Regulations, Title 8	Meet requirements for a safe and hazard-free working environment. Categories of requirements include General Industry Safety Orders, General Construction Safety Orders, Electrical Safety Orders	517.4.2
California Clean Air Act, California Health & Safety Code 39650 et seq.	Meet requirements for Best Available Control Technology to minimize exposure limits to toxic air pollutants and possible risk assessments for carcinogen pollutants	5.17.4.2
California Public Resources § 25523(a); 20 CCR § 1752, 1752.5, 2300.2309, and Division 2, Chapter 5, Article 1, Appendix B, Part (1), California Energy Commission (CEC)		517.4.2
California Health and Safety Code § 25500 to 25541; 19 CCR §§ 2720-2734	Estimate emissions for listed air toxic pollutants and submit inventory to air district for major sources of criteria air pollutants. Follow-up from air district may require a health risk assessment	5.17.4.2

TABLE 5.17-5
LORS APPLICABLE TO WORKER SAFETY
(CONTINUED)

LORS	Applicability	Conformance (Section)
Local		
Fresno County Zoning Ordinance	Provide safety setbacks as required by the Fresno County Fire Protection Division	5.17.4.3
Fresno County Department of Community Health, Environmental Health Division	Provide implementation of the Hazardous Materials Business Plan and Risk Management Plan	5.17.4.3

5.17.4.1 Federal

5.17.4.1.1 Occupational Safety and Health Act of 1970 (OSHA), 29 USC 4651 et seg.; 29 CFR 441910 et seg.; and 29 CFR 41926 et seg.

The authority establishes occupational safety and health standards (§ 1910) [i.e, permissible exposure limits for toxic air contaminants (§ 1910.100), electrical protective equipment requirements (§ 1910.137), electrical workers safety standards (§ 1910.269), and the requirement that information concerning the hazards associated with the use of all chemicals is transmitted from employers to employees (§ 1910.1200)] and safety and health regulations for construction (§ 1926). Subpart I of § 1910 and subpart E of § 1926 address personal protective equipment.

Under the Operational Status Agreement of October 5, 1989 between the Federal Occupational Safety and Health Administration (OSHA) and the California Department of Industrial Relations, Division of Occupational Safety and Health (DOSH), the state resumed full enforcement responsibility for most of the relevant federal standards and regulations, (55 Fed. Reg. 18610 [July 12, 1990]; 29 CFR § 1952.172). Federal OSHA has retained concurrent enforcement jurisdiction with respect to certain federal standards including standards relating to hazardous materials at 29 CFR § 1910.120 (Id.).

The administering agencies for the above authority are OSHA and DOSH (or Cal-OSHA).

5.17.4.1.2 Department of Labor, Safety and Health Regulations for Construction Pomulgated Under 4333 of the Contract Work Hours and Safety Standards Act, 40 USC 327 et seg.

The code establishes safety and health regulations for construction. The requirements for this regulation are all addressed in Title 8 California Code of Regulations, Chapter 4, Subchapter 4, General Construction Safety Orders.

The administering agencies for the above authority are OSHA and DOSH (or Cal-OSHA).

5.17.4.1.3 Uniform Fire Code, Article 80

The article includes provisions for storage and handling of hazardous materials. Considerable overlap exists between this code and chapter 6.95 of the Health and Safety Code. However, the fire code does contain independent provisions regarding fire protection and neutralization systems for emergency venting (§ 80.303, D, Compressed Gases). Other articles that may be applicable include Article 4, Permits, and Article 79, flammable and Combustible Liquids.

The administering agency for the above authority is the FCFPD.

5.17.4.1.4 National Fire Protection Association

NFPA prescribes minimum requirements necessary to establish a reasonable level of fire safety and property protection from the hazards created by fire and explosion. The standards apply to the manufacture, testing, and maintenance of the equipment.

The administering agency for the above authority is the Fresno County Fire Protection Division.

5.17.4.1.5 Compliance

Midway will comply with all federal LORS by developing appropriate plans and policies as well as by measures described in 5.17.2 and 5.17.3.

5.17.4.2 State

5.17.4.2.1 8 CCR

These authorities prescribe general occupational safety and health regulations and standards in addition to the construction and industrial safety regulations, standards, and orders. Applicable sections of 8 CCR, Chapter 4, Subchapter 7 and 24 CCR, will be complied with. Topics of concern are provided in Table 7.4-2. Specifically, 8 CCR §1509 (Construction) and §3203 (General Industry) make numerous changes designed to redirect the emphasis of Cal-OSHA towards ensuring that employers have an effective work site IIPP to focus Cal-OSHA discretionary inspections in the highest hazard industries as determined by worker compensation and other occupational injury data, and to limit the number of follow-up inspections which Cal-OSHA must perform. The CCR, Title 8, Section 5189, requires facility owners to develop and implement effective Safety Management Plans to 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 process.

5.17.4.2.2 California Health and Safety Code, Section 25500

This code requires companies that handle hazardous materials in sufficient quantities to develop a Hazardous Materials Business Plan (HMBP). This plan will be similar to the HMBP developed for CalPeak Panoche (see Attachment C).

The HMBP includes the basic information on the location, type, quantity, and health risks of hazardous materials handled, stored, used, or disposed of that could be accidentally released into the environment. It also includes a plan for training new personnel, and for annual training of all personnel in safety procedures to follow in the event of a release of hazardous materials. It also includes an emergency response plan and identifies the business representative able to assist emergency personnel in the event of a release.

The California Health and Safety Code, Section 25531, directs facility owners storing or handling acutely hazardous materials in reportable quantities to develop an RMP and submit it to appropriate local authorities, the EPA, and the designated local Administering Agency for review and approval. The RMP includes: an evaluation of the potential impacts associated with an accidental release; the likelihood of an accidental release occurring, the magnitude of potential human exposure; any pre-existing evaluations or studies of the material; the Management and Prevention Plan and is known as the California Accidental Release Program. Midway will develop and submit an RMP prior to operation of the Midway plant.

5.17.4.2.3 Compliance

Midway will comply with all state LORS by developing appropriate plans and policies as well as by measures described in 5.17.2 and 5.17.3.

5.17.4.3 Local

5.17.4.3.1 Fresno County Department of Community Health, Environmental Health Division

Provides for the implementation of the Hazardous Materials Business Plan and Risk Management Plan.

5.17.4.3.2 Compliance

Midway will comply with all local LORS. Midway will develop a Hazardous Materials Business Plan for construction and operation of the new facility, and will develop a Risk Management Plan for operation of the new facility. In addition, Midway will continue compliance by updating the appropriate plans and policies as well as by the measures described in 5.17.2 and 5.17.3.

