

C. Alternatives

This section summarizes the information presented in Appendix 1 to this EIR, Alternatives Screening Report, which contains detailed documentation and maps of all alternatives suggested for EIR consideration. This section is organized as follows: Section C.1 is an overview of the alternatives screening process; Section C.2 describes the methodology used for alternatives evaluation; Section C.3 presents a summary of which alternatives have been selected for full EIR analysis and which have been eliminated based on CEQA criteria; Section C.4 describes the alternatives that have been retained for full EIR analysis within each individual issue area in Section D; and Section C.5 presents descriptions of each alternative that was eliminated from EIR analysis and explains why each was eliminated. Section C.6 describes the No Project Alternative.

C.1 Alternatives Development and Screening Process

One of the most important aspects of the environmental review process is the identification and assessment of reasonable alternatives that have the potential for avoiding or minimizing the impacts of a proposed project. In addition to mandating consideration of the No Project Alternative, CEQA Guidelines (Section 15126(d)) emphasize the selection of a reasonable range of technically feasible alternatives and adequate assessment of these alternatives to allow for a comparative analysis for consideration by decision makers. CEQA Guidelines state that the discussion of alternatives shall focus on alternatives capable of eliminating or reducing significant adverse environmental effects of a proposed project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly. However, CEQA Guidelines declare that an EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote or speculative.

The Proposed Project is described in detail in Section B of this EIR. Appendix 1 describes the alternatives screening analysis that has been conducted for the Proposed Project and provides a record of the screening criteria and results that were reached regarding alternatives carried forward for full EIR analysis and alternatives eliminated. Appendix 1 documents: (1) the range of alternatives that was suggested and evaluated; (2) the approach and methods used to screen the feasibility of these alternatives according to guidelines established under CEQA; and (3) the results of the alternatives screening. For alternatives that were eliminated from EIR consideration, Appendix 1 explains in detail the rationale for elimination. “Non-wires alternatives”¹ are addressed as well.

Numerous alternatives to the Proposed Project were suggested during the scoping period (February-March 2003) by the general public, and federal, State and local agencies after PG&E filed its Application for a CPCN. Other alternatives were developed by EIR preparers, presented by PG&E in its PEA, or evaluated by the California Independent System Operator (ISO) in its Stakeholders process that has been studying the San Francisco and Peninsula electricity supply.

Alternatives for this project were restricted to the San Francisco Bay Area, no further south than the Jefferson Substation, but including consideration of transmission line routes from the East Bay. This is consistent with the geographic area that was encompassed in studies by the ISO that developed the Jefferson-Martin project.

¹ “Non-wires alternatives” include methods of meeting project objectives that do not require major transmission lines (e.g., baseload generation, distributed generation, renewable energy supplies, conservation and demand-side management, etc.).

In total, the alternatives screening process has culminated in the identification and screening of approximately 30 potential alternatives. These alternatives range from minor routing adjustments to PG&E's proposed 230 kV project location, to entirely different transmission line routes, to alternative energy technologies, as well as non-wires alternatives.

C.2 Alternatives Screening Methodology

The evaluation of alternatives to the proposed Jefferson-Martin Project was completed using a screening process that consisted of three steps:

- Step 1:** Clarify the description of each alternative to allow comparative evaluation.
- Step 2:** Evaluate each alternative using CEQA criteria (defined below).
- Step 3:** Determine the suitability of the each alternative for full analysis in the EIR. If the alternative is unsuitable, eliminate it from further consideration. Infeasible alternatives and alternatives that clearly offered no potential for overall environmental advantage were removed from further analysis.

Following the three-step screening process, the advantages and disadvantages of the remaining alternatives were carefully weighed with respect to CEQA's criteria for consideration of alternatives. These criteria are discussed in greater detail in Appendix 1.

CEQA Guidelines (Section 15126(a)) state that

An EIR shall describe a reasonable range of alternatives to the project, or to the location of the project, 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.

In order to comply with CEQA's requirements, each alternative that has been suggested or developed for this project has been evaluated in three ways:

- Does the alternative meet most basic project objectives?
- Is the alternative feasible (legal, regulatory, technical)?
- Does the alternative avoid or substantially lessen any significant effects of the Proposed Project (including consideration of whether the alternative itself could create significant effects potentially greater than those of the Proposed Project)?

C.2.1 Consistency with Project Objectives

CEQA Guidelines require the consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of project objectives" (Section 16126.6(b)). Therefore, it is not required that each alternative meet *all* of PG&E's objectives.

The objectives of the Proposed Project are defined by PG&E in its PEA (Section 2.2.1). This EIR does not adopt or endorse the objectives that PG&E has defined for its Proposed Project.² PG&E's four stated objectives are presented below; each is described in more detail in Appendix 1 of this EIR.

² The CPUC's CPCN proceedings will separately and specifically evaluate the need for the project.

- **Meet Electric Demand.** The first project objective is to provide additional electricity to the region in order to ensure that the electric system includes adequate capacity to safely and reliably serve the San Francisco and northern San Mateo County area, even under reduced generation scenarios. This objective is based on the limited generation existing in CCSF and the possible upcoming closure of Hunters Point Power Plant.
- **Comply with Planning Criteria.** The second project objective is to ensure that the region's transmission system will continue to meet planning standards and criteria established by the ISO and the North American Electric Reliability Council (NERC) to ensure the safety and reliability of this system. Compliance with these criteria would also result in continued consistency with the pre-ISO planning guide entitled "Supplementary Guide for Application of the Criteria for San Francisco," which was considered as part of the October 2000 stakeholder study.
- **Create a More Diverse Transmission System in the Area.** The third project objective is to further increase transmission system reliability in the San Francisco and northern San Mateo County area by providing a second independent major transmission line pathway into the area. By meeting this objective, the Project would eliminate the "all eggs in one basket" concern that currently exists in the area (all major transmission lines currently connect the San Mateo and Martin Substations and are located in the general Highway 101 corridor).
- **Implement the ISO Board of Governors' April 2002 Resolution.** The fourth project objective is to implement the April 2002 ISO Board of Governors' resolution approving the Jefferson-Martin Project for addition to the ISO-controlled grid, consistent with the ISO Tariff as adopted by the Federal Energy Regulatory Commission pursuant to the Federal Power Act.

C.2.2 Feasibility

CEQA Guidelines (Section 15364) define feasibility as:

. . . capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

In addition, CEQA requires that the Lead Agency consider site suitability, economic viability, availability of infrastructure, general plan consistency, other regulatory limitations, jurisdictional boundaries, and proponent's control over alternative sites in determining the range of alternatives to be evaluated in the EIR (CEQA Guidelines Section 15126.6(f)). Feasibility can include three components:

- **Legal Feasibility:** Does the alternative have the potential to avoid lands that have legal protections that may prohibit or substantially limit the feasibility of permitting a 230 kV transmission line?
- **Regulatory Feasibility:** Does the alternative have the potential to avoid lands that have regulatory restrictions that may substantially limit the feasibility of, or permitting of, a 230 kV transmission line by September 2005 or summer 2006?
- **Technical Feasibility:** Is the alternative feasible from a technological perspective, considering available technology; the construction, operation, and maintenance or spacing requirements of multiple facilities using common rights-of-way, and the potential for common mode failure?

For the screening analysis, the legal, technical, and regulatory feasibility of potential alternatives was assessed. The assessment was directed toward reverse reason, that is, a determination was made as to whether there was anything about the alternative that would be infeasible on technical, legal, or regulatory grounds.

This screening analysis does not focus on relative economic factors or costs of the alternatives (as long as they are found to be economically feasible) since CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of project objectives or would be more costly" (CEQA Guidelines Section 16126.6(b)). The CPUC's CPCN proceedings will separately and specifically consider cost issues.

C.2.3 Potential to Eliminate Significant Environmental Effects

CEQA requires that to be fully considered in an EIR, an alternative must have the potential to "avoid or substantially lessen any of the significant effects of the project" (CEQA Guidelines Section 16126.6(a)). If an alternative was identified that clearly does not provide potential overall environmental advantage as compared to the Proposed Project, it was eliminated from further consideration. At the screening stage, it is not possible to evaluate all of the impacts of the alternatives in comparison to the Proposed Project with absolute certainty, nor is it possible to quantify impacts. However, it is possible to identify elements of an alternative that are likely to be the sources of impact and to relate them, to the extent possible, to general conditions in the subject area.

Table Ap.1-2 in Appendix 1 presents a summary of the potential significant effects of the Proposed Project. This impact summary was prepared prior to completion of the EIR analysis, so it may not be complete in comparison to the detailed analysis now presented in Section D of this EIR. However, the impacts in the table are representative of those resulting from preliminary EIR preparation and were therefore used to determine whether an alternative met this CEQA requirement.

C.3 Summary of Screening Results

Alternatives identified by the Applicant, agencies, EIR preparers, and the public are listed below according to the determination made for analysis. Alternatives considered included alternative route alignments and other transmission alternatives, alternatives that could replace the Proposed Project as a whole, non-wire alternatives, and the No Project Alternative. If so desired, in its decision, the CPUC could elect to combine or match certain alternatives and project components. The potential to create different permutations of alternatives in reality creates many more overall alternatives.

C.3.1 Alternatives Fully Analyzed in the EIR

The alternatives listed below have been chosen for detailed analysis in this EIR through the alternative screening process. These alternatives are briefly described in Section C.4 and in greater detail in Section 4 of Appendix 1. The preliminary conclusions generated during the screening process are presented briefly below and each of these alternatives is evaluated within each environmental issue area of Part D of this EIR. The alternatives are illustrated on Figures C-1a [\(rev\)](#) and C-1b [\(rev\)](#); and an individual map of each alternative is presented in Section 4 of Appendix 1 of this EIR.

Transmission Line Route Alternatives — Southern Segment

- PG&E Underground Route Option 1B
- Partial Underground Alternative

Figure C-1a. Alternatives Analyzed in the EIR, Southern Segment (rev)
For security reasons this figure is not included in the online version of the report.

Figure C-1b. Alternatives Analyzed in the EIR, Northern Segment (rev)
For security reasons this figure is not included in the online version of the report.

Transmission Line Route Alternatives — Northern Segment

- West of Skyline Boulevard Transition Station Alternative (with proposed underground route, Sneath Lane, or Westborough Boulevard)
- Sneath Lane Transition Station (with proposed underground route, Sneath Lane, or Westborough Boulevard)
- Glenview Drive Transition Tower Alternative
- Trousdale Drive Transition Tower Alternatives
- Golf Course Drive Transition Station Alternative
- Cherry Avenue Alternative
- Modified Underground Existing 230 kV Collocation Alternative and New South San Francisco Segment
- PG&E's Route Option 4B: East Market Street Alternative
- Junipero Serra Alternative

C.3.2 Alternatives Eliminated from Full Consideration in the EIR

The alternatives listed below were eliminated from consideration in the EIR; they are described and the reasons for their elimination are presented in Section C.5 below and more detailed descriptions are in Section 4 of Appendix 1. Figures C-2a (rev), C-2b (rev), and C-2c depict the alternatives eliminated from consideration and an individual map of each alternative is presented in Section 4 of Appendix 1 of this EIR.

Transmission Line Route Alternatives — Southern Segment

- PG&E's 1B with Underground 60 kV Line (refer to Figure C-1a, PG&E Underground Route Option 1B)
- Alternatives to Trousdale Drive: Existing Millbrae 60 kV ROW Alternative
- Alternatives to Trousdale Drive: SFPUC Water Facility ROW Alternative
- West of Existing Corridor, East of I-280 Alternative
- West of Reservoirs Alternative
- PG&E Underwater Cable Alternative Segments to PG&E Route Option 1B
- Watershed Restoration Alternative
- Hill/Nevin West of I-280, East of Reservoirs Alternative

Transmission Line Route Alternatives — Northern Segment

- I-280 Northbound Ramp Alternative
- PG&E's Route Option 2A, El Camino North Alternative
- PG&E's Route Option 3B, BART North Alternative
- Mission/El Camino Real to A Street Alternative
- San Bruno Mountain Collocation Alternative
- Caltrain ROW Alternative

Other Transmission Alternatives

- San Mateo Substation to Martin Substation
- Moraga Substation to Potrero or Embarcadero Substations
- Sobrante Substation to Potrero or Embarcadero Substations
- Jefferson to various substations

Non-Wire Alternatives

- New Generation Alternatives (Potrero Unit 7, San Francisco Williams Turbines)
- Renewable Resource Alternatives (Solar, Wind, and Tidal Technologies)
- System Enhancement Alternatives (Distributed Generation and Demand-side Management)
- Integrated Resource Alternatives

C.4 Alternatives Evaluated in this EIR

C.4.1 Introduction

As discussed in Section C.2, alternatives were assessed for their feasibility, their ability to reasonably achieve the project objectives, and their potential for reducing the significant environmental impacts of the Proposed Project. Based on these screening criteria, the following alternatives were selected for detailed analysis within this EIR.

C.4.2 Transmission Line Route Alternatives: Southern Segment

C.4.2.1 PG&E Underground Route Option 1B

Description

This alternative is an underground option to the southernmost 11.2 miles of overhead segment of the Proposed Project along the I-280 corridor; it was suggested by PG&E in its PEA. This option was endorsed during the scoping process by numerous agencies and individuals, including residents of the Town of Hillsborough and the San Mateo Highlands (an unincorporated area of San Mateo County).

In Route Option 1B, the existing overhead double circuit 60 kV line would be unchanged, and would remain in its current configuration and location. As illustrated in Figure Ap.1-2 in Appendix 1 and on Figure C-1a, the new 230 kV line would transition underground at Jefferson Substation and would be installed within Cañada Road for about 5.0 miles to Highway 92. It would then turn onto Highway 92 (just west of I-280), before turning onto Skyline Boulevard (Highway 35). The route would continue north in Skyline Boulevard, crossing over Crystal Springs Dam above San Mateo Creek, to Golf Course Road where it would turn east, crossing below I-280 then turning north on the continuation of Skyline Boulevard to Carolands Substation, 0.4 miles north of Black Mountain Road in the Town of Hillsborough.

From Carolands Substation, the route would travel along Skyline Boulevard to its intersection with Trousdale Drive, then turn northeast onto Trousdale Drive. The route would turn north onto El Camino Real and remain in this roadway until rejoining the Proposed Project at El Camino Real and Huntington Drive or transition to one of the Northern Segment Alternatives (see Section C.4.3).

Crossing of Crystal Springs Dam. Route Option 1B as proposed by PG&E would require installation of the 230 kV solid dielectric cables on the existing Crystal Springs Dam or attached to the bridge that goes over the dam. Because the bridge over the dam is not earthquake safe, use of the existing bridge is not being considered. This crossing presents challenges with respect to design and potential new environmental impacts because there is California red-legged frog (CRLF) habitat on the dam, and there are potential conflicts with proposed seismic retrofits of the bridge and the dam. Based on consultation with the SFPUC, PG&E has identified five options for crossing the dam without using the bridge,

Figure C-2a. Alternatives Eliminated from Full Consideration, Southern Segment (rev)
For security reasons this figure is not included in the online version of the report.

Figure C-2b. Alternatives Eliminated from Full Consideration, Northern Segment (rev)
For security reasons this figure is not included in the online version of the report.

Figure C-2c. Alternatives Outside of San Mateo County
For security reasons this figure is not included in the online version of the report.

and CPUC staff developed a sixth overhead dam crossing. All of these options take into account modifications and required future operations of the spillway, which would not affect the ability of the cable system to operate. Two of the options developed by PG&E and SFPUC engineers, which would install the duct bank on top of the dam in permanent or temporary configurations (until the new bridge is completed), could affect the existing CRLF habitat. Attaching the cables to face of the dam on the lake side, temporarily using an overhead crossing of the dam (until bridge repairs are made and the cables could be attached to the new bridge), and using a submarine cable are the other three options proposed by PG&E. A permanent overhead crossing of the dam was also analyzed. Currently, PG&E believes that ~~a 3,000-foot underwater cable (a single segment with no splices) installed around Crystal Springs Dam- the top of the dam~~ would be the preferred route ~~around-across~~ the dam. Regardless of the option selected, PG&E would have to consult with the USFWS to determine the type and extent of acceptable mitigation.

Because of concerns about CRLF and cultural resources impacts to the historic dam, EIR preparers added consideration of a permanent overhead crossing of the dam. An overhead dam crossing would require construction of two transition stations for the 230 kV line, one south of the dam and one north of the dam. Between the transition stations, the line would be overhead and would follow the Proposed Project route east of the I-280 bridge. An additional modified permanent overhead crossing of Crystal Springs Dam was suggested by PG&E during the comment period on the Draft EIR and is evaluated in Section D.

Comments on the Draft EIR suggested a modification of the Route Option 1B in which the underground transmission line would be installed west of Skyline Boulevard in the City of Burlingame. This Burlingame Route Modification would replace a 0.4-mile segment of the Skyline Boulevard portion of the alternative route by relocating it to the west into the existing 60 kV right-of-way west of Skyline Boulevard (where Towers 10/63 through 10/69 are currently located). This route modification is illustrated in Figure Ap.1-2d and discussed in greater detail in Section 4.2.1 in Appendix 1, but was eliminated from full EIR analysis because it would create greater land use impacts than the original alternative due to the reroute unavoidably passing through and immediately adjacent to residential properties on both the north and south ends of the segment.

Rationale for Full Analysis

Project Objectives. Route Option 1B would meet all project objectives.

Feasibility. Construction and operation of Route Option 1B, including the stated options for crossing Crystal Springs Dam, is feasible. No technical, regulatory, or legal feasibility concerns exist, except for the Crystal Springs Dam crossing options that would impact the CRLF and/or the historic dam.

Lessen Significant Environmental Impacts. This alternative has the potential to lessen environmental impacts in several areas:

- It would reduce impacts to highly sensitive habitats in Edgewood Park and the Pulgas Ridge Preserve because there would be no new construction or tower removal in these areas.
- Visual impacts of the Proposed Project would be nearly eliminated with no new overhead towers or transition stations.
- It would eliminate recreation impacts of construction and installation of taller towers in Edgewood Park, the Pulgas Ridge Preserve, Crystal Springs Golf Course, and along other trails and bikeways in the Watershed Lands.

- It would eliminate impacts adjacent to residences in The Highlands, the Town of Hillsborough, and Burlingame, including construction impacts, visual impacts of larger towers, and increased EMF.
- It would eliminate underground construction within the Alquist-Priolo Zone of the San Andreas Fault.
- Land use impacts associated with the proposed transition station would be eliminated in the City of San Bruno.

C.4.2.2 Partial Underground Alternative

Description

This alternative, illustrated in Figure Ap.1-3 of Appendix 1 and in Figure C-1a, was developed as a partial overhead/underground alternative in response to scoping comments voicing concerns about the Proposed Project's biological impacts in and around Edgewood Park and visual and EMF concerns near residences along the I-280 corridor. In this alternative the 230 kV and 60 kV circuits would be located together.

