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1.0 INTRODUCTION

1.1 PROJECT OVERVIEW

This Application for Certification (AFC) is for the construction and operation of a nominal 660 megawatt (MW) combined cycle power plant in Colusa County. E&L Westcoast, LLC (E&L Westcoast) would construct and commission the power plant. Under a contract executed earlier this year, E&L Westcoast would then transfer ownership and operation of the power plant to Pacific Gas and Electric (PG&E) after completion of commissioning. The site is located approximately 4 miles to the west of Interstate 5 (I-5) and approximately 72 miles north of the city of Sacramento. The environmental setting of the site is optimal for a power plant. The site is located directly west of both PG&E's Cottonwood to Vaca-Dixon transmission corridor, and the PG&E gas transmission pipelines (lines 400 and 401). The site locale is a rural, sparsely populated portion of the western Sacramento Valley and is primarily dedicated to farming and grazing agricultural uses. Approximately eight residences are located within 2 miles of the project site; the residence nearest to the proposed project site is approximately 1.7 miles from the site. The general location of the site is shown on Figure 1.1-1, which also shows the nearby local communities of Maxwell, Williams, and Willows.

The facility is referred to as the Colusa Generating Station (CGS). The CGS will incorporate two General Electric (GE) combustion turbines that will burn natural gas and a GE steam turbine driven with steam generated by Heat Recovery Steam Generators (HRSGs). Each combustion gas turbine and the steam turbine will be connected to one of three separate electric generators. Output of the generators will be connected to step-up transformers and then to a new PG&E switchyard.

The CGS will be interconnected to PG&E's northern California transmission grid, and power generated by the facility will be available to serve energy needs throughout California.

The project will use an air cooled condenser as the ultimate heat sink, and will employ a zero liquid discharge system. The combination of these technologies greatly minimizes the required consumptive use of water for plant operation to the absolute minimum technically possible. No water is being evaporated for the plant heat sink systems. Usage is restricted to water for demineralization for the steam cycle, combustion turbine inlet air evaporative cooling, fire water, service water, and potable water for eyewash stations, drinking, showers, and sanitation. Water requirements and wastewater generation are also reduced by recycling.

Construction of the project is scheduled to occur over 24 months, beginning in early 2008. The cost of construction is estimated at approximately $450 to $500 million dollars.[1] The CGS is planned to begin commercial operation by the spring of 2010.

1.2 PROJECT OBJECTIVE

The initial objective for the project was to satisfy PG&E's 2004 *Long Term Facility Ownership Request for Offers* to obtain power resources. In April 2006, PG&E executed an agreement with E&L Westcoast for the purchase of the 660 MW CGS project. The current objective of the project is to design and construct the project at the proposed site and with the specified equipment to fulfill the requirements of the agreement.

[1] Current dollars.

1.3 PROJECT BACKGROUND

In 2001, an AFC was filed for a 500 MW combined cycle power plant at the same site as the CGS. That power plant was to be constructed and operated by Reliant Energy Colusa County, LLC (Reliant). URS Corporation prepared the 2001 AFC. Subsequent to the CEC filing, Reliant opted not to proceed with constructing the power plant. Where appropriate, technical data obtained from the 2001 AFC were used and updated for this 2006 AFC.

1.4 FACILITY DESCRIPTION

E&L Westcoast is leasing a 100-acre site located off Dirks Road in unincorporated Colusa County. The project will include the following components:

- A 22.5-acre power generation facility and stormwater detention basin
- A 8.2-acre switchyard
- A 43-acre construction area (including laydown, parking, and office)
- A 1,800-foot-long electrical interconnection to PG&E's existing transmission lines
- A 1,500-foot-long natural gas pipeline connecting to PG&E's existing natural gas lines
- A 2,700-foot-long water supply pipeline from the Tehama-Colusa Canal
- A 2,500-foot-long access road extending from the existing road leading to the PG&E Compressor Station
- Replacement of the Glenn-Colusa Canal Bridge and Teresa Creek Bridge
- Widening of the Delevan/McDermott Road intersection

The 100-acre site is located just west of PG&E's existing Compressor Station. As indicated above, linear facilities include transmission lines interconnecting to PG&E's existing transmission lines, a new natural gas interconnecting pipeline to PG&E's existing natural gas distribution system, a new water supply pipeline to deliver water to the site from the Tehama-Colusa Canal, and an access road extending from an existing road currently used to access PG&E's Compressor Station.