5.17.4.4 Agencies and Agency Contacts

Agencies with jurisdiction to issue applicable permits and/or enforce LORS related to worker safety are shown in Table 5.17-6.

TABLE 5.17-6
AGENCY CONTACTS

Agency	Contact	Title	Telephone
Fresno County Department of Community Health, Environmental Health Division	Specialist on-Call	Hazardous Materials Management Specialist	(559) 445-3271
Fresno County Fire Protection Division, Station #96	Fire Station Captain	Fire Station Captain	(559) 655-4107

5.17.4.5 Applicable Permits

The permits required for this project are listed in Table 5.17-7. A Hazardous Materials Business Plan will be developed prior to construction and will be updated prior to operation. A Risk Management Plan will be developed prior to ammonia being brought onto the Midway site.

TABLE 5.17-7
APPLICABLE PERMITS

Jurisdiction	Potential Permit Requirements
Federal	None required
State	None required
Local	Hazardous Materials business Plan and Risk Management Plan

5.17.5 References

American Conference of Governmental Industrial Hygienists. 1996. Threshold Limit Values (TLV) for Chemical Substances and Physical Agents and Biological Exposure Indices.

California Code of Regulations. ND. Title 8. “General Industry Safety Orders, Construction Safety Orders, and High Voltage Electrical Safety Orders.

Code of Federal Regulations. ND. Title 29 Part 1910. “Construction Safety Orders.”

ND. Title 29 Part 1926 “General Industry Safety Orders.”

National Fire Protection Association. 1994. A Compilation of NFPA Codes, Standards, Recommended Practices and Guides. Quincy, Massachusetts

National Institute for Occupational Safety and Health. 1992. Health Hazard Evaluation Report, U.S. Army Corps of Engineers, Ozark Power Plan, Ozark, Kansas. HETA-92-0243-2377.

1986. Health Hazard Evaluation Report, City of Ames Municipal Power Plant, Ames, Iowa. HETA-86-422-1891.

1985. Health Hazard Evaluation Report, Niagara Mohawk Power Corporation, Lycoming, New York. HETA-85-493-1786.

1983. Health Hazard Evaluation Report, Grand Gulf Nuclear Power Plant, Port Gibson, Mississippi. HETA-83-132-1508.

1978. Health Hazard Evaluation Report, U.S. Army Corps or Engineers, Ozark Power Plant, Ozark, Kansas.

National Safety Council. 1992. Accident Prevention Manual. Volume 2, Chapter 6, Fire Protection. Pp. 1324-1386

URS Corporation. 2006. Application for Certification, Panoche Energy Center.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Worker Safety** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Existing conditions: Sec. 5.17.1 Impacts: Sec. 5.17.2 Mitigation: Sec. 5.17.3		
Appendix B (g) (11) (A)	A description of the safety training programs which will be required for construction and operation personnel.	Sec. 5.17.2.1.1, 5.17.2.1.2		
Appendix B (g) (11) (B)	A complete description of the fuel handling system and the fire suppression system.	Sec. 5.17.2.1.2, 5.17.2.1.1		
Appendix B (g) (11) (C)	Provide draft outlines of the Construction Health and Safety Program and the Operation Health and Safety Program, as follows:	----------	----------	
	Construction Health and Safety Program: * Injury and Illness Prevention Plan (8 Cal. Code Regs., § 1509);	Sec. 5.17.2.1.1 Pg. 5.17-2		
	* Fire Protection and Prevention Plan (8 Cal. Code Regs., § 1920);	Sec. 5.17.2.1.1 Pg. 5.17-6		
	* Personal Protective Equipment Program (8 Cal. Code Regs., §§ 1514-1522)	Sec. 5.17.2.1.1 Pg. 5.17-4		
	Operation Health and Safety Program: * Injury and Illness Prevention Program (8 Cal. Code Regs., § 3203);	Sec. 5.17.2.1.2 Pg. 5.17-7		

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
	* Fire Prevention Plan (8 Cal. Code Regs., § 3221);	Sec. 5.17.2.1.2 Pg. 5.14-13		
	* Emergency Action Plan (8 Cal. Code Regs., § 3220);	Sec. 5.17.2.1.2 Pg. 5.17-11		
	* Personal Protective Equipment Program (8 Cal. Code Regs., §§ 3401-3411).	Sec. 5.17.2.1.2		
Appendix B (h) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;	LORS compliance: Sec. 5.17.4, Table 5.17-5		
Appendix B (h) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Sec. 5.17.4.4, 5.17.4.5 Tables 5.17-6 & 5.17-7		
Appendix B (h) (2)	A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).	LORS conformity: Sec. 5.17.4.1.5, 5.17.4.2.3, 5.17.4.3.2		
Appendix B (h) (3)	The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency.	Sec. 5.17.4.4 Table 5.17-6		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Worker Safety** Project: ____ Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (h) (4)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Sec. 5.17.4.5 Table 5.17-7		

CalPeak Panoche

California Accidental Release Prevention (CalARP) Program
Risk Management Plan (RMP)

(Executive Summary only
for full report contact
CalPeak Power, LLC)

California Accidental Release Prevention (CalARP) Program Risk Management Plan (RMP)

for the

CalPeak Panoche No. 2 Facility Mendota, California

Submitted To:

County of Fresno
Department of Environmental Health

Submitted By:

CalPeak Energy, LP
701 B Street, Suite 340
San Diego, CA 92101

Prepared By:

Scientific Resources Associated
927 Wilbur Avenue, Suite 1
San Diego, CA 92109

June 14, 2001

California Accidental Release Prevention (CalARP) Program Risk Management Plan (RMP)

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

Following requirements of the California Accidental Release Program (CalARP), CalPeak Power, LC (CalPeak) has completed a Risk Management Plan (RMP) for its proposed electrical power generation facility referred to as the CalPeak Panoche No. 2 facility (hereinafter referred to as the Facility), located near the Pacific Gas & Electric Substation near Mendota in Fresno County. The County of Fresno Department of Environmental Management has informed CalPeak that a RMP is required due to the presence of 19% aqueous ammonia at the site.

This RMP reflects CalPeak's planned effort to manage and minimize the risks associated with the storage and use of 12,000 gallons of aqueous ammonia at the Facility. Aqueous ammonia is the only CalARP-regulated substance that will be present at the proposed Facility in quantity in excess of the threshold planning quantity. The proposed Facility is not subject to the requirements of the Federal RMP regulation as set forth under 40 CFR Part 68, because the concentration of aqueous ammonia is less than 20% by weight and is therefore not listed in the Federal regulation.

The Facility is not subject to the Federal Occupational Safety and Health Administration (OSHA) Process Safety Management (PSM) requirements and is therefore not subject to the requirements of Prevention Program 3. However, accidental release modeling indicates a potential for an offsite release. The Facility is therefore subject to the requirements of the CalARP Prevention Program 2.

