

## 2 ALTERNATIVES ANALYSIS

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### 2.1 INTRODUCTION

Pacific Gas and Electric Company (PGandE) evaluated a number of alternative methods for achieving the Delta Distribution Planning Area Capacity Increase Substation Project's (project) objectives (refer to Chapter 1: Project Description) before selecting Site C as the proposed project for review and approval by the California Public Utilities Commission (CPUC). Early in the planning process, PGandE planning engineers considered several electric planning solutions and system alternatives to address the need for additional distribution capacity, including capacity increases at existing substations; load transfers to adjacent distribution planning areas; adding feeders from more remote distribution planning areas; and combining distributed generation, load management, and customer energy efficiency programs. However, as discussed in Section 2.5 Other Alternatives Considered and Eliminated, PGandE determined that these alternatives were not capable of increasing distribution capacity and, therefore, a new 21 kilovolt (kV) distribution substation was needed to meet the project's objectives. As a result, PGandE did not evaluate these alternatives further. PGandE then moved forward with the identification of several alternative projects that provide for a new substation and thus meet the project's objectives.

Specifically, PGandE identified four potential substation sites located in the central part of the Delta 21 kV Distribution Planning Area (DPA), identified as Sites A, B, C, and D and depicted on Figure 2-1. The locations of the sites relative to current land use designations are depicted on Figure 2-2. PGandE also evaluated a No Project alternative. This chapter discusses the selection and evaluation of the alternatives and provides a comparison of the alternatives. In addition, the existing conditions at Sites A, B, and D and an impacts analysis are provided. Existing conditions and impacts are thoroughly discussed for Site C in the remaining chapters of this Proponent's Environmental Assessment (PEA).

#### 2.1.1 CEQA Review of Alternatives

The California Environmental Quality Act (CEQA) does not require a review of alternatives<sup>1</sup> where, as is the case with PGandE's project, the proposed project would result in no significant environmental impacts after mitigation (Guidelines, Sec. 15126.6, subd. (a) and (f)(2)(A); Assigned Commissioner's Ruling dated October 16, 2001, A.01-07-004). However, General Order No. 131-D (GO 131-D) requires that an application for a Permit To Construct include the "[r]easons for adoption of the power line route or substation location selected, including comparison with alternative routes or locations, including the advantages and disadvantages of each" (GO 131-D, section IX.B.1.c.).

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<sup>1</sup> The California Environmental Quality Act (CEQA) defines a "feasible alternative" as one that would attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project. Economic viability is also taken into account when determining the feasibility of alternatives (2004 CEQA Guidelines, California Code of Regulations, Title 14, Chapter 3, Section 15126.6 as amended December 1, 2003).

## **2.1.2 Selection and Evaluation of Alternatives**

In order to meet the project objections (refer to Chapter 1: Project Description, Section 1.4.1), PGandE looked for potential substation sites within the DPA boundary and near the center of the load growth to best accommodate planned and anticipated growth. PGandE land planners and construction managers identified potential locations for a new substation by reviewing aerial photographs, conducting field visits and engineering-feasibility studies, discussing the project with property owners, and consulting with the cities of Antioch and Brentwood. The four selected alternative substation sites were then analyzed by evaluating each site by the following criteria to determine their suitability:

- Project objectives
- Engineering
- Land use
- Environmental impacts
- Economics

As described below, the conclusion of this evaluation and analysis led to the selection of Site C as the proposed project.

## **2.2 DESCRIPTION OF ALTERNATIVES**

### **2.2.1 Site C Alternative (Proposed Project)**

Site C is a 5.1-acre parcel located on a flat area currently used for agriculture (refer to Figure 1-2 in Chapter 1: Project Description). The site, located at the base of a hill, is owned in fee by PGandE. The site is located in a currently rural area within the city limits of Antioch in Contra Costa County, approximately 1 mile south of the intersection of Lone Tree Way and Hillcrest Avenue and approximately 0.4 mile west of the intersection of Heidorn Ranch Road and Sand Creek Road. A new 230 kV transmission line loop would be constructed from the Contra Costa to Cayetano 230 kV circuit (approximately 250 feet southwest of the site) to serve the project. An in-depth description of the proposed project site and components is provided in Chapter 1: Project Description.

### **2.2.2 Site A Alternative**

Site A is a level, 6-acre portion of a 20-acre, privately owned parcel in the City of Brentwood (see Figure 2-3 in Attachment 2-A). This site is immediately adjacent to the east side of the Highway 4 Bypass. The Contra Costa to Delta Switching Yard and the Contra Costa to Brentwood 230 kV transmission lines, which would be used to provide power for the substation, are along the western boundary of the site.