The southernmost segment of the Partial Underground Alternative would require installation of the new overhead towers and lines nearer to Cañada Road. This 2.8-mile segment of the route would be located entirely within SFPUC Watershed Lands. The segment would involve relocation of the proposed new towers out of Edgewood Park and the Pulgas Ridge Preserve, and would replace 2.3 miles of the Proposed Project. From north of Edgewood Road, the route would be identical to the Proposed Project for about three miles to the Ralston Substation.

From Ralston Substation to just south of the Carolands Substation, the Partial Underground Alternative would follow the Proposed Project route for 3.5 miles, but the alternative would be installed underground where it would be adjacent to residences, from proposed Towers 4/27 to 6/37 and from proposed Towers 7/39 to 8/50. The underground line, requiring a trench of about 3 feet wide, would be installed within the disturbed dirt road that parallels the existing overhead 60 kV transmission line through these areas. Because an underground crossing of San Mateo Creek would not be feasible, the line would transition to overhead for about 0.5 miles at this crossing. Transition towers would replace proposed Towers 6/37 and 7/39 to allow an overhead crossing of San Mateo Creek, which would be the same as the crossing for the Proposed Project. This alternative would transition to overhead again at Tower 8/50 (on land of the Town of Hillsborough's water storage facility), and there would be an overhead crossing of I-280 at that point. From Tower 8/53 where the Proposed Project would cross I-280, this alternative would be the same as the Proposed Project route north until Tower 9/62.

North of the new I-280 crossing at Tower 8/50, this alternative would remain entirely on the west side of the freeway. This would eliminate two crossings of the freeway that would be required with the Proposed Project. Where the Proposed Project would cross I-280 to the east (proposed towers 63 through 68 would be east of the freeway), this alternative would remain west of the interstate until it would rejoin the proposed route between Towers 10/68 and 10/69. North of Tower 10/69, this alternative would rejoin the Proposed Project to the transition station at San Bruno Avenue and Glenview Drive.

Optional Tower and Underground Line Locations. The following optional tower and underground line locations were suggested during the comment period on the Draft EIR and are evaluated in the Final EIR as to whether they should be included as part of the Partial Underground Alternative (see Section 4.2.3 in Appendix 1 for additional discussion).

- **Firebreak Adjacent to I-280.** Use of the disked firebreak adjacent to the I-280 Freeway would be an optional underground route location further west of the residences for the portion of the Partial Underground Alternative in the San Mateo Highlands area near Lexington Avenue. This disked firebreak is nearly continuous from the intersection of Highway 92 to Bunker Hill Drive and follows the fenceline along the east side of the Caltrans ROW along I-280. This firebreak generally varies from 35 to 45 feet wide for the majority of its length. However, the width of the firebreak narrows (sometimes to 15 feet wide) and twists considerably in several areas where steep slopes, large trees, or patches of oak woodland are present. In order to utilize this route for an underground transmission line, the 40-foot minimum construction ROW would extend into undisturbed serpentine grassland, several trees would need to be removed, and several more trimmed. The disked firebreak route along I-280 would result in greater impacts to adjacent serpentine grassland habitat and increased erosion potential, and would result in new impacts to wetlands/waters, trees, and two additional special status plant species, as compared to the original underground route, and was therefore, not considered further.
- **Move Underground Segment 50 to 100 Feet West.** This option segment would move the the approximately 1.1-mile long underground route in the San Mateo Highlands area approximately 50 to 100 feet west of the current alignment so it would be further from residences. This route would not be within the existing access road, requiring development of a new ROW and trenching and disturbance through more areas of undisturbed serpentine grassland and sensitive habitat, than if the trenching was done in the existing corridor. Therefore, because this option would create greater impacts in undisturbed sensitive habitat than it would reduce, it was not considered further.
- **Optional Locations for Transition Station at Tower 6/37.** In response to a comment on the Draft EIR regarding tree loss, Mitigation Measure B-2b has been added (see Section D.4.4.2) that would require relocation of the originally defined transition station south of San Mateo Creek. PG&E originally defined Tower 6/37 as the transition station south of San Mateo Creek. Because undergrounding south of that station would require removal of many trees and dense vegetation, the transition station has been relocated to the south in the vicinity of Tower 6/36, as illustrated in Figure Ap.1-3d in Appendix 1. The revised transition station location would allow removal of the prominent existing Tower 6/36 and installation of a transition station approximately 150 feet north of that site, in a hollow with oak trees to the east screening the view from most residences.
- **Optional Locations for Transition Tower at Tower 7/39.** As defined by PG&E when the Partial Underground Alternative was developed, the transition tower north of the San Mateo Creek crossing, Tower 7/39, would be immediately adjacent to the backyard of a residential property on Lakeview Drive. In order to reduce the visual impact of that tower and to locate that transition tower further from the residential property, several potential alternatives and solutions were evaluated, including: (a) moving the transition tower location to the south, (b) moving the transition tower to the north, and (c) installing the line underground across the creek, which would eliminate the need for both of the transition structures.

The first option would be technically infeasible due to geotechnical constraints and the steep slope to the south. The third option would also have technical feasibility concerns because the line would have to be bored through hard rock, such as sheared serpentinite, and there would be an approximately 20-foot elevation change between the bore entry and exit points on the northern end. The third option is also not legally permissible because as explained in Section 2.3.2.1 of Appendix 1, it would not be permissible under CEQA to move both the 60 and 230 kV line together out of the existing right-of-way to the PG&E Route Option 1B route. Therefore, the second option was the only one found to be feasible; this option is analyzed in Section D.

Rationale for Full Analysis

Project Objectives. The Partial Underground Alternative would meet all project objectives.

Feasibility. This alternative is considered to be feasible, although issues of concern are noted below:

- There are no legal feasibility concerns associated with this alternative. As described in Section 4.2.2 of Appendix 1, any alternative that would entail placing the 230 kV line underground along the current alignment of the existing 60 kV line may properly consider collocating the 60 kV line in such an underground alignment.
- PG&E stated in its scoping comment letter dated March 7, 2003 that the Partial Underground Alternative could present technical feasibility problems with PG&E's existing underground gas transmission lines; however, if the transmission line were placed more than 10 feet away or if protective measures were instituted, such as cathodic protection, issues with induced current and collocation would be avoided. Therefore, this alternative is technically feasible.
- Regulatory feasibility is of concern because of SFPUC and NPS restrictions on the creation of a new utility corridor along a portion of Cañada Road near Edgewood Road based on the Watershed Plan and the Scenic and Recreation Easement. However the benefit of this route segment is that it would eliminate the existing and proposed transmission line through Edgewood Park and the Pulgas Ridge Preserve. Therefore, it is possible that the SFPUC and NPS would determine that this alternative, while creating a new utility corridor in one area and thus a policy inconsistency issue, provides a net benefit to the environment by continuing to have only one corridor outside of a sensitive biological area.

Lessen Significant Environmental Impacts. The Partial Underground Alternative has the potential to lessen environmental impacts in several areas:

- It would allow removal of towers in the highly sensitive habitats in Edgewood Park and the Pulgas Ridge Preserve, and no new towers would be installed there.
- Visual impacts and EMF concerns would be greatly reduced (especially adjacent to residences in The Highlands, the Town of Hillsborough, and Burlingame).
- It would eliminate recreation impacts of construction and installation of taller towers in Edgewood Park, the Pulgas Ridge Preserve, and along other trails and bikeways in the Watershed Lands.
- Two overhead crossings of I-280 would be eliminated.

Optional Transition Station Location for Tower 6/37. The relocation of this southern transition station would eliminate the need for tree and shrub removal between Towers 6/36 and 6/37. Views of the transition station from residences would mostly be screened by existing oak trees. As a result, Mitigation Measure B-2b (Relocate Transition Station to North of Tower 6/36) is presented in Section D.4, Biological Resources, recommending relocation of the southern transition station proposed at Tower 6/36 for the crossing of San Mateo Creek in order to minimize tree removal in this area, and is also evaluated within each issue area in Section D in this Final EIR.

Optional Transition Tower Location for Tower 7/39. The transition tower, relocated approximately 100 feet to the north and at least 100 feet from any Hillsborough residential property line, along with landscape mitigation measures for the tower, will allow the undergrounding of the line north of this point, thereby considerably reducing overall visual effects and EMF levels on Hillsborough residences in the area. The original location of this tower, immediately west of the residence in which the existing

tower is located, was found to create a significant (Class I) visual impact (see Section D.3.4.2), and relocating it to the north would have a similar impact. However, Mitigation Measure V-24a (Reduce Impacts of Tower 7/39) in Section D.4.4.2 has been added to the EIR, which would relocate Tower 7/39 so it would be 100 feet north of its proposed location, and at least 100 feet from the property line of any of the residences. Also Mitigation Measures V-6a and V-20a, respectively, would require use of paint to minimize visibility and implementation of a landscaping plan to reduce visual impacts.

C.4.3 Transmission Line Route Alternatives: Northern Segment

Each of the following alternatives is located within the northern segment of the Proposed Project. This segment includes the primarily north/south route segments, starting from Trousdale Boulevard-Drive in the south, and offering connections to San Bruno Avenue, Sneath Lane, Westborough, and other connectors from the Skyline corridor to the BART or El Camino Real corridors. All of these alternatives would be underground. The discussions below describe each potential alternative segment and explain the reasons for retention for full analysis for each.

C.4.3.1 Transition Station Alternatives (with proposed underground route, Sneath Lane, or Westborough Boulevard)

Two possible alternative locations for an overhead-to-underground transition station are described in this section: a location west of Skyline Boulevard near the west end of San Bruno Avenue, and a location adjacent to the existing Sneath Lane Substation. Both locations are illustrated on Figure Ap.1-9 of Appendix 1 and in Figures C-1a and C-1b. These options are presented in response to concerns from the residents and City of San Bruno regarding the proposed transition station at the corner of San Bruno Avenue and Glenview Drive, and the likelihood that a significant visual impact would result from installation of a transition station at that location.

Each of the transition station alternatives could be used in conjunction with three different overhead or underground transmission line routes: the proposed overhead route or Partial Underground Alternative, the proposed underground route down San Bruno Avenue, an alternative underground route down Sneath Lane, and an underground route continuing north on Skyline Boulevard to Westborough Boulevard.

C.4.3.1.1 West of Skyline Boulevard Transition Station Alternative (with proposed underground route, Sneath Lane, or Westborough Boulevard)

Description

This alternative transition station, would be located west of Skyline Boulevard, southwest of near its intersection with San Bruno Avenue, on the SFPUC Watershed Lands. The line would transition to underground at the West of Skyline transition station, and the underground transmission line could then follow three different routes: (a) travel north on Skyline Boulevard for 0.1 miles, turning east at San Bruno Avenue to join the Proposed Project route on San Bruno Avenue near Glenview Drive in the City of San Bruno; (b) continue north underground in Skyline Boulevard to Sneath Lane, turning east on Sneath and continuing to the BART ROW, or (c) continue north underground along Skyline Boulevard for 2.1 miles to Westborough Boulevard, then turn east and continue in Westborough to either Junipero Serra Boulevard (addressed in Section C.4.3.5) or the BART ROW.

Rationale for Full Analysis

Project Objectives. The West of Skyline Boulevard Transition Station Alternative (with proposed underground route, Sneath Lane, or Westborough Boulevard) would meet all project objectives.

Feasibility. After analysis of seismic concerns and the feasibility of the I-280 crossing, construction and operation of the West of Skyline Boulevard Transition Station Alternative (with proposed underground route, Sneath Lane, or Westborough Boulevard) was found to be feasible. No technical, regulatory, or legal feasibility concerns exist.

Lessen Significant Environmental Impacts. This alternative has the potential to lessen environmental impacts as follows:

- It would avoid the proposed trailhead-parking project and impacts to a planned residential development east of Glenview Drive.
- The significant visual impact of the proposed transition station would not occur.
- Use of Sneath Lane or Westborough Boulevard routes would avoid the proposed Huntington Drive grade separation project at San Bruno Avenue.

C.4.3.1.2 Sneath Lane Transition Station (with proposed underground route, Sneath Lane, or Westborough Boulevard Alternatives)

Description

The Sneath Lane Transition Station Alternative was suggested during the scoping process as a means of eliminating the Proposed Project transition station and avoiding San Bruno Avenue. The Sneath Lane transition station location would require that the new overhead 60/230 kV line would continue north-northwest along Skyline Boulevard/Highway 35 for 0.6 miles past San Bruno Avenue to the Sneath Lane Substation where a transition station would be installed adjacent to the existing substation. At this point, an underground route would begin.

Like the West of Skyline Transition Station Alternative, this transition station could be used with three possible underground transmission line routes: the Proposed Project route down San Bruno Avenue, the Sneath Lane route, and the Westborough Boulevard route (each described above and in Appendix 1).

Rationale for Full Analysis

Project Objectives. The Sneath Lane Transition Station (with proposed underground route, Sneath Lane, or Westborough Boulevard route alternatives) would meet all project objectives.

Feasibility. After seismic and engineering analyses similar to the West of Skyline Transition Station Alternatives, construction and operation of the Sneath Lane Transition Station (with all route options) was found to be feasible. No technical, regulatory, or legal feasibility concerns exist.

Lessen Significant Environmental Impacts. This alternative has the potential to lessen the following environmental impacts:

- It would collocate the new transition station next to an existing utility substation, thereby reducing visual impacts.

- It would avoid conflict with the proposed trailhead-parking project and impacts to a planned residential development east of Glenview Drive.
- Use of Sneath Lane or Westborough Boulevard routes would avoid the proposed Huntington Drive grade separation project at San Bruno Avenue.

C.4.3.1.3 Glenview Drive Transition Tower Alternative

Description

This alternative location was suggested by the City of San Bruno in a comment letter based on the Draft EIR. This alternative transition tower is depicted in Figure Ap.1-9 and Ap.1-9a in Appendix 1 and would be located approximately 0.5 miles south of the proposed transition station on Glenview Drive, west of an existing water tank owned by the City of San Bruno. The tower would be located on the roadway divider between Glenview Drive and Skyline Boulevard on land owned by Caltrans.

To reach this transition tower, the overhead 230 kV line would turn to the east from Tower 14/93 crossing Skyline Boulevard, then transition to underground at the Glenview Drive Transition Tower. The underground transmission line could then follow three different routes that are discussed in Section C.4.3.1.1 and C.4.3.1.2 for the West of Skyline and Sneath Lane Transition Station Alternatives, and which (a) travel north on the west side of Glenview Drive for approximately 1,500 feet, turning east at San Bruno Avenue to join the Proposed Project route on San Bruno Avenue near Glenview Drive in the City of San Bruno and continue down San Bruno Avenue or use the Cherry Avenue Alternative; (b) continue north underground in Glenview Drive and then turning west on San Bruno Avenue to join Skyline Boulevard and then north to Sneath Lane, then turning east on Sneath and continuing to the BART ROW, or (c) continue north underground along Skyline Boulevard beyond Sneath Lane to Westborough Boulevard, then turn east and continue in Westborough to either Junipero Serra (see Section C.4.3.5) or the BART ROW.

Rationale for Full Analysis

Project Objectives. This alternative transition tower location, in combination with any of the three underground routes, would meet all of the stated objectives of the Proposed Project.

Feasibility. The suggested location of the Glenview Drive Transition Tower is on Caltrans ROW, between Skyline Boulevard (State Highway 35) and Glenview Drive. Skyline Boulevard is currently a two-lane conventional highway (not a limited access roadway). Caltrans retains this ROW for potential future expansion of Skyline Boulevard to four lanes, but this expansion is not currently identified on Caltrans' 10-year plan (Caltrans, 2003c) or as an advance planning study. However, it has been included in Caltrans' 25-year plan for road widening to four lanes. According to Caltrans, Skyline Boulevard currently has an 80-foot ROW east of the centerline of the existing roadway. In the present situation, allowing for one existing 12-foot traffic lane, a shoulder of approximately 7 feet (as defined in Table 302.1, Standards for Paved Shoulder Width), and the required safety area (called the "Clear Recovery Zone") of about 20 feet (6 meters), there would remain about 40 feet of ROW prior to expansion. Based on the expansion to two lanes (each 12 feet wide) plus the 7 foot shoulder and 20 foot Clear Recovery Zone, there would be approximately 28 feet of ROW. The transition tower would require a permanent space of about 12 feet in diameter on the eastern edge of the ROW (adjacent to Glenview Drive).

While the expansion to four lanes is not currently in Caltrans 10-year plan, it is identified on its 25-year plan. There appears to be adequate space for the tower to be installed outside of the Clear Recovery Zone even if there were an expansion. Based on the information provided by Caltrans and documented above, it appears that there are no feasibility obstacles to PG&E's submittal of a request for an Encroachment Permit to Caltrans. Caltrans would review the permit for compliance with all relevant requirements.

The Glenview Drive Transition Tower location lies somewhat closer to the mapped active trace of the San Andreas Fault than the proposed transition station location; however it is located east of the active trace so the transmission line would cross the fault overhead (the preferred method to minimize seismic risk).

Lessen Significant Environmental Impacts. As with the proposed transition station location, there are seismic issues of concern due to the proximity of the site to the San Andreas Fault. However, the Glenview Drive Transition Tower would be compatible with the already developed environment associated with the adjacent public utility (water supply tank) and would be located at a much less visually prominent site, so it would be generally more compatible with adjacent land uses than the proposed transition station. The adjacent water tank would also make the visual impacts of the structure substantially less than those of the highly visible proposed site. The land in the roadway divider, adjacent to the water tanks is disturbed, so there would be minimal habitat impacts, similar to the proposed transition station site. In addition, a transition tower at this location would be located east of the main trace of the San Andreas Fault, so if it were used in conjunction with the proposed route would avoid an underground fault crossing, as opposed to the Sneath Lane and West of Skyline transition sites.

C.4.3.1.4 Trousdale Drive Transition Tower Alternatives

Description

The alternative transition towers at the west end of Trousdale Drive were suggested in comments on the Draft EIR for two purposes: first, as a means of connecting the southern portion of the Proposed Project with Route Option 1B's Trousdale Drive and El Camino Real segment, and second, to connect the southern portion of the Partial Underground Alternative with Route Option 1B. In both cases, the 60 kV lines north of Trousdale Drive would remain in their existing condition. The two transition tower locations are shown in Figure Ap.1-9b; the two alternative towers would be about one-half mile apart but both would be along existing SFPUC Watershed Land utility roads southwest of the west end of Trousdale Drive.

For connection with the Partial Underground Alternative, the lines would transition underground approximately 1,100 feet west of Tower 10/70 on the west side of an existing SFPUC dirt access road. The route would travel east underground in the dirt and paved SFPUC utility access roads, past Tower 11/70 to the west end of Trousdale Drive. At that point the line would cross under I-280 and follow PG&E Route Option 1B east on Trousdale Drive and north on El Camino Real.

