Executive Summary

Contra Costa Generating Station, LLC, (Applicant) proposes to construct, own, and operate an electrical generating plant in Oakley, Contra Costa County, California. The Contra Costa Generating Station (CCGS) will be a state-of-the-art natural gas-fired, combined-cycle electrical generating facility rated at a gross nominal generating capacity of 624 megawatts (MW).[1] The facility will use General Electric's (GE's) new 7FA gas turbine technology platform, which provides superior operational flexibility. The new 7FA gas turbine has been certified as consistent with GE's ecomagination principles[2] by GE's third-party auditor. This new platform has been specifically designed to be able to rapidly respond to loading changes that will result as more intermittent renewable resources are integrated into the grid. The new 7FA also offers improved efficiencies due to advanced metallurgy.

The facility will be located in Oakley, Contra Costa County, California, on a 21.95-acre parcel (the project site) that is currently part of a larger 210-acre parcel owned by E. I. du Pont de Nemours and Company (DuPont). The project site is on land that is officially zoned Heavy Industrial. The City of Oakley, formed in 1999, has developed its General Plan and has designated the entire DuPont property a redevelopment zone, but has not formally rezoned the DuPont property. Under the City's General Plan, the land use designation for the project site is Utility Energy. The City's zoning ordinance, in addition, designates a Utility Energy zoning district. According to the General Plan:

> The Utility Energy designation allows for power plant uses involved in the clean production of electricity utilizing the best available combustion turbine technology (Oakley 2020 General Plan, Land Use Element, p. 2-17).

Existing surrounding land uses include industrial, vacant industrial, commercial, and agricultural uses. Surrounding land uses include the former DuPont Oakley manufacturing site and marinas along the San Joaquin River to the north, power plants owned by Pacific Gas and Electric Company (PG&E) and Mirant to the west; vineyards and mixed commercial, industrial, and residential uses to the south, and vineyards and residential uses to the east.

Project Objectives

The CCGS would provide needed electric generation capacity with improved efficiency and operational flexibility to help meet northern California's long-term electricity needs. PG&E has identified a near-term need for new power facilities that can be online by or before 2015 and that can support easily dispatchable and flexible system operation. PG&E has recently issued a Request for Offers (RFO) to obtain these energy resources from qualified bidders

[1] Approximate facility net output with both combustion turbines operating at 100 percent load with inlet air evaporative cooling at ISO conditions (59 degrees Fahrenheit, 60 percent relative humidity). The facility will have a maximum net output of 638 MW minimum design ambient conditions (34 degrees Fahrenheit, 83 percent relative humidity).

[2] Ecomagination is a GE initiative that involves research and development for energy efficiency, and sets goals for reduction in greenhouse gases and water use.

and CCGS is participating in this RFO. The CCGS's project objectives are consistent with this need as follows:

- Provide the most efficient, reliable, and predictable power supply available by using combined-cycle natural gas-fired combustion turbine technology capable of supporting the growing power needs of Contra Costa County
- Use state-of-the-art technology to provide operational flexibility and rapid-start and dispatch capability
- Site the project as near as possible to 230-kV high-voltage electrical transmission lines and a high-pressure natural gas transmission pipeline
- Site the project near the San Francisco Bay Area load center and minimize the need to construct new transmission lines
- Minimize environmental impacts

Project Components

The CCGS will include the following principal design elements:

- Two General Electric Frame 7FA combustion turbine-generators (CTGs) with a nominal rating of 213 MW each, and equipped with metallurgical enhancements to increase operating efficiency
- A single condensing steam turbine generator
- Heat recovery steam generators of the horizontal, natural circulation type
- An air-cooled condenser to provide process cooling
- CTGs equipped with evaporative coolers on the inlet air system and dry low NO_x combustors
- An emission reduction system that will include a selective catalytic reduction (SCR) unit to control NO_x stack emissions and an oxidation catalyst to control carbon monoxide and volatile organic compounds emissions
- A 230-kV onsite switchyard to deliver the project's power directly to the grid through a 2.4-mile-long, single-circuit, 230-kV transmission line that will connect the project site with the PG&E Contra Costa Substation
- Direct connection with the adjacent PG&E Antioch natural gas terminal for natural gas supply and natural gas compressors
- Connection to an existing onsite potable water line
- Connection to an existing onsite sanitary sewer pipeline