**Figure 2-1: Alternative Sites Location Map**  
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**[BACK PAGE OF COLOR FIGURE]**

**Figure 2-2: Land Use Designations**  
**[INSERT 8X11 B&W]**

### **2.2.3 Site B Alternative**

Site B is a 6-acre site in the northeastern portion of a 50-acre, privately owned parcel in the City of Brentwood (see Figure 2-3 in Attachment 2-A). The site adjoins the west side of the Highway 4 Bypass between Sand Creek Road and Lone Tree Way. The Contra Costa to Delta Switching Yard and the Contra Costa to Brentwood 230 kV transmission lines, which would be used to provide power for the substation, are immediately east of the site.

### **2.2.4 Site D Alternative**

Site D is a 5-acre area within a 160-acre, privately owned parcel in unincorporated Contra Costa County (see Figure 2-6 in Attachment 2-A). This site is located immediately west of the Contra Costa to Las Positas and the Contra Costa to Cayetano 230 kV transmission lines, which would be used to provide power for the substation.

### **2.2.5 No Project Alternative**

Under the No Project alternative, a 21 kV distribution substation would not be constructed.

## **2.3 COMPARISON OF ALTERNATIVES**

Each of the alternative sites for the substation would meet the project's basic objectives and PGandE determined that all of them could be developed without prohibitive engineering or economic constraints.

The existing resource conditions at each site were evaluated and potential resource impacts were analyzed to allow for a comparison of the alternatives. This analysis revealed that construction of Sites A, B, C, and D would result in similar impacts to air quality, cultural resources, geology and soils, hydrology and water quality, noise, population and housing, public services and utilities and service systems, growth-inducing and cumulative impacts, land use and planning, and recreation with the implementation of similar mitigation measures to reduce impacts, where necessary. However, potential impacts to visual, biological, and agricultural resources were found to vary among sites.

The following section provides a comparison of the alternatives with specific regard to visual, biological, and agricultural resources impacts. The No Project alternative is also compared to the proposed project. A detailed discussion of existing resource conditions at each alternative site and potential impacts is provided in Section 2.4 Existing Conditions and Impacts Analysis of Alternatives.

### **2.3.1 Site C Alternative (Proposed Project) Comparison**

PGandE selected Site C as the proposed project because it has the least potential to impact views, would result in similar or fewer impacts to agricultural resources, and because all other potential impacts, including those to biological resources, can be mitigated to a less than significant level (see the remaining chapters in this PEA for a detailed discussion of impacts and mitigation measures).

Construction of a substation at Site C would not substantially alter existing views from the closest residences (0.5 mile) or the closest public roadway (Heidorn Ranch Road at 2,000 feet) due to distance, natural landform, and existing landscape backdrop. Site C would not be visible from the Highway 4 Bypass. Visual screening provided by perimeter tree planting would further reduce impacts to views. Chapter 4: Aesthetics provides a thorough discussion of existing view conditions and impacts to views, along with site photos and visual simulations.

Construction of the project at proposed Site C has the potential to impact biological resources due to four threatened or endangered wildlife species that are in potentially close proximity to the project: California red-legged frog (*Rana aurora dratonii*) (CRLF), California tiger salamander (*Ambystoma californiense*) (CTS), burrowing owl (*Athene cunicularia hypugea*), and San Joaquin kit fox (*Vulpes macrotis mutica*) (kit fox). The required bridge enhancement and installation of a culvert where the access road crosses Sand Creek has the potential to impact sensitive species that utilize the stream and adjacent upland habitat. Several special-status plant species also have the potential to occur in the project area. Construction at Site C would also result in the permanent loss of 0.04 acre of wetland. Chapter 6: Biological Resources discusses potential impacts to sensitive wildlife and plant species in detail. With the implementation of the mitigation measures discussed in that chapter, all impacts to biological resources would be reduced to a less than significant level.

Construction of the project at proposed Site C would result in agricultural land being removed from production. The land is not classified as Prime or Unique Farmland, or Farmland of Statewide Importance, nor is it subject to a Williamson Act<sup>2</sup> contract.

### **2.3.2 Site A Alternative Comparison**

Environmental impacts associated with Site A would be generally similar to the proposed project, with the exception of impacts to biological resources being less and with the exception of the potential to substantially impact visual resources.

Construction of a substation at Site A would result in close-range foreground views from the residential area that is currently being constructed immediately adjacent to the site and unobstructed foreground views of the substation for motorists traveling along the Highway 4 Bypass (in both directions). Most of the facility structures, including the new transmission tower, would be seen against a hillside backdrop, with some upper portions visible along the skyline. To some extent, perimeter landscaping could reduce these visual impacts; however, even with landscaping, a substation facility at Site A would appear visually prominent in motorists' views from the Highway 4 Bypass and from the residential development. A thorough description of existing views and impacts to views from Site A is provided in Section 2.4.1.1 Site A Alternative Impacts Analysis.

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<sup>2</sup> The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments that are much lower than normal because they are based upon farming and open space uses as opposed to full market value. Local governments receive an annual subvention of forgone property tax revenues from the state via the Open Space Subvention Act of 1971.