The second option under this alternative, which would allow connection of the Proposed Project to Route Option 1B Alternative, would be to simply replace Proposed Project Tower 11/70 with a transition tower. The Proposed Project would transition underground at Tower 11/70 and follow the same route underground in the SFPUC paved access road north to Trousdale Drive where it would turn

east and join the PG&E Route Option 1B Alternative on Trousdale Drive. This option is also shown in Figure Ap.1-9b.

Rationale for Full Analysis

Project Objectives. These alternative transition tower locations, in combination with the Partial Underground Alternative or the Proposed Project with the PG&E Route Option 1B Alternative would meet all of the stated objectives of the Proposed Project.

Feasibility. This alternative, used in conjunction with the Proposed Project or the Partial Underground Alternative and PG&E Route Option 1B, would be legally, technically, and regulatorily feasible.

Lessen Significant Environmental Impacts. Use of Trousdale Drive as an underground route would avoid the need for a transition station near San Bruno Avenue and Skyline Boulevard, and it would avoid use of San Bruno Avenue between Skyline Boulevard and Huntington Drive and the associated short-term construction impacts there. In addition, because it turns east south of San Bruno Avenue, it would avoid the visual and biological impacts of the Proposed Project in the I-280 corridor between Trousdale Drive and San Bruno Avenue. This route would also avoid visual concerns of San Bruno residents regarding the proposed transition station, as well as seismic concerns with a San Andreas Fault crossing at any of the transition station/tower sites near San Bruno Avenue.

C.4.3.1.5 Golf Course Drive Transition Station Alternative

Description

This transition station alternative location was suggested in comments on the Draft EIR and also as a part of the Watershed Restoration Alternative (see Section C.5.2.6). The Golf Course Drive Transition Station site would be located at the northeast quadrant of the three-way intersection of Golf Course Road, Golf Course Drive, and Skyline Boulevard, in unincorporated San Mateo County. The site is immediately north of a Caltrans Park & Ride lot in open space land within the SFPUC Peninsula Watershed.

Similar to the Trousdale Drive Transition Tower Alternatives, it would allow creation of hybrid alternatives between the Proposed Project, the Partial Underground Alternative, and PG&E's Route Option 1B as illustrated in Figures Ap.1-9c and Ap.1-9d. This location was suggested for use in conjunction with the Partial Underground Alternative as a means of reducing the significant visual effects of the transition tower near Tower 8/50 and Carolands Substation, as well as to eliminate the 230 kV overhead crossing of I-280.

Following are the options for use of the Golf Course Drive Transition Station Alternative:

Route Option 1B/Partial Underground Alternative. As a hybrid between Route Option 1B and the Partial Underground Alternative or Proposed Project, the line would be installed underground in Skyline Boulevard from the Jefferson Substation to Golf Course Road. Rather than turning east in Golf Course Road (under the freeway), the 230 kV line would continue north onto Golf Course Drive to just north of with the intersection of Skyline Boulevard and Golf Course Road. From the transition station, the line would be overhead west of the I-280 freeway, connecting with the Partial Underground Alternative or the Proposed Project, continuing north to one of the four transition station options near San Bruno Avenue. This option would eliminate the use of the portion of Route Option 1B route north

of Hayne Road, which is approximately 7 miles long (including Skyline Boulevard, Trousdale Drive and El Camino Real).

Partial Underground Alternative Crossing of I-280. The second option for the use of the Golf Course Drive Transition Station would be to allow an underground crossing of the 230 kV line below the I-280 in the Partial Underground Alternative. Under the Partial Underground Alternative, both the 60 kV and 230 kV lines would travel underground (west of Black Mountain Road) from the transition tower at Tower 7/39 to Golf Course Road. The underground 230 kV line would turn west on Golf Course Road to its intersection with Skyline Boulevard, and would then transition to overhead at the new transition station and continue overhead west of the I-280. The 60 kV line would continue underground in the existing 60 kV ROW, transitioning to overhead at Tower 8/50 (east of the I-280) to serve the Carolands Substation, then cross over or under the freeway at the location suggested in the Partial Underground Alternative.

In the original definition of the Partial Underground Alternative, both the 60 and 230 kV lines would be underground from the transition tower north of San Mateo Creek (Tower 7/39) to another transition tower south of Carolands Substation (Tower 8/50). A 60/230 kV transition tower at the 8/50 location would create a significant visual impact due to its prominent roadside location. However, if the 230 kV line turns west when the line reaches Hayne Road and crosses below the I-280 freeway, there will be a need only for a single-circuit 60 kV transition tower at the 8/50 location so the visual impact would be substantially reduced. The 60 kV line would then enter Carolands Substation and cross the I-280 freeway overhead from Tower 8/50 to the west.

In both options, from the transition station northward, the 230 kV line would transition overhead and would join the route of either the Proposed Project or the Partial Underground Alternative when they cross to the west side of I-280. From there the line would continue north in the same alignment as the Partial Underground Alternative, joining the Proposed Project at Tower 8/53 and continuing northward to one of the other transition station options.

Rationale for Full Analysis

Project Objectives. The Golf Course Drive Alternative Transition Station, in combination the Proposed Project, Partial Underground Alternative, and/or PG&E Route Option 1B, would meet all of the stated objectives of the Proposed Project.

Feasibility. Construction of an alternative transition station at this location and connection to the Proposed Project, Partial Underground Alternative, and/or PG&E Route Option 1B is technically, regulatorily, and legally feasible.

Lessen Significant Environmental Impacts. As a hybrid, the segment of PG&E Route Option 1B along Trousdale Drive would be eliminated along with the impacts to residences. Use of this alternative transition station with the Partial Underground Alternative would reduce the height and mass of the transition tower at Tower 8/50 because it would only be for the 60 kV line and would eliminate the freeway crossing for the 230 kV line (the 60 kV line would still have to cross over I-280).

Due to its protected location adjacent to existing trees and below I-280 and from screening by trees and landscaping that would be required as mitigation, construction of this alternative station would not result in significant visual impacts or disturbances or disrupted access to adjacent land uses, which are primarily open space and the Caltrans Park & Ride parking lot. Although this alternative transition

station site is located in undeveloped open space, an initial biological assessment determined that no sensitive habitat or species are present on the site.

C.4.3.2 Cherry Avenue Alternative

Description

This route within the City of San Bruno was proposed by the City of San Bruno Planning Department to avoid short-term construction impacts to the eastern portion of San Bruno Avenue and at the intersection of San Bruno and Huntington Avenues, where there is a proposed grade separation project planned. It would diverge from the Proposed Project route at the intersection of San Bruno Avenue and Cherry Avenue, follow Cherry Avenue for 0.5 miles to the north, turn east on Sneath Lane and end at El Camino Real or Huntington Avenue in the BART ROW. The route is shown in Figure Ap.1-10 in Appendix 1 and in Figure C-1b.

Rationale for Full Analysis

Project Objectives. The Cherry Avenue Alternative would meet all project objectives.

Feasibility. Construction and operation of the Cherry Avenue Alternative is feasible. No technical, regulatory, or legal feasibility concerns exist.

Lessen Significant Environmental Impacts. This alternative has the potential to lessen environmental impacts in several areas:

- It would avoid the proposed Huntington Drive grade separation project at San Bruno Avenue.
- It would allow use of Cherry Avenue and a portion of Sneath Lane, affecting fewer businesses.

C.4.3.3 Modified Underground Existing 230 kV Collocation Alternative and New South San Francisco Segment

Description

PG&E currently operates an underground 230 kV transmission line entirely in streets between San Mateo and Martin Substations. This alternative would use a portion of that route through the Cities of Millbrae, San Bruno, and Brisbane, and would incorporate a new route segment through South San Francisco and adjacent cities. The new route segment, described below, was developed to avoid several very congested utility areas in South San Francisco, especially along Linden Avenue, Airport Boulevard, and Bayshore Boulevard near the ongoing Highway 101 “flyover” construction area. This alternative is illustrated in Figure Ap.1-12 in Appendix 1 and in Figure C-1b.

Different portions of this alternative could be used with the Proposed Project route or any of the Southern Segment alternatives described in Section C.4.2. The southernmost point at which this alternative would be used is at the corner of San Bruno Avenue and El Camino Real, where PG&E’s Route Option 1B ends. Either the Proposed Project route (at San Bruno Avenue and Huntington Avenue) or the Sneath Lane Underground Route (Tanforan Avenue to Shaw Drive) could also connect with this Northern Segment Alternative.

This alternative would start at El Camino Real and Huntington Avenue, and would continue east on San Bruno Avenue for 0.4 miles, then north into PG&E’s 115 kV overhead line corridor just east of 7th Avenue (adjacent to Highway 101). Just south of the I-380, the route would jog west onto 7th Avenue, then cross

under I-380 and enter the City of South San Francisco where 7th Avenue becomes Shaw Road. After traveling on Shaw Road for 0.7 miles, the route would require a bored crossing of a tributary of Colma Creek and travel through a large parking lot east of Golden Gate Produce Terminal for approximately 0.3 miles before joining Produce Avenue.

This alternative would turn east and cross below Highway 101 in Airport Boulevard, then turn northeast onto Gateway Boulevard. The route would travel along Gateway Boulevard for approximately 1.1 miles, cross Oyster Point Boulevard, and enter a vacant parcel. There are two large contaminated areas in this segment of the route: the Homart Site (along Gateway Boulevard from East Grand Avenue to Oyster Point Boulevard), and the Chiltern Site (just north of Oyster Point Boulevard and west and south of Veterans Boulevard). The Chiltern Site would be avoided with use of Route Option E (described below) and construction through the Homart Site would be safely completed using defined procedures with which existing utilities were installed.

From Veterans Boulevard, the underground alternative route would follow the eastern edge of the UPRR for approximately 1.0 mile into the City of Brisbane to Sierra Point Parkway, passing through the closed Sierra Point Landfill area where the integrity of the landfill cap would be ensured with use of approved engineering methods that were used to install utilities serving the recent development in the Sierra Point area. At that point, the route would cross below Highway 101, then leave Sierra Point Parkway and with a bored crossing, traverse under the railroad tracks into Van Waters and Rodgers Road (private) for 0.2 miles before joining Bayshore Boulevard. The alternative route would follow the existing 230 kV underground line in Bayshore Boulevard for 1.1 miles, around the east side of San Bruno Mountain. This route would rejoin the Proposed Project route at the corner of Guadalupe Canyon and Bayshore, following the Proposed Project route for the last 0.8 miles into the Martin Substation.

Route Options. In response to comments on the Draft EIR, six route options were developed to bypass areas of concern for utility congestion and business disruption:

- **Route Option A** is a variation of the Modified Underground Existing 230 kV Collocation Alternative that would avoid the airport parking lot and high traffic volumes on Produce Avenue and the Airport Boulevard underpass below Highway 101. It would involve: (a) A bored crossing to the northeast below both the 101 Freeway and the Colma Creek Tributary. The bore pits would be at the curve in Shaw Road (where it turns from a north/south to an east/west street, in parking lots either northeast or southwest of the corner) and in open space at the end of the cul du sac at the southwest end of Marco Way. (b) Underground construction in Marco Way, then north on South Airport Boulevard to the point where South Airport Boulevard meets Gateway Boulevard. At this point Route Option A would re-join the originally described alternative.
- **Route Option B** is located in the Sierra Point area and provides an option to installing the line within the landscaped area west of the parking lot. In this option, the line would be installed within the parking lot just east of the railroad ROW, instead of using the originally proposed route, which would be within the landscaped area immediately east of the railroad ROW
- **Route Option C** is also in the Sierra Point area and could be used instead of the original route or part of Route Option B. With Route Option C, the line could go further east, following Shoreline Court north to Sierra Point Parkway. Upon reaching Sierra Point Parkway, the route would re-join the originally defined alternative, turning west and then crossing below the railroad ROW to the south end of Van Waters and Rodgers Road.

- Route Option D would avoid the active loading docks along Van Waters and Rodgers Road, instead using the east side of these facilities where no disruption of business activities would occur during construction.
- Route Option E would avoid the contaminated Chiltern Site parcel in the City of South San Francisco by turning east on Oyster Point Boulevard then north into Veterans Boulevard, where the line would turn north, proceeding within the Veterans Boulevard ROW (where other utilities are located) to the edge of the UPRR. At this point Route Option E would re-join the originally described alternative.
- Route Option F would continue about 200 feet north from Route Option D, adjacent to the railroad tracks, north of the north end of Van Waters and Rodgers Road, and then turn west into Bayshore Boulevard north of the intersection. Use of this option would eliminate any possibility that project construction would impact the businesses on Van Waters and Rodgers Road.

Rationale for Full Analysis

Project Objectives. The Modified Underground Existing 230 kV Collocation Alternative and New South San Francisco Segment and Route Options A through F would meet all project objectives.

Feasibility. This alternative, including Route Options A through F, would utilize less congested segments in the portions of the existing 230 kV route in South San Francisco and is technically feasible. No technical, regulatory, or legal feasibility concerns exist. While the route would pass through the Homart Site (a remediated industrial contamination along about 4,000 feet of Gateway Boulevard and Oyster Point Boulevard), there are accepted practices for safe construction through these roadways. These procedures have been used when existing utilities were installed. The route would also pass through a maximum 1,600-foot portion of the closed and capped Sierra Point Landfill, using accepted engineering techniques to ensure the continued integrity of the landfill cap if all construction could not occur above the cap.

Lessen Significant Environmental Impacts. This alternative has the potential to lessen environmental impacts in several areas:

- It would avoid crossing San Bruno Mountain in Guadalupe Canyon Parkway.
- By utilizing a primarily commercial and industrial existing corridor, it would reduce construction impacts to schools and residences in the Cities or Towns of San Bruno, South San Francisco, Colma, and Daly City.
- It would eliminate approximately 3.7 4 miles of overall construction and associated short-term noise, dust, and traffic impacts.
- Route Options A through F would avoid areas of high traffic volumes and potential utility congestion, and would reduce short-term construction disturbances to businesses along the original alternative route.

C.4.3.4 PG&E's Route Option 4B: East Market Street Alternative

Description

The East Market Street Alternative was developed by PG&E as an option for the Hoffman and Orange Street segment of the Proposed Project. This alternative would be entirely within Daly City, and would diverge from the Proposed Project route by continuing north on Hillside (where the Proposed Project turns east onto

Hoffman). The route would follow Hillside for 0.4 miles, and then turn northeast into East Market Street (see Figure Ap.1-15 in Appendix 1 and Figure C-1b), where it would rejoin the proposed route at Orange Street (East Market becomes Guadalupe Canyon Parkway at Orange Street). This alternative is a total of approximately 0.6 miles long, and would replace 0.8 miles of the Proposed Project.

Land uses along Hillside and East Market include commercial and residential properties, and the main entrance to Susan B. Anthony High School along the southeast side of East Market.

Rationale for Full Analysis

Project Objectives. PG&E's Route Option 4B – East Market Street Alternative would meet all project objectives.

Feasibility. Construction and operation of PG&E's Route Option 4B – East Market Street Alternative is feasible. No technical, regulatory, or legal feasibility concerns exist.

Lessen Significant Environmental Impacts. This alternative has the potential to lessen environmental impacts in several areas:

- It would eliminate construction and operation through the most densely populated residential area of the Proposed Project.
- The alternative would reduce EMF impacts to residences because the alternative streets are wider and mitigation would be easier to implement (by placing the line across the street from the school and/or by deeper burial of the line).

C.4.3.5 Junipero Serra Alternative

Description

This alternative alignment was suggested during scoping by the Town of Colma. The underground transmission line route would utilize Junipero Serra Boulevard for 1.8 miles (beginning at Westborough Boulevard in the City of South San Francisco), rather than the BART ROW. This route would eliminate use of San Bruno Avenue and would avoid the Proposed Project's use of Lawndale/McLellan, and most of Hillside.

Because Junipero Serra Boulevard does not extend south to Sneath Lane, this route could be used only with the Sneath Lane or West of Skyline transition station alternatives with the feasible Skyline to Westborough route options (see Section C.4.3.1). This route alternative could use either the Sneath Lane or West of Skyline Transition Station Alternatives, and would continue north along Skyline Boulevard until it would turn east onto Westborough Boulevard to the intersection of Westborough Boulevard and Junipero Serra Boulevard. The route along Junipero Serra would traverse the City of South San Francisco for 0.2 miles before entering the Town of Colma. Junipero Serra is a wide road with a median and few pedestrians. The land uses along the route become commercial as it approaches Serramonte Boulevard. The route would turn east into Serramonte Boulevard, staying in Serramonte for about one mile to Hillside, where it would rejoin the Proposed Project route. Figure Ap.1-16 in Appendix 1 and Figure C-1b present maps of this alternative route.

Rationale for Full Analysis

Project Objectives. The Junipero Serra Alternative would meet all project objectives.

Feasibility. Construction and operation of the Junipero Serra Alternative is feasible and there would be no space constraints associated with existing utilities. No technical, regulatory, or legal feasibility concerns exist.

Lessen Significant Environmental Impacts. This alternative has the potential to lessen environmental impacts in several areas:

- It would avoid use of Lawndale ~~Drive~~-Boulevard and much of Hillside ~~Drive~~Boulevard, areas that the Town of Colma would like to see bypassed, avoiding impacts to newly paved roadways.
- The alternative would use wider and less traveled roads, reducing potential traffic congestion.

C.5 Alternatives Eliminated from Full EIR Evaluation

C.5.1 Introduction

As discussed in Section C.1, alternatives were assessed for their ability to reasonably achieve the project objectives and reduce the significant environmental impacts of the Proposed Project. Also, their technical, legal, and regulatory feasibility was evaluated. Based on these screening criteria, the alternatives eliminated from EIR consideration are listed above in Section C.3.2. The rationale for elimination of each alternative is summarized below and presented in detail in Section 4 of Appendix 1 of this EIR.

C.5.2 Transmission Line Route Alternatives: Southern Segment

Each of the following alternatives is located within the southern segment of the Proposed Project from Jefferson Substation to the general area of the proposed transition station at San Bruno Avenue. Unless specified in alternatives descriptions, alternatives involve only the single-circuit 230 kV transmission line and the existing 60 kV would remain untouched. The discussions below briefly explain the reasons for elimination from EIR analysis for each potential alternative; more in-depth descriptions of each alternative are in Appendix 1.

C.5.2.1 PG&E's 1B with Underground 60 kV Line

Description. The route of this alternative would be exactly the same as PG&E's Route Option 1B (Section C.4.2.1) depicted in Figure Ap.1-2 in Appendix 1. However, in this alternative, the single-circuit 60 kV line would be undergrounded as well as the 230 kV line. Under this option, which was suggested in scoping comments, both transmission lines would transition to underground at Jefferson Substation and continue north through public roadways in the SFPUC Watershed Lands (8.3 miles), unincorporated San Mateo County (0.5 miles), the Town of Hillsborough (2.9 miles), and the Cities of Burlingame (0.9 miles), Millbrae (1.8 miles), and San Bruno (1.3 miles) for the length of the Southern Area Component. The line would travel down Cañada Road, Highway 92, Skyline Boulevard/Highway 35, Trousdale Drive and El Camino Real, and then join the Proposed Project route at San Bruno Avenue. Approximately 11.2 miles of this alternative would be installed underground, but would also include undergrounding the existing 60 kV transmission lines, so construction would include removing the existing 60 kV towers. The existing tower bases would be left in place through Edgewood Park in response to biological concerns involving invasive plants species and ground disturbance in the serpentine soils.

