Decision **ALTERNATE PROPOSED DECISION OF COMMISSIONER WOOD**
(Mailed 9/26/01)

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of PACIFIC GAS AND ELECTRIC COMPANY (U 39 E) for a Certificate of Public Convenience and Necessity Authorizing the Construction of the Tri Valley 2002 Capacity Increase Project	Application 99-11-025 (Filed November 22, 1999)

OPINION GRANTING A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY

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1. Summary

This decision grants a certificate of public convenience and necessity (CPCN) to Pacific Gas and Electric Company (PG&E) to construct 8.8 miles of new 230 kilovolt (kV) double-circuit transmission line, upgrade certain other transmission facilities, and construct a transmission/distribution substation to serve the Dublin area. The facilities we approve will be constructed in the cities of Dublin and Pleasanton, and unincorporated areas of Alameda County, an area referred to as the Tri Valley.[1]

Demand in the Tri Valley area is projected to exceed supply as early as 2002. PG&E has demonstrated the need for a portion of the project it proposed in order to maintain the reliability of its electric system; however it did not demonstrate that all of the facilities it proposes are necessary to serve expected demand. We select one of the environmentally superior Pleasanton routes identified in the Final Environmental Impact Report (FEIR) prepared for the Commission. We reject PG&E's proposed route and an alternative proposed by the City of Pleasanton and the Kottinger Ranch Homeowner's Association (jointly, Pleasanton Parties), although some of the route we adopt overlaps with portions of the route recommended by the Pleasanton Parties. Each of the routes we reject in the Pleasanton area results in greater impacts on the environment and the local community than the route we select today.

Regarding the proposed substation in Dublin, the FEIR concludes that an alternative, more southerly, location for the Dublin substation is environmentally

[1] The Tri Valley also encompasses the cities of Livermore and San Ramon and parts of unincorporated Contra Costa County.

superior to PG&E's proposed substation. The FEIR concludes that, given forecasted load growth, slow growth measures in the North Livermore area, increased transmission capacity from the Tri Valley project as a whole, and the significant environmental impact of constructing a new substation in North Livermore, no substation should be constructed in North Livermore. After reviewing the question of need and weighing the environmental impacts and other factors, we grant a CPCN to PG&E to construct both its proposed Dublin substation and its proposed North Livermore substation.

2. Procedural History

In 1986, PG&E filed Application (A.) 86-10-006 for authority to construct a 230kV transmission line between the Tesla-Newark 230kV transmission corridor and construct its Vineyard Substation located in Pleasanton, California. In Decision (D.) 88-01-062, the Commission approved a CPCN, for an all underground alternative from Tesla-Newark to Vineyard Substation, subject to completion of a supplemental EIR for this alternative. PG&E filed a petition to modify D.88-01-062 to extend the two year expiration date of the CPCN. PG&E subsequently withdrew its petition to modify. PG&E's cost estimate in 1987 for the all underground alternative was $31 million.

PG&E then filed the present application seeking approval of its proposed project depicted in Appendix B to this decision. PG&E also filed a Proponent's Environmental Assessment (PEA) to support its proposed project. PG&E continued to support its proposed route through the proceeding but has identified two other options it finds acceptable for the Pleasanton area of the project if the Commission does not select its proposed project. All of the routes and substation locations studied in the FEIR are depicted on the map attached as Appendix A.

Several parties intervened and participated actively during the evidentiary hearings and subsequent briefing. These parties are: the Commission's Office of Ratepayer Advocates (ORA), the California Independent System Operator (ISO or CA ISO), the City of Pleasanton and Kottinger Ranch Homeowners Association (jointly, the Pleasanton Parties), Catherine Foley, Coleman Foley, Inc., Foley Ranches, and Coleman Foley Testamentary Trust (jointly, Foley Intervenors), the City of Dublin, the City of Livermore, the City of San Ramon, the Lin Family, Centex Homes (Centex), and Livermore Area Recreation and Park District (LARPD).[2] The East Bay Regional Park District (EBRPD) petitioned to intervene after opening briefs had already been submitted. EBRPD's was granted party status in D.01-05-077. Other groups and individuals without party status submitted comments on the Draft EIR (DEIR), as described fully in the FEIR.

Public participation hearings were held on February 8, 13, and 15, 2001 in Livermore, Pleasanton, and Dublin, respectively. Evidentiary hearings took place on February 20-23, 26-28 and March 5-8, 2001. The parties filed post-hearing opening and reply briefs. Closing argument before the assigned Commissioner and Administrative Law Judge (ALJ) was held on May 1, 2001.

D.01-05-077 describes the public process utilized to prepare the DEIR and FEIR. D.01-05-077 certified that the FEIR meets the requirements of the California Environmental Quality Act (CEQA) regarding adequacy and

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[2] We do not list the City and County of San Francisco, the Modesto Irrigation District, the Center for Energy Efficiency and Renewable Technologies, or the California Electricity Oversight Board, who did not participate in this proceeding beyond the filing of an appearance. We dismiss them as parties from this proceeding and direct the Process Office to move them from Appearance status to Information Only status.

independent judgement. In considering whether to grant a CPCN for the Tri Valley project, we rely on the comprehensive environmental information compiled in the FEIR. The environmental documents for this proceeding consists of Exhibits 1000, 1001, 1002, 1003, 1003-A, and 1004.

3. Scope of Proceeding

In April 2000, the assigned Commissioner found the following issues to be within the scope of this proceeding:

1. Need for the proposed project including consideration of the decision by the ISO that the project is needed;
2. Assessment of the merits of alternative routes, including route segments located underground, the proposed and alternate routes, and proposed and alternative substation locations;
3. Consideration of the following factors contained in Pub. Util. Code § 1002:
    a. Community values;
    b. Recreational and park areas;
    c. Historical and aesthetic values; and
    d. Influence on the environment;
4. Consideration of whether, pursuant to the Commission's General Order (GO) 131-D, the project promotes the safety, health, comfort, and convenience of the public;
5. Jurisdiction over costs, and advisability and amount of a cap on project cost;

6. Whether the project has cumulative and/or growth-inducing impacts.[3]

4. Proposed Project[4]

PG&E's Tri Valley 2002 Capacity Increase Project is proposed to serve its projected electric demand in the cities of Dublin, Livermore, Pleasanton, and San Ramon, and in portions of unincorporated Alameda and Contra Costa Counties adjacent to these cities. PG&E's proposed project consists of approximately 20.7 miles of 230 kV overhead double-circuit transmission line, approximately 2.7 miles of 230 kV underground double-circuit transmission line, two new distribution substations, modifications to an existing substation, and an underground/overhead transition station. The components of PG&E's proposed project are addressed as four parts, one for each of the three major geographic areas of the project (Pleasanton, Dublin/San Ramon, and North Livermore), cumulatively referred to as Phase 1, and one for PG&E's proposed Phase 2, which is not immediately needed.

4.1 Pleasanton Area Proposed Project

In the Pleasanton area, the project consists of modification of the existing Vineyard Substation (in Pleasanton) to include a 230 kV transmission interconnection. PG&E proposes to install 2.8 miles of new 230 kV overhead

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[3] The foregoing description of the scope is derived from the text of the April 26, 2000 *Assigned Commissioner's Ruling Establishing Category and Providing Scoping Memo.* The ruling stated the issues slightly differently. In addition, the list of issues described herein does not include one of the issues listed in the ruling because no party pursued it during the case.

[4] The description of the proposed project is derived from Exhibit 1000. For more details of the proposed project, refer to Exhibit 1000 or Exhibit 11.

double-circuit transmission line and 2.7 miles of 230 kV underground double-circuit transmission line to serve the Vineyard Substation, and a transition station to convert the 230 kV overhead transmission line to an underground cable system.

The proposed overhead transmission route would originate approximately 1.0 mile east of the entrance to the Vallecitos Nuclear Center along Route 84, originating in PG&E's existing Tesla-Newark transmission line corridor, which is occupied by four rows of lattice steel towers. The proposed transmission line would connect with the existing Contra Costa–Newark #2 transmission line and travel north on lattice steel towers for approximately 2.8 miles through gently to moderately steep sloped rangeland toward the City of Pleasanton. The transition to underground would occur approximately halfway between the origination point and the Vineyard Substation.

The transition station[5] would be constructed below the natural ridgeline where, in part due to landscape screening, visibility from the City of Pleasanton would be minimized. The layout would require an area of 0.2 to 0.5 acres, including vehicle access, and would be graded flat or in a terraced layout. An access road to the transition station would be built from the City of Pleasanton's Kottinger Ranch water storage tank site. The transition station for PG&E's proposed project in the Pleasanton area would be located on property owned by Foley Intervenors.

The underground segment begins at the transition structure and traverses the ridge to the existing Kottinger Ranch water tank in south

[5] "Transition station" is the term used to refer to the location and equipment required to transition from overhead transmission facilities to underground transmission facilities.

Pleasanton. After passing the water tank, the route continues down an existing paved road and into city streets. PG&E's engineering design for the route through city streets is set forth in Exhibit 3, Tab A. PG&E's proposed route would travel along Benedict Court, Smallwood Court, Hearst Drive, and Bernal Avenue. The section of Benedict Court on the proposed route is approximately 1,100 feet in length. The Smallwood Court segment is approximately 300 feet in length. The Hearst Drive segment is approximately 2,500 feet in length and the Bernal Avenue segment is approximately 4,300 feet in length. Many segments of these streets have homes only on one side of the street. PG&E indicates that the project would be constructed on the side of the street away from homes, wherever possible. The underground segment would continue along Bernal Avenue until it reaches Vineyard Substation. As proposed, the line will cross the Arroyo del Valle waterway by a horizontal dry boring, adjacent to the Bernal Avenue Bridge.

The underground segment would be constructed within a duct bank, consisting of nine PVC pipe ducts, encased in concrete. The duct bank would also include a duct to carry fiber optic cable. At intervals along the underground segment, splice vaults would be installed to allow for easier installation and maintenance. The transmission cable would be pulled through the ducts and spliced in the vaults.

4.2 Dublin/San Ramon and Livermore Area Proposed Project

In the Dublin/San Ramon area, PG&E proposes to construct a new Dublin substation, located three miles north of Interstate 580 and one mile east of Tassajara Road in Contra Costa County. In the North Livermore area, PG&E proposes to construct a new North Livermore substation, located three miles north of Interstate 580, just west of the intersection of May School Road and

North Livermore Avenue. In order to serve these new substations, PG&E plans to install 7.9 miles of new 230 kV overhead double-circuit transmission line in its existing easement (which is currently vacant).

PG&E's proposed Dublin substation would be located on a five acre parcel just north of its existing right-of-way on rolling rangeland used for cattle grazing. This remote location is north of approved development within Alameda County, and south and east of approved development in Contra Costa County. Initially, no landscape screening is proposed for PG&E's proposed Dublin substation. PG&E estimates that it may be 10 to 15 years before its proposed Dublin substation site becomes surrounded by residential development.

The North Livermore substation would be identical to the Dublin substation in terms of the size, layout, and equipment but it would be constructed inside an earthen landscaped berm, with a precast concrete wall structure and vegetation appropriate for the setting. The substation would be set back approximately 60 feet from North Livermore Avenue to allow for any future widening of the roadway. The setback would also accommodate the length of driveway required to handle a mobile tractor trailer in the event of a transformer exchange, which would allow the normal traffic flow on North Livermore Avenue to be uninterrupted.

The total distance between the Contra Costa-Newark line and PG&E's proposed Dublin substation is 6.9 miles.[6] The transmission line PG&E proposes would connect to the Contra Costa-Newark transmission line north of the City of Livermore and terminate in the west at the proposed Dublin substation.

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[6] The Contra Costa-Newark line runs north-south through the North Livermore area.

Beginning at the tap point on the Contra Costa-Newark line, the first four miles of PG&E's proposed transmission line traverse due west. At the 4-mile mark, the route turns 20 degrees in the southwest direction. It continues 0.7 miles and then makes a 12 degree turn north and continues for 1.3 miles. The route makes a final 8 degree turn north, heading almost due west, and traverses 0.9 miles before terminating at the Dublin substation site. The towers are expected to be lattice towers compatible with the existing Contra Costa-Newark line. The route crosses primarily grassland within a vacant PG&E right-of-way (which would need to be expanded from 75 to 120 feet in width for the project).