To allow for transportation of some of the heavier equipment components to the site, the following two bridges would be replaced: (1) a bridge on Dirks Road over the Glenn-Colusa Canal, and (2) a bridge on McDermott Road over Teresa Creek. In addition, the eastern side of the Delevan/McDermott intersection would be slightly widened. After construction is completed, local access roads will be repaved or resurfaced as necessary and appropriate.

The power plant and switchyard will use approximately 31 acres of the 100-acre site. The total area disturbed during construction will be approximately 97 acres, including disturbance associated with the construction laydown, linear facilities, and bridge replacements. A photograph of the site is presented on Figure 1.4-1. A computer rendered aerial view of the completed project showing the major generating facility components is shown on Figure 1.4-2.

The CGS will include two natural gas–fired, GE Frame 7-FA combustion gas turbines with electrical generators, referred to as combustion turbine generators (CTGs). Each will be equipped with Dry Low-NO_x (DLN) combustors to reduce the formation of NO_X, a regulated air pollutant. The CTGs will each be equipped with evaporative inlet air coolers to enhance turbine performance in hot weather.

Hot exhaust gases from the CTGs will be directed to parallel HRSGs where steam will be generated at three pressures. The steam produced by the HRSGs will be combined to drive a single steam turbine. The HRSGs will include duct burners to increase steam output and achieve higher levels of power output in selected modes of operation. They will also include selective catalytic reduction (SCR) emissions control equipment for further reduction of nitrogen oxides (NO_X) and an oxidation catalyst for reduction

of carbon monoxide (CO) and volatile organic compound (VOC) emissions in the exhaust gas. Cooled exhaust gases from each HRSG will be exhausted to the atmosphere through a 175-foot-tall stack.

Steam from the HRGSs will be directed to the multistage steam turbine, then exhausted and condensed in an air cooled condenser. Condensate from the air cooled condenser will be returned to the steam cycle.

Power for each CTG unit will be generated at 18 kilovolts (kV) and steam turbine generator or manufacturer's standard design. The output of each then passes through a step-up transformer where it is increased to 230 kV for transmission. The step-up transformers are interconnected with a new switchyard through a series of circuit breakers that control the delivery of CGS's electrical output to various PG&E transmission circuits.

The CGS will use "dry" cooling technology for its operation and a wastewater recovery system will be installed to recycle all of the other process wastewater for reuse.

1.5 PROJECT OPERATIONS

The CGS is designed to be sold to PG&E and to become a utility asset. In this role, the CGS will operate when and for the period of time dictated by market demands. Thus, the number of hours of operation and the level of output of the facility cannot be forecast in advance. However, based on the CGS' state-of-the-art generation equipment and its combined cycle configuration, E&L Westcoast expects that it will be one of the most efficient generation facilities available, will be operated with a capacity factor between 60 percent and 90 percent, and have an expected availability factor of at least 92 percent.

The CGS will be able to operate at several different levels of electrical output. At full operation of both CTGs, the plant will be able to increase output by operation of the combustion turbine evaporative air inlet coolers and HRSG duct firing. When necessary, the plant will be able to operate at partial load by reducing the operating level of the CTGs or placing one CTG on standby.

