SECTION 1.0

Executive Summary

1.1 Project Overview

Mariposa Energy, LLC (Mariposa Energy) proposes to construct, own, and operate an electrical generating plant in Alameda County, California. The Mariposa Energy Project (MEP) will be a natural gas-fired, simple-cycle electrical generating facility rated at a nominal generating capacity of 200 megawatts (MW). Figure 1.1-1 provides an architectural rendering of the project.

The facility will be located southeast of the intersection of Bruns Road and Kelso Road on a 10-acre portion of a 158-acre parcel (known as the Lee Property) immediately south of the Pacific Gas and Electric Company (PG&E) Bethany Compressor Station and 230-kilovolt (kV) Kelso Substation. The proposed power plant site is located in the southern portion of the Lee Property, between two small hills.

The project site is in northeastern Alameda County, in an unincorporated area designated for Large Parcel Agriculture by the East County Area Plan (ECAP). The site is located approximately 7 miles northwest of Tracy, 7 miles east of Livermore, 6 miles south of Byron, and approximately 2.5 miles west of the community of Mountain House in San Joaquin County. Figure 1.1-2 shows the location of the project within Alameda County. Figure 1.1-3 shows the site location.

The existing, unrelated 6.5-MW Byron Power Cogen Plant occupies 2 acres of the 158-acre parcel northeast of MEP. The remainder of the parcel is non-irrigated grazing land. There was a prior wind turbine development on the project site and the southern portion of the parcel. Minor debris from that wind development remains on site.

The project will have the following design features:

- Four General Electric (GE) LM6000 PC Sprint combustion turbine generators (CTGs) and associated support equipment
- Air emissions control systems including selective catalytic reduction (SCR) systems for nitrogen oxides (NO_x) control and oxidation catalyst for carbon monoxide (CO) control
- A new approximately 0.7-mile-long, 230-kV transmission line to deliver the plant output to the electrical grid via the existing 230-kV Kelso Substation located north of the project site
- Approximately 580 feet of new 4-inch-diameter natural gas pipeline that will run directly northeast from the project site to interconnect with PG&E's existing high-pressure natural gas pipeline (Line 2)
- A new 6-inch-diameter, 1.8-mile water supply line from the Byron-Bethany Irrigation District (BBID) Canal 45

1.1.1 Project Objectives

MEP's primary objective is to provide dispatchable, operationally flexible, and efficient generation to meet PG&E's need for new energy sources and to satisfy the terms of Mariposa Energy's power purchase agreement with PG&E. PG&E issued a Request for Offers on April 1, 2008, indicating that additional peak electric generation capacity is needed in the vicinity (PG&E, 2008). In accordance with the California Public Utilities Commission (CPUC) Decision 07-12-052, PG&E needs to acquire between 800 and 1,200 MW of new resources, with a preference for dispatchable and operationally flexible resources.

Operationally flexible resources are required to assist with the integration of intermittent renewable resources, such as solar and wind facilities. Additionally, peaking capacity is needed to respond to increases in the local demand for electricity that typically occur in the afternoons of summer days. A facility that provides peaking capacity must be able to be up and running at peak generation within 10 minutes to meet California Independent System Operator (CAISO) requirements. As a peaking facility, MEP will not run continuously, but instead will start, run for as many hours as necessary, and then shut down. MEP is designed to reliably provide this type of fast-start capability and highly flexible dispatchable energy and capacity.

1.1.2 Key Project Benefits

MEP provides the following key environmental and economic benefits.