To serve the North Livermore substation, at 2.1 miles west of the Contra Costa-Newark tap point, a line turns south on North Livermore Avenue. It continues south one mile to the proposed North Livermore substation location just west of May School Road.

4.3 Phase 2 Proposed Project

As proposed, Phase 2 would directly connect the Dublin and North Livermore substations to the Tesla Substation, which is located in the Central Valley, southeast of Altamont Pass. When the transformer loading at the North Livermore and Dublin substations approaches the current carrying limit of the Contra Costa-Newark 230 kV circuit, PG&E proposes to construct approximately 10 miles of double-circuit, looped-configuration transmission line to the Tesla Substation in its existing vacant easement.[7] Towers for this portion of the line would be tubular steel pole construction.

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[7] This easement extends from Tesla Substation on Patterson Pass Road in eastern Alameda County to the San Ramon Substation in the City of San Ramon on Alcosta Boulevard.

PG&E's existing 75 foot wide easement would need to be widened to 120 feet to accommodate Phase 2. Phase 2 would use the easternmost 10 miles of the existing easement, from its intersection with the Contra Costa-Newark 230 kV transmission line near Vasco Road to its origin at Tesla Substation. This easement traverses gently to moderately sloped grazing land, mostly encumbered with windfarms through the Altamont Hills. Some relocations of this easement may be necessary at the Republic Services Group Landfill[8] at Vasco Road and within some of the windfarm development where there are encroachments on PG&E's easement.

5. Description of Alternatives Studied[9]

During the environmental review process, the Commission studied alternative transmission line routes, alternative substation locations, the possibility of local generation to defer need for the project, and a "no project" scenario. As a part of the alternatives evaluation process, 27 potential alternative routes or methods of providing the required increase in electricity to the region were evaluated. Fourteen alternatives were eliminated because they did not offer significant environmental advantages over PG&E's proposed project or because they were not feasible.

In the Pleasanton area, the Commission studied five alternative routes (S1, S2, S2A, S4, and S5) in various configurations to connect a 230 kV transmission line from the Contra Costa-Newark #2 transmission line to Vineyard Substation

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[8] The landfill was previously owned by Browning Ferris Industries. Republic Services Group is the current owner of record.

[9] The descriptions of the alternatives are derived from Exhibits 1000, 1003, and 1003-A. For more detailed descriptions of the alternatives, refer to those exhibits.

and a local generation alternative. In the Dublin/San Ramon area, the Commission studied one alternative Dublin substation site (D1) and two alternative routes (D1 and D2) to connect a new Dublin substation by a 230 kV transmission line to Contra Costa-Newark #2. In the North Livermore area, the Commission reviewed two alternative substation sites (L1 and L2) and five alternative routes or configurations (L1, L2, P1, P2, and P3) to connect a new North Livermore substation by a 230 kV transmission line to Contra Costa-Newark #2. For Phase 2, the Commission reviewed one alternative transmission route (Stanislaus Corridor) and a switching station alternative. [10] Each alternative is described below.

5.1 Pleasanton Area Alternatives

All Pleasanton area alternatives (with the exception of the local generation option) include upgrades to the existing Vineyard Substation. New structures would be erected within the existing fenced perimeter of the Vineyard Substation to accommodate the new 230 kV transmission line connections. New equipment would include circuit breakers, switches, bus work, transformers, control and power cables, relay, and communication equipment.

5.1.1 S1 (Vineyard-Isabel-Stanley) Alternative

In this alternative, the Contra Costa-Newark line would be tapped in the Tesla-Newark Corridor within Sycamore Grove Park. The transmission line would be installed overhead from the Tesla-Newark corridor to the southwest corner of Highway 84 and Vineyard Avenue. This portion of the

[10] The Commission also studied an alternative to a portion of PG&E's proposed Phase 2 project at Brushy Peak Regional Preserve but in the FEIR this alternative was eliminated, and thus is not described.

new 230kV line would generally follow the existing 60kV route. The overhead/underground transition point would be located about 100 feet southwest of the corner of Highway 84 continuing straight north to the point where it meets Vineyard Avenue. The underground line would continue on the south side of Vineyard Avenue to Isabel Avenue. It would be installed overhead along the west side of Isabel to Stanley Boulevard, then turn west and be installed overhead along the north side of Stanley Boulevard. It would cross Stanley Boulevard into Vineyard Substation, just before Bernal Avenue. This alternative is about 6.6 miles long with 1.1 miles underground.

5.1.1.1 "Improved Isabel-Stanley"[11]

The improved Isabel-Stanley route builds off of the S1 alternative but would place the transmission line underground along Isabel Avenue. The Pleasanton Parties did not identify specifically where the underground line would be placed along or within Isabel Avenue. Undergrounding along Isabel Avenue is designed to mitigate the adverse, but less than significant, visual impacts of an overhead line on Livermore residents.

5.1.2 S2 (Vineyard Avenue) Alternative

This alternative would follow the same path as S1 until Isabel Avenue. Where S1 turns north onto Isabel Avenue, S2 would remain underground, crossing Isabel Avenue and continuing underground along

[11] This route was proposed by the Pleasanton Parties but rejected as infeasible by the DEIR and FEIR. We describe this route because it is the subject of testimony and briefing by numerous parties. However, the FEIR compellingly rejected this route as infeasible and so we do not consider it in our discussion of the proper routing of the project.

Vineyard Avenue, using either New or Old Vineyard Avenue[12], to Bernal Avenue. Where Vineyard Avenue meets Bernal Avenue, the line would turn north on Bernal Avenue (still underground), and into the Vineyard Substation as it would in the proposed route. This alternative would be about 5.5 miles long; the first 1.5 miles would be installed overhead and the remainder underground.

As described in the Exhibit 1003, this alternative can travel on either New or Old Vineyard Avenue. The FEIR explored locating the underground line along New Vineyard Avenue or locating the underground line within the Old Vineyard Avenue roadway (which will become a limited-access roadway with recreational and local access uses).

5.1.3 S2A Alternative

This alternative segment was developed to eliminate the significant visual and recreation impacts of the portions of the S1 and S2 alternatives that are located in the Sycamore Grove Park. S2A can be combined with the S1, S2, and S2/S5 alternatives and replaces the overhead portion of S2. S2A would be installed completely underground, except for an overhead-to-underground transition station adjacent to the Tesla-Newark corridor near the Del Valle Water Treatment Plant. The S2A alternative would begin at the existing

[12] The City of Pleasanton has approved the Vineyard Avenue Corridor Specific Plan, which includes proposed development of residential areas along Vineyard Avenue and construction of a new elementary school (Neal Elementary School) in the same corridor. In conjunction with this construction, 1.5 miles of Vineyard Avenue will be relocated to the northeast, so it runs immediately adjacent to Arroyo del Valle Creek. Along the southwest side of "New Vineyard Avenue" there would be an open space buffer of approximately 200 to 400 feet where no residences would be constructed. The proposed Neal Elementary School buildings are proposed to be located closer to "Old Vineyard Avenue".

Contra Costa-Newark transmission line southwest of the water plant, with a transition station located on private property. It would require an approximately 1-mile long transmission line to reach the S1/S2 route adjacent to Sycamore Grove Park. Two feasible options were considered for the southern most portion of this one mile route, but both options would be the same in the northernmost 0.6 miles. The options for installation of the southern 0.4 miles are to install it overhead or underground west of Foley Road. The FEIR explored placing this portion underground within Foley Road but determined that it would be infeasible due to conflicts with existing subsurface drainage and water collection systems operated by the Zone 7 water treatment plant. In the next 0.6 miles, the transmission line would be installed underground, west/northwest of Foley Road and outside of the roadway right-of-way. In this manner, the line would not conflict with Zone 7's existing or future pipelines, nor would the stability of any portion of the road be jeopardized. Where S2A meets the S1 and S2 routes, S2A would continue underground, following whichever route it is combined with.

5.1.4 S4 (Eastern Open Space) Alternative

This alternative would follow PG&E's proposed route overhead from a tap in the Tesla-Newark Corridor, 2.2 miles to a point where S4 would turn northeasterly away from PG&E's proposed route. The S4 route would continue northeasterly overhead for 1.5 miles, then transition to underground for the last 0.8 mile north to Vineyard Avenue. At this point, the S4 route would turn west on Vineyard Avenue, still underground, and follow the S2 route along Vineyard Avenue and Bernal Avenue into the Vineyard Substation. The total length of this alternative (from the Tesla-Newark tap to the Vineyard Substation) would be about 6.6 miles. The S4 alternative could also be

combined with the S5 alternative instead of following the S2 route into Vineyard Substation.

5.1.5 S5 (Quarry) Alternative[13]

S5 provides an alternative routing from New (or Old) Vineyard Avenue to the Vineyard Substation. S5 crosses through quarry property and can be combined with parts of the S2A/S2, and S4 alternatives. S5 could begin in various locations, depending on the route it is combined with. S5 would essentially begin from either New (or Old) Vineyard Avenue and turn north at the location where the existing 60 kV line crosses Arroyo del Valle Creek, just across from the future Neal Elementary School. The line would be installed underground at the creek crossing by means of an open-trenched crossing which would end at a transition station located on quarry land where the line would be brought overhead. From this half-acre fenced transition station, three tubular steel transmission poles would be installed on quarry land, and a fourth pole would be located north of Stanley Boulevard. Approximately 8 to 10 more poles would be located along the north side of Stanley Boulevard to the west of the crossing at the quarry entrance, then the line would cross back to the south into the existing Vineyard Substation.

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[13] This alternative was originally eliminated from consideration in the DEIR due to concerns about limiting availability of gravel resources, potential conflicts between quarry operations and transmission lines, concerns about cliff instability, and visibility of overhead transmission lines from Shadow Cliffs Regional Recreation Area. Based on comments on the DEIR, this route was reconsidered, modified, and included as an alternative in the FEIR. Because this route did not result in significant impacts, recirculation of the EIR was not required. (See D.01-05-077, p. 12 and Conclusion of Law 6.)

5.1.6 Local Generation Alternative

At the time the DEIR was prepared, there were three potential generation projects in the Tri Valley area, two in Pleasanton and one in Livermore. Each would involve construction of a natural gas turbine power plant of less than 50 MW. If constructed by mid-2002, the Pleasanton projects could defer the Vineyard Substation upgrade and associated transmission upgrade for one to two years, depending on demand growth.

5.2 Dublin/San Ramon Area Alternatives

5.2.1 D1 (South Dublin) Alternative

The D1 alternative would require a transmission line of about 3.1 miles with about 0.8 mile underground, as well as a new five-acre substation. The 230 kV transmission line connection would originate at Vineyard Substation in the south. The overhead portion of the 230 kV transmission line to the D1 substation would start from Vineyard Substation, cross Stanley Boulevard, head north until it reached the north side of the paved east-west roadway into the gravel quarry area. There the route turns east for 0.25 miles, then turns north for 0.35 miles. At this point, the route follows El Charro Road through the gravel quarries and continues to the south side of the I-580 interchange. Approximately 15 tubular steel transmission poles would be required for the overhead portion of the route.

Just south of I-580, the transmission line would transition to underground at a half-acre transition station. It would turn west to follow the south side of the Caltrans right-of-way, and then turn north and cross beneath the freeway (by means of a bored crossing) one half mile west of Fallon Road. From the north side of the freeway, the line would go straight north into the D1 substation one half mile west of Fallon Road.

The D1 substation would be constructed on five acres of currently vacant land in a commercially-zoned area between Fallon and Tassajara Roads, about 1,000 feet north of the I-580 freeway and 2,600 feet west of Fallon Road and immediately south of (and adjacent to) the future extension of Dublin Boulevard. This location was selected because it is in the only commercially-zoned portion of the Dublin Ranch development; all the property to the north will be residential. The FEIR recommends a mitigation measure (L-14) that would require screening of the substation to minimize visibility of the substation within the commercial area.