Use of Site A would avoid impacts to biological resources because no sensitive habitats or wildlife were identified to occur within or immediately surrounding the site.

Construction of a substation at Site A would result in land classified as Prime Farmland<sup>3</sup> being removed from production. However, the City of Brentwood has zoned the land as Planned Development and assigned a land use designation of Mixed-Use Business Park. The land is not the subject of a Williamson Act contract.

Overall, PGandE determined Site A to be a less preferable alternative because of the increased visual impacts.

### **2.3.3 Site B Alternative Comparison**

Environmental impacts associated with Site B would be generally similar to the proposed project, with the exception of impacts to biological resources being less and with the exception of the potential to substantially impact visual resources.

Construction of Site B would result in unobstructed foreground views of the substation from existing and future residences and unobstructed foreground views of the substation for motorists traveling along the Highway 4 Bypass (in both directions). Most of the facility, including the new transmission tower, would be seen against the skyline. To some extent, perimeter landscaping would reduce these visual effects; however, even with landscaping, a substation at Site B would be highly visible in foreground views from the Highway 4 Bypass. A thorough description of existing views and impacts to views from Site A is provided in Section 2.4.2.1 Aesthetics.

Use of Site B would avoid impacts to biological resources because no sensitive habitats or wildlife were identified to occur within or immediately surrounding the site.

Construction of a substation at Site B would result in land classified as Prime Farmland<sup>4</sup> being removed from production. However, the City of Brentwood has zoned the land as Planned Development and assigned a land use designation of Mixed-Use Business Park. The land is not the subject of a Williamson Act contract.

Overall, PGandE determined Site B to be a less preferable alternative because of the increased visual impacts.

### **2.3.4 Site D Alternative Comparison**

Environmental impacts associated with Site D would be generally similar to the proposed project, with the exception of potentially greater impacts to visual, biological, and agricultural resources.

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<sup>3</sup> Based on 2002 California Department of Conservation Farming Mapping and Monitoring Program. Changes to the mapping take six years to implement.

<sup>4</sup> Based on 2002 California Department of Conservation Farming Mapping and Monitoring Program.



Construction of a substation at Site D would result in unobstructed views looking down on the substation from locations within existing hillside residences southeast of the site. Existing, intervening terrain and/or vegetation does not completely screen views and perimeter tree planting would not substantially reduce views, as the residences are higher in elevation than the substation. Site D would not be visible from the Highway 4 Bypass. A thorough description of existing views and impacts to views from Site D is provided in Section 2.4.3.1.

Construction at Site D would have similar impacts to biological resources as the proposed project. There is potential for several of the same sensitive wildlife species (e.g., CRLF, CTS, kit fox) to occur at Site D. In addition, there are three seasonal wetlands in the area (of which, approximately 0.02 acre would be permanently impacted) that may support additional sensitive status wildlife, such as vernal pool crustaceans. These seasonal wetlands also increase the potential for impacts to special-status plants as compared to the proposed project. Construction of the substation at Site D would also require enhancing the bridge and installing a culvert at the Sand Creek crossing, which could impact sensitive species (see Section 2.4.3.3 Biological Resources for a more thorough discussion). With the implementation of mitigation measures, potential impacts to biological resources would be less than significant.

Construction of a substation at Site D would result in land classified as farmland of local importance being removed from production. The land is also the subject of a Williamson Act contract. Land can be removed from a Williamson Act contract by termination of the contract (resulting in a penalty fee) or through eminent domain. However, Section 51290 of the California Government Code states:

*“(a) It is the policy of the state to avoid, whenever practicable, the location of any federal, state, or local public improvements and any improvements of public utilities, and the acquisition of land therefore, in agricultural preserves. (b) It is further the policy of the state that whenever it is necessary to locate such an improvement within an agricultural preserve, the improvement shall, whenever practicable, be located upon land other than land under a contract pursuant to this chapter.”* [e.g., a Williamson Act contract]

Overall, PGandE determined Site D to be a less preferable alternative due to the increased visual impacts, greater impacts to biological resources than the proposed project, and the property being the subject of a Williamson Act contract.

### **2.3.5 No Project Alternative Comparison**

The No Project alternative would avoid potential impacts to environmental resources associated with construction of Site C. This alternative would not add or upgrade either local transmission or distribution facilities or allow for significant local generation. However, this alternative is not considered a realistic option because it would not achieve the goal of increasing Delta 21 kV DPA distribution capacity to accommodate both planned and anticipated local load growth, and it does not address the need to provide safe and reliable electric service to existing customers in the cities of Antioch, Brentwood, nearby Oakley, and unincorporated areas of Contra Costa County.

## **2.4 EXISTING CONDITIONS AND IMPACTS ANALYSIS OF ALTERNATIVES**

The following sections provide the existing conditions and a detailed analysis of potential resource impacts from a substation at Sites A, B, or D, and the No Project alternative. A detailed analysis of Site C is provided in the remaining chapters of this PEA. As previously mentioned, since all environmental impacts from the proposed project can be mitigated to a less than significant level, the CPUC is not required to prepare an Environmental Impact Report or otherwise evaluate alternatives under CEQA.