1.6 PROJECT SCHEDULE

The AFC for the CGS has been submitted to the California Energy Commission (CEC) in November 2006 for consideration for a six-month review and certification process. E&L Westcoast expects to mobilize and begin construction shortly after CGS certification. Construction of the project is expected to occur over 24 months, beginning in early 2008. The project, including offsite infrastructure as well as startup and commissioning, will be completed and begin commercial operation by the spring of 2010.

1.7 PROJECT OWNERSHIP

The CGS, including the generation facility and water pipeline, will be owned by E&L Westcoast, LLC, a wholly owned subsidiary of E&L Westcoast Holdings, LLC. E&L Westcoast controls the 100-acre site by long-term lease. A separate sublease will be used as part of the agreement with the property owner to secure the additional area required for construction laydown.

Under a contract executed earlier this year, E&L Westcoast intends to transfer the ownership and operation of the plant to PG&E after completion of construction and commissioning. The new transmission switchyard, interconnecting transmission and gas lines will be owned by PG&E.

1.8 WATER SUPPLY

The CGS has been designed to use dry cooling technology, operating with the absolute minimum water requirements practicable for the type of generation technology employed. Expected average water consumption is 126 acre-feet per year. Water will be supplied by the Glenn-Colusa Irrigation District

(GCID) via the Tehama-Colusa Canal, located west of the project site. A water intake and 2,700-foot-long water supply pipeline will convey water to the power plant. E&L Westcoast has obtained contract rights to a sufficient quantity of water to supply all project water needs.

1.9 FUEL SUPPLY

The CGS will burn natural gas fuel. The project site is located just west of the PG&E Delevan Compressor Station and two gas transmission lines. Gas will be delivered to the project site via a pipeline interconnected to PG&E's existing gas transmission lines located approximately 1,500 feet to the east of the project site. PG&E will provide a pipeline tap and supply interconnection as well as a pressure reducing/metering station. The pressure reducing/metering station will be located within the CGS facility. The pipeline tap will be located at the PG&E Compressor Station.

1.10 TRANSMISSION

The project site is located approximately 1,800 feet west of PG&E's Cottonwood to Vaca-Dixon transmission corridor, which includes four 230 kV high-voltage transmission circuits. The CGS will be interconnected to all of these circuits to afford maximum flexibility in routing the electrical output of the CGS to different areas of California.

A new switchyard will be constructed adjacent to the CGS. The existing four Cottonwood to Vaca-Dixon 230 kV transmission circuits will be connected into this new switchyard, which will be operated by PG&E. The new switchyard will include circuit breakers and other switching gear to allow delivery of CGS output to the Cottonwood to Vaca-Dixon lines or to allow the lines to operate independent of the CGS when the CGS is offline for service outages.

1.11 PROJECT ENVIRONMENTAL INFORMATION

Potential impacts that the proposed project may have on the environment have been evaluated in detail. The CGS will avoid or minimize potential environmental impacts through project siting and design, best management practices and incorporation of mitigation measures. As a result, the CGS will have no significant environmental impacts.

1.11.1 Air Quality

The proposed project will not have a significant adverse impact on air quality and will provide all of the offsets required by regulations. The project will have emissions of criteria pollutants including NO_X, CO, VOCs, sulfur dioxide (SO_2) and particulates less than or equal to 10 microns in diameter (PM_{10}). These emissions will be fully offset by providing emission reductions from other regional emission sources or from local sources. In addition, the facility will incorporate the following state-of-the-art air pollution controls that reflect Best Available Control Technologies (BACT) to reduce emissions:

- Dry Low-NO_X burner technology and SCR to reduce NO_X emissions to 2 parts per million (ppm) @ 15 percent oxygen (O_2) dry.
- An oxidation catalyst to limit CO emissions to 3 ppm @ 15 percent O_2 dry and VOC emissions to 2.0 ppm @ 15 percent O_2 dry.
- Pipeline-quality natural gas as a primary fuel to limit SO_2 and PM_{10} emissions.