5.2.2 D2 (Dublin/San Ramon) Alternative

For the D2 alternative, PG&E's proposed Dublin substation would be constructed at PG&E's proposed location but the substation would be fed from the west (from the existing San Ramon Substation). The 230 kV line from Dublin to San Ramon would follow PG&E's vacant easement. Approximately one mile of the westernmost part of the route (from the ridgeline west into the San Ramon Substation) would be installed underground. In addition, the San Ramon-Pittsburg line (a single circuit 230 kV line) would need to be reconductored along its entire length (approximately 20 miles) along with some minor upgrades to the San Ramon Substation to increase power into the substation.[14]

[14] While PG&E's original presentation of this alternative in its PEA stated that reconductoring would be required, subsequent power flow modeling by PG&E and the ISO indicated that reconductoring would probably not be required. The EIR evaluated potential impacts of reconductoring in the event it were required.

5.3 North Livermore Area Alternatives

5.3.1 L1 (Raymond Road) Alternative

L1 would start at a tap to the Contra Costa-Newark line at the northeast corner of Ames Street and Raymond Road. A transition station would take the line underground at that corner, and the line would run underground to the west along Raymond Road for 1 mile to the corner of Raymond Road and Lorraine Road. This route follows the north side of the Alkali Sink Preserve where a unique assemblage of sensitive plant species, including the endangered palmate-bracted bird's beak, grows. The L1 substation would be located just northeast of this corner, immediately east of the farm/barn property that is just north of the Raymond/Lorraine Road corner. The substation itself would be identical to that proposed by PG&E at the North Livermore Road site: it would be five acres with berms, vegetative screening, and walls as required to protect views.

5.3.2 L2 (Hartman Road) Alternative

The 230kV transmission line route would be the same as for S1, but rather than turning west on Stanley Boulevard, the line would continue north for an additional 1.7 miles along the Highway 84 corridor to the I-580 junction. Between Stanley Boulevard and Jack London Boulevard, the line would be installed overhead and then from Jack London Boulevard north it would be underground. The underground line would turn west to a location just west of the Water Reclamation Plant and east of the end of the airport runways, cross Airway Boulevard at an angle to the northeast, then turn north again along Kitty Hawk. The line continues underground beneath I-580 approximately one to 1.3 miles north of I-580 to a North Livermore substation study zone in the

southwest corner of the North Livermore development area, near Las Positas College.

The total length of this alternative (from the Tesla-Newark Corridor the L2 substation Site) is about 7.3 miles, with 3.6 mile underground. Due to the topography (relatively steep hillside) of the substation site area, the EIR evaluated a substation "study zone" for the L2 alternative that included the hillside and the flatter area to the north. The southern portion of the study zone is within the City of Livermore, and the northern portion is in unincorporated Alameda County. The whole study zone is adjacent to and immediately southeast of the future Hartman Road. The substation would occupy a five-acre site in the study zone.

5.3.3 P1 (Variant on the Proposed Project)

This alternative is identical to PG&E's proposed project, except that the one mile of north-south 230 kV transmission line along North Livermore Road would be installed underground. Two overhead/underground transition structures (one for each circuit) or a transition station would be located just southwest of the corner of North Livermore Road and Manning Road.

5.3.4 P2 (Variant on the Proposed Project):

This alternative encompasses P1, and would also require PG&E to install the first 2.8 miles of the transmission line, from the Contra Costa-Newark tap point heading west, underground.

5.3.5 P3 (May School Road)

This underground route would be 2.4 miles long and would follow May School Road, east from the PG&E's proposed North Livermore substation to the Contra Costa-Newark transmission line (where a transition structure would be installed). Because of landslide concerns at the easternmost

point of this route, the route was modified slightly in the FEIR by moving the easternmost part slightly to the north and utilizing more stable and less steep terrain.

5.4 Phase 2 Alternatives

5.4.1 T1/Stanislaus Corridor Alternative

A new 230 kV double circuit line would be constructed from Tesla Substation to the tap point of the selected Pleasanton area alternative. This route would be about 14.2 miles long (if combined with the S1 or S2 alternatives) or 17.3 miles long (if combined with PG&E's proposed route or the S4 alternative). The Stanislaus Corridor is currently occupied by two parallel lattice tower lines constructed around 1910 that are not currently in use. As part of this alternative, the parallel towers would be replaced with one set of tubular steel towers. At Tesla Junction, where the Stanislaus towers continue east across the Central Valley, the new line would turn northeast, for 2.1 miles into the Tesla Substation, paralleling an existing 115kV lattice tower line. This alternative would use existing transmission corridors along its entire length and would replace the 10 miles of PG&E's new Phase 2 Northern Corridor.

5.4.2 T2/Switching Station Alternative

During Phase 1 of the project, the Vineyard, Dublin and North Livermore substations would all be connected to the Contra Costa- Newark #2 line. The Phase 2 switching station alternative would involve construction of a switching station to allow direct connection of the new 230 kV transmission lines (proposed or alternative routes) in the Pleasanton area to the existing Tesla-Newark 230 kV transmission line. The existing Tesla-Newark line, while also a 230 kV line, has a higher rating (allowing it to carry more power) than the Contra Costa-Newark line. Power flow modeling by the ISO verifies that Tesla-Newark

line is capable of supplying the switching station and the Vineyard and Dublin Substations without overloading.

6. Results of Environmental Analysis

As required by CEQA, the FEIR presents conclusions regarding the environmentally superior alternative for each project component. This comparison is based on the environmental impacts of PG&E's proposed project and each alternative, as identified in Exhibit 1000, Sections C.2 through C.13, and as modified and further evaluated in Section C and H of Exhibit 1003. CEQA requires that, if the No Project Alternative is found to be environmentally superior, the EIR also identify the environmentally superior "build" alternative for the consideration of decision makers. Alternatives are compared by summarizing the impacts of each alternative in each environmental issue area, considering the relative importance of the issues, and then identifying the alternative with the least overall impact on the environment. Exhibit 1003, Section D, presents summary tables for each alternative.

The FEIR found two alternatives in the Pleasanton area to be environmentally superior to other alternatives and the proposed project. As described in Exhibit 1003 and 1003-A, the FEIR finds that the combinations of S2A/S2 and S2A/S2/S5 to be environmentally superior. Because each of these routes utilizes a combination of the Pleasanton alternatives, and because variants for S2A and S2 were studied, the environmentally superior alternatives are briefly described.

The environmentally superior S2A/S2 alternative route begins at the existing Contra Costa-Newark transmission line immediately southwest of the Zone 7 Del Valle water treatment plant, on private property. An overhead-underground transition station would be constructed adjacent to the Contra

Costa-Newark line. From this point, the line would be placed underground immediately west of Foley Road, within two private property parcels, continuing west/northwest adjacent to Foley Road, just outside of the roadway right-of-way. Where Foley Road and Vineyard Avenue intersect, the underground transmission line would turn west along Vineyard Avenue, crossing Highway 84. From Highway 84, the underground route would be located in the firebreak road south of Vineyard Avenue, past Isabel Avenue (where a bored crossing beneath the roadway would likely be required). From Isabel Avenue, the underground line would continue along the firebreak road for approximately 0.9 miles until the point at which New Vineyard Avenue diverges to the northwest. The underground line would continue along New Vineyard Avenue (within the roadway or immediately adjacent to it) until it reconverges with (Old) Vineyard Avenue. PG&E would be required to consult with local jurisdictions regarding the exact placement of all underground segments. Where Vineyard Avenue becomes a divided roadway, the transmission line would be installed within the roadway. The transmission line travels underground on Vineyard Avenue to Bernal Avenue. Where Vineyard Avenue meets Bernal Avenue, the line would turn north on Bernal Avenue (still underground), and into the Vineyard Substation. Based on PG&E's estimates the total length of this route is 5.72 miles, all underground. (PG&E June 4, 2001 Cost Information Filing.)

The S2A/S2/S5 route mirrors the S2A/S2 route onto New Vineyard Avenue. Whereas S2A/S2 continues along New Vineyard Avenue, the S2A/S2/S5 alternative would turn north (from New Vineyard Avenue) at the location where the existing 60 kV line crosses Arroyo del Valle Creek, across from the future Neal Elementary School. The line would be installed underground at the creek crossing by means of an open-trenched crossing which

would end at a transition station located on quarry land where the line would be brought overhead. The overhead portion of the route begins at the transition station on quarry land (just north of Arroyo del Valle Creek). From this half-acre fenced transition station, three tubular steel transmission poles would be installed on quarry land, and a fourth pole would be located north of Stanley Boulevard. Approximately 8 to 10 more poles would be located along the north side of Stanley Boulevard to the west of the crossing at the quarry entrance, then the line would cross back to the south into the existing Vineyard Substation. The total length of this alternative would be approximately 6.4 miles with about 4.3 miles underground.

The S2/S2A route would be entirely underground from the Contra Costa-Newark transmission line to the Vineyard Substation. This alternative minimizes visual impacts, utilizes corridors with greater construction access, and follows disturbed corridors (adjacent to or within existing roadways). For these reasons, this route would have less impact on threatened species than PG&E's proposed project and other alternatives studied. Although this alternative passes residential areas along Vineyard Avenue near Bernal Avenue, the impacts on these areas have been determined in the FEIR to be less than significant.

The S2A/S2/S5 alternative, using the Quarry Route would result in overhead and underground lines of 2.1 and 4.3 miles, respectively. The underground lines along Vineyard Avenue would protect the views across the valley. This alternative avoids residential areas by traversing an existing quarry operation, but the overhead lines through the quarry would be visible from the Shadow Cliffs Regional Recreation Area.

The environmentally superior alternatives for the Pleasanton area have different tradeoffs for the western portions of the routes. S2/S2A is all

underground and so results in no visual impacts. S2A/S2/S5 includes an overhead portion. The visual impact of this alternative is considered to be less than significant given the existing visual setting, but, if constructed, the overhead segment will exist and be visible for a long period of time. However, S2A/S2/S5 avoids proximity to residential neighborhoods and construction impacts associated with construction of an underground line. Because both alternatives use existing roadways or disturbed corridors, they will have similar impacts on other environmental factors. PG&E's proposed project would traverse undeveloped grazing land in its southern half, and relatively narrow residential streets in the northern half compared to the environmentally superior alternatives, which utilize existing or disturbed corridors, and wider streets.

The FEIR finds that the D1 alternative is environmentally superior to PG&E's proposed Dublin substation and D2 alternative for the Dublin/San Ramon area. The transmission line route to the D1 substation is primarily within the gravel preserve so would have minimal visual impacts or construction disturbance to the public. The D1 substation site is in the commercially zoned portion of the Dublin Ranch development, in an area where commercial and industrial growth is focused and there is a high demand for electricity. In comparison, PG&E's proposed Dublin substation would require new transmission lines across the open space of North Livermore, crossing several scenic canyon areas and disturbing many more miles of habitat.

In North Livermore, the FEIR finds that the No Project Alternative is environmentally superior to PG&E's proposed project and the alternatives studied because the environmental impacts of constructing the project in this pristine area would be greater than those of not constructing the project at this time. The North Livermore substation itself would create a significant and

unavoidable visual impact, which would be avoided with the No Project Alternative. Because there is little ongoing or recent growth in the North Livermore area (in the vicinity of North Livermore Road), there would be no need to bring in distribution lines from other substations (the most likely action if the No Project Alternative were approved in this area).

However, for the North Livermore area, the FEIR identified the environmentally superior "build" alternative to be the P3 variant[15] on PG&E's proposed project. Under this alternative, a five acre substation would be constructed on the west side of North Livermore Avenue at May School Road as proposed by PG&E. PG&E's proposed North Livermore substation site is preferred over the L1 and L2 alternative sites, with a 2.4-mile underground transmission line route to the Contra Costa-Newark line that would run along May School and Dagnino Roads and a private road. This underground route was proposed as a mitigation measure to reduce potential air quality impacts associated with the longer underground route (P2 alternative), and to reduce the significant visual impacts of PG&E's proposed project route to this substation. If the proposed North Livermore substation is connected to PG&E's proposed Dublin substation, a combination of the P2 and P3 alternatives was found to be environmentally superior to PG&E's proposed project (but inferior to the No

[15] As a result of comments on the DEIR, the original P3 was modified. Originally, the route traveled straight east along May School Road to the Contra Costa-Newark line. As described in the FEIR, the route now heads east on May School Road, turns north for 0.25 miles along Dagnino Road and then turns east on a private dirt road to connect to Contra Costa-Newark. When this order refers to P3, it refers to this modified route.