### **2.4.1 Site A Alternative Impacts Analysis**

#### ***2.4.1.1 Aesthetics***

Site A is located on the east side of the Highway 4 Bypass and motorists would have unobstructed foreground views of the substation. The existing view of Site A as seen from the northbound Highway 4 Bypass is shown in Figure 2-4 in Attachment 2-A. The substation and new tower would appear prominently in the foreground from the highway at this location. Most of the facility structures in the substation would be seen against a hillside backdrop, with some upper portions visible along the skyline. In addition, the new transmission tower would appear along the highway between two existing towers, seen in the foreground. The substation would also be visually prominent when seen from locations within the residential subdivision that is currently being constructed immediately east of the site. As described above, even with landscaping, a substation facility located at Site A would appear visually prominent in motorists' views from the Highway 4 Bypass. As a result, impacts to visual resources would be more substantial than the proposed project.

#### ***2.4.1.2 Air Quality***

Air quality impacts would be similar to the proposed project and less than significant. Ultimately, Site A would be located immediately west of a residential area (sensitive receptor); however, operation of the substation would not significantly impact air quality and, therefore, impacts would be less than significant, similar to the proposed project.

#### ***2.4.1.3 Biological Resources***

No sensitive habitats or wildlife were identified to occur within or immediately surrounding the site. Potential impacts to nesting raptors would be similar to the proposed project, and less than significant with the implementation of mitigation measures, as necessary. Construction would result in the loss of approximately 5 acres of non-native grassland. However, non-native grassland is common throughout the region and loss of this limited area would be considered less than significant. Potential impacts to special-status plants would be similar to those at the proposed site. Therefore, potential impacts to biological resources as a result of the construction of the substation at this site would be minimal and insignificant.

#### ***2.4.1.4 Cultural Resources***

The Contra Costa County General Plan of 1996 appears to assign a “high” archaeological sensitivity rating of the Site A area, whereas the proposed project (Site C) is located in an area of “medium” sensitivity. However, no prehistoric or historic archaeological sites have been

recorded at, or adjacent to, Site A and none were observed during the field inventory of Site A and associated access road. In addition, no local, state, or federal historically or architecturally significant structures, landmarks, or points of interest have been recorded or identified at, or adjacent to, the site. If cultural resources are inadvertently discovered, potential impacts would be mitigated. As with the proposed project, impacts to cultural resources would be less than significant.

#### **2.4.1.5 Geology and Soils**

There are no active faults in the immediate vicinity and the distance to the nearest active regional fault is similar to Site C. Near-surface geology consists of the alluvial geologic unit. With similar site-to-fault distances and similar near-surface geology, there is no material difference in the levels of ground movement expected to occur due to regional seismicity. The potential for liquefaction due to large regional earthquakes is low to very low, similar to Site C (Association of Bay Area Governments, 2004). The site occurs on low-relief terrain without unstable geologic units or a history of subsidence. Conditions prone to lateral spreading, landslides, and other seismically induced ground failures do not occur. Soils at the site belong to the Capay Series of the Capay-Rincon Soil Association. The soil type is Capay clay, which occurs in nearly level areas and is moderately well-drained. Capay clay soil characteristics are similar to the Rincon clay loam soil type found at Site C, which is fine-grained and montmorillonitic with a high shrink-swell potential. Lands at Site A are classified as mineral resource zone (MRZ)-1<sup>5</sup> and no known locally important mineral resources occur in the vicinity, nor are there any active mining operations. Site A occurs on the same near-surface Holocene and Pleistocene alluvial geologic materials as Site C. Given the existing geological, soil, and paleontological conditions at Site A, impacts would be less than significant, similar to those at Site C.

#### **2.4.1.6 Hydrology and Water Quality**

Site A is not proximal to any mapped natural drainage. Hydrology and water quality impacts would generally be similar to or less than Site C (as no drainages are crossed), and less than significant.

#### **2.4.1.7 Land Use and Planning, Recreation, and Agricultural Resources**

Site A is located on privately owned land in the City of Brentwood (see Figure 2-3 in Attachment 2-A) immediately adjacent to the east side of the Highway 4 Bypass. Its most recent use has been agricultural (left fallow). Based on the California Department of Conservation Farming Mapping and Monitoring Program (2002) the land is classified as Prime Farmland, although the *City of Brentwood General Plan* designates the land use as Mixed-Use Business Park. The City of Brentwood has zoned the area as Planned Development-53 (PD-53). While development standards are not currently in place for PD-53, a substation could be deemed compatible with the Mixed-Use Business Park land use designation. There is currently no application on file with the City of Brentwood to develop this parcel. A subdivision is currently being constructed immediately east of the site. The Contra Costa to Delta Switching Yard and

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<sup>5</sup> MRZ-1 is the classification given to lands where there is adequate information on mineral resources in the area to indicate that no significant mineral deposits are present or where the State Geologist judges that limited likelihood exists for their presence.

the Contra Costa to Brentwood 230 kV transmission lines, which would be used to provide power for the substation, are along the west boundary of Site A. A substation at Site A would not impact recreational resources.