- **Minimal Water Usage:** The project has been designed to be air-cooled with no evaporative cooler or fogger for turbine inlet air cooling. Instead, it will use more expensive mechanical chillers, with air cooled condensers. Also, the project is designed to reuse water by recycling process wastewater.
- **Zero Liquid Discharge (ZLD) Facility:** Process wastewater and stormwater runoff from plant equipment process areas will be treated onsite via an oil/water separator and activated carbon filtration system. The treated water then will be recycled to the raw water storage tank for plant process water usage.
- **Minimized Visual and Noise Impacts:** The project is located away from sensitive receptors. It uses natural topography to shield the facility from view and to buffer noise. Although the location requires additional grading and civil engineering work, it allows for minimized impacts.
- **Minimized Project Laterals for Electrical, Gas, and Water Interconnections:** The water, gas, and electric interconnections are 1.8 miles, 0.1 miles, and 0.7 miles, respectively. These short distances minimize environmental impacts and disturbances.
- **Minimized Land Use Impacts:** The project has been sited on non-irrigated grazing land, rather than prime farmland, farmland of statewide importance, unique farmland, or irrigated grazing land. It is in an area that already has been disturbed by the nearby existing Byron Power Cogen Plant, three high-voltage power lines, and previous wind farm development. The natural gas compression station and electrical substation on adjoining property to the north have also decreased the agricultural value of the property.

FIGURE 1.1-1
ARCHITECTURAL RENDERING
Mariposa Energy Project
Alameda County, California

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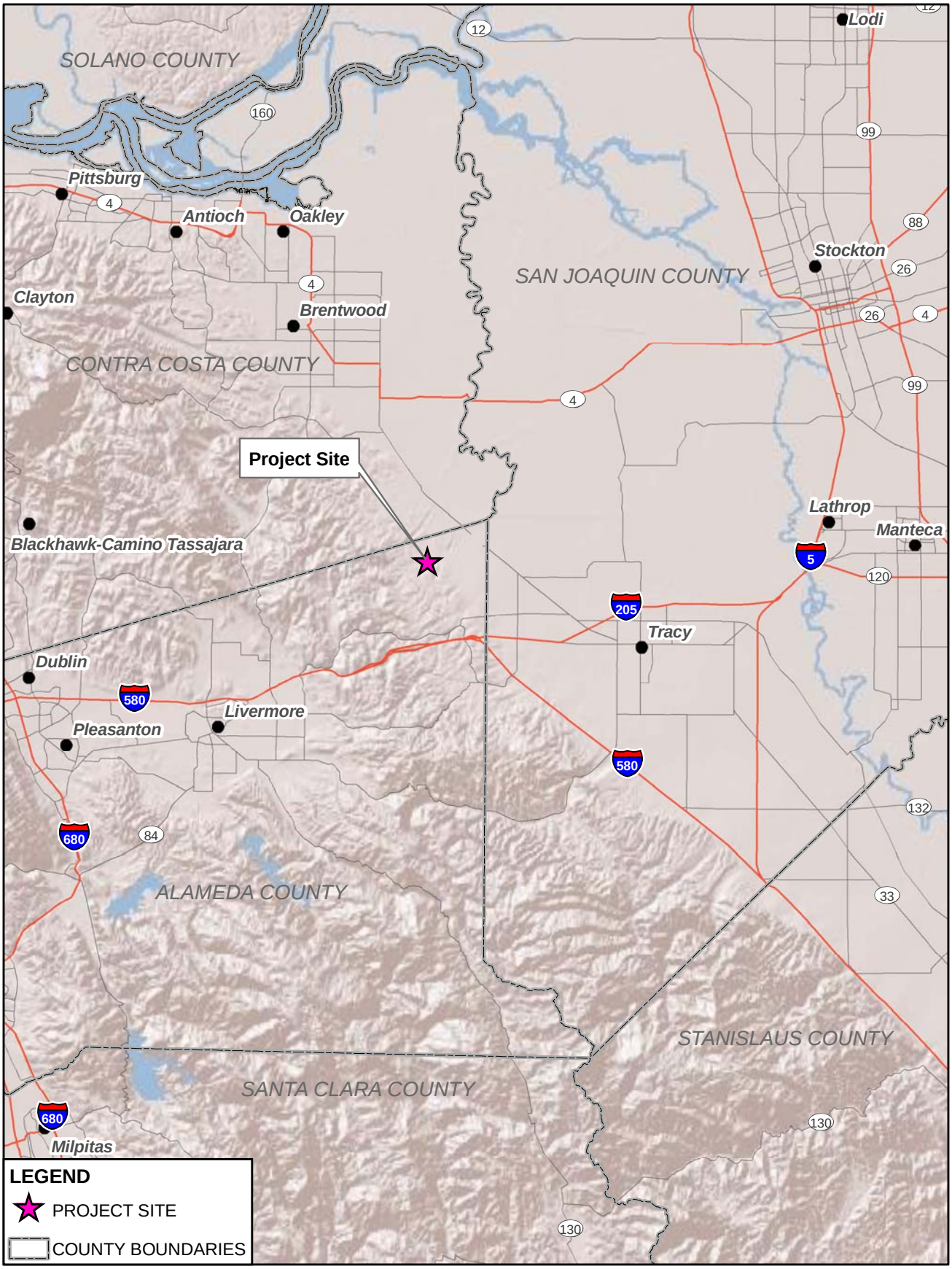