Project Alternative).[16] The substation site would still create a significant and unavoidable visual impact, but impacts in nearly all other issue areas would be less with the P3 alternative (all underground transmission lines) than for the L1 and L2 alternatives or PG&E's proposed project.

For Phase 2, the FEIR finds that the No Project Alternative is environmentally superior. Based on power flow modeling completed by PG&E with input from the ISO and the Commission's consulting engineer, the need for Phase 2 within the next few years is in doubt. Because any of the "build" alternatives would have some environmental impacts and the No Project Alternative would not result in construction of any Phase 2 facilities in the Tri-Valley area, the No Project Alternative is found to be environmentally superior.

However, for Phase 2, the FEIR identified the environmentally superior "build" alternative to be the construction of a switching station at the southern tap point for whichever Pleasanton area alternative is selected. Compared to construction of new transmission lines, the switching station alternative was found to be clearly environmental superior to the other alternatives because it

[16] If the North Livermore substation were connected to the proposed Dublin substation, the transmission line to the proposed Dublin substation would follow the P2 alternative route, which is the same route as the proposed transmission line but underground rather than overhead. The transmission line would leave the North Livermore substation underground (following the P2 route), heading north, parallel to and just west of North Livermore Avenue, to Manning Road where the route would turn west. From the corner of Manning Road and North Livermore Avenue, the route would remain underground, as defined in the P2 alternative for just less than one mile. Just west of the edge of the valley, the transmission line would transition to overhead (with use of a transition station), and continue to route would follow PG&E's existing but vacant right-of-way for approximately 4 miles overhead, nearly due west, to the proposed Dublin substation

would eliminate the need for construction of 10 to 15 miles of new transmission line to the Tesla Substation.

7. Parties Positions on Routing and Location of Substations

7.1 PG&E

PG&E continues to strongly support its proposed project in its entirety, including construction of Phase 2. In the Pleasanton area, PG&E would also support the S4/S2 or S4/S5 alternatives because, along with its proposed project, PG&E believes these routes have the least environmental impacts and could be constructed most quickly and at least cost. PG&E opposes construction of the environmentally superior D1 alternative to serve Dublin and argues that no project in North Livermore is inappropriate.

PG&E focuses much of its argument in support of its proposed project in the Pleasanton area on timing issues. For example, PG&E argues that the Commission must reject certain alternatives as infeasible because they could take additional time to build and construct or receive permits from other governmental agencies, and thus such alternatives would put at risk completion of the project by Summer 2002. PG&E argues that it has already prepared detailed engineering plans for its proposed route and begun consultations with governmental permitting agencies, which will speed completion of the project. It also stated, that it had begun similar engineering and permitting work on the S4 alternative, another route it prefers. (PG&E: Kraska, RT 1750.)

PG&E argues that the environmentally superior S2A/S2 alternative simply increases project costs without providing any additional environmental benefits because PG&E's proposed project does not present any significant environmental impacts. PG&E argues that CEQA does not require mitigation of effects that are not considered significant. In addition, PG&E argues that the

S2A/S2 alternative will introduce a significant visual impact to Sycamore Grove Park users because construction of a transition station would be required on land near the park. PG&E also argues, citing its own testimony and witness, that the S2A/S2 alternative would have more biological impacts, specifically with respect to the California Red-Legged Frog and California Tiger Salamander, than its proposed route or the S4 alternative, because overhead routes can avoid drainages and habitat areas. PG&E argues that the S2A/S2 alternative, because it is constructed underground, cannot avoid drainages that provide breeding habitat for these species and thus this alternative presents more biological impacts than PG&E's proposed route.

Regarding Dublin alternatives, PG&E opposes selection of the environmentally superior D1 alternative. PG&E argues that in comparison to its proposed Dublin substation and attendant transmission facilities, D1 is more costly, less consistent with community values, and farther from the load it needs to serve. PG&E raises timing concerns, as well as safety concerns, about securing approval from the Alameda County Airport Land Use Commission (ALUC) for construction of D1. PG&E also argues that construction of D1 transmission lines through a quarry would present a significant conflict with the on-going gravel mining operations.

PG&E argues that its proposed substation location is superior because it avoids land use conflicts caused by the D1 substation location. PG&E states that locating a substation at the D1 site is "obviously incompatible with the City's planned land uses for the area" (PG&E Opening Brief, p. 61) and discusses the Dublin planning process, and the loss of commercial development land that would result from locating a Dublin substation in southern Dublin. PG&E places great weight on the testimony of Dublin city leaders who have indicated their

opposition to the D1 location. For example, PG&E cites the fact that the D1 location would be located across the street from high density residential development as a reason why the substation should not be constructed. PG&E argues that, at a minimum, a conditional use permit from the City of Dublin would be required if D1 is selected, which would raise substantial timing concerns for PG&E.

PG&E argues that the D1 substation location is also less preferred, from an electrical standpoint, because of its proximity (about 2 miles) to the Vineyard Substation. PG&E argues that the Dublin substation needs to serve load primarily to the north and east of the existing developed areas of Dublin. PG&E also argues that locating the substation at D1, in southern Dublin, will require PG&E to rely on overly long distribution feeders, in violation of its distribution planning guidelines, to serve emerging load in the northern and eastern parts of Dublin. In addition, PG&E argues that 50% of the capacity at Vineyard Substation and the D1 substation location would essentially be wasted because of their overlapping "spheres of influence" (PG&E Opening Brief, p. 60). From a cost standpoint, PG&E also prefers its proposed Dublin substation as compared to D1. PG&E's cost estimate, using project specific unit costs, identifies D1 as costing 125% more than PG&E's proposed project.

Regarding North Livermore, PG&E opposes undergrounding the transmission line that will connect its proposed North Livermore substation to the Contra Costa-Newark line. PG&E argues that overhead transmission towers will not result in a significant visual impact because the area is undeveloped and undevelopable under the North Livermore Specific Plan and Measure D. (PG&E Opening Brief, p. 67.) PG&E argues that its proposed mitigation measure of undergrounding existing distribution infrastructure will allow it to avoid

significant visual impacts even with an overhead connection. PG&E argues that adoption of P3 would result in potentially significant impacts on the palmate-bracted bird's beak, an endangered plant found in an area approximately 1 mile south of the P3 alternative. PG&E also opposes the P3 alternative as more costly than PG&E's proposed project in North Livermore.

7.2 ISO

The ISO does not express a position on what routes should be adopted. The ISO testified that all of the alternatives studied, with the exception of the No Project Alternative, meet the electrical needs and reliability criteria of the system. (ISO Opening Brief, p. 11.) The ISO does express concern, however, that if a route with a significantly larger amount of undergrounding than PG&E's proposed project were selected, that the project might not be completed in time to be online to serve load in Summer 2002.

7.3 Pleasanton Parties

The Pleasanton Parties begin from a premise that transmission lines should be sited in a manner that avoids impacts on residential neighborhoods, utilizes existing utility corridors or industrial areas, and avoids open space. Using these factors, the Pleasanton Parties advocate construction of the "Improved Isabel-Stanley" route in the Pleasanton area. If the Commission does not select this route, the Pleasanton Parties recommend selection of the S2A/S2/S5 alternative with certain mitigation measures, including measures designed to reduce visual impacts of the new line and existing infrastructure.

The Pleasanton Parties strongly oppose PG&E's proposed project in the Pleasanton area, as well as S2 and S2A/S2. The Pleasanton Parties argue that there will be significant adverse construction impacts from PG&E's proposed project because it would traverse narrow residential streets. PG&E will be

required to avoid existing utility infrastructure (water, gas, electric) during construction, which the Pleasanton Parties assert will require extensive hand excavation, shoring, and more time than PG&E estimates. The Pleasanton Parties argue that the geological features of the proposed route make it prone to landslides, which will be exacerbated by the construction activities required by PG&E's proposed project.

The Pleasanton Parties also take issue with the fact that PG&E did not look at routing alternatives that would limit exposure to electromagnetic fields (EMF). Instead, PG&E developed an EMF mitigation plan after it selected its proposed project rather than factoring in exposure levels prior to selection of a route. The Pleasanton Parties also express concern that PG&E has never installed an underground 230 kV solid dielectric cable, and that only 9.5 circuit miles of 230 kV solid dielectric cable are in operation in the United States. The Pleasanton Parties are concerned about PG&E's lack of experience in installing this type of technology, possibility of failures, and the impacts of failure in a residential setting. The Pleasanton Parties also take issue with PG&E's cost estimates and scheduling arguments.

The Pleasanton Parties support the Improved Isabel-Stanley route because the route would utilize existing disturbed corridors, it limits impacts on existing residential neighborhoods, and minimizes impacts on open space. It is for these same reasons that these parties support one of the environmentally superior alternatives, the S2A/S2/S5 alternative. The Pleasanton Parties oppose the other environmentally superior alternative, S2A/S2, because it places underground transmission lines closer to residential neighborhoods (along Vineyard Avenue as it approaches Bernal Avenue). The Pleasanton Parties argue that the Improved Isabel-Stanley route is feasible and that an underground

easement could be acquired from the California Department of Transportation (CalTrans) or private property owners that would enable PG&E to locate an underground line along Isabel Avenue.

7.4 Foley Intervenors

The Foley Intervenors focused on alternatives serving the Pleasanton area. They support either S2A/S2 or S1 and oppose PG&E's proposed project and S4. The Foley Intervenors argues that S2A/S2 and S1 are superior to PG&E's proposed project in terms of biological impacts. The Foley Intervenors point to discussion in both the DEIR and FEIR (Exhibits 1000 and 1003 respectively) to compare the S2A/S2 and S1 routes to PG&E's proposed route and S4. The Foley Intevenors argue that S2A/S2, because it travels along a disturbed roadway corridor, does not provide suitable habitat for California red-legged frog or California tiger salamander.[17] The Foley Intevenors argue that PG&E purposefully did not conduct field studies of the S2A/S2 route because such studies would have demonstrated the lack of biological impacts.

In addition, the Foley Intervenors argue that PG&E's cost estimates for its proposed route are underestimated because of improper land acquisition costs. The Foley Intevenors assert that PG&E's argument regarding its preferred route turns on the cost estimates, since PG&E selected the cheapest route, and thus the underestimated costs should not be relied on by the Commission as a factor in selection of a route. The Foley Intervenors also argue that PG&E's cost estimates for alternate routes are overstated because it used project-specific unit

[17] PG&E's proposed route and S4 travel along undisturbed corridors with observed populations of California red-legged frogs and California tiger salamander.

costs from the proposed project rather than looking at the specific geographic features of the various alternate routes to asses cost information. For example, the Foley Intervenors argue on brief that the cost per mile to construct the S2A/S2 underground alternative will be less costly to construct than PG&E's proposed route "because the underground trenches will generally run along flat, easy-to-excavate routes that are not subject to the work restrictions that apply to residential neighborhoods." (Foley Opening Brief, p. 17.) In comparison, PG&E's proposed route will be constructed on a steep slope and then within narrow residential streets and will have to be constructed in a way that avoids existing utility infrastructure.

7.5 Lin Family

The Lin Family owns property throughout the Tri Valley area. The Lin Family supports PG&E's proposed project in Dublin and in North Livermore supports either PG&E's proposed project or the P1, P2, or P3 alternatives.[18] The Lin Family opposes PG&E's proposed route in the Pleasanton area because of the impact on Kottinger Ranch residents during construction. The Lin Family generally recommends that the S4 alternative, with some modifications, be adopted in lieu of PG&E's proposed Project.

The Lin Family strongly opposes the environmentally superior D1 substation location. The Lin Family is the developer of Dublin Ranch, the location of the proposed D1 substation location. The Lin Family argues that locating a substation in Dublin Ranch contradicts the Visual Resources section of

[18] The Lin Family expresses concern that P3 as modified in the FEIR could impact wetland mitigation efforts on their North Livermore property but do not state whether it would cause such an impact or not.

the Eastern Dublin Specific Plan, a policy regarding preservation of "natural open beauty of the eastern Dublin hills" (Lin Opening Brief, p. 6), the Campus-Office designation of the area, and community values. The Lin Family argues that D1 is also electrically inferior. The Lin Family summarizes their opposition to D1 by saying "the environmental benefits of Alternative D1 are insufficient to override its added cost and electric power supply inadequacies." (Lin Opening Brief, p. 10.)