Rationale for Elimination

This alternative is in conflict with CEQA law due to the required relocation of the 60 kV circuit from the existing corridor to the separate underground ROW. This suggested alternative that would include placing both the proposed 230 kV line and the existing 60 kV line underground along a new alignment is not considered to be within CEQA's required "reasonable range of alternatives," and therefore cannot be evaluated for full analysis in the EIR. While undergrounding of only the proposed 230 kV line along an alternate route is a legitimate, potentially feasible alternative, the relocation of the existing 60 kV line to such a new route is not a permissible alternative under CEQA Guidelines. Legal standards require that there be an essential connection or relationship between an alternative and a legitimate lead agency interest dealing with a proposed project, and that an alternative be "roughly proportional" in nature and scope to the impacts of the Proposed Project. Since the impacts of the Proposed Project stem solely from construction of a new 230 kV line, and not from the existing 60 kV line, the relocation of the existing 60 kV line to a wholly new alignment cannot reasonably be required by the CPUC. The legal feasibility issues are defined in greater detail in Appendix 1. For these reasons, this alternative was not considered further in the screening process and is not considered for EIR analysis.

C.5.2.2 Alternatives to Trousdale Drive

PG&E's Route Option 1B suggests use of Trousdale Drive as a route for the underground transmission line to travel east from the I-280 corridor to the El Camino Real and BART ROW. This section considers two options to that east-west route: the Millbrae 60 kV ROW and the SFPUC water pipeline ROW. These options are considered due to concerns stated by the City of Burlingame regarding the use of Trousdale Drive as an underground route. Franklin Elementary School and the Mills-Peninsula Hospital are located along Trousdale Drive. In addition, the main water line from the San Francisco Water Department to the Cities of Burlingame and San Mateo and other areas to the south is buried under Trousdale Drive at Magnolia (City of Burlingame, 2003).

Millbrae 60 kV ROW Alternative

Description

This alternative was developed by the CPUC staff in order to evaluate the potential for collocation of the new underground 230 kV line with an existing transmission corridor, a 60 kV line that runs between the I-280 corridor and the Millbrae Substation (near Highway 101 and Millbrae Avenue). The City of Burlingame requested that Trousdale Drive be avoided, if possible, because of a planned expansion project for the Mills-Peninsula Hospital. It would diverge from the Proposed Project and the I-280 corridor three miles south of San Bruno Avenue so it would eliminate visual, recreational, geologic/seismic, and biological impacts along the northernmost overhead segment of the proposed route. It would avoid effects to several heavily used recreational trails, including the Sawyer Camp Trail and its access points at Proposed Project MP 11.4 and 11.6. In addition, it would eliminate the transition station at San Bruno Avenue and Glenview Drive, the use of San Bruno Avenue, and the San Andreas Fault crossing at Skyline Boulevard and San Bruno Avenue.

As shown in Figure Ap.1-4 in Appendix 1 and Figures C-2a and C-2b above, this route would diverge from the Skyline corridor at about MP 11.6 miles at Tower 11/73. It would follow the existing overhead Millbrae 60 kV corridor for approximately 1.6 miles to El Camino Real, west of Millbrae Substation. The line would have to utilize a narrow ROW through steep hillsides through residential areas and past several schools near Tioga Drive before traveling down the hill through open space and

meeting Richmond Drive. The 60 kV ROW runs between homes and along residential back yards. At the point where it reaches Richmond Drive, the ROW is wider and the lines are located along a center median. There are multi-family residential land uses on the north and south sides of Richmond Drive, and a school located on the south side. From Richmond Drive the line continues to the east, through a shopping center and across to El Camino Real. The route would turn north onto El Camino Real and rejoin the proposed route at El Camino Real and San Bruno Avenue.

Rationale for Elimination

Feasibility. While no legal or regulatory feasibility concerns arose, the alternative was determined not to be technically feasible because:

- There would be engineering constraints resulting from traversing the steep hillside and through a narrow easement immediately adjacent to residential properties. There is inadequate space in the existing ROW to install an underground line, and the ROW could not be widened due to the proximity of adjacent homes.
- Installation of an underground line along this portion of the corridor would also create geotechnical concerns due to required construction on very steep and potentially unstable hillsides. Construction of trenches perpendicular to steep slopes could create erosion and exacerbate existing slope instability.
- **Potential Environmental Impacts.** The Millbrae 60 kV line corridor runs along residential backyards and across steep hillsides in the City of Millbrae within a narrow easement. In comparison to Trousdale Drive, which is a wide four-lane street with gentler slopes, this alternative poses much greater geotechnical concerns regarding slope stability, and greater land use and EMF impacts to residential homes. Construction impacts associated with underground construction would be severe in the narrow and steep ROW.

SFPUC Water Facility ROW Alternative

Description

This route, recommended for consideration by the Town of Colma, is depicted in Figure Ap.1-5 in Appendix 1 and in Figures C-2a and C-2b above and would follow the existing SFPUC water pipeline ROW from the Skyline corridor, through the Cities of Millbrae, San Bruno, and South San Francisco where it would join the proposed or an alternative alignment. This alternative route was considered because it would reduce seismic impacts because it would avoid the crossing of the San Andreas Fault zone at San Bruno Avenue. Because it would be located within an existing utility corridor, the alternative would avoid the proposed use of San Bruno Avenue, the BART corridor, and Hillside and Lawndale/McLellan ~~Drives~~Boulevards.

This alternative would diverge from the Proposed Route at Tower 12/82, following the SFPUC water pipeline ROW north-northeast to San Bruno Avenue, Sneath Lane, Junipero Serra Boulevard, or Serramonte Boulevard. The route would follow Crystal Springs Road east from the SFPUC facility, cross under, and then parallel I-280 to the west to San Bruno Avenue, where it would cross east under I-280 again traveling north towards El Camino Real (crossing Sneath Lane just west of Cherry Avenue). From just west of the intersection of El Camino Real and 2nd Street in the City of South San Francisco, the SFPUC pipeline ROW would roughly parallel El Camino Real (west of Junipero Serra) to Serramonte Boulevard in the Town of Colma. The route would be in an existing utility corridor. However, the ROW passes through residential areas and cemeteries (Woodlawn Memorial Park,

Greenlawn Memorial Park, Greek Orthodox Memorial Park, Cypress Lawn Cemetery, and Golden Gate National Cemetery) and near four schools.

Rationale for Elimination

Feasibility. While no legal feasibility concerns exist, other feasibility concerns are:

- The SFPUC does not allow any utility collocation with its water pipelines, therefore, this alternative would not be regulatorily feasible to permit.
- The ROW at its southern terminus, near Crystal Springs Road, is very narrow and runs along the side of a steep canyon that presents geotechnical concerns regarding slope stability. Also, additional space in this portion of the ROW does not appear to be available. Therefore, this alternative is technically infeasible.
- In addition, the collocation with the existing pipeline would create additional engineering concerns, requiring engineering modifications, additional cost and construction disruption.

Potential Environmental Impacts. Due to the collocation of the transmission line with existing water pipelines, cathodic protection and/or insulation may need to be installed on the water pipeline (to avoid electric shocks). While this impact is mitigable with engineering modifications, additional cost and construction disruption would be created. The route also crosses several residential areas and cemeteries and near four schools, which could raise EMF and construction impact concerns.

C.5.2.3 West of Existing Corridor, East of I-280 Alternative

Description

This 3.1-mile alternative from Ralston Substation to just north of Hayne Road would require relocation of both the 230 and 60 kV lines, and was suggested during scoping. It could be either overhead or underground in the suggested route. Because the route would be the same and the impacts are similar, both the underground and overhead options are addressed together. This alternative route was developed because it would reduce or eliminates visual impacts to residences (but visual impacts of the overhead version of this alternative would likely be significant from I-280). It would also eliminate EMF concerns of residents along the Proposed Project route in the I-280 corridor, especially in the vicinity of Lexington Avenue and Black Mountain Road.

The alignment would be entirely west of the Proposed Project, and would relocate the segment from towers 5/28 to 6/34, and from 7/40 to 8/49 to the west to increase their distance from residences. The route would remain east of I-280 and would remain entirely on SFPUC Watershed Lands, but would be located on lands that are currently undisturbed. If the route were underground, then there would be an overhead crossing of San Mateo Creek, similar to the Proposed Project and mentioned above for the Route Option 1B and Partial Underground alternatives. The route is illustrated in Figure Ap.1-6 in Appendix 1 and in Figure C-2a above.

Rationale for Elimination

Project Objectives. This alternative would meet three of the four project objectives. However, there could be delays in getting permits within the project timeline of 2005-2006 to meet electric demand.

Feasibility. No legal or technical feasibility concerns exist. However, the following regulatory concerns were identified:

- Due to the extent of habitat disturbance and the sensitivity of resource agencies to the high value of this habitat, it would be considered very difficult to obtain required permits/approvals from the U.S. Fish and Wildlife Service and the California Department of Fish and Game (for impacts to sensitive species), the SFPUC (for a new easement as discussed in Utility Easement Policy W6), and the National Park Service, if necessary (for disturbance within its Scenic and Recreation Easement), within a reasonable period of time.
- The habitat in this area is protected by the Federal and State Endangered Species Act and the Native Plant Protection Act. The amount of increased indirect and direct impacts to this area would require consultation with and a biological opinion from the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Federal Endangered Species Act (based on the experience of biologists with PG&E and EIR preparers, the extent of anticipated disturbance from the Proposed Project in this area would be unlikely to trigger USFWS consultation requirements).

Potential Environmental Impacts. This alternative would create significant biological impacts as a result of the placement of towers or undergrounding in the highly sensitive serpentine grasslands in the SFPUC watershed lands to which the relocation was suggested. The towers and line associated with an overhead route would also have increased visual impacts to travelers on I-280 (affecting a far greater number of viewers than those affected in residences along Lexington Avenue and Black Mountain Road). If the lines were placed underground then there would be much greater construction impacts to the grasslands, and the requirement for permanent access roads to be maintained. Impacts would likely be significant and unavoidable, even after implementation of required mitigation. Therefore, due to these unmitigable environmental impacts, this alternative was eliminated from further consideration in this EIR.

C.5.2.4 West of Reservoirs Alternative

Description

This alternative alignment was proposed in scoping comments by residents in The San Mateo Highlands and the Town of Hillsborough. No specific route has been defined so the alternative is only conceptually depicted in Figure Ap.1-7 and in Figures C-2a and C-2b above. It would require construction of an underground 230 kV line or new 230 kV overhead towers to the west of the Crystal Springs and San Andreas Lakes. The West of the Reservoirs Alternative would replace approximately 14.6 miles of the proposed route and would be within the SFPUC Watershed lands. The 60 kV line would remain unchanged with this alternative. In the West of Reservoirs Alternative, the towers would be considerably farther from residences, especially in the Town of Hillsborough and the San Mateo Highlands, for which the Proposed Project presents EMF and aesthetic concerns. The route would be located further from the San Andreas Fault for the majority of the southern component. The alternative would also avoid short-term construction impacts related to noise and traffic because of its location in an isolated area. It would also eliminate construction in the sensitive serpentine habitat areas west of I-280 (but would create new, unspecified biological impacts).

Rationale for Elimination

Project Objectives. This alternative would meet three of four project objectives. However, because there is no specifically defined route at this time, this area has not been evaluated for presence of biological or cultural resources. The time required to complete biological and cultural resources surveys would substantially delay the project timeline and would fail to achieve the project objective of meeting electric demand by September 2005 or summer 2006.

Feasibility. No legal or technical feasibility concerns exist; however the following feasibility concerns would result:

- This alternative would establish a new utility corridor through the undeveloped Peninsula Watershed, which would conflict with Watershed Plan Policy WA6 and therefore would not be regulatorily feasible.
- This alternative would almost certainly be considered as inconsistent with the NPS Scenic Easement, because it would require construction disturbance and development of new access roads and transmission towers in a currently undisturbed area, creating a significant new visual impact on the western side of the Watershed Lands.
- Visual impacts of a new overhead line in an undisturbed corridor would also create a policy inconsistency with the SFPUC WA6 and NPS Scenic Easement, which are intended to protect the viewshed surrounding the Watershed Lands.

Potential Environmental Impacts. With this alternative, a new utility corridor would be established in an undeveloped area. There would likely be extensive impacts to biological resources due to the undisturbed nature of the western Watershed Lands. Biological surveys have not been completed for this alternative and these would take substantial time; the Watershed Lands are rich in biological resources. Because road access to the western watershed lands is very limited, extensive new access roads would be required for construction and for maintenance, adding to the impacts of the transmission line construction itself (the Proposed Project requires a few new access roads, but most portions of the route are accessible by existing access roads).

In addition to biological impacts, there could be impacts to cultural resources in this undisturbed area. The Proposed Project corridor is disturbed and has been surveyed for cultural resources; however, this new area has not been surveyed so potential cultural impacts are not known. Because the area was inhabited by prehistoric cultures due to the proximity of the lands to the creeks that followed the valley (prior to dam inundation), the potential for cultural resources exists.

The western watershed lands are also susceptible to landslides. Visual impacts of a new overhead line in an undisturbed corridor could be significant. As discussed above, these visual impacts would also create a policy inconsistency with the SFPUC WA6 and NPS Scenic Easement, both of which are intended to protect the viewshed surrounding the Peninsula Watershed.

C.5.2.5 PG&E's Underwater Cable Alternative Segments to PG&E's Route Option 1B Alternative

Description

PG&E proposed three possible route options for the Underwater Cable Alternative segments to reduce impacts of its Route Option 1B Alternative. These options were developed because they would avoid CRLF habitat on the dam, and to avoid conflict with the County of San Mateo's Cañada Road Bridge repair/replacement actions. In addition, there would be no new overhead structures along the scenic shoreline. Maximizing the length of the route located in the reservoir(s) would reduce the length of underground duct bank required for Route Option 1B, and the accompanying construction-related short-term impacts in the roadways.

The first underwater cable option would require about 3,000 feet of cable and would enter and exit the Lower Crystal Springs Reservoir near the dam, minimizing the length of cable in the reservoir. This

route is illustrated in Figure Ap.1-2b (in Appendix 1) as one of several feasible options for crossing Crystal Springs Dam as part of the PG&E Route Option 1B Alternative. The second underwater cable option would be over 9,200 feet long, entering Lower Crystal Springs Reservoir north of the dam and exiting the reservoir near the southern end, as depicted in Figure Ap.1-8. The third option would maximize the distance that the cable would travel underwater, and would require over 12,000 feet of cable (this option was determined to be infeasible while still in the conceptual phase, so no map is provided). Under this third option, the cable would enter Lower Crystal Springs Reservoir near the dam and would travel to the southern end of the reservoir. The cable would be bored through the old Crystal Springs Dam (which now supports Highway 92) to reach the Upper Crystal Springs Reservoir. The transmission line would exit the Upper Reservoir on the eastern shore after traveling about half of the reservoir's length. Once out of the reservoirs, each of these options would continue along the PG&E Route Option 1B Alternative route.

Rationale for Elimination

The 3,000-foot underwater alternative segment has been retained for analysis and is discussed under the PG&E Route Option 1B Alternative. The two longer submarine options would require that segments of cable be spliced together and this technology is not proven for deep water use. Therefore, these options would not be technically feasible. The rationale for their elimination is discussed below.

Feasibility. No legal feasibility issues exist, however the following concerns have been identified:

- A Caltrans permit would be required for the bored crossing of Highway 92 at the dam between Upper and Lower Crystal Springs Reservoirs for the extended underwater route (Option 3). This permit would likely be obtained as long as it could be shown that the boring would pose no threat to the roadway.
- Underwater cables in general are considered to be technically feasible; however the highest voltage underwater cable installed to date is 170 kV. A 230 kV underwater cable has never been installed. Also, as described above, an underwater cable alternative installed in the Crystal Springs Reservoirs would require that segments of cable be spliced together approximately every 3,000 feet. According to PG&E, the splices of the underwater cable would not be reliable over the long-term due to the depth of the lakes (about 100 feet). Therefore, in this analysis, an underwater cable longer than 3,000 feet is not considered to be technically feasible, eliminating PG&E's second and third underwater options.

Potential Environmental Impacts. Biological resources of the lakes have the potential to be affected by heat from the transmission lines. However, because these heat effects would be minor and limited to the area immediately adjacent to the cable alignment, they would not create any significant impacts to biological resources within the reservoir. Water quality could be affected by boat operation, cable installation, and/or cable operation. The primary water quality issue associated with underwater cable installation would be possible fuel and/or oil leakage or spill from the motorized watercraft. Disturbed areas adjacent to the bore sites would also need to be stabilized to prevent sediment deposition into the reservoir.

C.5.2.6 Watershed Restoration Alternative

Description

In its comment letter on the Draft EIR, the 280 Corridor Concerned Citizens Group (280 Citizens) presented a new alternative for consideration (Davis, Wright, Tremaine, 2003). This alternative is described as being a variation of the Partial Underground Alternative (described in Section 4.2.3 of this Appendix). However, the 230 kV underground line would follow PG&E's Underground Route Option 1B route from Jefferson Substation to just south of Carolands Substation. The alternative is illustrated on Figures Ap.1-8A and 1-8B (Appendix 1) and is defined as follows:

- **230 kV Line:** From the Jefferson Substation to the Carolands Substation, the 230 kV line would follow the All Underground Alternative 1B alignment in Cañada Road, then transition to overhead just north of Hayne Road along Skyline Boulevard (at the south end of the Crystal Springs Golf Course). The overhead 230 kV line would continue north on the west side of the I-280 to a transition station in San Bruno.
- **60 kV Line:** Approximately 12.4 miles of the existing double circuit 60 kV line would be removed between Jefferson Substation and the Millbrae Tap (near MP 12.4, west of the I-280 and about one mile north of Trousdale Drive). The remaining 60 kV system would be served from other 60 kV substations.
- **Service to Existing Substations and Taps:**
 - **Ralston Substation** would be served directly by the 230 kV circuit via 230kV/12kV stepdown transformers. Underground 230 kV and 12 kV lines would connect Ralston Substation and Skyline Boulevard, following an existing overhead utility ROW and an existing dirt road. A ring bus breaker configuration would be installed to allow protection of the 230 kV line, requiring expansion of the existing approximately 0.5 acre substation to 1.5 acres (this size is considered by EIR preparers to be the minimum — more likely an area of at least 2 acres would be needed to accommodate the ring bus breaker configuration). Also, two 230 kV transition towers would be required for the overhead/underground transition, plus additional transition poles would be required for the 12 kV lines at the site.
 - **Watershed, Carolands, and Crystal Springs Substations** would be served with new 12 kV distribution lines from Ralston Substation. These 12 kV lines would be completely underground, primarily following Skyline Boulevard/Cañada Road. An underground/overhead transition station would be required near Skyline Boulevard and Crystal Springs Road to allow connection to the Crystal Springs Substation.