N

0 3 6

Miles

FIGURE 1.1-2
PROJECT VICINITY
MARIPOSA ENERGY PROJECT
ALAMEDA COUNTY, CALIFORNIA

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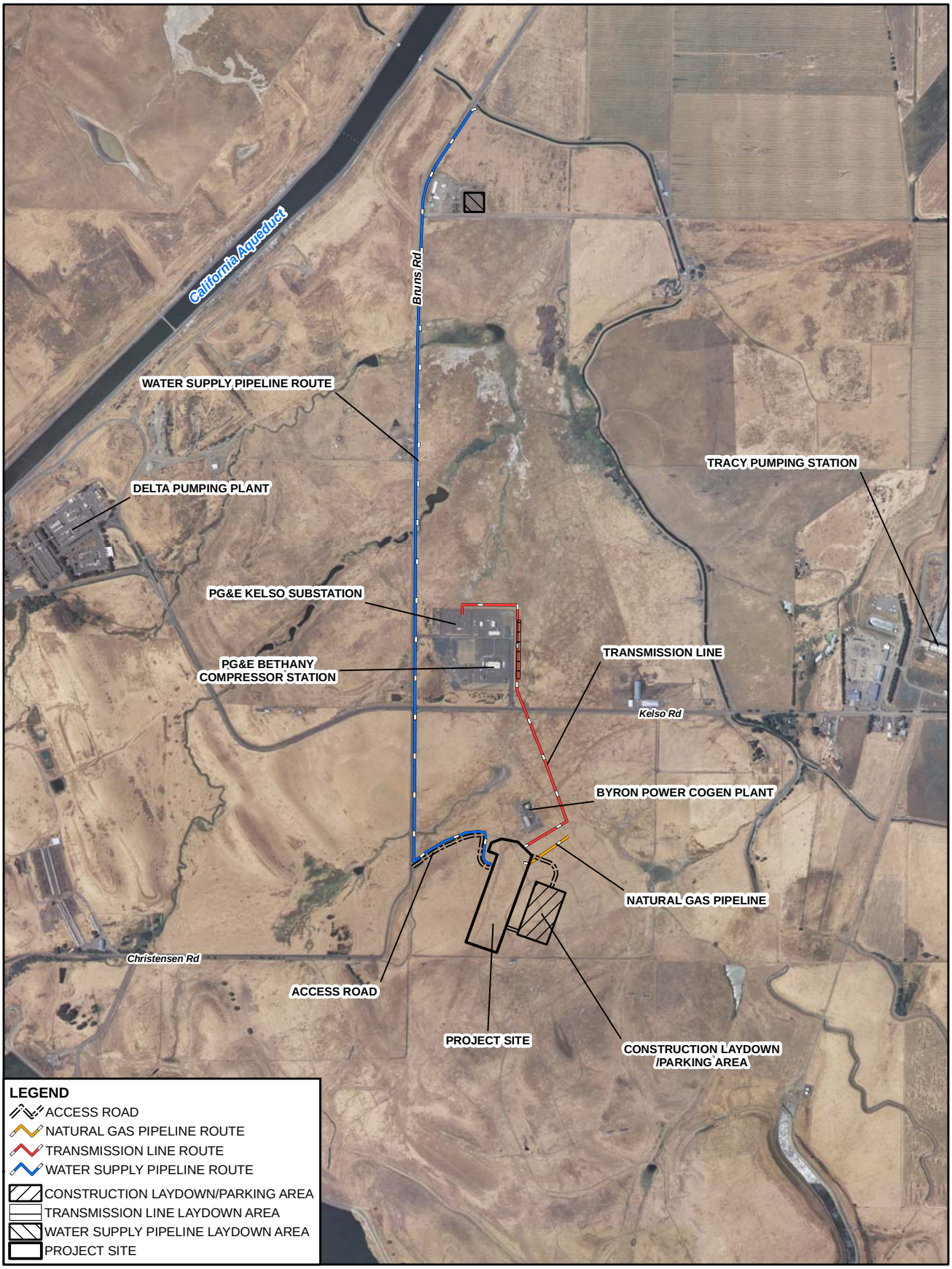