7.6 City of Dublin

The City of Dublin strongly opposes the environmentally superior D1 substation alternative and associated transmission line as inconsistent with the values of Dublin, infeasible, unreliable, and unnecessarily expensive while failing to decrease the environmental impacts of PG&E's proposed project. The City of Dublin supports PG&E's proposed Dublin substation and associated transmission line as feasible, cost-effective, and consistent with community values.

The City of Dublin argues that locating a substation at the D1 location would be inconsistent with the values of the community. The City of Dublin argues that the D1 location has been zoned as Campus-Office as a result of 15 years of local planning and a substation would disrupt the vision for the area. The City of Dublin argues that because planning has occurred for the Dublin Ranch area where D1 is located, and essentially no planning has occurred for PG&E's proposed location, use of PG&E's proposed location is preferable. The City of Dublin notes that an electrical substation is not among the permitted uses in a Campus-Office area in its Development Plan, although it concedes that the zoning for Campus-Office would conditionally permit public and semi-public uses that are complementary to office buildings, residences, and warehouses.

The City of Dublin also has concerns over the aesthetic impacts of the D1 substation location.

The City of Dublin argues that constructing D1 would remove from development five acres that are ideal for office or residential occupants and because of the location, that kind of development cannot be replaced. The City of Dublin also indicates that removal of five acres from development potential would impact collection of development fees and thus Dublin's ability to pay for services and facilities to serve the area.

In addition, the City of Dublin raises issues surrounding feasibility of construction of D1 before summer 2002 due to time to pursue condemnation, need to acquire a Caltrans permit for transverse encroachment, potential conflicts with future I-580 widening, and time to construct. The City of Dublin also argues that the D1 location is electrically inferior to PG&E's proposed site because it would not allow the Dublin substation to serve new demand in San Ramon or southern Contra Costa County.

The City of Dublin also opposes the FEIR's conclusion that no project should be built in North Livermore and argues that locating a Dublin substation at D1 should not be a deciding factor for selecting no project for North Livermore.

7.7 The City of Livermore

On brief, the City of Livermore supports the FEIR's conclusions with respect to the North Livermore area. Specifically, on brief, the City of Livermore supports deferral of building a North Livermore substation or selection of the environmentally superior "build" alternative if the Commission concludes this portion is needed. Livermore supports the P3 alternative, if need is demonstrated, because it is the shortest route and it preserves the scenic

character of the area by eliminating overhead transmission lines while also meeting the electrical needs of system. In its reply brief, the City of Livermore has modified its position to oppose deferral of the substation. The City of Livermore now states that it has reassessed the record and supports building of the North Livermore substation.

The City of Livermore testified that there is a conflict with the overhead portion of the D1 alternative and local and federal laws and policies regarding height restrictions near airports. For this reason, the City of Livermore supports PG&E's proposed Dublin substation and opposes selection of D1. In its reply brief, the City of Livermore also cites to PG&E's Opening Brief to argue that D1 is electrically inferior to PG&E's proposed Dublin substation.

The City of Livermore supports adoption of either PG&E's proposed project, the S4 alternative, or the S5 alternative to serve the Pleasanton area.[19] The City of Livermore identifies several adverse impacts it associates with both S1 and S2 as reasons to oppose these alternatives. These impacts include introduction of overhead lines and structures on Isabel Avenue and the surrounding area, adverse visual impacts, and inconsistency with local land use policies. The City of Livermore also opposes the Improved Isabel-Stanley Route supported by the Pleasanton Parties as infeasible due to permitting problems. In addition, the City of Livermore has concerns about S1 based on potential conflicts with the Livermore Municipal Airport.

[19] It is unclear from its brief whether Livermore supports S5 in combination with S2A/S2 or S4.

7.8 City of San Ramon

The City of San Ramon opposes selection of D2 to serve Dublin. The City of San Ramon testified that it "already bears its share of overhead electric transmission impacts" (Exhibit 500, p.3) due to the large substation located in San Ramon. It argues that new development should bear its own impacts and not affect existing citizens and residents. The City of San Ramon also is concerned that selection of the D2 alternative will have negative effects upon conservation easements being processed in the Dougherty Valley.

7.9 Centex

Centex opposes the S1 and L2 alternatives identified in the FEIR because they would require construction of overhead lines along Isabel Avenue, would be more costly then other alternatives studied, and are incompatible with community and aesthetic values. Centex also opposes the Improved Isabel-Stanley alternative offered by the Pleasanton Parties because the FEIR rejected this route as infeasible.

7.10 LARPD

LARPD opposes selection of any alternative that would require construction of any towers, transition or switching stations within the boundaries of Sycamore Grove Park or Brushy Peak Regional Preserve. Thus LARPD supports most of the routes identified in the FEIR, including PG&E's proposed project for the Pleasanton area except S4 as long as they incorporate S2A as described in the FEIR. LARPD has concerns with the portion of S1 that runs along Isabel Avenue because the recreational trail along Isabel Avenue will eventually be deeded to LARPD. LARPD does point out that while an alternative utilizing S5 may be attractive from a cost standpoint in the short term, over the long term an all underground alternative seems preferable. LARPD

points out that there is a plan to develop a "Chain of Lakes" as the quarries cease operations and the character of the area will shift from industrial to recreational over time. LARPD believes that the Commission must consider this tradeoff when selecting a route for Pleasanton. In the North Livermore area, LARPD focuses on PG&E's proposed project for Phase 2 and its impact on Brushy Peak Regional Preserve. LARPD opposes certification of Phase 2 at this time.

7.11 EBRPD

The EBRPD objects to any routing that includes the S5 alternative. EBRPD argues that S5 will have a significant visual impact on Shadow Cliffs Regional Recreation Area users and therefore should not be selected based on its impacts on parks and recreation.

8. Project Need

PG&E's proposed Tri Valley project consists of several distinct parts. In Phase 1, PG&E proposes construction of 2 new substations, expansion of an existing substation, and two new double-circuit 230 kV transmission lines. One transmission line would connect the existing Vineyard Substation to the Contra Costa-Newark line to the south. The second transmission line would connect the newly constructed Dublin and North Livermore substations to the Contra Costa-Newark line to the east.[20] Without connection to the 230 kV system, Vineyard Substation does not currently have sufficient capacity to serve all of the demand in the Pleasanton area. There is no substation located in Dublin at this time. Existing substations (Las Positas and San Ramon) are currently serving the

[20] In the Tri Valley area, the Contra Costa-Newark line runs from north to south and then turns and runs southwest. Thus, although both proposed transmission lines would connect to the same existing line, they would do so at different locations.

demand in Pleasanton and Dublin through the 60 kV system. Phase 2 would connect PG&E's proposed Dublin and North Livermore substations directly with the Tesla substation, and remove the transmission line connection to Contra Costa-Newark #2. With the installation of new substations and transmission lines, additional transformers at the Vineyard Substation, and connection of Vineyard Substation to the 230 kV system, capacity in the Tri Valley area will increase significantly, as well as allow existing substations to serve local load growth. The question before us is whether both proposed substations and attendant transmission lines, as well as Phase 2, are necessary to meet the expected load growth of the area within the standard five year planning horizon.

8.1 Existing Capacity

The Tri Valley area is served by 12 and 21 kV distribution facilities. The 12 kV system is supplied from the 60 kV transmission system at five substations: Livermore, Vasco, Sunol, Radum, and Parks. The 21 kV system is supplied by three major substations: Vineyard, San Ramon, and Las Positas.

8.1.1 Tri Valley 12 kV System

The Tri Valley 12 kV system consists of five 60/12 kV substations: Livermore, Vasco, Sunol, Radum, and Parks. Livermore consists of two 12.6 megavolt ampere (MVA)[21] transformers. Vasco consists of one 8.7 MVA transformer and one 9.3 MVA transformer. Sunol has one 12.5 MVA transformer. Radum consists of two 12.6 (MVA) transformers. Parks has one 4.5 MVA transformer. (See Exhibit 11, p. 2-8.) The total installed capacity of the 12 kV

[21] Absent system constraints, each MVA equates to 1 megawatt (MW) of capacity.

system would appear to be 85.4 MW. No modifications to these substations are proposed as part of this project.

8.1.2 Vineyard Substation

The Vineyard Substation is located in Pleasanton and was originally constructed with the expectation that it would be served by a 230 kV transmission line. However, that transmission facility was never constructed and Vineyard Substation has operated as a part of the 60 kV system and is served by the Las Positas-Livermore-Vineyard 60 kV and San Ramon-Radum 60 kV lines. The Vineyard Substation serves customers in the city of Pleasanton and in surrounding unincorporated Alameda County.

Vineyard Substation currently consists of one 230/60/21 kV, 75 MVA transformer and one 60/21 kV, 75 MVA transformer. Connection to the 60 kV system, rather than the 230 kV system, limits the distribution capacity of the substation to 55 MW when operated in a looped configuration. When operated in a temporary radial configuration, the substation capacity is 79.9 MW.[22] (See generally Exhibit 1, p. 9.)

8.1.3 San Ramon Substation

The San Ramon Substation is located in southern San Ramon and is served by the 230 kV Pittsburg-Moraga #3 line. The San Ramon Substation

[22] The transmission system is normally operated in a looped configuration, which allows distribution substation transformers to be fed from more than one transmission source, making this configuration very reliable. A radial configuration is fed from a single transmission source, which increases the capacity limit of the substation, but makes customers served by that distribution substation transformer more susceptible to outages if the transmission source fails. (See generally Exhibit 1, pp. 9-10.)

serves customers in the cities of San Ramon, Dublin, Pleasanton, and unincorporated Alameda and Contra Costa Counties.

San Ramon Substation currently consists of four 230/21 kV, 75 MVA transformers. (Exhibit 11, p. 2-7.) PG&E states that the distribution capacity limit at San Ramon Substation is 284.7 MW (Exhibit 1-A, p. 22) and that space and equipment limitations at San Ramon Substation prevent additional expansion of the substation capacity (Exhibit 1-A, pp. 21-22, fn 10).

8.1.4 Las Positas Substation

The Las Positas Substation is located in north-eastern Livermore and is served by the 230 kV Contra Costa-Newark #1 line. The Las Positas Substation serves customers in the city of Livermore and unincorporated Alameda County.

Las Positas Substation currently consists of two 230/21 kV, 45 MVA transformers and one 230/21 kV, 75 MVA transformer (Exhibit 11, p. 2-7). PG&E states that the capacity limitation at Las Positas is 136.2 MW (Exhibit 1-A, p. 23) but did not indicate whether there are additional constraints (such as space or equipment) that limits it to this capacity.

8.2 New Capacity[23]

8.2.1 Vineyard Substation

Once Vineyard Substation is connected to the 230 kV system, each of the two existing 75 MVA transformers will be able to serve

[23] Phase 2, as proposed by PG&E would not add new capacity to the system but rather, would switch one or more of the substations serving the Tri Valley area to an alternative transmission line. Therefore, Phase 2 is not discussed in the Capacity or Load sections, but will be addressed in the context of the need assessment.

approximately 75 MW. At full build out, as proposed by PG&E, Vineyard Substation will consist of four 75 MVA transformers (see Exhibit 1000, p. B-4), equating to the ability to serve 300 MW of load.

8.2.2 Dublin Substation

At full build out, the Dublin Substation will consist of four 230/21 kV, 45 MVA transformers, equating to a capacity of 180 MW. (See Exhibit 1, pp. 19-20 and Exhibit 1000, p. B-4.)

8.2.3 North Livermore Substation

At full build out, the North Livermore Substation would consist of four 230/21 kV, 45 MVA transformers, equating to a capacity of 180 MW. (See Exhibit 1000, p. B-4.)