1.2 Facility Accidental Release Prevention and Emergency Response Policy

CalPeak is committed to adhering to the most stringent safety and environmental policies for its facilities. This RMP presents a summary of the Facility's plans and programs to avoid a release of aqueous ammonia to the environment. This RMP also presents a discussion of the Facility's Emergency Response Plan, which presents CalPeak's policies in the event of a release of aqueous ammonia.

CalPeak has developed an Emergency Response system that will allow quick action in the event of an aqueous ammonia release. The Emergency Response system involves early release detection through the use of ammonia sensors at the facility; determination of the severity and extent of the event by the CalPeak Operations Manager; notification of the first responder and the Fresno County Department of Environmental Management by dialing 911; and follow up accident investigation procedures by the CalPeak Operations Manager.

1.3 Description of Regulated Processes and Regulated Substances

The Facility will use Selective Catalytic Reduction (SCR) technology to control emissions of nitrogen oxides (NOx) and meet the requirements for Best Available Control Technology (BACT). As part of the SCR system, aqueous ammonia is used to reduce NOx and thereby

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minimize emissions. The aqueous ammonia is injected into a catalyst system, which then catalyzes the NOx reduction reaction.

The Facility is equipped with a single 12,000-gallon horizontal storage tank. A maximum of 12,000 gallons of aqueous ammonia will be stored on site at any one time. The storage tank is surrounded by a below-grade containment area that is designed to contain 110% of the total volume of the storage tank. Aqueous ammonia will be delivered to the site in 6,000 gallon Department of Transportation (DOT)-approved transport trucks approximately twice per month by an approved vendor with trained delivery truck operators.

Aqueous ammonia is transferred from the storage tank by a pump through a flow meter in ½-inch piping to a vaporizer. Hot air is introduced by a fan into the vaporizer to vaporize the aqueous ammonia. The ammonia is then transferred to a balancing header, where it is distributed among 28 injection nozzles and injected into the SCR system to control NOx emissions.

The Facility will be operated as an unmanned facility, with both a local control panel and a control room. The control room will be manned at all times that the Facility is operating. Operators will be responsible for monitoring the status of operations at the Facility, and for initiating emergency response actions should they become necessary.

1.4 Worst Case and Alternative Aqueous Ammonia Release Scenarios

As stated in the Introduction, the Facility is subject to CalARP Prevention Program 2 requirements. The Facility is therefore required to analyze the offset consequences of a worst-case release scenario as well as one or more alternative release scenarios.

The conditions that must be assessed for the worst-case release scenario are clearly defined in the CalARP regulation. The worst-case scenario involves the complete loss of the greatest amount of a regulated substance that can be stored in a vessel or pipe at the Facility. This worst-case release must be analyzed even if there is no credible series of events that could lead to such a release. The loss is assumed to occur over 10 minutes. Credit can be taken for passive mitigation features such as physical enclosure, but not for active features such as human intervention.

The alternative release scenario is based on a combination of reasonable assumptions; however, it is not necessary to estimate the probability of occurrence, or even to perform analyses that show the alternative scenario is more likely than the worst-case scenario. For the alternative release scenario, credit can be taken for active as well as passive mitigation systems, provided that the mitigation systems are capable of withstanding the event that is assumed to cause the release.

Worst-Case Release Scenario

Aqueous ammonia for the SCR system will be stored at the Facility in an indoor, horizontal storage tank. The tank has a maximum volumetric capacity of 12,000 gallons. For the worst-case scenario, in accordance with the requirements of the Federal RMP regulation (40 CFR Part

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68.25(c)), the entire contents of the 12,000 gallon tank are assumed to spill instantaneously, and the contents of the spill are assumed to evaporate to the ambient air over a 10-minute period under worst-case atmospheric dispersion conditions. As a mitigation measure, the tank will be surrounded by a below-grade containment area that is sized to contain 110% of the tank volume.

Alternative Scenario

The alternative release scenario is assumed to occur during truck unloading operations. During truck unloading operations, the transfer hose between the loading truck and ammonia tank may decouple. The spill may include all contents of the transfer hose and a 30-second release of ammonia at the maximum truck transfer rate before the operator can shut off the transfer pump. Approximately 84.1 gallons of aqueous ammonia would instantaneously spill onto the unloading pad, which is sloped to drain the aqueous ammonia into the below-grade containment area.

1.5 Accidental Release Prevention Program

CalPeak will minimize the potential for an occurrence of an accidental release of aqueous ammonia at the Facility. Ammonia system design features will include a containment that will hold 110% of the volume of the storage tank, drainage of the unloading area into the containment area below the storage tank, emergency shutdown procedures, ammonia sensors, alarms, training, emergency response plans, and other appropriate safety procedures that will ensure safe operation of the aqueous ammonia system. CalPeak's Operations Manager will have overall responsibility for adminstering the RMP. The important safety features implemented by CalPeak are discussed in this RMP document. These key features of the ammonia system at the Facility will include:

- Proactive facility inspection and maintenance program that will be administered by the CalPeak Operations Manager, and is designed to identify potential hazards before a release occurs.
- A below-grade containment area sized to contain 110% of the volume of the 12,000-gallon aqueous ammonia storage tank.
- An unloading area that is sloped to the containment area so that any spills occurring during unloading operations will be fully contained.
- System design incorporating the latest building codes designed for Seismic Zone 4.
- Automatically-actuated safety valves throughout the system.
- Pressure relief valves that vent back to the storage tank.
- An emergency shut-off valve located on the aqueous ammonia truck that can be activated by the delivery truck operator.
- Comprehensive training of employees, Facility operators, and contractors.
- Written standard operating procedures.

1.6 Five-Year Accident History

The Facility is a proposed new electrical generating plant that has not yet been constructed. Therefore, the five-year accident history does not apply.

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1.7 Planned Changes to Improve Safety

The Facility will be a new operation. As part of the process of developing this RMP, a Hazard Evaluation was conducted on the system design to identify any possible improvements or recommendations to improve the safety of the system. As a result of the Hazard Evaluation, a list of recommended actions has been developed that will be implemented prior to bringing aqueous ammonia on site. CalPeak is committed to operating the facility in a safe manner and will implement measures to reduce the likelihood of a release, and the potential consequences of a release should it occur.

The Facility will be operated in a manner that will protect all employees, contractors, and the public from exposure to hazardous chemicals. CalPeak facilities are all operated with an expectation that there will be zero safety incidents. The Facility is therefore designed to significantly reduce the spill potential of hazardous chemicals. However, if such incidents occur, these events will be investigated and appropriate countermeasures will be implemented to prevent recurrence. Incidents will then be shared across the company in order to minimize potential events elsewhere. CalPeak is also committed to working with the community, and is a partner in the prevention of releases, response to spills, and subsequent safety improvements of hazardous chemical incidents.

