

# **Pastoria Energy Facility**

## **Application For Certification Executive Summary**

**Filed by the Applicant with the  
California Energy Commission  
November 30, 1999**

## 1.1 INTRODUCTION

The Pastoria Energy Facility (PEF) is a proposed nominal 750 megawatt (MW), natural gas fired, merchant-class electrical generating facility project located in southern Kern County, California. The proposed power plant and ancillary facilities will be owned by Pastoria Energy Facility, Limited Liability Corporation (LLC). The PEF, LLC (Applicant) is a subsidiary of Enron North America Corporation.

The Applicant is seeking approval from the California Energy Commission (CEC) to construct and operate a state-of-the-art natural gas fired generating facility on an undeveloped site on Tejon Ranch. The proposed site is adjacent to an existing gravel quarry, and is approximately 30 acres in size. The proposed generating facility site is located approximately 30 miles south of Bakersfield, and approximately 6.5 miles east of Interstate 5 at the base of the Tehachapi Mountains.

The proposed project includes a 25-acre construction laydown area to the south of the proposed generating facility site. It also includes construction and operation of project ancillary facilities to supply water, natural gas, access, and facilities to interconnect electrical output to the grid and dispose of wastewater.

The proposed PEF will provide approximately 750 MW of electricity, which will be sold into the deregulated electrical market either through contractual arrangements or through the Independent System Operator (ISO). Electricity will be delivered to the existing electrical grid via a short 230 kilovolt (kV) double circuit interconnection to Southern California Edison's (SCE) transmission system via the Pastoria Substation, which is located approximately 1.25 miles south of the PEF site. If, in the future, the State of California determines that it is feasible to purchase energy from the project, a short interconnection from the SCE Pastoria Substation to the Edmonston Pumping Station switchyard (located approximately 1.15 miles southeast of the PEF site) will be required.

The proposed PEF incorporates three combustion turbine generators (CTG) operating in combined cycle mode, utilizing a two-on-one configuration plus a one-on-one configuration. The proposed PEF layout has been designed to accommodate a fourth CTG in the future to increase output to approximately 1000 MW if the market warrants. If the Applicant decides to pursue construction of an electrical interconnection from SCE's Pastoria Substation to the Edmonston Pumping Plant and/or to install a fourth CTG, the Applicant will submit an amendment or a new application at that time.

The PEF project proposes to utilize state-of-the-art XONON™ emission control technology based on its commercial availability. XONON™ operates within the gas combustion turbine combustors to reduce formation of NO<sub>x</sub> and CO emissions that would normally require downstream emission controls. The XONON™ technology is being jointly developed by

General Electric Company and Catalytica Combustion and is expected to become commercially available on F Class turbines in time to meet the PEF schedule. In the event that XONON™ technology is not commercially available in time for construction of the PEF, the alternate emission control system will be a Selective Catalytic Reduction (SCR) system. The proposed project proposes to meet a NO<sub>x</sub> emission level of 2.5 ppmvd at 15 percent O<sub>2</sub> based on a one-hour rolling average.

This Application for Certification (AFC) has been prepared in accordance with the CEC's Rules of Practice and Procedure and Power Plant Site Certification (February, 1997), as amended, and is intended to provide:

- A detailed description of the proposed Pastoria Energy Facility project
- An assessment of the anticipated project impacts on the existing environment
- Applicant-committed measures to mitigate project impacts
- A discussion of compliance with applicable laws, ordinances, regulation, and standards.

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

## **1.2 NOI PETITION**

On January 25, 1999 Tejon Ranch Company and Tejon Ranch Corp. filed a Petition for Jurisdictional Determination with the California Energy Commission. Tejon Ranch sought a determination that a 960 MW natural gas-fired combined cycle power plant, developed to sell power into the competitive market place through the power exchange, be eligible for an exemption from the Notice of Intention provisions of Public Resources Code 25502. The project will be located on the ranch, approximately 30 miles south of Bakersfield.

Enron North America has reached an agreement with Tejon Ranch to develop this project. As directed in the Commission's Committee Decision of March 17, 1999, the Applicant has notified staff of this agreement. The project is as described in the Tejon Ranch petition, except that the facility size has been reduced from 960 MW to 750 MW. The Pastoria Energy Facility qualifies as a successor to the Tejon Ranch project, which was previously granted an NOI exemption.