Rationale for Elimination

Project Objectives. The proposal would not likely meet WECC, NERC and CAISO minimum planning criteria. The objective to create a more diverse transmission system in the area would be met with the WRA because the WRA would create a 230 kV line that does not originate at the San Mateo Substation. However, the proposal would result in a degradation in electrical service to other loads in the area, because the diversity and reliability of the 60 kV system would be diminished significantly because of the removal of a substantial portion of this system.

The WRA would result in construction of a new 230 kV line between Jefferson and Martin Substations, so may be considered as compliant with the ISO resolution. However, it is noted that the Board implicitly assumed that the 60 kV system would be retained, not eliminated. Therefore, reliability is

not enhanced for the 60 kV system and the Board may not view the WRA proposal as consistent with its original resolution.

Feasibility. This suggested alternative appears to be technically and regulatorily feasible, but not legally feasible. It would include removal of the existing 60 kV double-circuit line from Jefferson Substation to the Millbrae Tap, installation of new 12 kV distribution lines, substantial modification to the Ralston Substation, and other modifications to the Carolands, Crystal Springs, and Watershed Substations. As described in Appendix 1, Section 2.3.2.1 under Option D, the WRA is not considered to be within CEQA's required "reasonable range of alternatives," because elimination of the 60 kV system is unrelated to the installation of the proposed 230 kV line. Therefore, this alternative cannot be considered for full analysis in the EIR. Undergrounding of only the proposed 230 kV line along an alternate route is a legally permissible and potentially feasible alternative that is fully considered in the EIR (PG&E Route Option 1B).

Potential Environmental Impacts. The WRA would create the following new impacts:

- Potentially significant visual impacts at the Ralston Substation resulting from: (a) two overhead/underground transition structures, (b) expansion of the substation from a 60 kV to a 230 kV substation, requiring increased area from about 1/2 acre to as much as 3 acres, and (c) addition of substation facilities (transformers and breakers) that would be much taller and more massive than those currently at the substation depending on the final engineering configuration.
- Potentially significant biological impacts resulting from the expansion of the Ralston Substation within undeveloped sensitive grassland habitat on the SFPUC Watershed.
- Potentially significant biological impacts from installing the underground 230 kV and 12 kV lines to connect the Skyline Boulevard underground line with the Ralston Substation. The previously undisturbed area (not an existing road utility corridor) between Skyline Boulevard (just east of Highway 92) and the substation consists of valuable serpentine soils and associated plants, which would be disturbed during construction over an area affected that would exceed the width of the existing "two-track" road.
- Construction impacts along the underground segment would be greater than those of the PG&E Route Option 1B because several 12 kV lines would be required to be installed underground along with the 230 kV line.
- Depending on the age of the existing system, to convert from 4 kV to 12 kV could mean replacing many poles, all of the insulators, probably a portion of the conductors, and all of the line transformers that step-down to the load utilization voltage (i.e., 120 V or 240 V). In addition, any 4 kV underground line would also need to be replaced. These upgrades would result in considerable short-term construction activity throughout the entire distribution area served by the Carolands station. Another option would be to locate two transformers upstream of Carolands; and to step down from 12 to 4 kV. This option would require additional land, probably slightly larger than the existing Carolands Substation at that location, which may be difficult given the space constraints at this location.

C.5.2.7 Hill/Nevin West of I-280, East of Reservoirs Alternative

Description

This alternative was suggested in a comment letter on the Draft EIR from San Mateo County Supervisors Jerry Hill and Mike Nevin, and is a modification of PG&E Route Option 1B that would

avoid Trousdale Drive and El Camino Real. The general terms of this alternative route, as described by Supervisors Hill and Nevin (see Comment Set R), would “continue to keep the line underground, and at the most appropriate location, take the line back across Highway 280 and onto Watershed lands where the line could go north under existing trails, service roads or bike routes until it rejoined Skyline Boulevard on the west side of Highway 280. At that point the line could continue underground along Skyline to Sneath Lane, turn right and travel down Sneath and connect to routes under consideration that would take the project eventually to the Martin Substation.”

Using this general route description as guidance, the Hill/Nevin West of I-280, East of Reservoirs Alternative was developed for purposes of analysis in this EIR, which would require installation of a 230 kV transmission line underground, following the PG&E Route Option 1B up to Trousdale Drive. At Trousdale Drive, the line would turn west on Trousdale Drive for less than 400 feet before entering the SFPUC Watershed and continuing west and northwest in access roads within the Watershed. The line would then join the Sawyer Camp Trail just east of the dam of San Andreas Lake, following the trail up to its start just off Skyline Boulevard. The underground line would continue north, within Skyline Boulevard. The alternative is illustrated in Figure Ap.1-8d. The line would cross to the east and join Skyline Boulevard just south of Bryant Way in the City of San Bruno. The line would continue in Skyline Boulevard to the Sneath Lane Transition Station Alternative, as Supervisors Hill and Nevin suggested.

The CPUC requested that PG&E provide design and preliminary feasibility information on the Hill/Nevin Alternative. In addition to defining the route described above, PG&E also defined routes that would be located in several residential streets within San Bruno. Those routes were not further considered by the CPUC because the residential streets are substantially narrower than Trousdale Drive, and both construction and operational impacts on residences would be greater than those of the Route Option 1B as originally defined. PG&E’s defined routes did not include a route in Skyline Boulevard north of Cambridge Road because the main trace of the San Andreas Fault is located there. This analysis retains that route segment, but moves it slightly west onto SFPUC Watershed Lands, following an existing SFPUC utility road/firebreak.

Rationale for Elimination

Project Objectives. This alternative would meet most project objectives. However, issues associated with biological permitting through the area with the SFPUC and under Section 7 of the Endangered Species Act could result in delay of the project, which would fail to achieve the objective of meeting electric demand by September 2005 or summer 2006.

Feasibility. This alternative would be technically and legally feasible, but would have significant regulatory feasibility issues. Permitting obstacles associated with this highly sensitive land and the SFPUC’s Watershed Management Plan would make this alternative regulatorily infeasible, as it would be very difficult to permit within a reasonable period of time. In addition, the extent of increased indirect habitat and direct mortality impacts to plants and wildlife in this area, especially to the California red-legged frog (CRLF), the San Francisco garter snake, the Mission Blue butterfly and possibly the Southwestern pond turtle, and/or associated habitats, would trigger consultation and a biological opinion from the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Federal Endangered Species Act (the extent of anticipated disturbance from the overhead Proposed Project or any overhead alternative in this area would not trigger USFWS consultation requirements), which could also contribute to project delays.

Potential Environmental Impacts. With this alternative, the overhead 60 kV line would remain in place and there would be a new (underground) utility corridor established on the SFPUC Watershed. Though the line would be placed in an existing disturbed roads and trails, there would likely be extensive impacts to biological resources, such as vegetation and wildlife, due to construction activities that could not be constrained within the narrow roadways and trails, extending into undisturbed Watershed Lands. Due to these potential impacts on the CRLF and San Francisco garter snake, consultation with the USFWS under the Section 7 of the Endangered Species Act may be required resulting in project delays. The susceptibility for and the effects of construction-induced erosion would be potentially significant due to the hilly topography, which increases the likelihood of erosion impacts, and the proximity to San Andreas Lake and other drainages and wetlands, which could impact water quality in the Watershed.

In addition, this alternative would be installed in the Sawyer Camp Trail and would be adjacent and parallel to the San Andreas Trail for approximately 3 miles. Construction activities along both trails would occur for several months resulting in the impediment of access and construction disturbance within the trail corridor.

C.5.3 Transmission Line Route Alternatives: Northern Segment

Each of the following alternatives is located within the northern segment of the Proposed Project and discussed in greater detail in Section 4 of Appendix 1. This segment includes the primarily north/south route segments, starting from Trousdale Boulevard in the south, and offering connections to San Bruno Avenue, Sneath Lane, Westborough, and other connectors from the Skyline corridor to the BART or El Camino Real corridors. All of these alternatives would be underground. The discussions below describe each potential alternative segment and explain the reasons for elimination for full analysis for each.

C.5.3.1 I-280 Northbound Ramp Alternative

Description

Proposed by the City of San Bruno, this alternative would diverge from the Proposed Project at the entrance/exit ramp of I-280 along San Bruno Avenue and would proceed adjacent to the northbound ramp, east of I-280, for approximately 0.5 miles north to Sneath Lane. PG&E has an existing gas pipeline along the west side of I-280. The route would then continue east on Sneath Lane to the BART ROW where it would rejoin the proposed route within the City of San Bruno boundaries. Entirely within the City of San Bruno, this route would be roughly the same distance as the proposed route and is shown in Figure Ap.1-11 of Appendix 1 and in Figure C-2b. This alternative would not change the location of the proposed transition station at San Bruno Avenue and Glenview Drive. This route would avoid short-term construction impacts to San Bruno Avenue and the intersection of San Bruno and Huntington Avenues, where there is a proposed grade separation project planned. It would also avoid construction in San Bruno Avenue between I-280 and the BART ROW.

Rationale for Elimination

Feasibility. No legal or technical feasibility concerns exist; however there are significant regulatory feasibility issues associated with acquiring an easement from Caltrans and using the I-280 off-ramp. PG&E would have to demonstrate that there were no other options, in which case Caltrans would work with them through the Exception Permit Process. However, given that there are other options (as described in this section and in Appendix 1), the regulatory feasibility of this alternative is questionable.

Potential Environmental Impacts. This alternative would not significantly lessen any impacts of the Proposed Project.

C.5.3.2 PG&E's Route Option 2A: El Camino North Alternative

Description

This alternative was presented in the PEA as PG&E's Route Option 2A. This underground line segment would diverge from the proposed route at the intersection of El Camino Real and San Bruno Avenue, where it would turn north in El Camino Real and be in that roadway for about 3.7 miles. It would turn east on Lawndale/McLellan Drive, rejoining the proposed route at the corner of Lawndale/McLellan and El Camino Real. The alternative segment would be located in the Cities of San Bruno (0.9 miles) and South San Francisco (2.2 miles) and the Town of Colma (0.6 miles), the same jurisdictions that would be affected by the relevant Proposed Project segment.

This alternative segment would replace roughly the same length of the Proposed Project, which would be entirely within the BART ROW. Land uses along El Camino Real are generally commercial, and traffic is heavy. The route would pass South San Francisco High School to the east of El Camino Real. Figure Ap.1-13 in Appendix 1 and Figures C-2a and C-2b show a map of this alternative. Because this alternative would be installed in El Camino Real and not the BART ROW, the alternative route would avoid conflict with the City of San Bruno's planned grade separation project at the corner of Huntington and San Bruno Avenues. It would also avoid passing Los Cerritos Elementary School along the BART ROW. Construction and operation of the El Camino Real North Alternative is feasible and there is adequate space underground in the roadways along this alternative route. No technical, regulatory, or legal feasibility concerns exist.

Rationale for Elimination

Potential Environmental Impacts. Without significantly reducing impacts of the Proposed Project, the El Camino North Alternative would require the installation of an underground line along the region's busiest commercial highway, and would thus cause temporary disruption to businesses along El Camino Real and to a few residences during construction. The El Camino Real Alternative would likely include a number of contaminated sites due to its long history of use for commercial and industrial (gas station) purposes.

C.5.3.3 PG&E's Route Option 3B: BART North Alternative

Description

The BART North Alternative was developed by PG&E as an alternative to the use of Lawndale/McLellan Drive (0.6 miles) and to part of the Hillside Boulevard segment (1.7 miles) of the Proposed Project. It was presented as Route Option 3B in the PEA. It would eliminate the 2,400-foot segment of proposed underground transmission line adjacent to El Camino High School (which is at the southeast corner of El Camino Real and Lawndale/McLellan). It would also reduce construction and traffic impacts along Hillside and Lawndale/McLellan, but would add impacts on Serramonte Boulevard.

As shown in Figure Ap.1-14 of Appendix 1 and Figure C-2b, this alternative would locate the transmission line in a 2.0-mile segment of the newly constructed and recently finished BART ROW between Lawndale/McLellan Drive and Serramonte Boulevard. The route would diverge from the Proposed Project route by staying in the BART ROW, rather than turning east onto Lawndale/~~McClellan~~ Boulevard. It

would remain in the BART ROW for about one mile to Serramonte Boulevard, where it would turn east into Serramonte. This alternative would rejoin the proposed route at the corner of Serramonte and Hillside.

Rationale for Elimination

Feasibility. This alternative would require construction across the landscaped front entrance to a historic Colma funeral home business, Holy Cross Cemetery, which overlies the restored BART ROW and is a National Register eligible historic property. Based on the BART construction, an alternative through this site is feasible, but it would require documentation regarding the project plans that would consider a variety of potential impacts to the property. PG&E would have to demonstrate that there would be no significant effect to either the cemetery or to the cemetery setting, which could be costly, but would not be impossible. Therefore, there are no engineering or regulatory constraints that would prevent construction in the BART ROW, and this alternative is feasible, except for the concerns discussed in relation to the cemetery.

Potential Environmental Impacts. This alternative would not significantly lessen environmental impacts of the Proposed Project, but rather it would create additional impacts of its own. Serramonte Boulevard is a busy, commercial street lined with several car dealerships that draw customers from the entire Bay Area, so construction in the street could cause short-term disruption to these businesses. The City of South San Francisco has expressed concern that further construction in the BART ROW north of Lawndale/McLellan Drive would negatively impact local businesses that were severely impacted during the lengthy BART construction. In addition, this alternative would require construction across the landscaped front entrance to a historic Colma funeral home business, Holy Cross/Cypress Lawn Cemetery, which overlies the restored BART ROW and is a National Register eligible historic property. This site was disturbed during BART construction and has recently been restored and revegetated. Additional disturbance to this historic property could be damaging.

C.5.3.4 Mission/El Camino Real to A Street Alternative

Description

This alternative route, recommended by the Town of Colma planning department, is shown in Figure Ap.1-17 in Appendix 1 and Figure C-2b. In conjunction with PG&E's El Camino North or BART North Route Options, this alternative would avoid construction impacts to Lawndale/McLellan Drive and to Hillside Boulevard and Hoffman Street from the City of South San Francisco to the City of Daly City. It would require use of either the El Camino North Alternative or the BART North Alternative, both recommended for elimination, but would allow avoidance of both Lawndale/McLellan and Serramonte Boulevard. The alternative route would follow along Mission Road/El Camino Real from Serramonte to A Street. The route would turn east onto A Street and would travel down A Street until turning north onto Hillside Boulevard in the City of Daly City. The route would follow Hillside Boulevard to Market Street, turn east on Market Street (as described for the East Market Street Alternative in Section C.4.3.4) and rejoin the proposed route at the intersection of Orange Street and East Market Street. A Street is a narrow road with single and multi-family residential land uses.

Rationale for Elimination

Potential Environmental Impacts. Mission/El Camino Real is a very busy, congested commercial corridor and A Street is a narrow, multi-family residential road. Therefore, there would be increased short-term traffic impacts associated with this route and heightened EMF concerns along A Street.

C.5.3.5 San Bruno Mountain Collocation Alternative

Description

This alternative route, recommended by the City of Daly City Planning Department in its scoping comment letter, would diverge from the proposed route in Guadalupe Canyon Parkway at approximately MP 26. At this point, the alternative would turn north and follow the existing 60 kV utility corridor for approximately 0.4 miles down the mountain, paralleling Linda Vista Drive into the Martin Substation. A portion of this route would be in public roadways, the underground route could follow Linda Vista Drive north, turn east onto Main Street, entering the City of Brisbane to Martin Substation (see Figure Ap.1-18 and Figure C-2b). This 0.4-mile long route segment would eliminate over one mile of the Proposed Project route at the eastern end of Guadalupe Canyon Parkway and along Bayshore Boulevard.

As defined by the City, this alternative would require undergrounding the existing power lines that traverse the northern face of San Bruno Mountain in an undisturbed area for a length of about 1,000 feet, and removing the existing towers in the entire 0.4-mile route segment. San Bruno Mountain State and County Park is unincorporated San Mateo County land and is maintained as open space for endangered species habitat, and also used for hiking and other public recreation. The San Mateo County Parks and Recreation Division has primary oversight of the management of these parks. The San Bruno Mountain Master Plan and Habitat Conservation Plan (HCP) divides different geographical areas within the HCP bounds of San Bruno Mountain into Management Units. The Management Unit that the Project crosses is called “PG&E Fee 2 (1-12-02)” and includes the open spaces south of Martin Street. This parcel (open space area only) is contained in the transmission and gas-line corridor, which is adjacent to the Rio Verde Heights Area. This unit also contains the Martin Substation, but the policies contained in the plan apply only to the open-space portions of the Martin Substation parcel. This alternative would create conflict with the current HCP for San Bruno Mountain and would not be regulatorily feasible.

Rationale for Elimination

Similar to PG&E’s 1B with Underground 60 kV Line described in Section C.5.2.1 above, this suggested alternative would not be legal under CEQA Guidelines. Placing both the proposed 230 kV line and the existing power lines underground in the power line easement over a portion of San Bruno Mountain is not considered to be within CEQA’s required “reasonable range of alternatives” and therefore this cannot be evaluated in the EIR. The relocation of the existing lines (which have no relation to the Proposed Project) to an underground route as part of the Proposed Project is not a permissible alternative. See Appendix 1, Section 4 for a more in-depth discussion of the legal feasibility conclusion.

The Proposed Project involves the construction of a new 230 kV transmission line. The existing lines are already in place, and thus is part of the environmental setting against which environmental impacts are judged. The impacts of the Proposed Project do not include the effects of activities already occurring or facilities already in existence, such as the existing transmission and power lines. The 230 kV line could be installed over San Bruno Mountain without affecting the existing power and transmission lines in any way.

In explaining the “rule of reason” by which alternatives are selected for evaluation, CEQA Guidelines section 15126.6(f) states, “The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project.” Because “the project” includes only the 230 kV line, and the effects of the project are limited to the impacts associated with the proposed 230 kV line, appropriate alternatives must be limited to those that could avoid or lessen the effects of the 230 kV

transmission line. CEQA does not permit the lead agency to try and “fix” or improve the existing environmental setting (i.e., in this situation, to relocate the existing overhead lines to an underground location) using a proposed change to the environment as a hook. This alternative was not analyzed or carried through the tiering analysis since it is not a permissible alternative under CEQA Guidelines.