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

N

0 750 1,500

Feet

FIGURE 1.1-3
SITE LOCATION
MARIPOSA ENERGY PROJECT
ALAMEDA COUNTY, CALIFORNIA

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- **Maximized Open Space and Agricultural Preservation:** The project will help preserve and improve 146 of the 158 acres on the parcel as open space and agricultural grazing use. Only 10 acres of the 158 acre site will be used permanently, and an incremental 5 acres will be used temporarily for construction and laydown requirements of MEP. Two of the 158 acres are occupied by the existing, unrelated cogeneration facility. MEP will include reseeding of the construction laydown area and cattle watering troughs to enhance the grazing capability of the balance of the site.
- **No Air Quality Impacts:** The project will use Best Available Control Technology (BACT) to reduce air emissions to minimal levels, and will provide air mitigation and improvements with both Bay Area Air Quality Management District and San Joaquin Valley Air Pollution Control District (SJVAPCD) to ensure there are no significant air quality impacts from MEP.
- **Minimized Hazard Materials Use and Storage:** The project will use 19 percent aqueous ammonia for emissions control and R134A as an air-cooled condenser refrigerant, rather than anhydrous ammonia for either use, despite some loss of efficiency and additional costs.
- **Minimized Construction and Operational Traffic:** The construction traffic will be routed away from the Mountain House community in neighboring San Joaquin County to minimize the temporary impacts.
- **Numerous Construction Jobs from 2011-2012:** The project will provide for a peak of approximately 177 construction jobs over a 14-month period, an especially important benefit in the current economic recession.
- **Minimal Use of County Services during Operations:** The project will have only eight full-time employees, all of whom will reside in the 3-County area. With only eight employees, the project will not significantly impact local housing, educational, or emergency response resources.
- **Local Purchases:** In addition to the direct employment benefit, MEP 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.
- **Increased Property Tax Revenue to Alameda County:** MEP is expected to generate about $2.4 million to $2.6 million in nominal dollars in property taxes annually.

1.1.3 Project Operation

As a peaking power plant, MEP will operate during times of very high electrical load, during periods when intermittent renewable source generation experiences fluctuation, when baseload plants are not operating or are being brought on line, or during emergency conditions. Although the facility will be licensed and permitted to operate up to 4,000 hours per year (46 percent of the time) with up to 300 startup and shutdown events; as a peaking power plant, its actual capacity factor will be much less. Consistent with most peakers, MEP could be expected to operate about 5 to 10 percent of the available hours. As discussed further in Section 2.0, the expected annual operation is 600 hours per year with 200 startup and shutdown events.