## **1.3 FACILITY LOCATION AND DESCRIPTION**

### **1.3.1 Facility Location**

The PEF site, including the adjacent construction laydown area, is located on Tejon Ranch in Kern County, California. The regional location is shown on Figure 3.2-1. Specific locations of the project components are shown on Map 3.2-1. (Note: the figures and maps referenced in this Executive Summary are presented at the end of Section 1.0 as well as in their respective sections.) The proposed site is approximately 30 acres in size and is located in a part of Township 10 North, Range 18 West, which is an historic land grant area (El Tejon) where legal Townships have not been established, and where Sections have not been delineated.

The proposed PEF site is located approximately 0.85 mile north of the California Aqueduct and about 0.75 mile north of the Edmonston Pumping Plant Road (refer to Figure 3.2-1 and Map 3.2-1). An approximately 0.85-mile-long access road will be constructed to connect the plant site with the existing Edmonston Pumping Plant Road. The site is currently undeveloped, vegetated with non-native grassland, and is used for cattle grazing. The site varies in elevation from approximately 1058 to 1088 feet above mean sea level (msl). The final site grade is planned to average about 1070 feet above msl. Pastoria Creek flows in a northerly direction and is located about 1000 feet west of the PEF site. Pastoria Creek (including tributaries) is the natural drainage path for runoff in the site area. Site grading contours, including drainage control berms, will provide for control of stormwater drainage and flows in the site area. Based on preliminary hydrologic studies performed for the PEF project, the PEF site is not located in a 100-year flood plain. Groundwater levels in the project area are generally greater than 180 feet below ground surface.

### **1.3.2 Facility Description**

The proposed PEF project design includes three natural gas fired, F-Class combustion turbine generators (CTGs) operating in combined cycle mode. Two CTGs will be installed in a two-on-one configuration with one steam turbine generator (STG). One CTG will be installed in a one-on-one, non-common shaft configuration with one STG. Figure 3.1-1 shows the proposed two-on-one plus one-on-one arrangement. The western area of the power block is allocated for a future CTG, in a one-on-one configuration, which may be added under an Amendment or a separate permit at a future date. A cross section of the proposed facility is presented on Figure 3.1-2. A computer-generated simulation of the proposed PEF is presented on Figure 3.1-4.

The hot exhaust gas from each CTG flows through a heat recovery steam generator (HRSG). The HRSG extracts heat from the exhaust to produce the steam that powers the STG. The

facility will utilize proven gas turbine technology that is currently in use in California and in other locations around the country.

The plant is expected to have an overall availability of 95 percent or higher and could operate up to 8760 hours per year. The facility will produce a nominal 750 MW based on a 60°F ambient temperature and 52 percent relative humidity. Each CTG will produce approximately 168 MW, the STGs will produce approximately 185 MW and 90 MW respectively. Plant auxiliary equipment will consume approximately 15 MW. The net heat rate of approximately 6900 Btu/KWh, based on the higher heating value (HHV) of natural gas, corresponds to an efficiency of approximately 50 percent.

The PEF will use 24 cooling tower cells, arranged back-to-back in two tower banks. One bank will contain 16 cells and the other bank will contain 8 cells. The cooling towers are expected to be standard, induced draft, counter-flow type with fiberglass structure and film fill. The 64-foot-tall towers will incorporate plume abatement coils and high efficiency drift eliminators. The estimated average annual cooling water tower makeup consumption rate is 2,925 gallons per minute (gpm).

Major equipment to be installed at the PEF is listed in Table 3.4.1-1. A Heat and Mass Balance Diagram is presented on Figure A-1.

The HRSG stacks will be 213 feet tall or less in conformance with good engineering practice (GEP). The control of NO<sub>x</sub> emissions within the gas turbines will be achieved using XONON™ emission control technology as Best Available Control Technology (BACT)/Lowest Achievable Emission Rate (LAER). Using XONON™, the F-class gas turbine exhaust will meet stack emission permit requirements for NO<sub>x</sub> and CO. An emission limit of 2.5 ppmvd at 15 percent O<sub>2</sub>, on a one hour rolling average, is proposed. Alternatives being considered are discussed in Section 3.11.3.2 (Alternative Emissions Control Technology).