CP-I-0069200

CalPeak Panoche

Spill Prevention Control and Countermeasures Plan (SPCC)

(Introduction only
for full report contact
CalPeak Power, LLC)

CalPeak Power – Panoche, LLC

Spill Prevention Control and Countermeasures Plan Panoche Facility

INITIAL DRAFT
October 2001

CP-I-0069150

SPCC PLAN CERTIFICATION PAGE

Name of Facility:	CalPeak Power - Panoche
Type of Facility:	Natural Gas Fueled Power Generator
SIC Code:	4911
Date of Initial Operation:	TBD
Location of Facility:	43725 W. Panoche Road Firebaugh, CA 93622
Designated Person Responsible:	TBD
Oil Spill History:	Oil spill history is provided in Section 2.5 of this Plan.
Management Approval:	Full approval is extended by management to commit the necessary resources toward spill prevention.
Signature:	_____
Name:	TBD
Title:	TBD

Certification: I hereby certify that I am familiar with the facility and, being acquainted with the provisions of 40 CFR Part 112 attest that this SPCC Plan has been prepared in accordance with good engineering practices.

Name: Harvey Owara
IDC
2020 SW Fourth Avenue
Portland, Oregon 97201

Signature: _____

Date: _____

Expires: _____

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SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN
CALPEAK POWER
PANOCHE SITE
FIREBAUGH, CA

1.0 INTRODUCTION

This Spill Prevention, Control, and Countermeasure (SPCC) Plan has been prepared for CalPeak Power's Panoche power plant to meet the requirements of the Environmental Protection Agency (EPA) oil spill prevention programs. CalPeak Power is required to prepare and implement a SPCC Plan due to the volume of petroleum products contained within equipment, tanks and drums on site.

1.1 Regulatory Framework

Under the Clean Water Act of 1973, as amended by the Oil Pollution Act of 1990, non-transportation related facilities are required to prepare and implement a plan to prevent the discharge of oil into navigable waters of the United States. In response to this authorization, EPA developed the regulations codified in 40 CFR 109 and 40 CFR 112, which outline the requirements for SPCC plans.

EPA regulations establish requirements for preventing discharges of oil[1] from onshore and offshore facilities that store, handle, transfer, process, or refine oil or other petroleum products and that are not directly engaged in the transport of these products. These regulations apply to facilities that could reasonably be expected to discharge oil in harmful quantities to navigable waters of the United States. They require facilities with a single above ground storage container greater than 660 gallons or more than 1,320 gallons cumulative above ground oil or petroleum product storage capacity, or facilities with more than 42,000 gallons cumulative underground oil or petroleum product storage capacity, to prepare SPCC Plans.

In 1989, the California Legislature found that in order to protect the state's people and natural resources from aboveground petroleum storage tank spills, an inspection program was necessary. The Aboveground Petroleum Storage Act (APSA) became effective January 1, 1990. The APSA requires owners or operators of aboveground petroleum storage tanks to file a storage statement, remit an annual fee, and implement measures to prevent spills. The APSA, Health and Safety Code, Section 25270.2(k) defines "storage tank" as any aboveground tank or container used for

1. According to EPA's "SPCC Requirements for Electrical Utilities – February, 1998", oils fall into the following categories: crude oil and refined petroleum products, edible animal and vegetable oil, other oils of animal and vegetable origin, and other non-petroleum oils. The EPA guidance also indicates that dielectric fluid used for transformers insulation is considered oil.

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the storage of petroleum. "'Storage tank' does not include - Oil-filled electrical equipment, including, but not limited to, transformers, circuit breakers, or capacitors, if the oil-filled electrical equipment contains less than 10,000 gallons of dielectric fluid." The facility's primary transformer contains 5,340 gallons of mineral oil and, therefore, is exempt from the APSA requirements.

1.2 Purpose

CalPeak Power is committed to conducting business in an environmentally responsible manner. This includes implementing programs to minimize the risk of oil releases to the environment, and to plan an appropriate remedial response in the event of a spill or release. Accordingly, this SPCC Plan has been prepared to address the federal and state regulatory requirements. The primary objectives of this SPCC Plan are to:

- **PREVENT** spills from occurring at this facility and impacting off-site receptors
- **PREPARE** for a possible spill
- **RESPOND** if a spill does occur

This SPCC Plan is based on the following three basic principles: 1) prevention of oil spills, 2) spill containment, and 3) removal and disposal of spilled oil.

The 5,340 gallons of mineral oil that is held within the primary transformer represents the largest volume of oil at the facility. The maximum probable spill, or worst case spill, from the facility would result from a catastrophic release from the transformer.

1.3 Scope

This plan covers CalPeak Power operations at the Panoche site only and is intended to be used in conjunction with all other federal, state, local, or cooperative spill contingency plans.

1.4 Modifications

In the event of a significant change in facility design, construction, operation, or maintenance that may affect the impact of an oil spill from the Panoche site to surrounding water bodies, this SPCC plan will be updated. The amendments to the Plan will be made no later than six months after the changes are implemented. Amendments will be reviewed and certified by a professional engineer. In addition, this SPCC Plan will be reviewed and updated, if necessary, every three

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years. Amendments and updates will be recorded on the log sheet provided at the beginning of the Plan.

1.5 Implementation Strategy

Implementation of this plan will help CalPeak Power prevent spills from occurring by conducting the following activities:

- Inspections
- Maintenance
- Training

If a spill occurs, the procedures and guidelines described herein will be implemented to minimize the risk to human health and the environment.

The facility will be manned less than 8 hours per day. Pursuant to 40 CFR 112.3(e), the current copy of this Plan will be maintained in an off-site control room. The off-site control room will be manned at all times that the facility is operating. A copy of this plan will also be maintained at the facility.

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CalPeak Panoche

Hazardous Material Business Plan (HMBP)

*(Introduction only
for full report contact
CalPeak Power, LLC)*

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1.0 INTRODUCTION

1.0 INTRODUCTION

1.1 GENERAL

CalPeak Power - Panoche, LLC (CalPeak) submits this Hazardous Materials Business Plan (Business Plan) for operations at the CalPeak Power - Panoche, LLC electric power-generating facility (Facility), located at 43699 West Panoche Road, Firebaugh, California (see Figures 1-1 and 1-2). This Business Plan satisfies requirements of Chapter 6.95 of the Health and Safety Code, Division 20, which establishes minimum statewide standards for Business Plans.

This Business Plan is designed to minimize hazards to human health and the environment, and describe the actions Facility personnel shall take in response to fires, explosions or any unplanned sudden or nonsudden release of hazardous constituents to air, soil, or surface water at this Facility. The Business Plan contains basic information on the location, type, quantity and health risks of hazardous materials utilized at the Facility.