1.2 Project Ownership

Mariposa Energy will construct, own, and operate MEP. Mariposa Energy is owned by Diamond Generating Corporation (DGC), a wholly owned subsidiary of Mitsubishi Corporation. DGC currently owns power generation assets in California, Washington, Texas, Oklahoma, Alabama, and Georgia, and is pursuing power generation facilities throughout the continental United States and Canada.

1.3 Project Schedule

Mariposa Energy is filing this Application for Certification (AFC) under the California Energy Commission's (CEC) 12-month licensing process. Assuming the project receives a license by July 2010, construction of MEP will begin in April 2011. Pre-operational testing of the power plant will begin in January 2012, and full-scale commercial operation is contractually obligated to commence by July 1, 2012.

1.4 Project Alternatives

Mariposa Energy evaluated a comprehensive set of alternatives. Section 6.0 presents a complete discussion of project alternatives.

A "no project" alternative was considered. The no project alternative was rejected because it fails to meet MEP's basic project objectives as described in this AFC. The no project alternative is inconsistent with the primary objectives to provide electrical power to support reliable supply and provide peaking power to PG&E's market area in Northern California. Additionally, the no project alternative would 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 MEP. Also, during periods when in-state generated electricity cannot meet the commensurate demand, California has been forced to rely on imported electrical energy, which has proven to be expensive and is not always available. Finally, the no project alternative is inconsistent with the policies and studies promulgated by CPUC, CEC, and CAISO.

In addition to the no project alternative, Mariposa Energy analyzed two possible alternative power plant sites. Both of these sites were rejected because each fails to satisfy most of the MEP's basic project objectives and/or fails to avoid or minimize potentially significant environmental effects.

Two alternative (recycled) water supply sources were evaluated: (1) the Mountain House Community Services District Wastewater Treatment Plant, at a distance of approximately 5.5 miles from MEP, and (2) the City of Tracy, at a distance of approximately 11.5 miles from MEP. Given the relatively small quantity of water that is expected to be used at MEP, insufficient quantity of available recycled wastewater at Mountain House, distance of the supplies from MEP, and the cost and environmental impacts of constructing an additional pipeline, the use of recycled water is not economically feasible for this project. Additionally, MEP has incorporated all cost-effective water conservation features to minimize the use of water.

Several alternative generating technologies and fuels were reviewed in a process that resulted in the selection of a state-of-the-art, natural gas-fired combustion turbine power plant for MEP. The alternative technologies included natural gas-fired reciprocating engines, conventional oil and natural gas-fired plants, combined-cycle combustion turbines, biomass-fired plants, solar plants, wind generation plants, and others. None of these alternate technologies was considered better than or equal to the GE Energy LM6000 technology selected for MEP in meeting the project's basic objectives and goals.

1.5 Environmental Considerations

Pursuant to the requirements set forth in existing environmental laws and the CEC's regulations, sixteen areas of possible environmental impact from the proposed 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 and the anticipated Conditions of Certification, there will be no significant unmitigated environmental impacts associated with the construction and operation of MEP. This Executive Summary highlights findings related to six subject areas that have historically been of interest in CEC proceedings: air quality, biological resources, land use, noise, visual resources, and water resources.

1.5.1 Air Quality

An assessment of the potential impact on air quality was conducted based on the proposed project emission estimates and air dispersion modeling. As discussed in Section 5.1, the predicted impacts are expected to be less than the California Ambient Air Quality Standards for the attainment pollutants (carbon monoxide, NO_x, and sulfur dioxide). The MEP site is located in an area designated by the U.S. Environmental Protection Agency and California Air Resources Board as non-attainment for ozone and particulate matter with a diameter less than 10 microns (PM_{10}) and with a diameter less than 2.5 microns ($PM_{2.5}$). MEP's potential air quality impacts will be mitigated by the installation and operation of BACT for the combustion turbines, and the purchase of emission reduction credits and SJVAPCD mitigations for any remaining emissions. As a result, 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 for public health.