### **1.3.3 Description of Ancillary Facilities**

- 1.38-mile long, double circuit 230 kV transmission line (Route 1) to interconnect to the existing SCE Pastoria Substation.
- 0.05-mile long, 20- to 30-inch diameter water supply line (Route 2) to connect to a proposed 54-inch water line to be installed by the Wheeler Ridge — Maricopa Water Storage District to the west of the PEF site (to convey up to 7.2 million gallons per day to the PEF).

- 11.65-mile long, 16- to 20-inch diameter fuel gas supply line (Route 3) from tie-in point with existing Kern River/Mojave gas line (two alternative routes, 3A and 3B, are also under consideration).
- 1.7-mile long, wastewater discharge line (Route 4) to injection wells located north of the PEF site (alternative of zero discharge is also under consideration).
- 0.85-mile long access road (Route 5) (new 2-lane roadway) from Edmonston Pumping Plant Road to PEF site.

### **1.3.4 Fuel Gas Supply**

The proposed project plans to use natural gas supplied via an 11.65-mile long, 16- to 20-inch diameter interconnection pipeline to the existing 42-inch diameter Kern River/Mojave pipeline. The existing line is pressurized at 700-900 psig. The proposed PEF will utilize up to an estimated 120 million standard cubic feet per day of pipeline quality natural gas.

### **1.3.5 Water Supply and Discharge**

The proposed project will obtain water via an interconnection to a proposed 54-inch water line to be installed west of the PEF site by the Wheeler Ridge-Maricopa Water Storage District. The District will meet the project's water needs (average demand of 3,115 gpm) from the California Aqueduct and local groundwater storage banks. The proposed PEF will generate an average wastewater stream of 760 gpm which will consist of cooling tower wastewater treatment and HRSG blowdown. Wastewater will be discharged via injection to existing oil wells or processed on site with a zero discharge system. A combination of the two wastewater handling options may be used. The Applicant will select the preferred wastewater disposition option during final project design. Sanitary waste will be handled via an onsite septic tank and leach system.

### **1.3.6 Transmission Facilities**

The proposed project includes a 1.38-mile long, double circuit, 230 kV transmission line interconnection to the existing SCE Pastoria Substation (refer to Map 3.2-1). The majority of the proposed line parallels an existing transmission corridor. The proposed steel lattice towers are shown on Figure 3.6-3 and are expected to have a maximum height of 120 feet.

## **1.4 PROJECT SCHEDULE**

The project schedule encompasses 30 months after the Notice to Proceed (NTP). It is expected that construction will require 24 months. It is currently anticipated that construction of offsite utilities (e.g., transmission lines and pipelines) will be constructed in months 10 through 17 after the NTP. Start-up of the facility is expected to occur in month 30 after the

NTP (refer to Table 3.8-1). The proposed PEF is expected to be on-line and in commercial production at the end of month 30 following the NTP. It is currently anticipated that project construction will begin in early 2001 and that the facility will be on-line by mid 2003.

## 1.5 PROJECT OWNERSHIP

- Owner Pastoria Energy Facility, LLC
- Operator Not Yet Determined
- Transmission Facility Ownership Southern California Edison.  
It is expected that the Pastoria Energy Facility, LLC and SCE will enter into a transmission agreement following completion of the currently ongoing System Impact Study.

## 1.6 SUMMARY OF ENVIRONMENTAL IMPACTS

The proposed project has the potential to adversely impact the existing environment. In order to limit all potential project impacts to a level of insignificance under normal operating conditions, the Applicant has carefully sited project facilities and incorporated innovative design measures and Applicant-committed mitigation measures. Section 5.0 of this AFC assesses the following environmental topics:

- 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 Socioeconomics
- 5.11 Traffic and Transmission
- 5.12 Noise
- 5.13 Visual Resources
- 5.14 Waste Management
- 5.15 Hazardous Materials Handling
- 5.16 Public Health
- 5.17 Worker Safety
- 5.18 Cumulative Impacts.

Refer to Section 5.0 for detailed assessments of the environmental impacts of the project on the existing environment, including Applicant-proposed mitigation measures to limit all identified potential significant impacts to levels of insignificance. No residual significant impacts are expected to result from construction or operation of the proposed PEF project.