Emergency planning and response activities are governed by the following priorities: (1) protecting life, (2) protecting the environment, (3) protecting property, (4) providing information to appropriate CalPeak Power departments and jurisdictional government agencies, (5) restoring plant operations, and (6) restoring normal operating and business functions.

Arrangements will be made with local emergency response organizations, as further discussed in Chapter 4.0, to facilitate effective implementation of the Business Plan in the event of an emergency. Copies of this Business Plan are controlled to assure that revisions are promptly provided to appropriate parties. Revisions will occur as required by 22 California Code of Regulations (CCR) § 66265.54 and 19 CCR § 2729. A list of controlled copies for this Business Plan is provided in the front of this Plan.

This Business Plan is formatted to facilitate implementation of emergency response. Chapters 2.0, 3.0, 4.0, and 5.0 follow the order and content of the Business Plan guidelines provided by the County of Fresno-Environmental Health System, the local Certified Unified Program Agency (CUPA).

The chapters are organized as follows:

- Chapter 2.0: Hazardous Material Inventory
- Chapter 3.0: Site Plan
- Chapter 4.0: Emergency Response Plans and Procedures
- Chapter 5.0: Employee Training

1.2 FACILITY OVERVIEW

The Facility consists of a 49.5-megawatt (MW) nominal electrical generation facility with ancillary equipment on approximately a 1.25-acre site. Consisting of modular units, the Facility utilizes natural gas to efficiently generate electricity. Hours of operation will vary depending on demand. The plant may operate up to 24 hours per day, 7 days per week.

The Facility includes two power generation turbines, one 49.5 MW generator, a Selective Catalytic Reduction module, an exhaust stack, the control enclosure, and a Facility substation that includes main set-up transformers, plant circuit breakers and a control room. Areas for the handling and use of aqueous ammonia (19.5 percent by volume ammonia) and raw demineralized water are included.

Onsite fire safety features consist of fire extinguishers and fire suppression systems for the turbine generator enclosure and the primary and secondary equipment enclosures. Facilities for manual initiation of the fire systems are provided. In addition, the raw water storage tank is equipped with a fire water suction connection to allow the Fire Department to connect to the water source with their pumping equipment (see Figure 3-2).

The Facility will be operated remotely as an unstaffed facility with both an onsite control panel and a control room located in the CalPeak Power Operations and Maintenance (O&M) Center at 7365 Mission Gorge Road, Suite C, San Diego, California. The CalPeak Power Control Room at the O&M Center will be staffed at all times. Operators will be responsible for monitoring the status of operations at the Facility, responding quickly to any operational issues, and for initiating emergency response actions should they become necessary.

As further discussed in the Facility Emergency Response Plan (Chapter 4.0), CalPeak Power employees (or designees) will only be trained to respond in a defensive manner. CalPeak is not equipped to provide first response for hazardous materials incidents, but will alert the first responder (Mendota Fire Department) that is trained to respond accordingly using appropriate response measures and within appropriate response times. In addition to alerting the first responder, trained CalPeak operators and maintenance personnel are available for call-out in case of an emergency. Response times for CalPeak's emergency response and maintenance personnel will be 1 hour.

Plant operators will conduct periodic visits to the Facility approximately once a week, or more frequently if required, for routine maintenance activities and visual inspection of equipment, ammonia storage tank, pumps, piping, secondary containment systems (including draining rainwater and clearing debris), onsite drainage systems and general housekeeping. CalPeak will perform a more extensive annual tank inspection as a scheduled activity based on CalPeak's automated maintenance program.

1.3 ONSITE FACILITIES AND CONTAINMENT

The Facility utilizes and stores hazardous materials and waste at various locations throughout the site as detailed in Chapters 2.0 and 3.0. Storage and handling of these materials occur in accordance with applicable federal, state and local laws and regulations. Areas at risk from hazardous materials (lubricant oils and aqueous ammonia) are contained in a manner that minimizes risk.

Chemical/oils kept onsite for plant operations will be self-contained and removed by qualified personnel. Chemicals/oils utilized onsite will be in closed containers or stored within a Hazardous Materials Storage Unit and will include secondary containment to prevent the flow of chemicals/oils onto the ground and into storm drains. Onsite equipment drains will be routed to a collection sump, for pumping to an onsite collection tank. The collected wastewater will be transported offsite for proper treatment. The Plant is designed to have no other wastewater discharge. Stormwater flows from the site will be directed toward the storm drain system as shown in Figure 3-2. An oil/water separator will also be located in the discharge line from the secondary containment area for the transformers.

Aqueous ammonia is stored in an outdoor, horizontally mounted, single-walled storage tank capable of holding up to 12,000 gallons (i.e., 96,000 pounds). Safety features of the ammonia system include pressure relief valves, automatically actuated safety valves, flow control and level indicators, and a push-button alarm. In addition, the Facility is equipped with three ammonia sensors with automatic visual and audible alarms that will trigger an immediate shutdown of the ammonia system in the event of a release. The visual and audible alarms will sound at the Facility in addition to the O&M Center. Ammonia sensors are located at the ammonia storage tank/unloading area, the ammonia pumps, and the ammonia flow control unit. The set point for the ammonia sensors will be 50 ppm, which is significantly below the 200 ppm level at which the State of California believes that there could be a health effect.

The ammonia storage tank (Primary Containment) is surrounded by a concrete secondary containment basin constructed at or below grade, capable of containing 110 percent of the capacity of the tank plus rainfall. The secondary containment basin is equipped with floating polyballs, which provide an 80 percent reduction of spill surface area and minimize associated vapors. A berm is also installed around the vaporizer skid to contain any aqueous ammonia releases that occur in that area.

A local ammonia supply company will deliver aqueous ammonia to the site. Aqueous ammonia is delivered approximately once every 2 weeks in 6,000-gallon capacity California Department of Transportation (Caltrans)-certified trucks that are designated for ammonia transport and operated by a trained driver. The trucks will travel along public roads permitted for hazardous materials transport. Once onsite, the trucks are parked in a delivery area sloped toward the containment area such that spills occurring during unloading will drain into the concrete containment area surrounding the ammonia tank. In the event of a spill, the aqueous ammonia solution will be removed from the secondary containment basin into a tanker truck to reduce vaporizing liquid.

CalPeak 's standard operating procedures require that deliveries of hazardous materials will be under the direction of a CalPeak Power employee. Specifically, deliveries of aqueous ammonia will require, at a minimum, two onsite operators: the ammonia delivery truck driver/operator, who is trained in handling aqueous ammonia, and the CalPeak Operator, who will also be trained in emergency response to an aqueous ammonia spill. The operators at the Facility are able to communicate with O&M Center control room at all times.