#### **2.4.1.8 Noise**

The primary difference between the proposed project and Site A relative to noise is the proximity of Site A to a greater number of sensitive receptors (residences). Construction noise would constitute a temporary impact to nearby sensitive receptors. However, as with the proposed project, noise-level impacts would be reduced to a less than significant level with implementation of mitigation measures. Ultimately, Site A would be located immediately west of a residential area (sensitive receptor); however, operation of the substation would not significantly impact noise levels and, therefore, impacts would be less than significant, similar to the proposed project.

#### **2.4.1.9 Population and Housing, Public Services, and Utilities and Service Systems**

There would be no impacts to population and housing, public services, and utilities and service systems, similar to the proposed project.

#### **2.4.1.10 Transportation and Traffic**

Transportation and traffic impacts for Site A would be less than significant, similar to the proposed project.

#### **2.4.1.11 Growth-Inducing and Cumulative Impacts**

Growth-inducing and cumulative impacts for Site A would be similar to the proposed project and less than significant.

### **2.4.2 Site B Alternative Impacts Analysis**

#### **2.4.2.1 Aesthetics**

Site B is situated along the west side of the Highway 4 Bypass where it would be highly visible in motorists' foreground views. Figure 2-5 in Attachment 2-A shows an existing view as seen from the northbound Highway 4 Bypass. The substation would appear prominently from the highway. Most of the facility, including the new transmission tower, would be seen against the skyline. As described above, perimeter landscaping could reduce these visual effects to some extent; however, even with landscaping the new substation facility would be highly visible in foreground views from the Highway 4 Bypass. As a result, impacts to visual resources would be more substantial than the proposed project.

#### **2.4.2.2 Air Quality**

Air quality impacts at Site B would be similar to the proposed project and less than significant.

#### **2.4.2.3 Biological Resources**

No sensitive habitats or wildlife were identified to occur within or immediately surrounding the site. Potential impacts to nesting raptors would be similar to the proposed project, and less than significant with implementation of mitigation measures, as necessary. Potential impacts to special-status plants would be similar to those for the proposed site. Therefore, potential impacts to biological resources would be minimal and insignificant.

#### **2.4.2.4 Cultural Resources**

The Contra Costa County General Plan of 1996 appears to assign a “high” archaeological sensitivity rating for Site B, whereas the proposed project (Site C) is located in an area of “medium” sensitivity. However, no prehistoric or historic archaeological sites have been recorded at, or adjacent to, the site and none were observed during the field inventory of Site B and associated access road. In addition, no local, state, or federal historically or architecturally significant structures, landmarks, or points of interest have been recorded or identified at, or adjacent to, the site. If cultural resources were inadvertently discovered, potential impacts would be mitigated. As with the proposed project, impacts to cultural resources would be less than significant.

#### **2.4.2.5 Geology and Soils**

There are no active faults in the immediate vicinity of Site B and the distance to the nearest active regional fault is similar to Site C. Near-surface geology consists of the same alluvial geologic unit. With similar site-to-fault distances and similar near-surface geology, there is no material difference in the levels of ground movement expected to occur due to regional seismicity. The potential for liquefaction due to large regional earthquakes is low to very low, similar to the proposed project (Association of Bay Area Governments, 2004). The site occurs on low-relief terrain without unstable geologic units or a history of subsidence. Conditions prone to lateral spreading, landslides, and other seismically induced ground failures do not occur. The soil type is Rincon clay loam (same soil type as Site C), which is well drained and occurs on relatively flat ground. Lands are also classified as MRZ-1 and no known locally important mineral resources occur in the vicinity, nor are there any active mining operations. Site B occurs on the same near-surface Holocene and Pleistocene alluvial geologic materials as the proposed project. Given the existing geological, soil, and paleontological conditions at Site B, impacts would be less than significant, similar to Site C.

#### **2.4.2.6 Hydrology and Water Quality**

Site B is not proximal to any mapped natural drainage. Hydrology and water quality impacts would generally be similar to or less than Site C (as no drainages are crossed), and, as with Site C, less than significant.

#### **2.4.2.7 Land Use and Planning, Recreation, and Agricultural Resources**

Site B is a privately owned parcel within the City of Brentwood (see Figure 2-3 in Attachment 2-A). The site adjoins the west side of the Highway 4 Bypass between Sand Creek Road and Lone Tree Way. Presently, this level site is used for agriculture. Based on the California Department of

Conservation Farming Mapping and Monitoring Program (2002) the land is classified as Prime Farmland. Construction at Site B would result in the permanent loss of approximately 5 acres of agricultural land, similar to the proposed project. Since agricultural land is common throughout the region, loss of this limited area would be less than significant.