1.11.2 Biological Resources

The proposed project would potentially impact special-status species, wetlands, and other waters. Impacts to sensitive biological resources have been avoided and minimized by selecting a power plant site, access roads, bridges, and other project facilities in areas that are less sensitive for special-status species, wetlands, and other waters. The project site will be located in an existing agricultural area that is primarily used for cattle grazing and that is adjacent to an existing PG&E Compressor Station. The following measures would be implemented to eliminate or reduce to a less-than-significant level the potential for impacts during project construction and operation:

- Restore temporary work areas that are disturbed during construction.
- Adjust timing of construction activities to avoid or minimize disturbance of sensitive species.
- Compensate for permanent impacts to wetlands to ensure no net loss of wetland area or function.
- Exclude ground-disturbing activities within 250 feet of the wetland boundaries or vernal pools to avoid potential direct and indirect impacts to vernal pool habitat and associated special-status species.
- Minimize ground-disturbing activities in alkali grassland habitat.
- Exclude all construction activities within 100 feet of rare plant occurrences.
- Compensate for the loss of habitats potentially utilized by foraging Swainson's hawks.
- Reduced vehicle speed in project-controlled roadways to minimize potential for giant garter snake mortality.
- Compensate for the permanent loss of habitat potentially utilized by the giant garter snake.
- Conduct preconstruction surveys for burrowing owls. Exclude all construction activities within 250 feet of active burrowing owl nests.
- Exclude cliff swallows from nesting on existing bridge structures that would be removed during the nesting season, or remove the bridge structures during the non-nesting period.
- Reduce nighttime lighting and include other measures to reduce potential for avian collision with the stacks and other tall structures.
- Develop a biological resources mitigation implementation and monitoring program.

1.11.3 Cultural Resources

No significant impacts to historic architectural resources would occur with project implementation. No archaeological resources were identified within the project Area of Potential Effect (APE) during archival research, Native American consultation, and field reconnaissance. Site-specific surveys indicate that there would not likely be impacts to cultural resources.

1.11.4 Land Use

The proposed project is sited adjacent to existing industrial facilities in an unincorporated area of Colusa County designated Agricultural-General (A-G) and zoned Exclusive Agriculture (EA). The CGS is compatible with these industrial facilities and would not impair the productivity of other agricultural land in the site vicinity. The closest resident is approximately 1.7 miles southeast of the site. E&L Westcoast has applied to Colusa County for a change in General Plan land use designation and zoning, and a subdivision of the 100-acre site. The application to the County will be processed concurrently with the CEC's review of this AFC.

1.11.5 Noise

The proposed project has been designed with noise control features to meet the stringent requirement of 45 dBA at night at nearby residences. Sound levels would not exceed the 60 L_{dn} criteria at the closest residence, as established by Colusa County.

1.11.6 Public Health

The proposed project will be fueled with clean burning natural gas minimizing potential toxic air emissions. The maximum incremental cancer risk from project emissions was estimated to be 1.194 in one million. For sensitive receptors, the maximum chronic "total hazard index" (THI) and the maximum acute THI were both estimated to be less than one. Based on this evaluation using conservative assumptions, CGS emissions are expected to pose no significant cancer or non-cancer health effects. As demonstrated by the air quality analysis, criteria pollutant emissions from the CGS will not cause or contribute to violations of federal or state ambient air quality standards, which have been set at levels designed to protect public health. No significant adverse health effects from criteria pollutant emissions are anticipated.

1.11.7 Worker Safety and Health

Worker exposure to physical and chemical hazards will be minimized through adherence to appropriate engineering design criteria, implementation of appropriate safety and administrative procedures, use of personal protective equipment, and compliance with applicable health and safety regulations.

1.11.8 Socioeconomics

The proposed project will have a positive impact on fiscal resources in the County and in the region. Construction will occur over a 24-month period, and total construction costs are estimated to range from approximately $78.75 to $87.5 million for payroll, and $371.25 to $412.5 million for equipment, materials, supplies, engineering, fees, insurance, taxes, administrative cost, and other direct costs.