Appropriate safety measures and administrative controls will be implemented during delivery operations. Protective safety equipment, including boots, face shields, gloves, impervious suit (rain jacket and pants) and respirators, will be located in a storage cabinet next to the ammonia unloading station. In addition, administrative controls are provided to allow sufficient headspace in the 12,000-gallon storage tank for vapor. The storage tank is equipped with a level gauge to assure that the tank is not filled above the administrative controls. The average daily amount of aqueous ammonia is projected to be approximately 8,000 gallons (i.e., 64,000 pounds).

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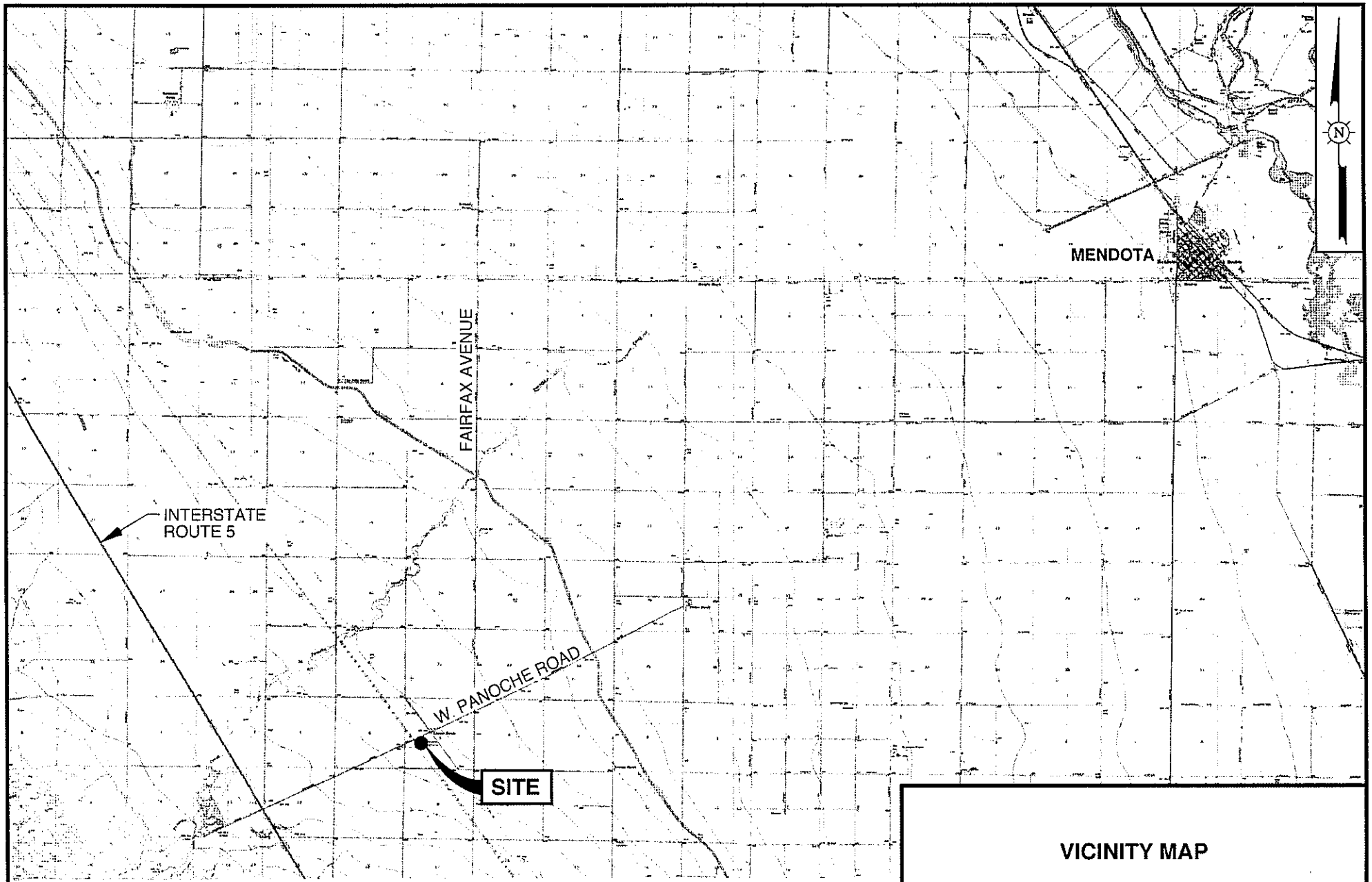

VICINITY MAP

CALPEAK POWER - PANOCHE, LLC
FIREBAUGH, CALIFORNIA

TRC

FIGURE 1-1

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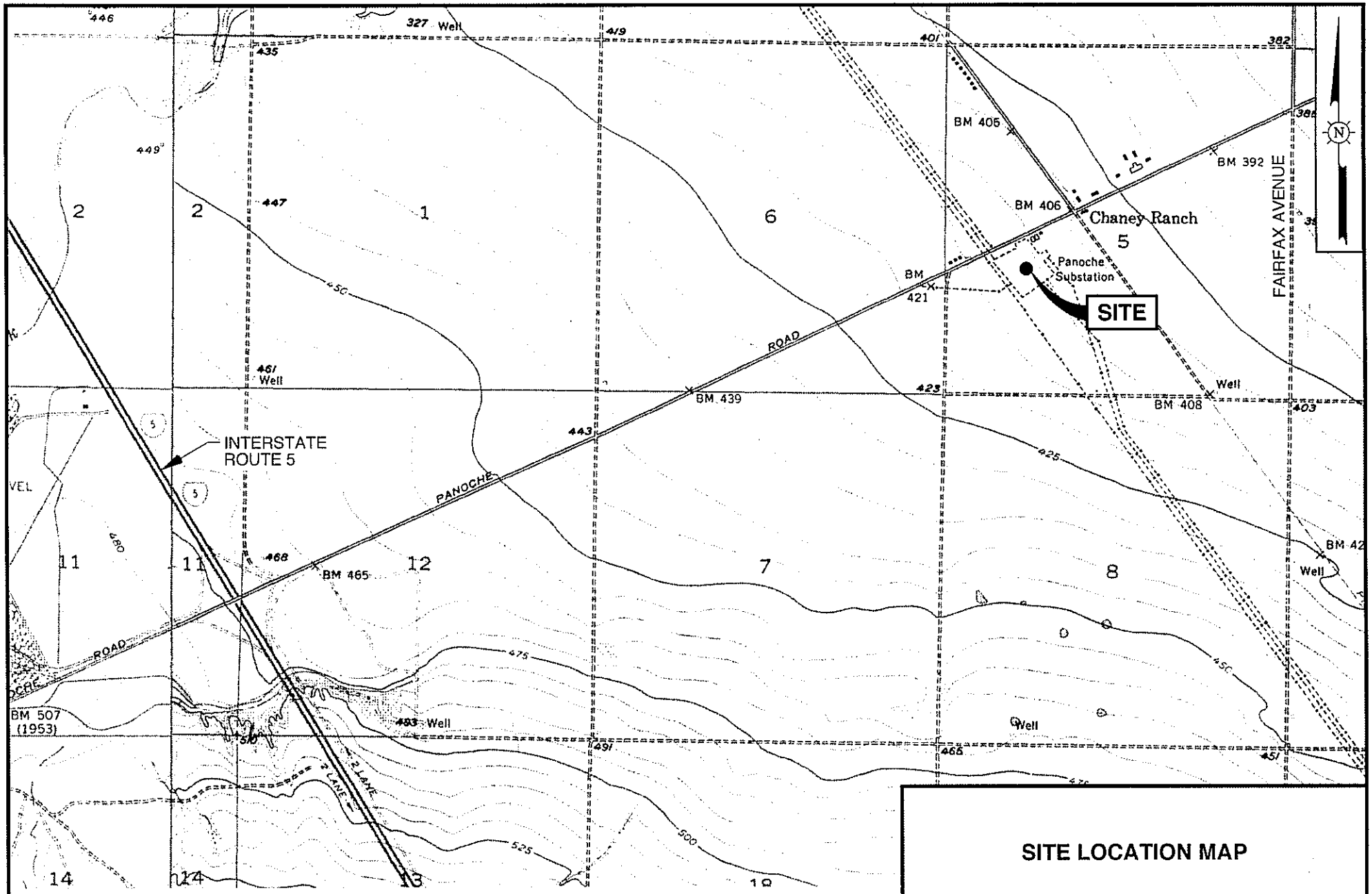