Project Owner

Contra Costa Generating Station, LLC is a limited liability corporation, wholly owned by Radback Energy, Inc. (Radback). Radback is in joint participation with GE Energy, an operating business of the General Electric Company, and Tenaska Inc., the second largest privately-owned power company in the United States. The principals of Radback are a highly experienced team that has permitted more than 7,000 MW of electrical generation in California through the California Energy Commission (CEC) process. This experience includes the PG&E Humboldt Power Plant and the Calpine Los Medanos Energy Center and the Delta Energy Center, which are both located in eastern Contra Costa County. Tenaska was founded in 1987, is 100 percent employee owned and employs more than 600 professionals. Tenaska has developed and operates numerous gas-fired power generating plants, including approximately 6,450 MW of gas-fired power generation that uses GE equipment.

Project Schedule

The Applicant is filing this Application for Certification (AFC) under the CEC's standard certification process. Assuming the project receives a certification by the fall of 2010, detailed design and construction of the CCGS will begin in spring 2011 and will last approximately 33 months. Pre-operational testing of the power plant will begin in mid-2013, and full-scale commercial operation is expected to commence by late 2013.

Project Alternatives

A "no project" alternative was considered and rejected. The no project alternative fails to meet the basic project objectives of the CCGS as described in this AFC. For example, the no project alternative is inconsistent with one of the primary objectives of the Applicant's program to provide electrical power to support reliable supply and operational flexibility in eastern Contra Costa County and the San Francisco Bay Area. Additionally, the no project alternative could result in greater fuel consumption and air pollution in the state because older, less efficient plants with higher air emissions would continue to generate power instead of being replaced with cleaner, more efficient plants, such as the CCGS. Also, due to limited availability of in-state generated electricity, imported electrical energy has proven to be expensive and is not always available.

In addition to the no project alternative, the Applicant analyzed four possible alternative power plant sites, each of which was rejected as infeasible. As discussed in detail in Section 6.0, each alternative fails to meet most of the project's basic objectives because of poor site location or potential to result in more significant environmental impacts.

Alternative routes for the project's gas, water, and sewer lines were not considered because connections to natural gas, sanitary sewer, and water currently exist on the project site. One alternative route for the project's electrical transmission line was considered but was rejected because of the expense and potential environmental impact of constructing a new transmission line. The selected route is the most direct and involves upgrading an existing

69-kV line on steel lattice towers with a 230-kV line on more aesthetically pleasing steel monopole towers.

Several alternative generating technologies were reviewed in a process that ultimately resulted in the selection of a state-of-the-art, combined-cycle, natural gas-fired combustion turbine power plant for the CCGS. The alternative technologies that were evaluated included simple-cycle combustion turbines, biomass-fired plants, waste-to-energy plants, solar plants, wind generation plants, and others. For reasons described in Section 6.0, none of these technologies was capable of meeting the basic project objectives. The combined-cycle turbine technology selected for the CCGS was chosen as the technology that most effectively and efficiently meets the project objectives.

Wastewater discharge technologies considered included a zero liquid discharge system (ZLD). This alternative was rejected because a ZLD for a dry-cooled plant of this nature would not support the CCGS project objectives of providing easily dispatchable, reliable, and economically viable power to the northern California grid. The cost of a ZLD in terms of initial construction costs, operations and maintenance costs, and lost production costs would be out of proportion to any environmental benefits of the eliminated volume of wastewater. The use of a ZLD system would be economically unfeasible and would offer little or no environmental benefit.

Environmental Considerations

Pursuant to the requirements set forth in existing environmental laws and the CEC's regulations, sixteen areas of possible environmental impacts from the project were investigated. Detailed descriptions and analyses of these areas are presented in Sections 5.1 through 5.16 of the AFC. As discussed in detail in this AFC, with the implementation of the proposed mitigation measures, the anticipated Conditions of Certification, and the provision of emission offsets, there will be no significant unmitigated environmental impacts associated with the construction and operation of the CCGS. This executive summary highlights findings related to five subject areas that have historically received the greatest level of attention in CEC proceedings: air quality, biological resources, noise, visual resources, and water resources.