C.5.3.6 Caltrain ROW Alternative

Description

The Caltrain (or Joint Powers Board) ROW Alternative was suggested during the comment period on the Draft EIR by several parties, including Caltrain. This northern segment route could be used in conjunction with any of the southern segment alternative routes. Figures Ap.1-12a and Ap.1-12b in Appendix 1, which depict the Modified Existing 230 kV Underground Collocation Alternative, also show the location of the Caltrain ROW. If used in conjunction with PG&E Route Option 1B, the route would travel east in Trousdale Drive and connect to Caltrain ROW at Trousdale Drive, just east of El Camino Real, traveling north from there in the Caltrain ROW.

Under this alternative and if used in conjunction with the Proposed Project, the transmission line would be within the Caltrain ROW for approximately four miles. From the Proposed Project in the City of San Bruno, the Caltrain ROW Alternative could enter the Caltrain ROW by diverging from Huntington Avenue and the BART ROW near Euclid Avenue, or by traveling east on Forest Lane. Forest Lane may be preferable because the crossing at Euclid Avenue includes many other underground utilities, including storm drainages, water lines, and natural gas pipelines. This route under this alternative could generally remain within the Caltrain ROW from this point, which is just south of the I-380 crossing, until the either the crossing of Van Waters and Rodgers Road or the point in the City of Brisbane where Bayshore Boulevard is immediately adjacent to the Caltrain ROW. At either of these points, in the City of Brisbane, this alternative would then follow the route of the Modified 230 kV Underground Alternative to the Martin Substation.

As noted in Comment Set I, the JPB has plans for railroad expansion including the future four-track alignment through the area with relocation of existing tracks, construction of grade separation at South Linden Avenue, reconfiguration of industrial spurs, and construction of a new South San Francisco Station at the East Grand Avenue Overpass.

Rationale for Elimination

Project Objectives. This alternative would meet two of the four objectives of the Proposed Project (implement the ISO Board of Governors resolution and diversify the transmission system). PG&E states that there would be reliability concerns because the narrow ROW and rail safety requirements could significantly constrain or disrupt PG&E’s ability to respond to emergencies on a timely basis. PG&E states that it would require full-time (24-hours per day) access to the line in emergencies such as line failure, or damage caused by third-party dig-ins or earthquakes. Locating an electrical fault on cables, splices, or terminations can be time-consuming, and PG&E would need full-time access to respond to such an emergency. Caltrain has two existing tracks encompassing approximately 30 feet in its ROW that varies from 80 to 130 feet, and there are approved plans (in progress) to construct two additional tracks in Brisbane that will increase the width of the coverage in the ROW to 60 feet. Given the four-track expansion and the 80-foot width of much of the ROW, the transmission line would have to be installed within 15 feet of active rail lines along many parts of the Caltrain route segment, requiring compliance with restricted access rules. Therefore, PG&E would not be able to undergo continuous emergency work within 15 feet of active rail lines unless the rail lines were temporarily taken out of

service or work occurred at night when rail service is minimal. While such repair work would not be prohibited by the JPB, it would likely be restricted, adding to the time required for repair.

In addition, this alternative would likely fail to achieve the objective of meeting electric demand by September 2005 or summer 2006. As described in detail below under "Feasibility," the installation of an underground transmission line along the Caltrain ROW in the Cities of San Bruno, South San Francisco, and Brisbane would require a complex design involving use of adjacent private properties and conflict with existing rail facilities, necessitating scheduling coordination that could delay the project timeline. Construction of the transmission line in severely constrained areas would require PG&E to work within 15 feet of active rail lines or sidings. This would require some rail lines to be temporarily taken out of service, or it would require PG&E to work at night or on weekends when rail service is minimal. This would curtail the pace of work. Additionally, installing the new transmission line and vaults in constrained areas would require PG&E to occupy or close industrial spurs and sidings. PG&E would need to coordinate this work with industrial facilities in South San Francisco that depend on the spurs and sidings. As such, transmission line work could temporarily disrupt rail service to the industries along the ROW and industries elsewhere that are only accessible via the main line in the ROW. Coordinating temporary closure, removal, and then restoration of many active side-tracks or spurs would also curtail the pace of work. Considering these constraints, the CPUC believes that it would not be possible to construct this alternative within the time frame of the project objectives.

Feasibility. No legal or regulatory constraints to use of Caltrain ROW have been identified. However, there are two potentially significant technical feasibility concerns related to the Caltrain ROW Alternative: (a) lack of space in some portions of the ROW, (b) potential conflict with existing utilities, which includes potential interference between the line protection facilities and the railroad communication system and other utilities within the ROW.

- **Lack of Space in ROW.** The narrow ROW and rail access restrictions provide the primary constraints to construction and operation of the transmission line in the JPB ROW. A design/engineering challenge would also be imposed by the requirement to install splice vaults at approximately 1,600 foot intervals along the underground transmission line segment (requiring the installation of 13 prefabricated concrete vaults, each 10 feet wide and 24 feet long, along the Caltrain segment. It appears that installation of vaults and the line itself in the narrowest parts of the JPB ROW would require the use of adjacent non-Caltrain property in many areas, possibly also requiring temporary closure, removal, and then restoration of many active side-tracks or spurs serving adjacent properties. Due to these concerns and others, detailed below, it cannot be guaranteed at this time that such design would be found feasible. Appendix 1, Section 4.3.11, identifies several specific areas in which construction would be especially difficult.
- **Interference with Existing Utilities.** Placement of a new trench in the narrow JPB ROW would also be complicated by the presence of a natural gas pipeline and fiber optic cable line that travel on either side of the ROW through most of the area, as well as a jet fuel pipeline in the northern segment of the ROW. These other utilities are usually present on both sides of the main tracks near the edge of the ROW. Because the construction of the transmission line would need to occur at least five feet away from the gas line, and special precautions would need to be observed near the fiber optic cable line, these utilities further constrain the JPB ROW.

Potential Environmental Impacts. This alternative would place the line in a narrow ROW that is used by an active commuter and freight rail system and other utilities. Construction of this alternative would be in a primarily industrial corridor along the railroad ROW, but there would be short-term air quality

and noise impacts associated with underground construction; these would be similar to those of the Proposed Project but in different locations.

C.5.4 Other Transmission Alternatives

This section addresses transmission alternatives that would not originate at Jefferson Substation and/or end at Martin Substation. The discussions below explain the reasons for elimination or retention for full analysis for each potential alternative.

C.5.4.1 San Mateo Substation to Martin Substation

Description

This alternative was evaluated in the San Francisco Long-Term Electric Transmission Planning Technical Study, October 2000 (the study that ultimately recommended the Jefferson-Martin Project), and may also be considered in the San Francisco Peninsula Long-Term Transmission Planning Study, Phase 2 Draft Study Plan (February 2003). This alternative would consist of a new 14.3-mile 230 kV underground cable constructed between San Mateo and Martin Substations in the Cities of San Mateo, Burlingame, Millbrae, San Bruno, South San Francisco, and Brisbane. This alternative is depicted in Figure Ap.1-119 in Appendix 1. The alternative would follow the existing 230 kV underground route, departing northward out of San Mateo Substation and heading across the Coyote Point Recreation Area (across the golf course) to the Highway 101 corridor. The route would roughly parallel Highway 101 along Airport Boulevard/Old Bayshore Highway. From the corner of Millbrae Avenue and El Camino Real (State Highway 82), the route heads north in El Camino Real for 1.3 miles. The route turns east for two blocks just south of Santa Maria Avenue, and then turns north into San Antonio/Huntington Avenues (the BART ROW) for approximately 1.3 miles. Immediately south of the I-380, this route would turn east, cross under the freeway, and turn immediately north in Herman Street. After 0.6 miles in Herman Street, the route turns into Linden Avenue for 0.9 miles, then turns east on Baden Avenue for one block, then north into Bayshore Boulevard, to the Martin Substation.

The alternative would be entirely underground and primarily be within existing roadways, eliminating environmental impacts to the SFPUC Peninsula Watershed and visual impacts and EMF concerns of the overhead portion of the Proposed Project. It would avoid crossing San Bruno Mountain in Guadalupe Canyon Parkway. By utilizing a primarily commercial and industrial existing corridor, it would avoid impacts to schools and residences in the Cities of San Bruno, South San Francisco, Colma, and Daly City. Finally, this alternative would have the shortest overall route of those considered, resulting in overall less extensive construction impacts.

Rationale for Elimination

Project Objectives. This alternative would meet only two of four project objectives:

- The ISO found that the San Mateo–Martin Alternative did not provide a net reliability benefit because it still originated at the San Mateo Substation (Project Objective #2).
- This alternative would not connect Jefferson Substation to Martin Substation, therefore not satisfying the fourth project objective, which is to implement the ISO Board of Governors' April 2002 Resolution.

Feasibility. This alternative is legally and regulatorily feasible, however, there are technical feasibility concerns regarding availability of adequate space within the city streets, given that the existing 230 kV

transmission line is already located there and there are also many other underground utilities. Construction through this crowded corridor would be difficult and disruptive.

Potential Environmental Impacts. Construction through this crowded corridor would be disruptive due to the congestion of existing utilities. Cultural resource impacts may be greater than for the Proposed Project, because areas nearer to the San Francisco Bay have greater sensitivity from past land uses. This alternative route would be located in an already-disturbed corridor so likelihood of encountering cultural resources is low, however, further studies would be necessary to determine if any cultural resources were present.

C.5.4.2 Moraga Substation to Potrero or Embarcadero Substations

Description

This “cross-bay” alternative was presented in the San Francisco Long-Term Electric Transmission Planning Technical Study, October 2000, and also may be considered in the ongoing San Francisco Peninsula Long-Term Transmission Planning Study, Phase 2. This alternative would not enter San Mateo County and would instead be located in Contra Costa and Alameda Counties and in the City and County of San Francisco, as described below.

This alternative would reduce EMF and construction impacts to commercial land, open space, and residential areas in San Mateo County (but would create both short-term construction impacts and similar long-term EMF concerns for fewer overall receptors in the City of Oakland). The alternative would eliminate visual and recreation impacts of the upgraded transmission towers in San Mateo County in the Peninsula Watershed, but the upgraded transmission lines in Contra Costa and Alameda Counties, while shorter, could also affect the biological, geologic, recreational, and visual resources in Robert Sibley Volcanic Regional Preserve, one of the East Bay Regional Park District’s original parks.

Because this route is located in Contra Costa County, Alameda County, and the CCSF, there would be no project impacts to San Mateo County. No construction would occur on Watershed Lands, avoiding visual and biological resources impacts, and underground construction through San Mateo County Cities of San Bruno, South San Francisco, Colma, and Daly City would be eliminated.

The alternative route is also shorter than the Proposed Project route (20 miles as compared to 25 miles for the proposed route), which would reduce the physical extent of construction impacts.

An approximately 20-mile kV circuit would be constructed to connect the Moraga and Potrero Substations. Figure Ap.1-20 in Appendix 1 illustrates the route. The route would utilize an existing transmission corridor from Moraga Substation to Claremont Substation and would then for the most part utilize a common corridor from the Claremont Substation, through Oakland, to the east side of the San Francisco Bay. Initiating from Moraga Substation in the City of Orinda in Contra Costa County the line would travel northwest for approximately 1.3 miles and then turn west. The overhead line would continue west, passing through unincorporated Contra Costa County and Robert Sibley Volcanic Regional Preserve (part of the East Bay Regional Park District (EBRPD)). At the western border of the preserve, the line would enter the City of Oakland in Alameda County, continuing overhead to Claremont Substation, which is located southwest of the intersection of Highway 13 and Highway 24, where it would transition to underground.

Appendix 1 describes the route in detail, but briefly, from Claremont Substation the underground line would follow the following streets: Broadway, Shafter, Forest, Claremont, Telegraph, and 40th Street. It would then follow Emery Street and Peralta Street to 7th Street, which would be followed to the San Fran-

cisco Bay. Within the CCSF after the Bay crossing, the route would travel 3.3 miles south along The Embarcadero, turn west onto King Street, southwest onto 3rd Street, and south onto Illinois Street to the corner of 23rd Street. Potrero Substation is located at 23rd Street and Illinois Street. The option terminating at Embarcadero Substation would end at First and Folsom Streets.

There are four options for bringing the transmission line across the San Francisco Bay: (a) run the cable through the BART service tunnel; (b) hang the cables from the Bay Bridge (new bridge in east half; existing bridge in west half); (c) lay a new submarine cable; or (d) use a combination of hanging on the Bay Bridge and a submarine cable.

Rationale for Elimination

Project Objectives. Because this alternative would not connect Jefferson Substation to Martin Substation, it does not satisfy the fourth project objective, which is to implement the ISO Board of Governors' April 2002 Resolution. Also, due to construction and permitting delays (addressed under Feasibility below), it may not be able to meet the Proposed Project's on-line date.

Feasibility

- PG&E has stated that it is not technically feasible to add another 230 kV line to the Embarcadero Substation, since it is an indoor substation with no room to expand (PG&E, March 28, 2003 letter). Therefore, use of the Embarcadero Substation Alternative was not considered further.
- The Moraga-Potrero Alternative would be regulatorily infeasible due to the likely inability to obtain permission to construct from BCDC, Caltrans, or BART (the three agencies with jurisdiction over bay crossing options) within a reasonable period of time. The engineering, maintenance, and timeline feasibility concerns related to installing a transmission cable across the San Francisco Bay are summarized below and presented in greater detail in Appendix 1.
 - **Submarine Cable Crossing.** Clean Water Act permits from the U.S. Army Corps of Engineers (USACE) would be required in order to lay marine cable across the San Francisco Bay. While there are several potential environmental and design concerns regarding the permitting, the USACE has stated that a bay crossing would be feasible according to its regulations but the cable would have to be installed as to avoid impeding dredging operations (USACE, 2003). In addition, an electric cable installed across the San Francisco Bay would require a permit from the Bay Conservation and Development Commission (BCDC). The BCDC is required to consider whether a feasible upland alternative that would avoid a bay crossing exists. Because other alternatives clearly exist at this time, the BCDC would be unlikely to permit a bay crossing (BCDC, 2003).
 - **Bay Bridge Crossing.** If the Bay Bridge were used to support the line, the crossing would require that Caltrans grant an exception to their longitudinal encroachment policy. It is very unlikely that Caltrans would permit such a crossing (Caltrans, 2003). The timeline and coordination with the Bay Bridge Retrofit Project could conflict with this project.
 - **Installation of Cable within Existing BART Tunnel.** Based on discussions with BART engineers and real estate managers, it would be technically possible to install a high voltage line in one of the BART tunnels, but there are serious BART concerns about loss of needed space in tunnels and about safety (BART, 2003b). Overall, BART personnel believe that a transmission line installation in BART tunnels or galleries would present unacceptable safety and engineering risk (BART, 2003c).

Potential Environmental Impacts. Though fewer overall receptors would be affected than for the Proposed Project, the cross-bay alternative would create both short-term construction impacts and long-term EMF concerns in the City of Oakland. The upgraded transmission lines in Contra Costa and Alameda Counties, while shorter than the Proposed Project, could also affect the biological, geologic, recreational, and visual resources in Robert Sibley Volcanic Regional Preserve, one of the East Bay Regional Park District's original parks.

C.5.4.3 Sobrante Substation to Potrero or Embarcadero Substations

Description

Similar to the Moraga Alternatives, these options are under consideration in the San Francisco Peninsula Long-Term Transmission Planning Study, Phase 2. As explained in Appendix 1, Section 4.4.2, use of the Embarcadero Substation would be infeasible for addition of another 230 kV line.

The Sobrante Substation is located east of Bear Creek Road and south of the Briones Dam in the City of Orinda in Contra Costa County, about 4.6 miles north-northwest of the Moraga Substation (Section 4.4.2). The line would travel south from the Sobrante Substation for approximately 3.3 miles and would join the Moraga line just north of the City of Orinda. From that point the route would turn west and would be identical to the Moraga route described above. The route would create new impacts of its own, but would be overall shorter than the Proposed Project. The route is shown in Figure Ap.1-20 in Appendix 1.

Rationale for Elimination

Project Objectives. Because this alternative does not connect Jefferson Substation to Martin Substation, it does not satisfy the fourth project objective, which is to implement the ISO Board of Governors' April 2002 Resolution, and may not be able to meet the on-line date.

Feasibility

- PG&E has stated that it is not technically feasible to add another 230 kV line to the Embarcadero Substation, since it is an indoor substation with no room to expand (PG&E, March 28, 2003 letter). Therefore, the Embarcadero Substation Alternative is eliminated.
- The Sobrante-Potrero Alternative would be regulatorily infeasible due to the likely inability to obtain permission to construct from BCDC, Caltrans, or BART (the three agencies with jurisdiction over bay crossing options) within a reasonable period of time. The engineering, maintenance, and time-line feasibility concerns related to installing a transmission cable across the San Francisco Bay are presented in greater detail under the Moraga-Potrero Alternative above and in Appendix 1.

Potential Environmental Impacts. Impacts would be the same as those described in for the Moraga-Potrero Substation Alternative above, except that the overhead route between the Sobrante Substation and Claremont Substation would be slightly different. General impacts would be similar, since both routes would be within East Bay open space, with potential impacts to biological, visual, and recreation resources.

C.5.4.4 Jefferson to Various Substations

Description

This alternative was also considered in the October 2000 San Francisco Long-Term Electric Transmission Planning Technical Study. The routes considered in this alternative would be the same as the Proposed Project through San Mateo County and would terminate in the City and County of San Francisco. This alternative includes potential termination points at Hunters Point Substation, Potrero Substation, Embarcadero Substation, Bayshore Substation, and Mission Substation (illustrated in Figure Ap.1-21 in Appendix 1):

- **Jefferson-Hunters Point or Potrero 230 kV Transmission Line.** This option would require a 31-mile 230 kV circuit ending at the Hunters Point Substation (or a 33-mile circuit to Potrero Substation). A 230/115 kV transformer would also need to be installed at either substation.
- **Jefferson-Embarcadero 230 kV Transmission Line.** While termination at the Embarcadero Substation was considered in previous ISO studies, PG&E states that there is inadequate space for another 230 kV connection at this location. Therefore, this option is considered to be infeasible.
- **Jefferson-Mission 230 kV Transmission Line.** Mission Substation, located at Mission Street and 8th/9th Streets in CCSF, is an indoor 115 kV distribution substation and has no 230 kV facilities. Space is extremely limited at Mission substation; there is no room to install a 230/115 kV transformer and associated 230 kV and 115 kV breakers, buses, and switches (PG&E, 2003).
- **Jefferson-Bayshore 230 kV Transmission Line.** Bayshore Substation is a small outdoor 115 kV distribution substation that supplies BART. Space is not available to install this 115/230 kV conversion (PG&E, 2003).

Rationale for Elimination

Project Objectives. None of these options would connect Jefferson Substation to Martin Substation, they do not satisfy the fourth project objective, which is to implement the ISO Board of Governors' April 2002 Resolution, and may not be able to meet the on-line date.

Feasibility. Only the Jefferson to Potrero/Hunters Point option is technically, regulatorily, and legally feasible. Mission, Embarcadero, and Bayshore Substations are technically infeasible due to space constraints.