1.5.2 Biological Resources

Section 5.2 provides a detailed discussion of potential impacts on biological resources from the construction and operation of MEP. With the implementation of proposed mitigation measures, MEP will have no significant impacts on biological resources in the area.

The project site is non-irrigated, grazed, non-native annual grassland located in the foothills of the Central Valley. While potentially sensitive habitats, including annual grasslands and waters of the U.S. (including wetlands) occur in the general area surrounding the project site, no rare plants have been detected thus far during the project's year 2009 protocol-level botanical surveys.

Annual grassland affected during project construction provides suitable habitat for various California Species of Special Concern. Western burrowing owl was detected in the proposed

laydown yard in February 2009 during a reconnaissance survey. Also, area grasslands provide nesting and foraging opportunities for other sensitive avian species, including grasshopper sparrow (Ammodramus savannarum), loggerhead shrike (Lanius ludovicianus), northern harrier (Circus cyaneus), and Swainson's hawk (Buteo swainsoni), and American badger (Taxidea taxus). The drainages and wetlands occurring along the water supply pipeline may support western pond turtle (Actinemys marmorata) and tri-colored blackbird (Agelaius tricolor). An unknown fairy shrimp species was detected during a February 2009 reconnaissance survey just north of the new facility site in a seasonal wetland. It is not known whether this freshwater crustacean was the vernal pool fairy shrimp (Branchinecta lynchi), which is federally listed as threatened.

There are state and federally listed species known in the area surrounding the project site. The facility site could result in a loss of suitable aestivation and dispersal habitat and suitable foraging and breeding habitat. MEP falls inside newly proposed critical habitat for California red-legged frog. While most protected species have not been observed in the project area during reconnaissance-level surveys performed in early 2009, there is an assumption that these species do exist in the area because of the presence of suitable habitats.

Using guidelines developed by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG), Mariposa Energy is proposing mitigation (or protective) measures for biological resources, including special-status species that could be affected by MEP. The mitigation measures will also reduce or eliminate impacts on other special-status species and species occurring within the MEP areas that do not have special protective requirements under the state and federal Endangered Species Acts. These mitigation measures will be further developed in the Biological Resources Mitigation Implementation Monitoring Plan (BRMIMP) that will be submitted to the CEC and natural resource agencies for approval. The BRMIMP also presents protection and mitigation measures issued by the natural resource agencies in each of their permit terms and conditions. Mariposa Energy anticipates obtaining federal permits and approvals, and recommendations from those state and local agencies whose jurisdiction is preempted by the CEC. Some of the federal and state agencies involved in the siting of MEP include the USFWS (e.g., Biological Opinion), CDFG (e.g., streambed alteration agreement recommendations to the CEC), U.S. Army Corps of Engineers (e.g., nationwide permit), and the Regional Water Quality Control Board (e.g., water quality certification).

1.5.3 Land Use

Section 5.6 contains a detailed discussion of MEP's land use. MEP is consistent with all relevant federal, state, and local plans and policies, and, as such, there are no significant land use impacts associated with the implementation of the project. There are also no significant cumulative land use impacts associated with MEP's implementation.

MEP is subject to applicable policies in the Alameda County General Plan. The General Plan includes area plans for the unincorporated portions of the County, while the ECAP applies directly to the area where MEP will be located.

Alameda County would have jurisdiction over the project site, but for the CEC's exclusive jurisdiction under the Warren-Alquist Act, which gives the CEC permit authority for the

licensing of any power plants greater than 50 MW. The CEC normally, however, defers to the local land use jurisdictions regarding findings of consistency of the project with local laws. Mariposa Energy has already been working with Alameda County; additional coordination with the County is expected to occur during the CEC licensing process.