The most notable socioeconomic impact from the proposed project would be the substantial increase in the County's total assessed value for real estate and associated increase in annual county property tax revenues of approximately 8 to 10 percent over total current property tax revenues. After construction, as a utility asset, the new power plant would pay an estimated $1.575 million to $2.0 million in annual property tax revenues, which would benefit local schools and the County general fund, as well as local service districts.

Construction workers would temporarily increase the nearby population, increasing the demand for services, particularly lodging. This temporary influx is not expected to place demands on the local lodging industry that cannot be met. The construction and operation of the CGS would not have a significant adverse impact on law enforcement, fire, emergency, medical, utility, or educational services. The project would not create a disproportionate impact on any low income or minority population.

1.11.9 Agriculture and Soils

The proposed project will convert approximately 100 acres from cattle grazing to an industrial use. This is a loss of approximately 0.05 percent of Colusa County's grazing lands. These lands are not rated as prime farmland, nor are they enrolled in any Williamson Act or Farmland Security Zone contracts. The construction and operation of the plant would not adversely affect the agricultural productivity of surrounding agricultural lands.

The erosion characteristics of the types on the project site range from slight to moderate. With Best Management Practices incorporated into the project, impacts from soil erosion would be less than significant.

1.11.10 Traffic and Transportation

Access to the project site is from I-5 via the Delevan Road interchange. Local roadways that provide access include Delevan Road, McDermott Road, and Dirks Road. These local roads are estimated to carry 370, 178, and less than 178 vehicles per day, respectively. All local access roads currently operate at Level of Service A. Construction traffic will average 214 one-way trips per day during the 24-month construction schedule. During the peak construction month, 462 peak one-way trips are anticipated. These additional trips will result in a Level of Service B on the local access roads, which will be a noticeable but a less-than-significant impact.

During plant operations, a total of 34 one-way peak daily trips is anticipated. This would not change the existing Level of Service on local access roads and would be a less-than-significant impact.

A bridge over the Glenn-Colusa Canal on Dirks Road and a bridge over Teresa Creek on McDermott Road will both be reconstructed as part of the project to accommodate heavy haul traffic. In addition, the Delevan Road/McDermott Road intersection will be realigned to accommodate the turning movement of construction trucks. These improvements will improve the load capacity and turning radius of the bridges and roadway for future use.

1.11.11 Visual Resources

Although the proposed project is sited near existing industrial uses (PG&E Compressor Station, 230 kV transmission lines), the plant will be visible from unblocked surrounding views within an approximately 5-mile radius to the north, east, and south. Existing industrial features and the topographic backdrop result locally in open views to the plant, which reduce the visual impact. Project features designed to reduce visual impacts include a monochrome color chosen to blend with the natural setting, use of non-reflective materials, shielded and controlled lighting using high-pressure sodium vapor fixtures, and revegetation of disturbed areas after construction. Impacts to visual resources would be less than significant.

1.11.12 Hazardous Materials Handling

Hazardous materials stored on the site during operations will include a 20,000-gallon aqueous ammonia tank for the SCR system, various water additives and water treatment chemicals including acids and caustics, various cleaning chemicals, and hydrogen (in maximum quantities of 24,000 standard cubic feet) for generator cooling. The aqueous ammonia tank will be placed in a containment basin with an underground containment sump sized to contain the entire volume of the tank and the rainfall that could collect within the containment over a 24-hour maximum recorded rainfall period. Additional equipment and containers on the site will be located inside containment berms, and incompatible materials will be stored in separate containment areas. Areas susceptible to potential leaks or spills will be paved and bermed. Piping and tanks will be protected from potential traffic hazards by concrete and/or steel

barriers. The CGS will implement accident prevention and mitigation measures to reduce the risk associated with the use and storage of hazardous materials.