The *City of Brentwood General Plan* designates the land use as Mixed-Use Business Park, and the zoning is Planned Development-52 (PD-52). While development standards are not currently in place for PD-52, a substation could be deemed compatible with the Mixed-Use Business Park land use designation. There is no application on file with the City of Brentwood for development of this site. The Contra Costa to Delta Switching Yard and the Contra Costa to Brentwood 230 kV transmission lines, which would be used to provide power for the substation, are immediately east of the site. A substation at Site B would not impact recreational resources.

#### **2.4.2.8 Noise**

The primary difference between the proposed project and Site B relative to noise is the proximity of Site B to a greater number of sensitive receptors (residences). Construction noise would constitute a temporary impact to nearby sensitive receptors. However, as with the proposed project, implementation of mitigation measures would reduce noise-level impacts to a less than significant level.

#### **2.4.2.9 Population and Housing, Public Services, and Utilities and Service Systems**

There would be no impacts to population and housing, public services, and utilities and service systems, similar to the proposed project.

#### **2.4.2.10 Transportation and Traffic**

Transportation and traffic impacts for Site B would be less than significant, similar to the proposed project.

#### **2.4.2.11 Growth-Inducing and Cumulative Impacts**

Growth-inducing and cumulative impacts for Site B would be similar to the proposed project and less than significant.

### **2.4.3 Site D Alternative Impacts Analysis**

#### **2.4.3.1 Aesthetics**

Figure 2-7 in Attachment 2-A shows an existing view of Site D as seen from Eaton Court Park. Portions of the substation at this site would appear beyond the existing transmission towers. Most of the facility, including the new transmission towers, would be seen against a hillside backdrop. In addition to the project's effects on views from Eaton Court Park, the substation would be visible from the existing hillside residential area less than 0.5 mile to the southeast. As described above, this residential area is higher in elevation than Site D and the intervening terrain and/or vegetation does not completely screen views to the northwest (toward Site D). As a result, unobstructed views looking down on the substation would be available from places within this

hillside residential area. Therefore, impacts to visual resources would be more substantial than the proposed project.

#### **2.4.3.2 Air Quality**

Air quality impacts for Site D would be less than significant, similar to the proposed project.

#### **2.4.3.3 Biological Resources**

Several sensitive wildlife species could potentially occur in the project area, including CRLF, CTS, and kit fox (similar to the proposed project) as well as the vernal pool fairy shrimp (*Branchinecta lynchi*) and Longhorn fairy shrimp (*Branchinecta longiantenna*). Construction of this alternative would also require bridge enhancement and installation of a culvert within Sand Creek, which would temporarily disturb CRLF breeding and dispersal habitat within proposed critical habitat (unit 15, 66FR 14635). Suitable upland habitat is present along the banks of the creek. The creek is unlikely to provide suitable aquatic habitat for CTS, which prefers waterbodies more sedentary than Sand Creek. However, non-breeding habitat for CTS was present along Sand Creek. Access via the existing dirt road may impede movement of CTS and CRLF in search of suitable breeding, foraging, and hiding habitat.

There are three seasonal wetlands within the project area that may provide habitat for listed vernal pool crustaceans, which could be indirectly affected. Vernal pool fairy shrimp are present within one of the isolated wetlands. Construction would result in the loss of approximately 0.02 acre of these wetlands. There are several stock ponds located outside the project boundaries, but within 1 mile of the study area. These waterbodies have the potential to provide suitable breeding habitat for CRLF populations that could potentially disperse into the project area, particularly during wet periods (i.e., winter months).

While there is currently no active denning occurring within Site D, the Recovery Plan for the kit fox mentions protecting their habitat in the northern part of their range and connectivity to the habitat further south. However, no suitable dens were located during a 2004 field visit and the intensive agricultural activity near the site makes the substation location unsuitable for this species. There is potential for burrowing owls to occur within the project area; however, site visits conducted during 2003 and 2004 did not identify occupied habitat for burrowing owls. Preconstruction surveys would be conducted to ensure no burrowing owls are disturbed during construction.

As a result of these existing conditions, impacts to sensitive biological resources at Site D would be similar to those at Site C. As with the proposed project, all of the potential impacts discussed above would be mitigated to a less than significant level.

#### **2.4.3.4 Cultural Resources**

The Contra Costa County General Plan of 1996 appears to assign a “medium” archaeological sensitivity rating for Site D. However, no prehistoric or historic archaeological sites have been recorded in or adjacent to the site and none were observed during the field inventory of Site D and associated access road. In addition, no local, state, or federal historically or architecturally

significant structures, landmarks, or points of interest have been recorded or identified in or adjacent to the proposed project location. If cultural resources were inadvertently discovered, potential impacts would be mitigated. As with the proposed project, impacts to cultural resources would be less than significant.