Potential Environmental Impacts. None of the substations analyzed in this alternative would reduce or avoid significant impacts of the Proposed Project, but rather there would be increased construction disturbance due to the greater length of these routes. The Potrero and Hunters Point options would require construction within city streets between the Martin Substation and the two CCSF substations. Neighborhoods between these sites are densely populated and traffic is heavy. Short-term construction impacts (noise, dust, equipment emissions) would result, as well as long-term concerns about EMF effects.

C.5.5 Non-Wires Alternatives

Non-wires alternatives are those that do not involve major new transmission lines. Renewable energy and fossil fuel generation, if they can be produced near the location it is used, are potential non-wires alternatives. In addition, demand-side management (conservation) and distributed generation can

reduce the need for the Proposed Project without new transmission. These alternatives are considered in this section and in greater detail in Sections 4.2 through 4.4 of Appendix 1.

C.5.5.1 New Generation Alternatives

Two alternatives are considered in this section: the proposed Potrero Power Plant Unit 7 (now under consideration by the CEC), and the Williams turbines that have been made available to the CCSF. The Williams turbines are also considered to be components of the No Project Alternative (see Section C.6).

Potrero Unit 7

Description

Mirant Corporation proposes to construct and operate the Potrero Power Plant Unit 7 Project as an expansion to its existing Potrero Power Plant that is located on the eastern shore of the City and County of San Francisco. Mirant filed an Application for Certification (AFC) with the CEC on May 31, 2000 for the proposed Potrero Unit 7 project, which would be a nominal 540 MW natural gas-fired, combined cycle power generating facility. On February 11, 2002, CEC staff filed its Final Staff Assessment (FSA), which, similar to this EIR, analyzes potentially significant environmental impacts, and recommended that the Energy Commission license the Potrero Power Plant Unit 7 Project with mitigation, including replacement of the proposed once-through cooling system with an alternative cooling system and air quality mitigation to reduce local diesel emissions from buses and trucks. In July 2003, Mirant ~~is expected to file~~ an AFC amendment that proposes use of hybrid cooling and eliminates the previously proposed once-through cooling system. To the extent that this proposal would require use of reclaimed wastewater, this would be subject to San Francisco Board of Supervisors' approval (CCSF, 2003). In July 2003, Mirant Corporation filed for Chapter 11 bankruptcy protection, and on November 5, 2003, Mirant requested the suspension of proceedings and further analysis related to the Potrero Power Plant Unit 7 Project.

Rationale for Elimination

Project Objectives

- There are significant reliability benefits from adding in-City generation, thus Potrero Unit 7 would clearly meet PG&E's reliability objective.
- Because this alternative does not connect Jefferson Substation to Martin Substation, it does not satisfy the fourth project objective, which is to implement the ISO Board of Governors' April 2002 Resolution.
- Potrero Unit 7 has not been approved, and as of November 5, 2003, Mirant Corporation requested the suspension of proceedings and further analysis related to the Potrero Power Plant Unit 7 Project. Even if approved and construction after approval would take at least two years, therefore, this alternative could not meet the objective of meeting electric demand by 2005/2006.
- If Potrero Unit 7 were constructed and the addition of this plant were used as a means to retire the Hunters Point Power Plant, then the net benefit to the San Francisco Peninsula would be reduced, only delaying and not eliminating the need for a new transmission project such as the Jefferson-Martin Project.

Feasibility

- Construction of a combined cycle power plant at Potrero is a feasible technology.
- There are regulatory feasibility constraints to project approval. While these constraints have been primarily related to the previously proposed once-through cooling system which is now being modified by Mirant, it remains to be seen what other issues may arise from evaluation of the new cooling system proposal.

Potential Environmental Impacts. The construction and operation of Potrero Unit 7 would eliminate (or at least delay) impacts from construction and operation of the proposed transmission line, but impacts typically associated with fossil fuel electric generation plants would occur instead, including air emissions, noise, traffic congestion, visual impacts, and the potential for releases of hazardous substances. While these impacts would occur in a different location from those of the Proposed Project, they may be greater overall due to the ongoing operational air emissions.

Williams Energy Company Settlement

Description

Under an agreement approved by San Francisco supervisors in late 2002, the CCSF is scheduled to receive four 45 MW gas turbines to increase energy reliability and encourage the planned phase-out of the power plant at Hunters Point. The turbines are part of a \$417 million resolution that the Williams Energy Company (Williams) negotiated with the State to reduce prices for electricity in long-term contracts and pay for a variety of local costs. CCSF is also expected to receive \$19 million to assist with siting the turbines. Given that the proposed Jefferson-Martin project would bring an additional 350 MW to Martin Substation, the addition of 200 MW of CCSF generation would not completely replace the electric service that would be provided by Jefferson-Martin.

The City expects to file an Application for Certification with the CEC, the CEQA lead agency, in early 2004~~by the end of 2003~~ and the CEC will conduct the CEQA review. The City will select an Engineer, Procure and Construct contractor in 2004 (CCSF, 2003). At this time, the City expects that if a CEC license and all other required permits are obtained in 200~~4~~³, and the power plant(s) could achieve commercial operation in 2005. However, the City notes that this is a very preliminary schedule. CCSF is evaluating potential sites within the City at which it may install the turbines. At this time, the City has not identified final sites for the turbines and it does not have control of potential sites (site control is required for CEC application submittal).

Rationale for Elimination

Project Objectives

- This alternative would meet only two of the four Project objectives. It is also uncertain with respect to its completion.
- As with the Potrero Unit 7 Project, there is no assurance that the turbines will, in fact, be constructed, or that they will be operational within a certain timeframe. Even if such a facility were constructed and operational within the timeframe of the Jefferson-Martin Project objectives, the new generation would likely defer, not eliminate, the need for additional transmission capacity in the project area.
- There are clear reliability benefits in providing a local source of power generation for San Francisco. However, this alternative would only serve CCSF and the uncertainty associated with the timeframe of

construction could fail to achieve the objective of meeting electric demand by September 2005 or summer 2006.

- Because this alternative does not connect Jefferson Substation to Martin Substation, it does not satisfy the fourth project objective, which is to implement the ISO Board of Governors' April 2002 Resolution.

Feasibility

- City planners with the Department of the Environment have noted that finding an acceptable location of turbine generators could pose a problem, since such industrial operations are not generally popular with neighbors and there are severe land constraints within the CCSF. The current schedule calls for the location decision to be made by the end of 2003; if an appropriate site(s) cannot be identified, this alternative may be infeasible.
- Even if sites were found, the facilities would still require CEC approval, which could be granted only after a year-long proceeding, providing many opportunities for public involvement. It cannot be assumed at this time that the application will be filed and approved.

Potential Environmental Impacts. Similar to Potrero Unit 7, the installation of generation would eliminate impacts from construction and operation of the 25-mile transmission line, but would also create impacts typical of fossil fuel electric generation plants, including increased air emissions and increased noise levels.

C.5.5.2 Renewable Resource Alternatives

This section considers the principal renewable electricity generation technologies that could serve as alternatives to the Proposed Project. These technologies are wind, solar, and tidal energy. Geothermal energy and biomass generation are not considered here because there are no geothermal resources in the San Francisco Bay area and there is no source of fuel (usually agricultural waste) for biomass facilities. The technologies could be attractive from an environmental perspective because of the absence or reduced level of air pollutant emissions. However, these technologies also have environmental consequences, feasibility problems, and they may not meet the objectives of this Proposed Project.

Conscious efforts are being made to increase the renewable resource component of California's generation supply. As of 2001, about 54 percent of California's in-state generation was from oil, gas, and coal plants and 38 percent from hydroelectric, wind, waste-to-energy, geothermal, and solar plants. The Electricity Resource Plan signed by Mayor Willie Brown in December 2002, is a joint effort by the SFPUC and San Francisco's Department of the Environment, which proposes a plan to avoid future energy crises through energy efficiency, new cleaner generation and imported power, and provides a framework for shifting San Francisco's dependence on fossil-fuel burning power plants to clean, renewable forms of energy. In 2003, the CPUC, in collaboration with the CEC, has initiated a proceeding to implement the State's Renewable Portfolio Standard Program as mandated by Senate Bill 1078, which requires retail sellers of electricity to increase their procurement of eligible renewable energy resources by at least 1 percent per year so that 20 percent of their retail sales are procured from eligible renewable energy resources by 2017. Therefore, even without replacing the Jefferson-Martin 230 kV Transmission Line Project, renewable resource technologies would still be pursued without conflict and could be needed in the future to satisfy power needs, enable plant closures, and/or preclude future large power projects.

Wind Technology

Description

Wind carries kinetic energy that can be utilized to spin the blades of a wind turbine rotor and an electrical generator, which then feeds alternating current (AC) into the utility grid. The range of capacity for an individual wind turbine today ranges from 400 watts up to 3.6 MW. There are now more than 16,000 wind turbines installed in the U.S., almost all located in California. Their aggregate power rating is about 1,500 MW, and they generated some 2.7 billion kilowatt-hours (kWh) of electricity in 1991. It has been estimated that with fully commercial development, 20 percent of the nation's electricity needs could be supplied by wind power. And while California is providing a large share of this resource, there still are opportunities for substantial growth. California currently generates about 1,800 MW of electricity from 105 separate wind facilities.

San Francisco could possibly obtain significant amounts of wind power in areas such as the Altamont Pass, where wind speeds are high and other conditions like proximity to transmission can be met. As a result of the Energy Plan, the SFPUC is currently looking at several wind generation sites including those adjacent to its own Bay Area reservoirs. The estimated potential for wind development in the greater Bay Area for San Francisco's use could possibly exceed 150 MW. Approximately 40 to 50 acres are needed per megawatt of power. Therefore, to achieve the approximately 400 MW proposed to be provided to Martin Substation by the Proposed Project, 1,600 to 2,000 acres would be needed.

Rationale for Elimination

Project Objectives

- This alternative would meet only one project objective (potentially increasing system diversity).
- The need for a consistent wind source creates overall reliability concerns with the technology and limits the feasible locations of wind technology.
- Because this alternative would not connect Jefferson and Martin Substations, it does not satisfy the fourth objective, which is to implement the ISO Board of Governors' April 2002 Resolution.

Feasibility. This alternative would not be technically feasible because the extensive land required to generate enough electricity to meet demand is not available in the project area.

Potential Environmental Impacts. Use of wind power could reduce impacts of the Proposed Project by eliminating the specific impacts in San Mateo County. However, new transmission would be required from an out-of-area source, creating impacts similar to those of the Proposed Project. Also, the large area needed for wind electricity generation would create significant land use, biological, cultural, and visual concerns.

Solar Technology

Description

Currently, there are two types of solar generation available: solar thermal power and photovoltaic (PV) power generation. Solar thermal power generation uses high temperature solar collectors to convert the sun's radiation into heat energy, which is then used to run steam power systems. Solar thermal is suitable for distributed or centralized generation, but requires far more land than conventional natural gas power plants. Solar parabolic trough systems, for instance, use approximately five acres to generate one mega-

watt. Photovoltaic (PV) power generation uses special semiconductor panels to directly convert sunlight into electricity. Arrays built from the panels can be mounted on the ground or on buildings, where they can also serve as roofing material. Unless PV systems are constructed as integral parts of buildings, the most efficient PV systems require about four acres of ground area per megawatt of generation. Recent estimates by the California Energy Commission considered that photovoltaics might be able to provide a maximum of 221 MW of statewide generation over the next 10 years.

Solar resources would require large land areas in order to meet the project objective to generate 400 MW of electricity. For example, assuming that a parabolic trough system was located in a maximum solar exposure area, such as in a desert region, generation of 400 MW would require nearly 2,000 acres. For a PV plant, generation of 400 MW would require about 1,500 acres.

The use of solar energy in California offers obvious promise as an environmentally preferred resource. However, it is limited by its availability (only during daytime hours) and by the relatively high cost of solar panels. California currently produces a total of about 400 MW of power from solar thermal projects. Centralized solar projects using the parabolic trough technology require approximately five acres per megawatt. Photovoltaic arrays require similar acreage per megawatt. However, electricity production is dependent on sunlight. Clouds, fog and shading limit the amount of power that a system produces. Solar is, however, particularly valuable when used at the local level to reduce peak power usage and to defer distribution infrastructure development.

Voters in the CCSF in November of 2001 passed a proposition that will provide \$100 million to support solar power and other renewable programs. In addition, the CCSF has prepared an Energy Resource Plan (in accordance with the Maxwell Ordinance) to guide the various energy efforts underway in the City. These programs will likely result in increased solar (or other renewable) generation within the CCSF. The City has not yet determined the amount of power that might be generated with the \$100 million investment, nor do they know how long it will take to invest the \$100 million in order to fully implement the program. Therefore, while the system will reduce the City's future reliance on fossil fuel plants, it is very unlikely to occur within the timeframe stated in the objectives of this project, or that enough power will be generated to significantly reduce the need for the Proposed Project.

Rationale for Elimination

Project Objectives

- This alternative would meet only one project objective (potentially increasing system diversity).
- There are reliability concerns with the technical ability to use solar power because of the need for a consistent solar source.
- Because this alternative would not connect Jefferson and Martin Substations, it does not satisfy the fourth objective, which is to implement the ISO Board of Governors' April 2002 Resolution.

Feasibility

- Solar photovoltaics are technically feasible and California clearly has a climate where this technology would be useful. However, the cost of these systems currently prohibits their widespread use. Solar generation is a feasible technology on a small scale, but it cannot generate power in the hundreds of megawatts, as required for the Jefferson-Martin Project. Therefore, this alternative is technically infeasible.

- Extensive land would be required to generate enough electricity to meet demand; this land is not available in the project area making this alternative technically infeasible.

Potential Environmental Impacts

- New transmission would be required from an out-of-area source, creating impacts similar to those of the Proposed Project.
- While solar generation facilities do not generate air emissions and have relatively low water requirements, construction of large solar thermal plants can lead to habitat destruction and visual impacts.

Tidal Generation

Description

The San Francisco Board of Supervisors approved a resolution on May 6, 2003 for a pilot project to explore using tides to make electricity, as part of San Francisco's efforts to pursue nonpolluting energy. The pilot project in San Francisco would be the first working project in the United States to test tidal power. This effort stems from California's recent energy shortages and the city's intention to decommission HPPP.

Each day, nearly 400 billion gallons of water pass through the mouth of San Francisco Bay under the Golden Gate Bridge, enough to generate an estimated 2,000 MW (more than twice the city's peak power demand). If harnessed, the energy from this water could be an answer to the city's power needs (Llanos, 2003). The system would not impact shipping since it would be far below the surface, probably on the sea floor itself. The cost of building a 1,000 MW system is estimated at \$600 million, but San Francisco's Environment Department estimates that over 30 years, costs would average out to six cents per kilowatt hour — about the same as natural gas and less than what San Franciscans now pay for power (Llanos, 2003). Within 10 years, San Francisco could build enough clean tidal power to meet its daily energy needs, as well as generate surplus energy to sell — all with a price tag of about one-third the cost per megawatt of solar power. Unlike the sun and wind, tidal current is consistent and predictable. Tidal generators could produce electricity up to 16 hours a day.

Rationale for Elimination

Project Objectives

- This alternative would meet only one project objective (potentially increasing system diversity).
- There are reliability concerns with tidal technology because it is new and essentially untested.
- Because this alternative would not connect Jefferson and Martin Substations, it does not satisfy the fourth objective, which is to implement the ISO Board of Governors' April 2002 Resolution.
- Expanding from a test to an underwater grid powering the entire city would take many years (beyond the timeframe of the Proposed Project).

Feasibility

- There would likely be regulatory feasibility issues associated with tidal power permitting from the USACE, BCDC, and/or the California Coastal Commission (depending on the location) for the large underwater area required for tidal energy generation.
- This technology is also new, and it is not clear to what extent it is technically feasible.

Potential Environmental Impacts

- This alternative would avoid the specific impacts associated with the construction and operation of the Proposed Project, but new transmission would be required from an out-of-area source, creating impacts similar to those of the Proposed Project.
- This alternative would disturb extensive underwater habitat to generate enough electricity to meet demand, resulting in the potential to cause significant biological impacts, especially to marine species and habitats. San Francisco's test project as well as environmental impact studies would be necessary to determine potential significant impacts.

C.5.5.3 System Enhancement Alternatives

Distributed Generation

Description

Consideration of Distributed Generation (DG) as an alternative to Jefferson-Martin was suggested during scoping. The CEC defines DG as "generation, storage, or demand-side management devices, measures, and/or technologies connected to the distribution level of the transportation and distribution grid, usually located at or near the intended place of use (CEC, 2002b). There are many DG technologies, including microturbines, internal combustion engines, combined heat and power (CHP) applications, fuel cells, photovoltaics and other solar energy systems, wind, landfill gas, digester gas and geothermal power generation technologies. Distributed power units may be owned by electric or gas utilities, by industrial, commercial, institutional or residential energy consumers, or by independent energy producers. To the extent that it is established, DG either can act to reduce the load on the PG&E system or can be applied as additional system generation. Distributed generation is the generation of electricity from facilities that are smaller than 50 MW in net generating capacity. Local jurisdictions — cities, counties and air districts — conduct most environmental reviews and issue all required approvals or permits for these facilities.

There are several incentive programs designed to provide financial assistance to those interested in operating Distributed Generation systems in California. Senate Bill 1345 (Statutes of 2000, Chapter 537, Peace, signed by Governor Davis in September 2000) directs the Energy Commission to develop and administer a grant program to support the purchase and installation of solar energy and small distributed generation systems. Solar energy systems include solar energy conversion to produce hot water, swimming pool heating, and electricity, as well as battery backup for PV applications. Small distributed generation systems include micro-cogeneration, gas turbines, fuel cells, electricity storage technologies (in systems other than PV), and reciprocating internal combustion engines.

Rationale for Elimination

Project Objectives

- This alternative would meet only one project objective (potentially increasing system diversity).
- DG does not provide a means for PG&E to meet its objectives for the project because of the comparatively small capacity of DG systems. Therefore, it would not allow PG&E to meet electric demand within the project timeframe and would not increase system reliability.
- Because this alternative would not connect Jefferson and Martin Substations, it does not satisfy the fourth objective, which is to implement the ISO Board of Governors' April 2002 Resolution.

Feasibility

- A number of serious barriers, including technical issues, business practices, regulatory policies, and high costs, make interconnection to the electrical grid for small generators difficult. As a result, DG may be technically and regulatorily infeasible.
- Broad use of distributed resources would likely require regulatory support and technological improvements. Lengthy local permitting processes would make it unlikely to construct sufficient quantities of DG within the timeframe required for the Proposed Project. Therefore, this alternative could be technically and regulatorily infeasible.

Potential Environmental Impacts

- Use of DG technology can reduce the need for (and environmental impacts of) transmission lines because the source of energy generation would be in close proximity to the location of demand.
- Other environmental impact comparisons would depend on the type of generation that would be used.