1.11.13 Waste Management

Wastes generated by the CGS during construction and operation of the facility will be recycled to the extent practicable. Wastes include nonhazardous solid and liquid wastes (e.g., scrap metal and sanitary waste) as well as hazardous solid and liquid wastes (e.g., spent SCR and oxidation catalyst and waste lubrication oil). Appropriate procedures and personnel training will provide assurance that nonhazardous and hazardous wastes are properly handled and do not significantly affect the environment or health and safety.

Disposal of nonhazardous waste from the plant would not significantly impact the capacity of the Class II and III waste disposal facilities identified as available for use by the project. Similarly, hazardous waste generation and disposal from the CGS will be minimized by recycling and would not significantly impact the capacity of Class I hazardous waste disposal facilities identified as available for use by the project.

1.11.14 Water Resources

The CGS will use an air cooled condenser that requires no water for cooling. Water will be supplied through a local provider, the GCID, wheeled to the Tehama-Colusa Canal, then extracted and conveyed to the site. Average water use during construction is estimated at 8,000 gallons per day. When operational, water use at the plant is estimated to be 126 acre-feet per year.

Project features designed to be protective of water quality include the zero liquid discharge system, which will eliminate offsite disposal of process wastewater; a stormwater detention basin to collect and manage stormwater runoff from the project site; and secondary spill containment around chemical delivery and storage areas, diesel fuel tanks and transformers. The site is not located in a floodplain. Impacts to water resources would be less than significant.

1.11.15 Geologic Hazards and Resources

No significant geological or soil-related impacts are anticipated from the construction or operation of the proposed plant. Final foundation design will incorporate mitigation measures designed to reduce impacts from moderate earthquake motions or expansive soils.

1.11.16 Paleontological Resources

Literature and archival reviews, as well as pedestrian surveys, did not provide evidence that any paleontological resources would be impacted by the construction or operation of the CGS.

1.12 PROJECT ALTERNATIVES

As part of its project development process, E&L Westcoast assessed a number of project alternatives. Alternatives evaluated by E&L Westcoast included:

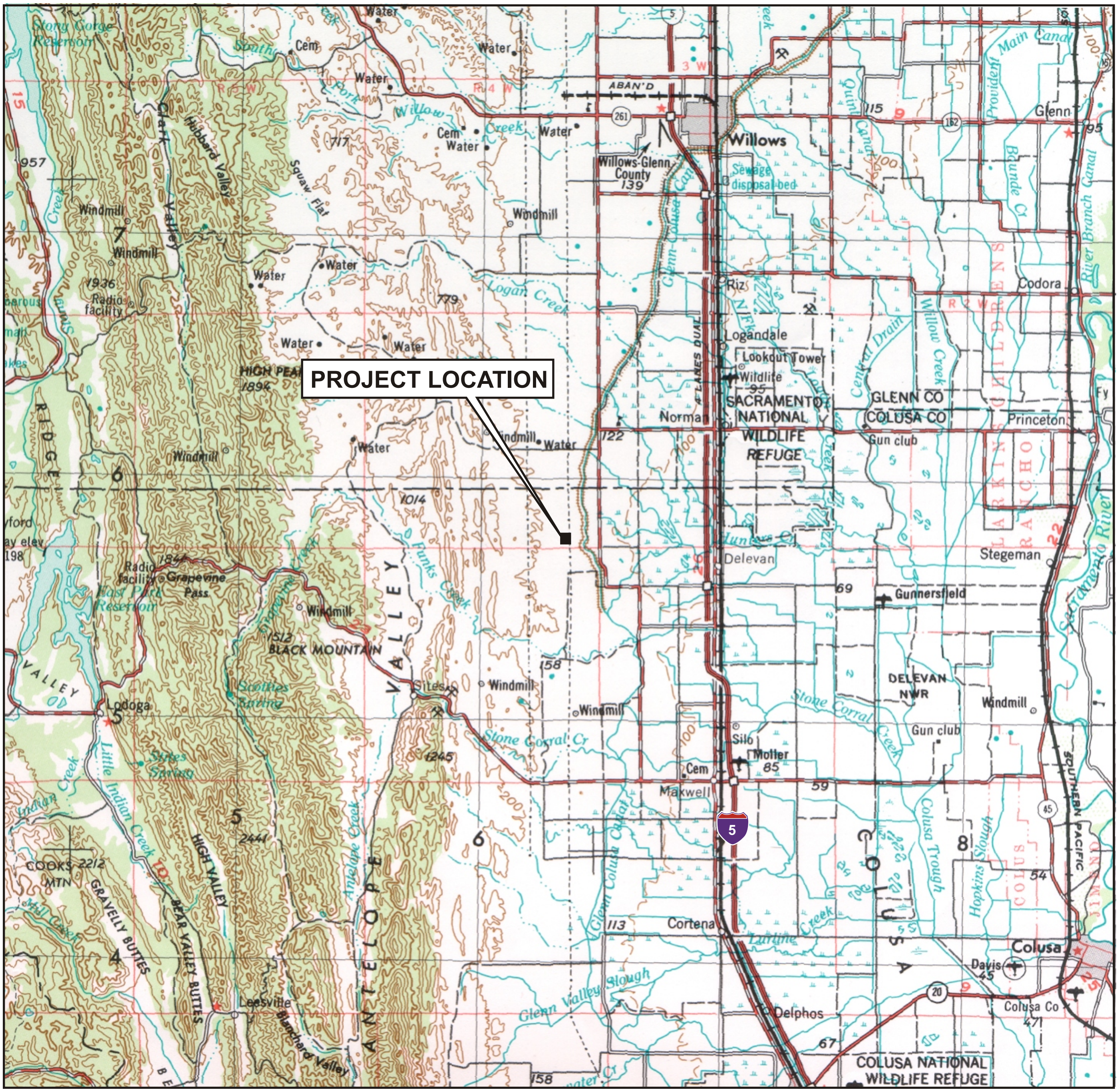
- A site located adjacent to PG&E's Cortina substation.
- A site located at the southern end of the Holthouse Ranch.
- Generation Technology – technology alternatives to combustion gas turbines were reviewed.

- Water Supply/Cooling System – a number of alternative water supplies including surface and local groundwater sources were evaluated. In addition, wet cooling technology was considered.

- Transmission Interconnection – interconnection at nearby substations and the California Oregon Transmission Project transmission line instead of interconnection with the PG&E Cottonwood to Vaca-Dixon transmission line was considered.

- No Project Alternative – as required by the California Energy Commission's project environmental review process,[2] the No Project Alternative was also evaluated by E&L Westcoast.

[2] The CEC process is a California Environmental Quality Act (CEQA) equivalent process.



Source:
USGS Topographic-Bathymetric Series
Ukiah, California, 1979

0 5 10

Scale in Miles
1:250,000

SITE VICINITY MAP

28067004
November 2006

Colusa Generating Station
E&L Westcoast, LLC
Colusa County, California

URS

FIGURE 1.1-1

10/17/06 vsa ..\28067004 CPV Colusa\1.0 Introduction\1.1-1_svm.cdr

PHOTOGRAPH OF THE SITE

Colusa Generating Station
E&L Westcoast, LLC
Colusa County, California

28067004
November 2006

URS

FIGURE 1.4-1

11/03/06 vsa ..\28067004 CPV Colusa\1.0 Introduction\1.4-1_photo site.cdr

Source:
Bechtel, November 2006.

SIMULATED VIEW OF PROPOSED PROJECT LOOKING SOUTHWEST

Colusa Generating Station
E&L Westcoast, LLC
Colusa County, California

28067004
November 2006

URS

FIGURE 1.4-2

11/03/06 vsa ..\28067004 CPV Colusa\1.0 Introduction\1.4-2_sim view.cdr