8.3 Total Capacity Summary

Utilizing the capacity at existing substations, as described above, capacity available to serve the Tri Valley area in 2002 is 586.2 MW.[24] Looking to the future, we assume that the capacity of the Tri Valley 12 kV system remains at 85.4 MW.[25] Vineyard Substation will increase in capacity to serve 300 MW. San Ramon Substation capacity will remain at 284.7 MW. Las Positas Substation

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[24] However, on page 18 of Exhibit 1-A, PG&E indicates that the capacity to serve the Tri Valley area in 2002 is 597.3 MW. This 11.1 MW difference may be due the inclusion of single customer substations or additional upgrades that the record does not describe. For purposes of our analysis, we have used the more conservative 586.2 MW figure that was derived from the record.

[25] However, PG&E can increase the capacity of these substations without submitting an additional application pursuant to General Order (GO) 131-D. For example, substation modification projects, like changing out transformer banks, have a specific exemption under GO 131-D. For this reason, relying on the existing capacity is a conservative assumption.

capacity is assumed to remain at 136.2 MW. Without the construction of either proposed new substation, total capacity would be 806.3 MW. If Dublin substation is constructed, capacity will increase by 180 MW. If North Livermore substation is constructed, capacity will increase an additional 180 MW. Therefore, the capacity of the Tri Valley system with both new substations is 1,166.3 MW, and with only one new substation is 986.3 MW.

8.4 Existing and Forecasted Demand

For purposes of describing existing and expected demand, PG&E breaks the Tri Valley area into three distribution planning areas (DPA). Load projections are made by DPA, and actual load data is collected by DPA. PG&E prepared a 1998 load forecast, by DPA. PG&E currently projects load to increase by 44 MW per year between 2001 and 2004 and thereafter grow by approximately 34 MW per year in the three DPAs that serve the Tri Valley area.[26]

8.4.1 Tri Valley 12 kV DPA

PG&E's 1998 load growth study identified a load growth rate of 4.5 MW per year for this DPA. However, PG&E does not believe that capacity for the 12 kV system needs to be expanded because it will switch load to the 21 kV system for service once additional capacity expansion occurs on the 21 kV system.

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[26] We were unable to recreate the per year growth estimates described by PG&E on page 18, lines 16-17 of Exhibit 1-A. Using the growth assumptions in the prior sections, as referenced by PG&E, we arrive at a growth estimate of 36.9 MW per year through 2004, 32.9 MW in 2005, and 26.5 MW thereafter. We will analyze the need for the project utilizing the individual DPA assumptions, as further described in subsequent sections, but recognize that these estimates may be on the low end.

Actual peak load in 2000 was 89.2 MW (Exhibit 8, Exhibit B) which is a reduction from the 1998 peak load of 93.5 MW described in PG&E's PEA (Exhibit 11, p. 2-8). Using 2000 actual load as a starting point and PG&E's forecast of 4.5 MW of growth per year, the expected 2002 load would be 98.2 MW, increasing to 120.7 MW in 2007. Some of this load would be switched to and served by the 21 kV system.

8.4.2 Vineyard/San Ramon DPA

The Vineyard/San Ramon DPA includes San Ramon, Dublin, Pleasanton, and parts of unincorporated Alameda and Contra Costa Counties. PG&E's load forecast includes growth associated with several residential and commercial developments.[27] The DPA load is expected to grow by 20 MW per year through 2005 and then decrease to 16 MW per year. (Exhibit 1-A, pp. 16-17.)

The actual peak load in 2000 for the Vineyard/San Ramon DPA was 342.6 MW. (Exhibit 1-A, p. 22 and Exhibit 8, Exhibit B.) Assuming growth proceeds at the pace projected by PG&E and using 2000 actual load as a starting point, forecasted load in 2002 will be 382.6 MW, increasing to 474.6 MW in 2007. However, PG&E states that it expects the Vineyard/San Ramon DPA load to increase by 73 MW between now and 2002, resulting in a 2002 summer peak load of 415.6 MW. (Exhibit 1-A, p. 22.) PG&E does not explain why it believes that load growth between now and 2002 will occur at almost double the rate it forecasted in 1998. Relying on PG&E's summer peak load forecast of 415.6

[27] Pleasanton growth is focused in the Bernal Property, Ruby Hills, the Vineyard Corridor Specific Plan, and the Hacienda Business Park. Growth in the Dublin area stems from Dublin Ranch, Santa Rita, and the East Dublin annexation. Growth in Contra Costa County and San Ramon is from the Bishop Ranch Business Park, Gale Ranch, and Windermere.

MW for 2002 and using the 1998 growth rate for future years, PG&E's 2007 load for this DPA would be 507.6 MW.

8.4.3 Livermore/Las Positas DPA

The Livermore/Las Positas DPA includes Livermore and unincorporated Alameda County. Growth in this DPA comes from industrial, commercial, and residential development in Livermore and surrounding Interstate 580.[28] The DPA load is expected to grow by 12.4 MW per year through 2004 and then decrease to 6 MW per year. (Exhibit 1-A, p. 18.)

The actual peak load in 2000 for the Livermore/Las Positas DPA was 123.8 MW. (Exhibit 8, Exhibit B.) Assuming growth proceeds at the pace projected by PG&E and using 2000 actual load as a starting point, forecasted load in 2002 will be 148.6 MW, increasing to 191.4 MW in 2007. However, PG&E states that it expects the Livermore/Las Positas DPA load to increase by 22.1 MW between now and 2001, resulting in a 2001 summer peak load of 145.9 MW. (Exhibit 1-A, p. 23.) PG&E now forecasts a 2002 summer peak load of 154.7 MW. Relying on this new forecast of 154.7 MW for 2002 and using the 1998 growth rate for future years, PG&E's 2007 load for this DPA would be 197.5 MW.

8.5 Existing and Forecasted Load Growth Summary

Using PG&E's most aggressive assumptions for 2002 summer peak load results in load of 98.2 MW for the Tri Valley 12 kV DPA, 415.6 MW for the Vineyard/San Ramon DPA, and 154.7 MW for the Livermore/Las Positas DPA,

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[28] Specifically, PG&E includes loads expected from the South Livermore Specific Plan, Springtown, and development within and around the City of Livermore. This forecast does not include potential development associated with the North Livermore Specific Plan.

a total of 668.5 MW for the Tri Valley area. Using the 2000 actual load figures and the 1998 forecast growth rates results in 2002 load of 98.2 MW for the Tri Valley 12 kV DPA, 382.6 MW for the Vineyard/San Ramon DPA, and 148.6 MW for the Livermore/Las Positas DPA, a total of 629.4 MW for the Tri Valley area. Using PG&E's most aggressive assumptions, 2007 load would be 120.7 MW for the Tri Valley 12 kV DPA, 507.6 MW for the Vineyard/San Ramon DPA, and 197.5 MW for the Livermore/Las Positas DPA, a total of 825.8 MW for the Tri Valley area. Using the 2000 actual load figures, and the 1998 forecast growth rates results in 2007 load of 120.7 MW for the Tri Valley 12 kV DPA, 507.6 MW for the Vineyard/San Ramon DPA, and 197.5 MW for the Livermore/Las Positas DPA, a total of 786.7 MW for the Tri Valley area.

8.6 Positions of Parties

8.6.1 PG&E

PG&E asserts that the entire project is needed to ensure electric reliability in the Tri Valley Area. PG&E estimates that at full build out (approximately 20 years from now), the total peak load of the Tri Valley area will be 950 MW. (PG&E Opening Brief, p.11.) PG&E argues that by 2002, the load in the Tri Valley area will exceed the existing capacity to serve the area by at least 54.1 MW. PG&E argues that even with the November 2000 passage of Measure D, a slow growth measure[29], the Livermore/Las Positas DPA will soon reach

[29] Measure D modifies Alameda County's East County Area Plan to add new growth control policies. Measure D modifies the previous urban growth boundary in eastern Alameda County. The measure removes land from urban development use designation and converts it to 20-acre enhanced agricultural parcels. Measure D specifically removed Alameda County from participation in the north Livermore planning process and redesignated the area encompassed by the North Livermore Specific Plan to 20-acre

Footnote continued on next page

capacity and thus the North Livermore substation remains needed. PG&E is concerned that not building its proposed North Livermore substation will require it to serve loads in the North Livermore area through distribution feeders greater than four miles in length, thus reducing reliability. PG&E argues that locating a Dublin substation at its proposed location allows it to serve load growth both in Dublin, and north into Contra Costa County. PG&E argues that locating a Dublin substation at the D1 substation location will not allow the substation to serve load in Contra Costa County, because the length of distribution feeders to reach that area would exceed its distribution planning policies. Likewise, PG&E believes that even if a Dublin substation were located at the D1 substation location, a North Livermore substation would still be required because excessively long distribution feeders would be required to serve North Livermore growth from a Dublin substation.

8.6.2 ISO

The ISO claims jurisdiction to make certain electrical system reliability determinations pursuant to AB 1890 and Pub. Util. Code §345, which provides that the ISO has the responsibility to "ensure efficient use and reliable operation of the transmission grid…" The ISO agrees regarding the need for Phase 1 but does not take a position on Phase 2. The ISO conducted its own review of the project as part of its grid planning process, which included issuing a request for proposals seeking non-wires alternatives for this particular project. At a January 2000 meeting of ISO's governing board, the ISO voted to approve

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enhanced agricultural parcels. The North Livermore specific Plan had included a plan for development of 12,500 housing units. Measure D does not prevent a city from annexing property, thus expanding the urban growth boundary indirectly.

the entire project on the ground the project was urgently needed to provide reliable electric service to the Tri Valley area, subject to completion of a non-wires alternative solicitation. In April 2000, following the solicitation, the ISO's governing board voted to support the Tri Valley Project without regard to routing.

The ISO did not conduct an assessment of the environmental, social or aesthetic impacts of the project, nor did it undertake a detailed consideration of the appropriate transmission line route or substation site. Likewise, the ISO did not conduct a detailed review of PG&E's cost estimates. As described on brief:

> The CA ISO reviewed the [PG&E transmission] report and the underlying supporting studies performed by PG&E. [Citation omitted.] While the CA ISO relied on data provided by PG&E, the CA ISO undertook additional analysis to confirm PG&E's work, and to solve power flow cases that were not adequately completed by PG&E. (ISO Opening Brief, p.8.)

Based on its review, the ISO concluded that all Phase 1 alternatives considered in the FEIR were electrically feasible. The ISO did express concerns that if construction delays occurred on the alternatives, reliability could be affected.

The ISO does not believe that the No Project Alternative for North Livermore will allow it to adequately maintain reliability. The ISO states it performed an assessment of the need for a North Livermore substation using data supplied by PG&E. (ISO:Green, RT 1144.) Assuming load growth occurs as described by PG&E, the ISO concurs with PG&E that a substation in North Livermore is needed. The ISO "acknowledges that if load does not materialize in North Livermore the need for a substation in the area may be delayed." (ISO

Opening Brief, p. 12.) The ISO found that "the Tri Valley Project is necessary to return the grid in the Tri Valley area to the reliable networked configuration for which the electric grid in the Tri Valley area was designed." (ISO Opening Brief, p. 6.) The ISO does not have a position on Phase 2. As it states on brief:

> [T]he need and timing of Phase 2 of the Project depends on the load growth in the Tri-Valley area. [Citation omitted.] The need for Phase 2 is currently estimated by PG&E to be 2009. [Citation omitted.] It is possible that closer to the date when Phase 2 is needed, other alternatives will be available and preferable. (ISO Opening Brief, p.5.)

8.6.3 ORA

ORA argues on brief that PG&E has not adequately considered alternatives, like local generation of demand-side management, to meet the needs of the Tri Valley area. ORA points out that an economic downturn, extremely high energy prices, and a shortage of generation were not considered by PG&E in preparing its load forecasts. ORA did not challenge PG&E's specific forecasts by offering an alternative demand scenario but argues that "PG&E's failure to consider price elasticity, conservation measures and non-wires alternative casts doubt on the reliability of its forecasts." (ORA Opening Brief, p. 4.) ORA also points out that the ISO did not conduct an independent verification of PG&E's load forecasts and for this reason, the Commission cannot simply defer to the ISO's judgment with respect to the need for the project. ORA is also opposed to certification of Phase 2 of the project, and argues that Phase 2 is not needed based on the record developed.