MEP has been designed to comply with the land use planning requirements of Alameda County. The project is on land that is zoned for Large Parcel Agriculture, where electric generation facilities are conditionally permitted, and where a thermal power generation facility currently exists. The parcel is currently under a Williamson Act contract. The project will not require cancellation of the contract, as electric facilities have been deemed compatible with Williamson Act contracts by the Legislature. The project is consistent with ECAP policies related to sensitive lands, sensitive viewsheds, transportation, services, infrastructure, and environmental health. The project will not conflict with operations at nearby Byron (East Contra Costa County) Airport, and will be compatible with ECAP policies related to transportation demand management and water use minimization.

1.5.4 Noise

Section 5.7 contains a detailed discussion of the noise impact assessment of MEP. There will be no significant adverse noise impacts from the construction or operation of MEP.

Alameda County maintains a nighttime and daytime noise standard for residential areas of 45 dBA and 50 dBA, respectively, from stationary noise sources. Mariposa Energy conducted 25-hour ambient noise monitoring at the two closest residences and prepared a noise generation model of MEP. The plant noise level is not predicted to exceed 43 dBA at residential locations, which is less than the 45 dBA Alameda County nighttime residential standard, significantly less than the daytime residential standard, and consistent with limits established for a baseload facility in the vicinity previously approved by CEC.

1.5.5 Visual Resources

Section 5.13 contains a detailed discussion of the visual resources assessment. MEP will not result in any substantially adverse visual impacts, nor will it degrade the existing visual character or quality of the site and its surroundings.

MEP has been carefully located in a bowl between two small hills so that it cannot be seen from much of the surrounding area. The existing visual character is agricultural, with scattered infrastructure. Therefore, even where it can be seen, it will not substantially degrade the visual quality of the surroundings.

The 80-foot tall exhaust stacks will be MEP's most visually prominent features. These stacks will be visually absorbed by other vertical features currently visible in the area, namely transmission towers and wind turbines, and would not appear in views from the known observation points to substantially encroach upon the existing views. The project is not located in a scenic or protected viewshed, and there are no state scenic highways in the vicinity of the project. The closest view of the project is from Bruns Road, by motorists who may be traveling toward the Bethany Reservoir State Recreation Area, a pumping plant, or limited residential locations. However, the duration of these views is brief, and MEP is not prominently visible from other locations throughout the surrounding area.

1.5.6 Water Resources

Section 5.15 contains a detailed analysis of water resources. There will be no significant adverse impacts on water resources from the construction or operation of MEP.

Raw water will be supplied by BBID via a new 1.8-mile pipeline along Bruns Road. Total water use is expected to average 34.8 acre-feet per year (equivalent to the usage of approximately 35 homes) based on the expected operating scenario of 600 hours per year and 200 start and stop cycles. The estimated annual usage associated with the maximum-permitted operating scenario of 4,000 hours per year and 300 start and stop cycles is approximately 187 acre-feet per year, under annual average temperature design conditions. Most of the water will be diverted to a mobile demineralization system. The demineralized water will be used for combustion turbine water injection for NOx control, online water wash of the combustion turbine compressor section, and the normal operating mode of the PC Sprint CTG. Additionally, some of the raw water will be used for miscellaneous onsite uses such as equipment washdown and landscape irrigation. A small amount of water (0.2 percent) will be diverted to a domestic water treatment system and used onsite for domestic uses (e.g., sinks, toilets).

The plant will be a ZLD wastewater discharge facility for process wastewater. All domestic wastewater will be routed to an onsite septic system and either discharged to an onsite leach field or removed via truck for offsite disposal. Stormwater runoff would be detained onsite in an extended detention basin and released according to regulatory standards for stormwater quality control.

1.6 Persons Who Prepared the AFC

Persons with primary responsibility for the preparation of each section of this AFC are listed in Appendix 1C.

1.7 References

Pacific Gas & Electric Company (PG&E). 2008. All Source Long-Term Request for Offers. April 1.