#### **2.4.3.5 Geology and Soils**

There are no active faults in the immediate vicinity and the distance to the nearest active regional fault is similar to Site C. Near-surface geology consists of the same alluvial geologic unit. With similar site-to-fault distances and similar near-surface geology, there is no material difference in the levels of ground movement expected to occur due to regional seismicity. The potential for liquefaction due to large regional earthquakes is low to very low, similar to the proposed project location (Association of Bay Area Governments, 2004). The site occurs on low-relief terrain without unstable geologic units or a history of subsidence. Conditions prone to lateral spreading, landslides, and other seismically induced ground failures do not occur. Soils at Site D are Pescadero clay loam. Similar to Rincon clay loam found at the proposed project site, this soil is fine-grained and montmorillonitic, with a high shrink-swell potential. Lands are classified as MRZ-1 and no known locally important mineral resources occur in the vicinity, nor are there any active mining operations. Site D occurs on the same near-surface Holocene and Pleistocene alluvial geologic materials as the proposed project. Given the existing geological, soil, and paleontological conditions at Site D, impacts would be less than significant, similar to those at Site C.

#### **2.4.3.6 Hydrology and Water Quality**

A substation at Site D would require enhancing the existing bridge and installing a culvert where the access road associated with the substation crosses Sand Creek, similar to the proposed project. The groundwater table near Site D is likely to occur at a shallower depth due to the presence of nearby vernal pools. Hydrology and water quality impacts would be similar to the proposed project and less than significant.

#### **2.4.3.7 Land Use and Planning, Recreation, and Agricultural Resources**

Site D is on private land in unincorporated Contra Costa County (see Attachment 2-A, Figure 2-6). Presently, this area is used for agriculture. Construction of the substation would result in the permanent loss of approximately 5 acres of agricultural land, similar to the proposed project. Based on the California Department of Conservation Farming Mapping and Monitoring Program (2002) the land is classified as Farmland of Local Importance. The land is also the subject of a Williamson Act contract. Therefore, removal of land from agricultural production would be considered a potentially significant impact.

Although Site D is not within the City of Antioch's limits, the *City of Antioch General Plan* refers to the area where Site D is located as the Ginochio Focus Area. The General Plan designates the area as Mixed Use, Planned Community/Resort. This area is currently only a planning study area and has not yet received an official land use designation. Utility substations are a permitted use within all City of Antioch zoning designations. The Ginochio Focus Area abuts the Urban Line Limit that was established in 1990 to maintain a 65/35 ratio of non-



urban/urban areas. The area is also within the *City of Brentwood General Plan* as “Special Planning Area R,” but the General Plan notes that there is currently no land use designation and that it is outside of Brentwood City limits. The site is located immediately west of the Contra Costa to Las Positas and the Contra Costa to Cayetano 230 kV transmission lines. A substation at Site D would not impact recreational resources.

#### **2.4.3.8 Noise**

Noise impacts would be less than significant with the implementation of mitigation measures, similar to the proposed project.

#### **2.4.3.9 Population and Housing, Public Services, and Utilities and Service Systems**

There would be no impacts to population and housing, public services, and utilities and service systems, similar to the proposed project.

#### **2.4.3.10 Transportation and Traffic**

Transportation and traffic impacts for Site D would be less than significant, similar to the proposed project.

#### **2.4.3.11 Growth-Inducing and Cumulative Impacts**

Growth-inducing and cumulative impacts for Site D would be similar to the proposed project and less than significant.

### **2.4.4 No Project Alternative Impacts Analysis**

If the project were not implemented, there would be no direct impacts to existing environmental conditions. However, the No Project alternative would have a substantial impact on the communities PGandE serves. This alternative could impact human health and safety as a result of insufficient capacity and prolonged power outages as severe and widespread overloading of the electric system that would likely occur could lead to equipment overheating and ultimately electrical and/or mechanical failures. These failures would result in electric service interruptions necessary to relieve overload during peak demand periods. As a result, PGandE would not be able to provide reliable service to existing customers, meet additional demand from these customers, or be able to serve new customers. This is true even with all current electric transmission and distribution systems working at maximum efficiency and with planned upgrades in place. Inability to provide reliable electrical service is inconsistent with plans for new development in the project area. PGandE anticipates future distribution capacity deficiencies to occur in the Delta 21 kV DPA in the years beyond 2007.

While there are no direct, immediate financial costs associated with the No Project alternative, power outages that may occur if the project is not constructed would likely require equipment repair and replacement, and generate other indirect costs. Because the No Project alternative does not meet the project’s objectives, and due to the issues discussed above, this alternative was rejected as infeasible.

## 2.5 OTHER ALTERNATIVES CONSIDERED AND ELIMINATED

As discussed in Section 2.1 Introduction, PGandE considered several system alternatives to determine if they could provide the additional distribution capacity needed in the Delta 21 kV DPA prior to evaluating the alternative substation sites. A discussion of these alternatives and why they were eliminated is provided below.