Air Quality

The CCGS site is located in a State of California and federal ambient air quality standards non-attainment area for ozone and fine particulates known as PM_{10}. The area is attainment or unclassified for carbon monoxide, nitrogen dioxide, and sulfur dioxide. An assessment of the impacts on air quality was performed using air dispersion modeling, and the impacts were all less than the California ambient air quality standards. In addition, project emissions will be sufficiently low that the project will not require a Prevention of Significant Deterioration (PSD) permit. The potential air quality impacts from the CCGS will be mitigated by the installation and operation of best available control technology for the combustion turbines and support equipment and by the provision of emission reduction credits. The project will have no significant adverse impact on air quality or public health. See Section 5.1 for a detailed analysis of air quality and Section 5.9 an analysis of public health.

Biological Resources

A literature search conducted for the project indicated that a variety of species that are considered sensitive by the biological resources regulatory agencies have some potential to occur at or near the CCGS project site. These include the San Joaquin kit fox, Swainson's hawk, white-tailed kite, western burrowing owl, and western red bat among other species. Biological resources field inventories were conducted at the project site, construction laydown area, and the 2.4-mile-long transmission line. Although a Swainson's hawk was observed foraging in the project vicinity during project field surveys, sensitive species were not found using or occupying the project site or transmission line alignment during these surveys.

A small (approximately 0.62-acre) wetland is located within the CCGS parcel, in its western "panhandle." This wetland is part of a 1.6-acre conservation area that was created in 1996 as a mitigation for activities in the Lauritzen Yacht Harbor and is under a conservation easement. Wetland delineations of the entire DuPont property conducted in 2006 and consultations with the U.S. Army Corps of Engineers have determined that this wetland, known as "Wetland E," is an isolated wetland lacking connectivity to navigable waters and is therefore non-jurisdictional. Stormwater from the PG&E Antioch natural gas terminal and the CCGS site currently provide runoff to Wetland E. The CCGS stormwater drainage system will be designed in accordance with Contra Costa County C.3 design requirements for using bioswales to treat stormwater before discharge. This design will also ensure that the supply of stormwater to Wetland E is not altered significantly. The Applicant has agreed to wetland enhancement measures that may include refuse and non-native plant removal and other measures to be determined in consultation with the California Department of Fish and Game (CDFG).

The CCGS will participate in the East Contra Costa County Habitat Conservation Plan/Natural Communities Conservation Plan (HCP/NCCP). This is a conservation plan for listed species that has been approved by the U.S. Fish and Wildlife Service (USFWS), CDFG, and the City of Oakley. The HCP/NCCP allows for development projects like the CCGS, seeking permits for construction, to pay a per-acre mitigation fee through the City of Oakley. Fee payment funds coordinated conservation and habitat acquisition and enhancement efforts within the East County that will be carried out in accordance with the HCP/NCCP. With participation in the HCP/NCCP fee program, further consultation with specific biological resources regulatory agencies is not required. Because the City of Antioch is not a signatory to the HCP/NCCP, it may be necessary to hold informal discussions with USFWS and CDFG regarding the potential project effects of the 1.4-mile portion of the proposed transmission line route that lies in the City of Antioch.

Noise

The Applicant conducted 25-hour ambient noise monitoring at the CCGS site and also prepared a noise generation model for the project. The CCGS will be designed such that noise attributable to the project would be approximately 50.7 A-weighted decibels (dBA) at the nearest sensitive receptor, the Sandy Point Trailer Park. The existing ambient noise during the four quietest hours of the nighttime is 43.3 dBA (L_{90}). This ambient nighttime noise, combined with project noise, would result in a project plus ambient noise level of 51.2 dBA, which represents an 8 dBA increase. This is within the CEC Staff's guideline that a

0 to 5 dBA increase in an area's nighttime background noise is clearly not significant, and a 5 to 10 dBA increase, measured as the average L_{90} of the four quietest nighttime hours, may not represent a significant adverse impact, depending on the circumstances. In this case, the nearest residential receptor is a non-conforming residential use in a light industrial district that has a General Plan land use designation of Commercial. The Applicant is willing to work with the City of Oakley and others to find mitigation measures that can feasibly reduce project noise levels at or near this location.