Demand-Side Management

Description

Demand-side management programs are designed to reduce customer energy consumption. Regulatory requirements dictate that both supply-side and demand-side resource options should be considered in a utility's plan to acquire lowest cost resources. One goal of these programs is to reduce overall electricity use. Some programs also attempt to shift such energy use to off-peak periods.

Both the CEC and the CPUC support and manage a variety of demand-side management programs (see Appendix 3 for more detail). In addition, PG&E uses a program of voluntary reduction in electricity use known as Customer Energy Efficiency (CEE). The demand forecasts presented for the Jefferson-Martin Project already account for any load reductions that are expected to result from locally focused CEE. The projected CEE benefits (no more than 2 to 7 MW in the project area) would not defer the required capacity addition (approximately 400 MW).

Rationale for Elimination

Project Objectives

- This alternative does not meet any of the stated project objectives.
- As a stand-alone alternative to the Proposed Project, energy conservation and load management programs were eliminated from its consideration since they represent a small fraction of the capacity requirements needed to meet PG&E's project import and reliability objectives.
- One of the objectives of the Jefferson to Martin Project is to further increase reliability in the San Francisco and north of San Mateo County area by providing a second independent major transmission line pathway into the area. Demand-side management would not increase diversity of supply nor increase transmission reliability in that way.
- Because this alternative does not connect Jefferson Substation to Martin Substation, it does not satisfy the fourth objective, which is to implement the ISO Board of Governors' April 2002 Resolution.

Feasibility. Demand-side management is feasible on a small scale, but it is not feasible on a scale that would be required to replace the Jefferson-Martin Project (i.e., reduce demand by 400 MW).

Potential Environmental Impacts. Because there would be no construction, no new impacts would be created.

C.5.5.4 Integrated Resource Alternative

Description

An integrated resources alternative could be made up of several components, rather than consideration of only a single transmission line project. The components could include a combination of the following:

- Demand-side management
- Transmission system upgrades
- Development of solar power and other renewables
- Distributed generation
- Generating facilities or cogeneration facilities.

This type of integrated resources planning is being implemented by the CCSF, with the combination of its Electricity Plan and the Williams turbines discussed above.

Rationale for Elimination

Project Objectives

- As discussed above, none of these alternatives individually meet all of the stated project objectives.
- Taken together and if implemented, integrated resource alternatives would diversify the system and would add needed capacity.
- Even if implemented by the 2005 to 2006 timeframe, these options would not supply sufficient power (or energy savings) to allow elimination of the Jefferson-Martin Project.
- Because this alternative does not connect Jefferson Substation to Martin Substation, it does not satisfy the fourth project objective, which is to implement the ISO Board of Governors' April 2002 Resolution.

Feasibility. Each of these components is technically feasible, and each could be implemented on a limited scale in CCSF and northern San Mateo County. However, each also has environmental and regulatory obstacles to their implementation (described in the individual sections above). The combination of these alternatives would have no fewer obstacles than they would individually. Therefore, this alternative would not be technically or regulatorily feasible.

Potential Environmental Impacts. The particular configuration of the options implemented would determine overall effects of this alternative. The individual discussions above address potential impacts that would be created by the individual technology options.

C.6 No Project Alternative

CEQA requires an evaluation of the No Project Alternative in order that decision makers can compare the impacts of approving the project with the impacts of not approving the project. According to CEQA Guidelines [Section 15126.6(e)], the No Project Alternative must include (a) the assumption that conditions at the time of the Notice of Preparation (i.e., baseline environmental conditions) would not be changed since the Proposed Project would not be installed, and (b) the events or actions that would be reasonably expected to occur in the foreseeable future if the project were not approved. The first condition is described in the EIR for each environmental discipline as the “environmental baseline,” since no impacts of the Proposed Project would be created. The potential for service curtailment in the absence of the project would depend on system load growth (which will be addressed in the CPUC’s hearings in late 2003). This section defines the second condition: reasonably foreseeable actions or events. The impacts of these actions are evaluated in each issue area’s analysis in Section D.

Section C.6.1 provides background on issues related to the No Project Alternative. Section C.6.2 presents the No Project Alternative scenario.

C.6.1 Background

The following paragraphs provide background information related to possible options for the No Project Alternative.

ISO’s Phase 2 Stakeholders Process

The California Independent System Operator (ISO) formed the San Francisco Stakeholders Study Group (SFSSG) in April 1999 to evaluate long-term power supply adequacy to San Francisco and the Peninsula. The SFSSG completed a study in October of 2000 entitled “San Francisco Peninsula Long-Term Electric Transmission Planning Technical Study.” A general understanding of the SFSSG Phase 2 process is relevant to the No Project Alternative because it may ultimately define the project that would be recommended if the Jefferson-Martin Project is not approved. This study evaluated several options for improving electrical service to San Francisco and the northern Peninsula, concluding with a recommended option that the Jefferson-Martin 230 kV Project should be operational by summer 2006 (the ISO later modified this date to “no later than 2005”). Based on this recommendation, PG&E prepared the CPCN and PEA that are being evaluated in this EIR.

The SFSSG is now in “Phase 2” of its process, evaluating acceptable ways to increase the load serving capability of the region beyond that provided by the Jefferson-Martin Project. This subsequent analysis is considered necessary by the ISO because of load estimates and the uncertainties regarding generation in the San Francisco area (ISO, 2003). Drafts of the Phase 2 Study Plan were developed in late 2002 and early 2003; a final Study Plan is expected to be developed in mid-2003.

According to the Final Draft Study Plan (February 2003), the following transmission options will be considered:

- San Mateo–Martin 230 kV underground cable
- Moraga-Potrero 230 kV line
- San Mateo–Potrero 230 kV
- Sobrante-Potrero 230 kV
- Moraga-Embarcadero 230 kV
- Sobrante-Embarcadero 230 kV

In addition, the SFSSG is considering the likely future of existing power generation in the San Francisco area (especially related to the planned closure of PG&E's Hunters Point Power Plant and the need for Mirant's Potrero Unit 3 to implement air emissions reductions).

New Generation in the San Francisco Area

There are two near-term possibilities for additional generation in the San Francisco area that would be recommended if the Jefferson-Martin Project is not approved: Potrero Power Plant Unit 7 and four combustion turbines provided to the CCSF by the Williams Companies. Both generation projects would provide a net increase in in-City generation. As is required with transmission planning guidelines, PG&E assumed that the largest generator would be offline when performing planning studies and determining need (see Section A). Using these rules, according to the San Francisco Peninsula Load Serving Capability study (ISO, May 23, 2003), and assuming subsequent closure of Hunters Point Unit 4, the net increase in available power would range from 5 MW (with the 180 MW Williams turbines) to 20 MW (with the 540 MW Potrero Unit 7).

Potrero Power Plant Unit 7

Mirant Corporation has proposed to construct a 540 MW generating facility to expand the existing Potrero Power Plant. This site is located in southeastern San Francisco, about one mile south of PacBell Park on the San Francisco Bay. Mirant's Application for Certification (AFC) is under consideration by the California Energy Commission (CEC). The Final Staff Assessment (equivalent to a Final EIR) prepared by the CEC staff identified significant impacts from use of cooling water from the San Francisco Bay and discharge of that water back to the bay, and prepared a report on alternative cooling technologies. Mirant is considering cooling options, including the possible use of reclaimed water from the CCSF's Southeast Water Treatment Plant and hybrid cooling towers. The Potrero Unit 7 project has also been controversial for potential air quality impacts and environmental justice issues. There is no guarantee that this plant will be approved by the CEC, and by the CCSF, and as of November 5, 2003, Mirant Corporation requested the suspension of proceedings and further analysis related to the Potrero Power Plant Unit 7 Project.

CCSF Combustion Turbines

The second generation possibility is the City and County of San Francisco's opportunity to install four gas turbine generators that would be provided by the Williams Companies as part of the settlement of a lawsuit with the State of California. Under this agreement, the CCSF would receive four General Electric LM6000 gas turbines that could be sited within the San Francisco Peninsula area. The CCSF has informed the ISO of its specific intent to locate these gas turbines in a manner that would enhance the electric reliability of San Francisco and enable the shutdown of HPPP Unit 4 (ISO, 2003a). PG&E and the ISO have determined that the turbines could be best utilized if they are directly connected to the existing 115 kV transmission network within the CCSF.

The CCSF is currently evaluating siting options for the four turbines, and expects to file an AFC with the CEC in early 2004. Siting of turbines in the CCSF is difficult given the limited industrial land available and the requirement that the turbines be located on 115 kV transmission lines. Sites under consideration may include the Potrero Power Plant site, the San Francisco Airport, the Hunters Point Power Plant site, the city's steam plant (Jessie Avenue, between Mission and Market), and the City's water treatment facilities. However, given the City's history of strong public opposition to power generation projects, it is not certain that even with CCSF political support, the turbines will be approved as proposed.

PG&E Projects Currently Being Planned or Considered

At the SFSSG meeting of May 9, 2003, PG&E transmission planners distributed a list of “Near-Term Electric Transmission Capacity Projects That Impact San Francisco and North San Mateo.” These projects are listed in Table C-1. These projects involve increasing emergency ratings, upgrading or installing new transformers, modifying protection equipment, reconductoring, transmission upgrades, and installing new transmission lines. While these projects would provide a benefit to San Francisco Peninsula electric service and reliability, none (aside from the Proposed Project itself) would provide enough benefits to meet project objectives.

Table C-1. PG&E Electric Transmission Projects

#	Project Name	Description	Schedule	Status
1	Newark-Ravenswood 230 kV Line Rerate	Increase the emergency rating of the Newark-Ravenswood 230 kV line using higher wind speed assumption.	Nov. 23, 2002	Complete
2	Ravenswood-San Mateo 115 kV Line Rerate	Increase emergency rating from 522 Amps to 618 Amps.	Mar. 23, 2003	Complete
3	Tesla-Newark No. 2 230 kV Line	Increase emergency rating (from 1,714 to 1,954 Amps) using a higher wind speed; replace 230 kV switches.	Apr. 18, 2003	Complete
4	Tesla-Ravenwood 230 kV Line Rerate	Increase emergency rating (from 2,110 to 2,500 Amps) using higher wind speed assumption.	May 2004	Planning
5	Monta Vista-Jefferson 230 kV Circuits	Upgrade Current Transformers to allow circuits to operate at conductor rating of 919 Amps normal/1,054 Amps emergency.	May 2004	Planning
6	Ravenswood 230/115 kV Transformer	Install a new 420 MVA, 230/115 kV transformer at Ravenswood.	May 2004	Engineering & Procurement
7	Cooley Landing 115 kV Bus Protection	Modify protection equipment to prevent a single event from taking out two power circuits.	May 2004	Planning
8	Ravenswood-Cooley Landing 115 kV Circuits	Increase emergency rating (from 799 to 949 Amps) using a higher wind speed assumption.	May 2004	Planning
9	San Mateo Martin No. 4 Line Voltage Conversion	Reconductor and convert 60 to 115 kV circuit; modify substations at Burlingame and Millbrae.	June 2004 or later depending on permit requirements	PTC filed with CPUC, Nov 2002; CEQA analysis underway
10	Potrero-Hunters Point 115 kV Underground Cable	Install new 115 kV underground cable; coordinated with CCSF 3rd Street Light Rail Project.	June 2004 or later depending on permit requirements	PG&E & CCSF developing joint EIR
11	Potrero Static VAR Compensator	Install +240/-1100 MVAR Static VAR Compensator at Potrero Switchyard	4thQuarter 2004	Planning
12	Jefferson-Martin 230 kV Line	Construct a new 230 kV line from Jefferson Substation to Martin Substation	September 2005	CPCN filed with CPUC, Sept 2002. This EIR evaluates the project.

Closure of Hunters Point Power Plant Unit 4

One important variable in consideration of the No Project Alternative is the timing of closure of HPPP Unit 4, which currently produces 170 MW. HPPP is one of only two baseload power plants in San Francisco, so its closure would greatly affect local reliability. PG&E owns the power plant, and has an agreement with the CCSF to close it as soon as allowable, but the ISO is the authority that will determine when it can be closed in order that closure has no serious effects on the region’s ability to provide

electric service. On April 18, 2003, the ISO wrote a letter to PG&E and the CCSF, defining the terms under which it would allow HPPP Unit 4 to close (ISO, 2003a). The letter and its attachments define that HPPP Unit 4 could be closed under certain specific circumstances, which define a range of possible actions in the San Francisco area.

C.6.2 No Project Alternative Scenario

The No Project Alternative required for consideration under CEQA regulations would mean that the Jefferson-Martin Transmission Line Project would not be built. Under the No Project Alternative, no adverse environmental impacts from the construction and operation of the Proposed Project would occur. However, PG&E or some other entity would need to augment existing facilities and add new transmission and/or generation capacity to compensate for existing system limitations and anticipated load growth or institute a controlled load shedding program.

If neither the Proposed Project nor any alternative were approved by the CPUC, PG&E and the ISO would evaluate updated load forecasts and consider alternative courses of action that could be implemented to provide adequate electric service in the San Francisco and Peninsula areas. The No Project Alternative scenario is based primarily on the April 18, 2003 letter from the ISO to PG&E and the CCSF. The letter identified future requirements that would allow retirement of Hunters Point Unit 4. Since these future requirements are considered by the ISO to be achievable and reasonable, they are the basis of this alternative. Therefore, the components of the No Project Alternative are assumed to be the following:

- (1) **New generation would be installed.** The uncertainty associated with approval and construction of new generation facilities in the CCSF is significant. However, given the apparent CCSF support for installation of the Williams turbines (and given the ISO's indication that operation of these turbines, with other system improvements, would allow closure of HPPP Unit 4), it seems likely that these turbines will be installed within a reasonable period of time. For purposes of this analysis, given that the CCSF has not yet determined the locations at which it proposes to install the turbines, it is arbitrarily assumed that two of the turbines would be installed at the Potrero Power Plant, one at the San Francisco Airport (adjacent to the existing United co-generation facility), and one at the CCSF steam plant near downtown San Francisco.
- (2) **Hunters Point Power Plant Unit 4 would be closed.**
- (3) **PG&E system upgrades would occur.** Rerating and upgrading of certain transmission lines, and installation of a new transformer would improve system reliability and service.
- (4) **PG&E system improvements would be made.** These include the conversion of San Mateo-Martin #4 from 60 kV to 115 kV and the installation of a Potrero-Hunters Point 115 kV underground cable.
- (5) **System management and planning would continue to occur.** PG&E and the ISO would continue to implement an Interruptible Load Program (allowing the selective load dropping during peak load periods), demand-side management would be encouraged, and curtailment of electric service would be required in the worst-case demand growth scenarios.

(6) **Increased utilization of Special Protection Schemes (SPS) – PG&E and ISO have implemented an SPS in San Mateo and are evaluating the implementation of an SPS in CCSF. Though important to**

pursue regardless of the outcome of the Proposed Project, continued and increased reliance on SPS in the Peninsula and CCSF would be insufficient to provide compliance with reliability criteria. Nonetheless, if no other alternative is pursued, at a minimum continued and increased use of SPS on the Peninsula and CCSF would be required to provide for controlled involuntary load curtailment during “high load” operating conditions.

New Generation

The uncertainty associated with approval and construction of new generation facilities in the CCSF is significant. For purposes of this No Project scenario, it is assumed that Mirant’s Potrero Unit 7 Project is not approved or operational within a reasonable period of time because there is substantial uncertainty associated with that project. However, it is assumed that the four CCSF turbines are installed. Given the apparent CCSF support for installation of the Williams turbines (and given the ISO’s indication that operation of these turbines, with other system improvements, would allow closure of HPPP Unit 4), it seems likely that these turbines will eventually be installed. For purposes of this analysis, given that the CCSF has not yet determined the locations at which it proposes to install the turbines, it is arbitrarily assumed that two turbines would be installed at Potrero Power Plant, one at the San Francisco Airport (adjacent to the existing United cogeneration facility), and one at the CCSF steam plant.

Closure of Hunters Point Power Plant

The ISO letter of April 18, 2003 defines specific conditions that would be required for the ISO to allow implementation of the agreement between PG&E and the CCSF to close Hunters Point Power Plant. While the timing of this closure cannot now be determined, it does now seem likely that the plant will be closed within the next few years.

Interruptible Load Program

As an alternative to constructing various components of the project, selective load dropping³ during peak load periods was considered. During the summer of 2001, the ISO solicited bids for “interruptible load.” This process took the form of two distinct but similar programs in which various loads (customers) would be paid to interrupt or curtail load during peak load conditions. The ISO had targeted approximately 2,800 MW of statewide load for these programs. Initially, the ISO received bids totaling about 580 MW and currently actual statewide participation amounts to 55 MW. While there are many and varied reasons for the small amount of capacity that is participating in these ISO programs, the results point to the fact that there are relatively small levels of load that can contribute in a manner that will effectively and reliably reduce peak loads. The failure to interrupt one’s load at the times required is much the same as a local generator not being available or the occurrence of some other contingency. Given the level of constraints with the current PG&E system serving the Bay Area, it is doubtful that interruptible load sufficient to solve these problems could be placed under contract.

Demand-Side Management (Conservation)

PG&E uses a program of voluntary reduction in electricity use known as Customer Energy Efficiency (CEE). PG&E has had an active CEE program over the past two decades. Its cumulative reduction of use has been substantial. For any given planning area, the historical CEE energy and peak demand impacts have been subsumed within the peak load demands experienced year by year and thus their impacts are

³ Load dropping can be at the discretion of the CAISO and/or utility, or voluntarily at the discretion of the consumer.

included in the forecast of peak growth. As for future potential CEE impacts, PG&E's Local Integrated Resource Plan (LIRP) study indicates that only 4 MW per year could be obtained through aggressive locally focused CEE. This falls well short of the long-term capacity needs in the project area, and therefore can only be viewed as an augmentation to other non-traditional wires solution options.

Curtailement of Electric Service

During June of 2000, when exceptionally high demand due to a Statewide heat wave coincided with the shutdown of units at local power plants, PG&E was forced to institute rolling blackouts (for periods of one to three hours) at various locations in and around the City of San Francisco. This type of scenario may have to be implemented again at times of peak demand if additional transmission and associated substation infrastructure is not provided. PG&E's load curtailment plans are structured so as to avoid curtailment of critical loads such as hospitals.

Summary of No Project Alternative Scenario

Following is a list of the components of this scenario that are considered to be most likely to occur. This list is also presented in the order in which the events would likely occur:

- Transmission system improvements as described in Section C.6.1 [Transmission line rerates (equivalent to Projects #1 to 4 and 8 in Table C-1), substation upgrades (Projects 5, 6, 7, 11), and new or upgraded 115 kV transmission lines (Projects 9 and 10)]
- New generation (most likely the CCSF turbines)
- Closure of Hunters Point Power Plant Unit 4
- Demand-side management
- Interruptible load program
- Curtailement of electric service.