### 2.5.1 Capacity Increases at Existing Substations

PGandE evaluated the potential to increase the capacity at several existing substations to meet the Delta 21 kV DPA's demand requirements. The locations of the three closest substations—Brentwood, Contra Costa, and Kirker—are depicted on Figure 1-3 in Chapter 1: Project Description. However, for the reasons discussed below, none of these alternatives would meet the project's objectives and were, therefore, eliminated.

- **Antioch Substation (60 kV/4 kV):** Lacks space to install even a single 21 kV bank.
- **Balfour Substation (60 kV/12 kV):** Located on a very small parcel of land with limited space for new equipment, and adding load to the 60 kV circuit would cause operating problems and very poor reliability.
- **Brentwood Substation:** Will be built out to its already-planned ultimate design once a third 230 kV/21 kV bank and one 21 kV circuit is added in 2005 and an additional 21 kV circuit is added in 2006.
- **Contra Costa Substation:** Currently built out to the ultimate arrangement for the existing transmission voltages. Converting the existing 115 kV/21 kV 45-megavolt-ampere (MVA) bank to a 230 kV/21 kV 75-MVA bank would cause potential overload to Contra Costa County Bank #3, 230 kV/115 kV, and would require extensive reconstruction of the substation. In addition, expanding this location would not provide the load capability where it is needed.
- **Kirker Substation:** Built out to the ultimate design and is too far west of the load growth.
- **Marsh Substation:** Not suitable for expansion due to the existing, large gas transmission lines passing under the property.
- **Pittsburg Substation (60 kV/4 kV):** Lacks room for installation of a 21 kV bank and is located too far west of the load growth.
- **Willow Pass Substation:** Located in the Willow Pass-Clayton 12 kV DPA, has room for installation of a 115 kV/21 kV bank, but is too far west of the load growth.

## 2.5.2 Load Transfers to Adjacent Distribution Planning Areas

PGandE evaluated the potential to add capacity to DPAs adjacent to the Delta 21 kV DPA to meet increased demand requirements. However, for the reasons discussed below, alternatives that transfer loads from adjacent DPAs would not meet the project's objectives and were, therefore, eliminated.

- **Clayton to Willow Pass, Grand Island, and Middle River Lines:** The lines are very small and the total capacity available of all three is much less than a typical 21 kV circuit.
- **Tracy DPA:** The DPA is fully loaded to its capacity.
- **Concord 21 kV DPA:** This DPA is very large and has capacity available. However, the nearest substation in this DPA is Clayton Substation (which could at most provide one circuit before reaching capacity), which is approximately 11 miles west of the expected load growth. The required feeder would be far too long to provide adequate voltage and reliability and acceptable line losses.

## 2.5.3 Bringing in Distribution Feeders from More Remote Distribution Planning Areas

PGandE considered extending distribution feeders from the Livermore and Walnut Creek DPAs (possible circuits from Research, Tassajara, or Cayetano substations). However, these feeders would be extremely long, costly, and difficult to operate efficiently. In addition, long feeders are subject to reliability problems. Furthermore, extending these feeders would use the remaining capacity in their respective DPAs, which themselves have seen high growth and are already capacity constrained. Extending feeders, even if doing so could meet basic project objectives, would only defer the necessity of new substation in east Contra Costa County. Thus, this alternative would not meet the project's objectives and was eliminated.

## 2.5.4 Combined Distributed Generation, Load Management, and Customer Energy Efficiency Programs

PGandE retained Energy and Environmental Economics, Inc. to perform a Local Integrated Resource Planning (LIRP) study for the DPA. The LIRP study "evaluated the potential for demand-side management (DSM) measures, distributed generation (DG) technologies, and demand-response programs to defer the planned capacity projects by cost-effectively reducing peak load. This study finds that the costs of implementing the DSM, DG, or demand-response programs exceed the benefits from deferring the traditional distribution capacity projects for the Delta 21 kV DPA." Thus, this alternative was rejected for economic reasons.

## 2.6 CONCLUSION

All four of the substation site alternatives meet the project's objectives. However, constructing the substation at Site C would be optimal because the site is located near the center of the load growth, thereby making the network of distribution feeder lines serving the area considerably more efficient and less costly than any other alternative. Additionally, there are several other reasons why Site C has been selected and recommended as the proposed project, including:

- Impacts associated with construction of the substation at this site would cause less significant impact on visual than the other alternatives. Additionally, all other potential impacts would be less than significant with the implementation of mitigation.
- The proposed *City of Antioch General Plan* designates the site as Public/Quasi Public to accommodate a substation. Additionally, the public has been on notice since 1998 that the site has been identified by PGandE as a proposed substation site in drafts of the Sand Creek Specific Plan.
- The site is already owned by PGandE.

None of the non-substation alternatives (e.g., no project alternative, capacity increase, load transfer, etc.) meet the project objectives.

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