8.6.4 City of Livermore

The City of Livermore argues on brief that need for construction of the North Livermore substation, and attendant transmission

facilities, has not been demonstrated. As described by the City of Livermore, the proposed substation is located outside of city boundaries, approximately three miles north of Interstate 580. This area is impacted by Measure D. The City of Livermore argues that "if development and projected load does not materialize within the ISO's 5 year planning horizon, there would be no transmission capacity or reliability problems in the Tri-Valley area which would be addressed by construction of the North Livermore substation and related components." (Livermore Opening Brief, p. 4.) The City of Livermore also states that to the extent that a new Dublin substation can serve load growth along the I-580 corridor, there is additional rationale for not constructing PG&E's proposed North Livermore substation and transmission facilities.

However in its reply brief, the City of Livermore now argues that the North Livermore substation and attendant transmission lines should be approved and constructed. The City of Livermore now believes additional capacity is needed in North Livermore based on approved and projected development.

8.6.5 Other Parties

The Pleasanton Parties, Centex, and the Lin Family do not dispute the need for the Tri Valley project. The Foley intervenors agree, saying "we all understand the need to increase the transmission capacity of the Tri Valley area . . .". (Foley Opening Brief, p. 1.) The LARPD does not address need for Phase 1 of the project but argues that the Commission should <u>not</u> grant a certificate for Phase 2. LARPD argues that denying Phase 2 of the project would not amount to "piecemealing" of the project, as PG&E argues, because it is unclear whether Phase 2 will ever be needed.

9. Discussion of Project Need

We have provided an extensive discussion of the capacity of the existing system and PG&E's load forecasts. No party besides PG&E prepared an independent need forecast for the Tri Valley area. Parties generally took on face value the statement that additional transmission capacity is needed in the Tri Valley area. However, the FEIR recommends no project for North Livermore or Phase 2. Because no party challenged PG&E's load forecasts, we lay out the record as we understand it, and independently analyze whether all elements of PG&E's proposed project are needed.

It is clear that additional capacity is needed in the Tri Valley area to serve its growing load. Although the record is not entirely consistent regarding the capacity of the system in 2002, it is clear that PG&E's forecasted peak load for 2002 exceeds installed capacity.[30] Even assuming that short term growth declines by 10% due to the economic downturn or conservation efforts, existing facilities are at capacity. The record is clear that capacity at the Vineyard Substation must be expanded. As articulated by PG&E's witness Pearson,

> " . . . there is approximately 100 megawatts of load that's currently fed from San Ramon that should be fed from Vineyard Substation, . . ." (PG&E: Pearson, RT 248.)

Freeing up capacity at the San Ramon Substation will allow it to serve new load nearby, specifically from the Bishop Ranch Business Park and the Gale Ranch and Windemere residential developments that are located in the San

[30] Capacity is somewhere in the range of 586.2 MW and 597.3 MW depending on which part of the record you rely on. Peak load in 2002 is expected to be in the range of 629.4 MW and 668.5 MW depending on starting point utilized.

Ramon area. Right now, load in Dublin is served by distribution feeders from San Ramon Substation, but is generally located more than four miles southeast of the San Ramon Substation. Growth is generally occurring on the southern and eastern end of Dublin, so serving Dublin's load from San Ramon Substation would require longer distribution feeders than PG&E's distribution planning guidelines allow for. Load in Dublin could be served by the Vineyard Substation which is located about 4 miles south of the center of Dublin's growth area but again, some longer distribution feeders would be required. In addition, demand in Dublin is growing rapidly. The record supports construction of a new substation in Dublin.

The record also supports the need for a new substation in North Livermore. Witness Pearson indicated that, like San Ramon Substation, the Las Positas Substation is also serving some load that could be served by Vineyard Substation. (PG&E: Pearson, RT 259.) Increased capacity of Vineyard Substation should free some of this capacity to serve growth in the Livermore/Las Positas DPA. Existing demand in this DPA is also generally located south of I-580, with the city center being located about 2 miles south of I-580. Growth in the Livermore/Las Positas DPA also is primarily in southern Livermore. Measure D has called into question whether growth in North Livermore will occur within a reasonable planning horizon.

On June 6, 2001, PG&E filed a motion seeking official notice of certain planning documents regarding additional development in the northern and eastern Livermore areas. The Exhibit A documents, regarding the Vasco/Laughlin Specific Plan, do not include any information about when, or by whom the document was produced, its status (approved, pending, or still being developed), or the potential timeframe for any construction. We note that at least

a portion of the document has been available since 1988. Regarding the Exhibit B documents, pertaining to industrial, commercial, and business park development, no timeline for the projects is identified. The included map does not identify streets which would allow for an easy understanding of where various parcels are located compared to various substation locations. After comparing the map with other exhibits in this proceeding what becomes clear, is that new development is expected to take place within four miles from the location of PG&E's proposed North Livermore substation and additional development is likely to occur in areas that are much closer to the existing substations of Vasco, Livermore, and Las Positas. There is considerable overlap in the 4 mile spheres of influence of the proposed North Livermore substation and the existing Las Positas substation.

Construction of a substation in North Livermore will enable PG&E to use the new substation to serve existing and new load within its sphere of influence while relieving much of the load that otherwise would be born by Las Positas, enabling that substation to serve the bulk of the expected new development.

In order for a significant amount of newdevelopment to occur in the North Livermore area, the area would need to be annexed by the City of Livermore or another city. Cal. Gov. Code § 56017 (Deering's 1987) provides "'[a]nnexation' means the annexation, inclusion, attachment, or addition of territory to a city or district." Annexation is the means by which an existing city extends its corporate boundaries.

The Cortese-Knox Act (Cal. Gov. Code §56000 *et seq.*), passed in 1985, sets the framework within which proposed city annexations, incorporations, consolidations and special district formations are considered. The Cortese-Knox Act establishes a Local Agency Formation Commission (LAFCO) for each

county, empowering it to review, approve or deny proposals for boundary changes and incorporations for cities, counties and special districts. The Legislature sets guidelines for the actions LAFCOs can take, providing statewide policies and priorities for the consideration of annexation (Cal. Gov. Code §56844). The Cortese-Knox Act mandates specific factors that a LAFCO must address when considering annexation proposals. LAFCOs establish the ground rules by which the annexation will be processed. There are several steps to annexation.

First, an application may be filed with the LAFCO by petition of affected landowners, registered voters or by resolution from the involved city. Prior to filing, the annexation proponent should meet with the LAFCO's executive officer to establish the minimum requirements for processing, then meet with any affected special districts and agencies to agree upon a taxation scheme and needed property tax transfers. LAFCO action is subject to CEQA and an initial study is required.

The LAFCO then has 30 days to review an annexation application and determine its completeness. The executive officer is prohibited from issuing a certificate of filing if an agreement establishing the allocation of property tax revenues has not been reached during the 30-day review period. A certificate of filing is a precondition to a LAFCO hearing on an application for annexation. If the application is determined to be complete the LAFCO will issue a Certificate of Filing setting the LAFCO hearing within 90 days. The hearings may be continued for up to 70 days. The LAFCO will analyze the proposed annexation in light of its state mandated evaluation criteria and responsibilities and its own adopted policies. Following the hearings, LAFCO will issue a resolution. The

consequent conditions set by the LAFCO's resolution will be the ground rules for the Conducting Authority's subsequent action (Cal. Gov. Code §56851).

The involved city, acting as the "Conducting Authority" will hold a public protest hearing, unless the proceedings are waived, to determine whether the proposed annexation may be approved without an election, terminated, or whether an election must be called to determine the proposal's outcome. The number of protests received before and during the hearing will determine which of these options the city must follow. If the annexation is approved, the city will forward a resolution containing the results of its activities to the LAFCO for final review and ratification. If the proposal is terminated, a resolution to this effect will be forwarded to the LAFCO and no new annexation may be proposed on the site for at least one year, unless the LAFCO waives the limitation upon finding that the limitation is detrimental to the public interest (§ 56855 and §56851). When an election is held, only residents of the proposed city or territory have a right to vote on the issue of annexation (§ 57103 and Board of Supervisors v. LAFCO, 3 Cal. 4th 903, 924 (1992)).

LAFCO may approve, conditionally approve or deny the proposed annexation. Within 30 days of the LAFCO's resolution, any person or affected agency may file a written request with the executive officer for reconsideration of the annexation proposal (Cal. Gov. Code §56857).

Under the relevant timelines, once an annexation application is submitted, processing of the application would be expected to take somewhere between 6 and 12 months, assuming no election is required. However, an applicant must prepare environmental documents, prior to submitting an application to start this clock.

The record supports a conclusion that there is a need for additional capacity south of I-580, given the current capacity of the Livermore-Las Posital DPA and forecasted growth. The question then becomes, would construction of a substation in unincorporated Alameda County, as proposed by PG&E, assist PG&E in serving this new demand?

Based on the development currently expected (see Exhibit 10 and PG&E's June 6, 2001 Motion), PG&E could construct a new substation south of I-580 in the southern or western portion of the city or to expand existing substations to meet this need. However, construction of the proposed substation in North Livermore would relieve Las Positas to serve much of the new demand. In addition, it would enable PG&E to more readily serve the North Livermore Specific Plan development, if it were to gain final approval. Thus, the North Livermore substation will not only help serve existing and expected load; it will provide PG&E with a flexible tool with which to serve future development in the area.

PG&E remains the only party advocating approval of Phase 2 of the project. As described in Exhibit 1001, power flow studies performed by the ISO, in conjunction with PG&E, show that additional service from the Tesla Substation is not likely to be necessary due to transmission system improvements that are underway or expected. The ISO takes no position on whether we should grant a CPCN for Phase 2 because it is not needed until 2009. As the ISO says, "[i]t is possible that closer to the date when Phase 2 is needed, other alternatives will be available and preferable." (ISO Opening Brief, p.5.) PG&E has not demonstrated the public convenience and necessity of Phase 2 of its proposed project.

There is an adequate record to support the conclusion that the remainder of Phase 1 of the project is needed pursuant to Pub. Util. Code § 1001. Therefore, we should grant a CPCN to PG&E to construct new substations to serve Dublin and North Livermore and new 230 kV transmission facilities to connect the new Dublin and North Livermore substations to the existing Contra Costa-Newark transmission line. We will address the location and routing of the approved project in the next section.

10. Discussion of Routing and Substation Locations

We have found that a 230 kV transmission connection between the existing Vineyard Substation and the Contra Costa-Newark transmission line is required. We have found that a new Dublin substation and attendant transmission facilities are needed. We have concluded that, a substation at North Livermore and a related transmission line are needed. In addition, based on power flow modeling conducted by the ISO and other parties, we conclude that Phase 2 should not be adopted at this time. Therefore, our discussion of routing and substation locations focuses on the Pleasanton, North Livermore and Dublin areas.

10.1 Timing

PG&E urges us to adopt transmission line routings that it prefers because it argues that they are the only ones it can complete in time to meet its self imposed Summer 2002 deadline. PG&E argues that because a transmission capacity expansion project must be completed by Summer 2002, we must automatically reject any alternative that requires more undergrounding than its proposed project, any alternative that it has not already begun consultations with other permitting agencies, and any alternative for which it has not already begun detailed engineering plans. What PG&E fails to state is that the Tri Valley area

has been in an overload situation for as much as ten years and in dire need of increased transmission capacity for a significant period of time. This situation is directly attributable to PG&E's decision not to construct the Vineyard 230 kV transmission project it received authorization for in 1988. The situation we find ourselves in is summed up by LARPD in its closing brief:

> "P.G.&E. should not be allowed to benefit from an apparent "crisis" which it had a hand in "creating". P.G.&E. has argued long and hard through these proceedings that due to projected load demands, this project must be completed by summer, 2002. Yet, in the course of the hearings before Judge Cooke, it was disclosed that this is not the first time P.G.&E. has come to the Commission seeking a Certificate of Public Necessity & Convenience to expand the transmission facilities in the Tri-Valley area. As a matter of record, this present effort seems to be a duplicate of that initiated in 1986. That effort received as much public and regulatory attention as the present effort, and ultimately it seems that when the CPUC required P.G.&E. to construct the project in a fashion it did not like, it simply left the bride at the chapel. Now, more than ten years later, it comes before the Commission with essentially the same project but with much more actual development in place and with a much greater apparent immediate need. Resisting every temptation to look at the situation with a jaundiced eye, it takes no stretching of the imagination to find that P.G.&E. has been hoisted on its own petard and now comes to the Commission seeking immediate relief. P.G.&E. should not be "rewarded" for having recognized the problem more than ten years ago, and then when achieving an unsatisfactory result, allowing the problem to go unresolved. Even if you put aside the current "energy crisis", one still can't ignore the fact that P.G.& E. is a victim of its own making. Despite this fact, the Commission should approach the issues raised here with all necessary attention and deliberation. In other words, we should not be forced into bad choices because a "crisis" exists as a result of P.G.& E.'s past behavior." (pp. 3-4.)