In addition, the River Oaks Crossing development includes a "big box" store that will be located between the residential receptors and the CCGS. This development would contribute significantly to the blockage of noise to areas south of the CCGS.

Visual Resources

The potential visual effects of the CCGS were investigated by conducting a detailed examination of local area viewsheds and viewer populations. The appearance of the project was evaluated from seven key observation points (KOPs), by developing simulated views of the project from these locations. These viewpoints represented viewing populations from the nearest residential receptors on Bridgehead Road, State Route 160 approaching the Antioch Bridge, the area north of the project site that will be developed as an industrial area with nature trails along the San Joaquin River, and from two locations along the transmission route. By conducting a detailed analysis of project area visual quality, viewer concern, visibility, number of viewers, duration of view, viewer exposure, and viewer sensitivity, it was determined that the impact of the project would be less than significant from all but one KOP, the nearest residential receptor at the trailer park on Bridgehead Road. This potential impact, however, could be reduced to a level below significance by planting a row of screening trees or large shrubs along the eastern margin of Bridgehead Road. The Applicant is working with the City of Oakley to develop this mitigation measure. It should also be noted that the trailer park is a non-conforming residential use in a light industrial zone with a General Plan land use designation of commercial. In addition, the River Oaks Crossing development includes a "big box" store that will be located between the residential receptors and the CCGS. This development and its landscaping would contribute significantly to screening views of the power plant from the trailer park.

Water Resources

The project will use air-cooled condenser (dry-cooled) technology for steam-process cooling. For this reason, the project will use much less water than a conventional plant using a cooling tower and standard evaporative cooling. The CCGS's water use will be approximately 240 acre-feet per year on an annual average basis. Process water will be supplied by the Diablo Water District (DWD). A will-serve letter from the DWD is included as Appendix 2I. Ironhouse Sanitation District has plans to install a treatment system to produce tertiary-treated water at some time in the future. The Applicant would consider using recycled water from this source when it becomes available.

Wastewater discharge will be to the sanitary sewer system, which is operated by Ironhouse Sanitation District. Discharge will be about 41 million gallons per year. A will-serve letter from the Ironhouse Sanitation District is included as Appendix 2J.

The project's stormwater management system will be designed to meet Contra Costa County's C.3 stormwater drainage design standards requiring use of bioswales. This will ensure that stormwater runoff from the CCGS meets applicable standards for water quality and does not increase downstream or offsite flooding potential.

Key Benefits

Environmental

The CCGS will use state-of-the-art, advanced, high-efficiency, combustion turbine technology, SCR, an oxidation catalyst and clean-burning natural gas to minimize emissions from the facility. NO_x emissions (a precursor to ozone formation) produced by the CCGS will be at least 90 percent less per megawatt than those produced by many older, existing power plants. In addition to the significant reduction of emissions relative to many existing plants, the CCGS operating efficiency will be such that the plant will consume less fuel than older plants of similar size, resulting in lower greenhouse gas emissions relative to existing plants. The use of an air-cooled condenser as a primary cooling method means that it will use a relatively small amount of water for cooling.

Employment and Economic Benefits

The project will provide for a peak of approximately 729 construction jobs over a 33-month period. The average number of workers during the construction period will be 303. The facility will permanently employ 22 persons, including power plant technicians, and electrician, chemist, engineering, mechanic, and administrative personnel.

In addition to the direct employment benefit, the CCGS plant will require and use the services of local or regional firms for major maintenance and overhauls, plant supplies, and other support services throughout the life of the facility. Indirect and induced employment is estimated at up to nine jobs.

CCGS is expected to bring increased property tax revenue to the City of Oakley. Assuming a capital cost of $450 to $500 million, CCGS will generate about between $5.9 and $6.6 million in property taxes annually.