SITE LOCATION MAP

CALPEAK POWER - PANOCHE, LLC
FIREBAUGH, CALIFORNIA

TRC

FIGURE 1-2

5.18 CUMULATIVE IMPACTS

5.18.1 Introduction

The cumulative impacts assessment for Midway is based on the CEQA (California Public Resources Code [PRC] Section 21083) and the CEQA Guidelines (CCR Section 15130) which requires that the discussion of cumulative impacts be "guided by the standards of practicality and reasonableness" (PRC Section 21083 (b)); and, that "the discussion include a list of past, present, and reasonably anticipated future projects producing related or cumulative impacts" (CCR Section 15130 (b)(1)(A)). The CEQA guidelines require that cumulative impacts be discussed when they are significant, and that the discussions of cumulative impacts reflect the severity of the impacts and their likelihood of occurrence. However, the CEQA Guidelines state that the discussion need not provide the impacts discussion in as much detail as is provided for the project's impacts.

The purpose of this section of the AFC is to identify past, present, and reasonably foreseeable actions in the Midway project area that could affect the same resources as the Midway project, and provide the following analysis:

- Determine if the impacts of Midway and the other actions would overlap in time or geographic extent
- Determine if the impacts of Midway would interact with, or intensify, the impacts of the other actions
- Identify any potentially significant cumulative impacts

The project consists of several components, including a nominal 120- MW power generating facility, an electrical transmission line extending west to the PG&E Substation, and other on-site facilities such as fuel gas line, stormwater infiltration basin, and access road. Where potentially significant impacts have been identified, an assessment of cumulative impacts is provided in the respective resource section(s) of this AFC.

Midway will be located on approximately 5.6-acres in the unincorporated area of western Fresno County, California. The project is owned by Starwood Power-Midway, LLC. The site is approximately halfway between Fairfax Avenue and Davidson Avenue, along West Panoche Road, approximately 2 miles east of US Interstate 5. The site is currently utilized as a storage-yard for CalPeak Power.

Projects that will potentially contribute to cumulative impacts are those located in the same general geographic area of influence of the Midway. For this cumulative assessment, the area of influence is defined as the area within a 5-mile radius of the power plant. Projects or proposed projects of potential regional significance are also considered in the cumulative analysis.

Information was gathered on projects that either: 1) are greater than 30,000 sq. ft.; 2) have submitted a defined project application for required approvals or permits; or 3) have been previously approved and may be implemented in the near future. The following assessment focuses on the potential overlap of construction and operation impacts among various projects meeting the criteria described above.

Information concerning existing sites for this analysis was primarily obtained from a list requested from the County of Fresno. The Computer Data Systems Department at the County of Fresno produced a list of all building permits pulled and all land use applications submitted to the County of Fresno since January, 2000 within a 5-mile radius of the Midway site. This list is attached as Figure 5.18-1 and a map indicating the location of this permit activity is attached as Figure 5.18-2. This list does not designate the size of new construction. However, the short folder description of each permit provides information that can be used to identify which projects are large in scale (possibly reaching the 30,000 sq. ft. limit) and which are not.

Three projects with permit or permit applications were identified in the project area (see Table 5.18-1). There are no other known permits for seemingly large-scale projects within a 5-mile radius of the proposed project site. The project site is located on the far western side of Fresno County, and is predominantly surrounded by agricultural land uses. The 5-mile radius is located entirely within the County of Fresno. Based on the aerial photographs of this site, the area has no incorporated city or even a small-unincorporated community. The closest city is the City of Mendota, which is a small town 16 miles to the northeast of the Midway. Thus, as expected, the list of permits does not indicate that any major residential or commercial projects have been constructed, or are in the process of being constructed, within a 5-mile radius of the project site.

For the few projects that did meet the criteria listed above, potential cumulative impacts were identified if the Midway project impacts would contribute to the impacts of reasonably anticipated future projects under construction at the same time. The magnitude of such cumulative impacts depends, in part, on the extent of construction overlap in time and geographic area. For the purposes of this cumulative impact assessment, it is anticipated that the construction phase for the Midway project will begin in the first quarter of 2008. This assessment also considers potential cumulative impacts that could occur during the operational phase of the Midway project.

5.18.2 Cumulative Impacts Analysis

Table 5.18-1 presents a list of potential projects considered in this cumulative impacts assessment.

TABLE 5.18-1
POTENTIAL CUMULATIVE PROJECTS CONSIDERED

No.	Project Applicant	Project Description	Status/Timing	Location
1	Unknown	Plan Check Power Generation Facility	Plan Check submitted in June of 2001. Project permits have not yet been finalized (i.e., is not complete).	APN: 027-060-61 This is the parcel directly adjacent and to the northeast of the subject site.
2	Unknown	New shell building with a convenience store	Permit finalized in October of 2003.	APN: 027-190-25
3	Energy Invested Funds	PEC 400 MW Plant	This proposed facility may be constructed at the same time as the Midway.	South of West Panoche Road just west of the PG&E substation on same parcel as Midway.

