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 the Bullard Energy Center (BEC) were not licensed and constructed, the goals and objectives of the developer toward its contractual obligations to Pacific Gas and Electric (PG&E) would not be met. (See Section 2, Project Objectives, for a summary of the PG&E solicitation process and resulting Power Purchase Agreement [PPA] with BEC.) Additionally, the direction to PG&E by the California Public Utility Commission (CPUC) to "plan for and procure the resources necessary to provide reliable service" would not be met. Without the BEC, PG&E would not be able to meet the capacity addition amounts found reasonable by the CPUC, and would be forced to meet anticipated system demand by other means.

4.2 ALTERNATIVE SITE LOCATION

PG&E in its 2002 Long-Term Fresno Study acknowledged the need for new generation or transmission to support the rapidly growing region. The developers investigated alternative industrial sites in the greater Fresno area, but ascertained that natural gas volumes and electric interconnection capacity was extremely limited. Land adjacent to Herndon sub-station was evaluated but deemed unacceptable because of existing and newly designated residential development areas nearby. Interconnection at Kearney sub-station would have required extensive re-conductoring that was cost prohibitive for a 200-megawatts (MW) project. The area surrounding Gregg sub-station has been designated for residential and commercial development. The Bullard site is zoned industrial, had previously received a conditional use permit from the City of Fresno for a 48-MW peaking plant, and could accommodate 200 MW with modest system upgrades.

If the BEC were to be constructed at an alternate location, the goals and objectives of the BEC would not be met as the BEC-PG&E agreement requires that the BEC be constructed at the BEC location. As PG&E chose the BEC project and its specific site location, it should be assumed that the Bullard site best suits the requirements of PG&E and its customers.

4.3 ALTERNATE PROJECT CONFIGURATIONS

In its Request for Offer (RFO), PG&E sought electrical production configurations that would meet system peaking and intermediate power needs with short dispatch notice. The BEC chose to employ simple-cycle combustion turbines to best meet these peak power needs. The BEC design consists of two General Electric LMS100 combustion turbines. The power purchase agreement between BEC and PG&E requires that the BEC consist of these turbines in a simple-cycle mode. Other generation configurations would not meet the goals and objectives of the BEC and PG&E.

4.4 ALTERNATE TECHNOLOGIES

As described in Section 3, Project Description, the BEC design is based on the use of two General Electric LMS100 combustion turbines. BEC chose these turbines over other technologies principally due to their environmental effectiveness, fuel conversion efficiency and rapid start-up cycles. Upon PG&E's technical and financial analysis of this technology and plant design, the resulting PPA requires that these specific turbines be used to meet the energy production requirements contained therein. BEC briefly considered alternate technologies, such as generation facilities utilizing fuels such as coal, oil, biomass or geothermal brine. BEC also looked at nuclear technology and solar generation technology. None of these fuels or technologies would be able to meet the reliability and dispatching requirements contained in the BEC-PG&E agreement. Therefore, no alternate technologies would meet the goals and objectives of the BEC.

4.5 ALTERNATE LINEAR ROUTES

As noted above, BEC is contractually obligated to construct the project at the prescribed location. Alternate sites would not satisfy the agreement between PG&E and BEC. BEC and PG&E have identified a corridor for the natural gas fuel line from the PG&E high-pressure line. Given the prescribed location of the project and its proximity to an existing PG&E 230 kilovolts (kV) line, no additional interconnection and linear route alternatives were considered.

4.6 WATER SUPPLY ALTERNATIVES

BEC has investigated numerous potential sources of water to supply the project. State Water Resources Control Board Resolution 75-58 lists water sources by priority for inland power plant cooling. Additional water policies from various agencies and water districts were also consulted during BEC's evaluation of the various source water options. BEC evaluated the following list of water options:

- Surface water – Water present in lakes, streams and rivers.
- Herndon Canal – Operated by the Fresno Irrigation District and located approximately one-half mile south of the project site.
- Reclaimed water – Wastewater treatment plant effluent that has received tertiary treatment.
- Municipal supply – Water available via the municipal water supply system.
- Agricultural wastewater – Drainage water from irrigation practices.
- Upper aquifer groundwater – Groundwater located in the uppermost aquifer beneath the project site.
- Lower aquifer groundwater – Groundwater located below the upper aquifer beneath the project site.
- Ocean water – Water from the Pacific Ocean.

Of these alternatives, the BEC chose to rely on municipal water. A discussion on the various water supply alternatives and BEC's analysis is presented in Section 5.5.2.1, Alternative Water Supplies.

4.7 WASTEWATER MANAGEMENT ALTERNATIVES

Given the physical and policy relationships between source water and wastewater, the BEC generally identified and evaluated wastewater options with source water implications in mind. As with source water, viability of wastewater management options is largely driven by several water efficacy policies. Following is a summary of the alternative wastewater management alternatives that are discussed in greater detail in Section 5.5.2.2, Wastewater Disposal Alternatives:

- Zero liquid discharge system – A mechanical system utilizing membrane technology and heat to effectively reduce liquid wastes to a dry waste for landfill disposal.
- Evaporation pond – Large, lined surface impoundment for disposal of wastewater via atmospheric drying, resulting in a sludge that must be disposed in a landfill system.
- Deep injection well – Disposal of wastewater via well discharge to a geologic formation that is unsuitable for potable water production and isolated from aquifers.
- Disposal to wastewater treatment plant – Discharge to a sanitary sewer discharging to a publicly owned treatment works.
- Surface discharge – Discharge of wastewater to the ground or receiving waters, including lakes, rivers and streams.
- Off-site treatment – Hauling of the wastewater to a facility in another location employing one or more of several technologies by a contracted service company.

BEC chose to rely on the City's wastewater treatment system.