5.18.2.1 CalPeak Panoche Power

This existing power plant, which has been in operation since 2001, is directly adjacent to the proposed Midway site. It is unclear what the details of the June, 2001 project were and why Fresno County records indicate this project's permits have not been finalized. Since this plant is currently in operation, it can be assumed that any permits submitted subsequently are for relatively minor work and probably do not meet the 30,000 sq. ft. criteria for projects that could potentially cause cumulative impacts. Thus, this project can be dismissed from the cumulative impact analysis because no cumulative impacts would occur.

5.18.2.2 Convenience Store Building

From the project description provided by the County of Fresno, this seems to be an addition to an already existing convenience store. Detailed information on this specific project was unavailable. However, it is highly unlikely that this building permit was for a structure that was equal to or over 30,000 sq. ft. Thus, this project can be dismissed from the cumulative impact analysis because no cumulative impacts would occur.

5.18.2.3 Proposed PEC

The PEC is proposed as a nominal 400-megawatt (MW) peaking facility consisting of four (4) General Electric LMS100 natural gas-fired combustion turbine generators, emissions control equipment, one cooling tower, and process water treatment equipment and other associated equipment. The proposed project consists of constructing the power generation facility, including a gas line extension, and expanding the existing adjacent PG&E Panoche substation. The project is proposed on approximately 12-acres in Fresno County, California. The proposed project is owned by Panoche Energy Center, LLC. The site is southeast of the intersection of Davidson Avenue and West Panoche Road, approximately 2.2 miles east of US Interstate 5. The site is currently in agricultural production. Potential mitigation of

noise impacts could result in the relocation of three adjacent residential structures. Other than noise impacts, the simultaneous operation of both power plants would not result in significant cumulative impacts on environmental resources in the area due to the relatively remote location of the two power facilities. Individual environmental resources and the cumulative impacts are addressed in the separate environmental disciplines contained in this section.

5.18.2.4 Conclusion

Midway and other projects identified in this section are not expected to result in significant cumulative impacts to air quality, cultural resources, land use, water resources, or traffic and transportation during the construction period or during the operation of the new facilities. Cumulative impacts associated with noise are expected to occur and are discussed in more detail in Section 5.12, Noise. Specifically, occupants of a 5-Plex will be relocated as mitigation. (Potential mitigation for noise impacts of the proposed PEC project may also result in the relocation of three additional residential units). Although very small projects could include short periods of concurrent construction (i.e., new mobile homes, new swimming pools, canopy additions, etc.), no projects were found that meet the criteria for projects that could potentially have cumulative impacts on the environment. Thus, as mentioned above, Midway and other projects in the area are not expected to result in significant cumulative impacts to the environment.

5.18.3 Stipulated Conditions of Certification

No Stipulated Conditions of Certification apply to the issue area of Cumulative Impacts.

5.18.4 Mitigation Measures

No new mitigation measures are proposed for the issue area of Cumulative Impacts outside those recommended for the Midway project and discussed in Section 5.12, Noise.

5.18.5 Applicable LORS

As shown in Table 5.18-2, no laws, ordinances, regulations, and standards (LORS) apply to the issue area of Cumulative Impacts.

5.18.6 Agency and Agency Contacts

Table 5.18-3 lists agencies and agency contacts applicable to the issue of Cumulative Impacts.

TABLE 5.18-2
LORS APPLICABLE TO CUMULATIVE IMPACTS

LORS	Applicability	Conformance
Federal	No Federal LORS apply	N/A
State	No State LORS apply	N/A
Local	No Local LORS apply	N/A

TABLE 5.18-3
AGENCY CONTACTS

Agency	Contact	Title	Telephone
County of Fresno, Public Works and Planning Department	Richard Perkins	Planning and Resource Analyst	(559) 262-4806 rperkins@co.fresno.ca.us
County of Fresno, Computer Data Systems	Jim Mobley	Senior IT Analyst	(559) 262-4270 jmobley@co.fresno.ca.us

5.18.7 Applicable Permits

No permits are required for the issue of Cumulative Impacts.

5.18.8 References

No other references were used other than those listed in Table 5.18-3 as agency contacts. These personal communications occurred on June 22 and 23, 2006.

SECTION 6 FINANCIAL INFORMATION

Starwood Power-Midway, LLC, a Delaware limited liability company, is a private enterprise whose sole purpose is to supply peaking power to the electrical grid under a 15-year power purchase agreement with PG&E. Aside from this agreement and other supporting project agreements (e.g., interconnection, security deposits, etc.), PG&E and Starwood Power-Midway, LLC have no financial relationship, asset ownership or otherwise. All financial risks associated with the construction and operation of the Midway project will rest on Starwood Power-Midway, LLC and its engineering, procurement, and construction (EPC) contractor. The total capital cost of the Midway project is estimated to be $85 million.

SECTION 7 LIST OF PREPARERS

This Application for Certification to the CEC for the Midway project was prepared by numerous contributors including the following key contributors.

Table 7-1
Consultant Participant Contacts

Responsibility	Name	Company/Affiliation
Licensing Project Manager	Ron Watkins	Starwood Power-Midway, LLC
Project Developer	Ron Watkins	Starwood Power – Midway, LLC
Project Coordinating Manager	Ron Watkins	Starwood Power-Midway, LLC
Development Engineer	Dave Tyburski	Energy Services Inc.
Project Manager	Richard Weiss	Starwood Power- Midway, LLC
Counsel	Allan Thompson	Allan Thompson
Project Engineer	Dave Tyburski	Energy Services, Inc.
AFC Project Manager	David Marx	URS Corporation
Assistant Project Manager	Angela Leiba	URS Corporation
Agriculture & Soils	Mike Hatch	URS Corporation
Air Quality	John Lague	URS Corporation
Biological Resources	Pat Mock	URS Corporation
Cumulative Impacts	Eric Vonberg	URS Corporation
Cultural Resources	Diane Douglas	URS Corporation
Geology	Mike Hatch	URS Corporation
Hazardous Materials Handling	John Lague	URS Corporation
Land Use	Eric Vonberg	URS Corporation
Noise	Paul Burge	URS Corporation
Public Health	Julie Mitchell	URS Corporation
Socioeconomic	Amy Gramlich	URS Corporation
Traffic	Noel Casil	URS Corporation
Visual Resources	Angela Leiba	URS Corporation
Waste Management	David Marx	URS Corporation
Water Resources	Elizabeth Zureick	URS Corporation
Worker Safety	Amy Gramlich	URS Corporation
Paleontology	Lanny Fisk	PaleoResource Consultants