We agree with LARPD that PG&E's past lack of action should not force us to accept only their preferred alternatives in order to meet a need that

has been obvious for many years. We will consider timing in assessing the various alternative routes, but this factor will not be a primary driver in our decision regarding the routes we select. Therefore, we do not reject any alternatives, as PG&E has recommended, for the simple reason that they may take longer to construct than PG&E's proposed or preferred projects.

In addition, we note that PG&E has argued that we should select its proposed project because it has already prepared detailed engineering plans on that route, but it has not done so for the environmentally superior alternatives. PG&E admits that it has also begun engineering work on the S4 alternative but not on other alternatives (PG&E:Zischke/Kraska, RT 1749-1750). A similar situation exists with respect to consultations with the U.S. Army Corps of Engineers (USACE) and the U.S. Fish and Wildlife Service (USFWS) for both PG&E's proposed route and S4. PG&E has chosen to pursue this work only for its preferred outcomes, and not for any alternatives that it does not support. We should not be forced to adopt a particular route because PG&E assumed its preferred project would be adopted, and so developed certain alternatives more than others. As stated above, we will consider these issues in evaluating the alternatives, but we will not reject routes because of these issues.

10.2 Timing Tradeoffs of the Various Alternatives[31]

10.2.1 Pleasanton Area

PG&E's proposed project is the shortest route (5.5 miles) and contains a greater proportion of overhead versus undergrounding (2.8 miles: 2.7

[31] Timing associated with any necessary eminent domain actions are addressed in a separate section.

miles) compared to several alternatives. Parties generally acknowledge that construction of underground transmission lines will take more time than constructing overhead lines. PG&E also supports S4 which has 3.7 miles of overhead and 2.9 miles of underground and S4/S5 which has 5.7 miles of overhead and 1.6 miles of underground construction. By comparison, the environmentally superior routes, S2A/S2 and S2A/S2/S5 have less overhead and more undergrounding than PG&E's preferred routes (0 miles: 5.9 miles and 2.1 miles: 4.3 miles respectively). The S1 alternative has the shortest amount of undergrounding with only 1.1 miles underground, but a total length of 6.6 miles. However, in assessing timing issues for construction, the length of the routes is not the sole factor. We must also look to the difficulty of the terrain and potential construction conflicts among other factors.

PG&E's proposed route begins at the Contra Costa-Newark line to the south and traverses overhead to the Pleasanton city limits. There it converts to an underground line and follows a ridgeline, heads down a hill and onto residential streets. PG&E will need to construct access roads in order to construct the overhead portion of the route. The overhead portion of S4 would be constructed in a similar setting. Once PG&E's proposed route converts to underground, it immediately follows a narrow ridgeline across an area that demonstrates evidence of past landslide activity. As it heads down hill next to the water tank, PG&E has indicated that it will likely need to perform some more extensive work in that area to ensure that the line does not slide. (PG&E: Johnson, RT 501-502.) Once the line reaches city streets it would be in a residential area. Several ninety-degree turns will be required for the line to follow the roadway. The record is clear that there is an extensive, preexisting, underground utility infrastructure in these streets (Exhibit 3, Tab A) that will

require careful excavation work and possibly significant hand excavation so that existing utilities are not damaged. (PG&E: Johnson, RT 501-522.) In order to avoid existing utilities, it is possible that PG&E will be required to trench to a significant depth, (PG&E:Johnson, RT 485), which will require more extensive shoring of the trench under California Occupational Safety and Health Administration (OSHA) requirements. (Exhibit 204-A, p. 3-3.) At Bernal Avenue, many of the utility conflicts abate and the project should proceed more rapidly under those conditions. Because much of the underground work will take place in residential neighborhoods, it is likely that restrictions will be imposed regarding construction hours, limiting the speed at which construction can proceed.

The S4 route converts to underground in a hilly area which should present similar construction issues as PG&E's proposed route where it first transitions to underground. Once it reaches Vineyard Avenue, S4 would have similar construction conditions as the proposed route along Bernal Avenue. The S4/S5 alternative is the longest route at 7.3 miles. As described below, the S5 portion of the route should be relatively easy to construct.

In comparison to PG&E's proposed project, the underground routes followed by S2A/S2 and S2A/S2/S5 are generally flat and straight, without existing utility conflicts. Therefore construction should be able to proceed at a more rapid rate along these routes than the underground portion of PG&E's proposed project. Along New Vineyard Avenue, the route would be coordinated with construction of a new road and new development. Because of the long underground segments however, total construction time may be longer than PG&E's proposed project. The S2A/S2/S5 route contains an overhead portion that would allow it to be constructed in a shorter time frame than S2A/S2.

Because the overhead portion traverses the gravel preserve and roads serving the quarry operations, which are well equipped to handle heavy equipment required for construction, construction of the overhead portion of this route should move more quickly than the overhead portion of PG&E's proposed project or S4.

The S1 alternative has the most overhead of the alternatives studied. Like the S5 alternative, S1 would have a portion of the route installed in the gravel preserve. However, compared to the S5 alternative, the construction would be more difficult because PG&E would need to construct roads within an active mining area in order to install and maintain the line. No new roads would have to be constructed to install the S5 portion of the project.

We cannot conclude definitively that any one route would be constructed most quickly. What we can conclude is that each route has tradeoffs with respect to difficulty of construction. Judging how long construction will take based on simply reviewing the length of underground construction as proposed by PG&E is not appropriate. We conclude that each of the alternatives studied by the FEIR for the Pleasanton area can be constructed in the same general timeframe as PG&E's proposed project and thus should be evaluated on their merits.

10.2.2 Dublin Area

PG&E's proposed Dublin transmission facilities would be located entirely above ground with a length of 6.9 miles. PG&E would be required to construct some access roads in order to construct the transmission facilities. The environmentally superior D1 would be only 3.1 miles total, with 0.8 miles underground. The D1 overhead route would be constructed over similar setting as S5 through quarry operations. The underground portion of D1 would require boring under I-580 and acquisition of an easement from CalTrans.

PG&E raises timing concerns regarding the environmentally superior D1 alternative because of mitigation measure L-11 which requires a Federal Aviation Administration (FAA) aeronautical study and submission of the project the Alameda County Airport Land Use Commission (ALUC) for determination of whether the alternative would create an obstruction to air navigation. Dublin raises concerns over acquisition of a transverse easement from CalTrans associated with construction of an underground portion under I-580. Both of these tasks could result in some construction delays compared to PG&E's proposed project in Dublin, however the shorter total miles of the D1 route could possibly offset some of that delay. We do not eliminate this alternative on this basis.

10.2.3 North Livermore Area

PG&E's proposed North Livermore transmission facilities would be located entirely above ground along North Livermore Avenue and heading east to the Contra Costa-Newark transmission corridor. PG&E's proposed project would include as a visual mitigation measure, undergrounding of existing distribution facilities along North Livermore Avenue. Other North Livermore alternatives contain combinations of overhead and underground construction, of generally the same length as PG&E's proposed project. Although underground construction would likely take somewhat longer than overhead construction, the terrain does not present any particularly difficult construction challenges. In addition, because of the passage of Measure D, load in North Livermore is likely to grow more slowly than in other parts of the Tri Valley. We do not eliminate any of the North Livermore alternatives on the basis of timing.

10.2.4 Summary

We do not reject any alternative because it might take longer to construct than PG&E's proposed project or might require additional engineering or consultations or permits from other agencies. If we were to adopt PG&E's argument that no alternative was acceptable if such work had not occurred, we would enter a self perpetuating circle whereby we would only be in a position to approve a project which the proponent had chosen to perform additional work on. This would be directly in conflict with CEQA's requirements that alternatives be studied. The fact that, in this case, PG&E has began engineering and permitting work only for its proposed and preferred routes, to the exclusion of all other alternatives, indicates the folly of this approach. In addition, the record is clear that the need for increased capacity in the Tri Valley area has been known for at least a decade. We should not be forced to select an alternative simply to meet a timing schedule that is of PG&E's own making.

We also note that although the need for additional capacity at the Vineyard substation is well demonstrated based on current load and the fact that San Ramon is currently serving Pleasanton loads, the current economic downturn and/or conservation efforts may have a more significant effect on future load growth in the Tri Valley area as a whole. We take official notice that actual metered peak demand for June 2001 was 8.8% lower than in June 2000. Similarly, monthly energy consumption for June 2001 was 8.3% lower than in June 2000. (See California Energy Commission analysis at www.energy.ca.gov/electricity/peak_demand/2001-06_demand_analysis. Pdf. While we cannot determine whether this trend will continue, this information indicates that aggressive assumptions about future growth may not materialize.

This information further suggests that timing concerns raised by PG&E may be somewhat mitigated by the current economic and energy situation.

10.3 Constructability

The Pleasanton Parties attack PG&E's proposed route as infeasible to construct because of conflicts with existing utilities along residential streets and geologic issues. PG&E submitted engineering plans with its rebuttal testimony. (Exhibit 3, Tab A.) The FEIR concluded that PG&E's proposed route was feasible and could be constructed. However, as described above, the construction of PG&E's proposed underground project does present challenges due to the narrow streets, existing utility conflicts, and depth of trench.

Likewise, the FEIR only studied alternatives that were considered feasible and able to be constructed. Based on comments submitted on the DEIR, the FEIR reassessed the Pleasanton Parties Improved Isabel-Stanley route, and continued to conclude that construction of that route was not feasible. In fact, testimony by the Pleasanton Parties own geologist, Dr. Sage, indicated that there were significant problematic geological issues associated with constructing an underground transmission line on the west side of Isabel Avenue. (Pleasanton Parties: O. Sage, RT 806-807.) The FEIR likewise reassessed the feasibility of the S5 alternative, which had previously been eliminated. By moving the location of the transmission poles away from the cliff of Shadow Cliffs Recreation Area, the FEIR concluded that modification removed geologic instability concerns and that construction of S5 was feasible.

Thus we conclude that all alternatives studied in the FEIR can be constructed, and we do not eliminate any of the options before us on that basis.

10.4 Environmental Impacts

The FEIR studied the environmental impacts of all alternatives consistent with the requirements of CEQA. For purposes of this project, impacts were primarily in four areas: biological resources, visual resources, land use impacts, and construction impacts. We discuss each of these issues below, as well as growth inducing impacts.

10.4.1 Biological Impacts

10.4.1.1 Pleasanton Area

In the Pleasanton area, PG&E's proposed project and S4 traverse overhead through undeveloped ranch land. It is these areas, rather than portions of the route that would be constructed within city streets, that present biological resource issues. The FEIR identified seven seasonal wetlands along PG&E's proposed project. Numerous special status species were identified with a moderate or high potential to occur along the proposed project. PG&E's biologists describe the land traversed by PG&E's proposed project and S4 as providing habitat for California red-legged frogs, California tiger salamanders, and Alameda whipsnake, all of which are endangered, threatened, or protected species. PG&E witness Buck Jones described the land in the following manner:

> "it's an amazing piece of almost wilderness. It's got rugged canyon terrain, very high ridgelines. It's oak studded. It has numerous drainages." (PG&E:Jones, RT 1043.)

In addition, the FEIR indicates that both of these routes could have impacts on heritage trees. The FEIR finds that impacts on the species and heritage trees can be mitigated to less than significant levels. However, the FEIR indicates that the impacts from these two routes, although less than significant, are greater than the impacts associated with S2A/S2,

S2A/S2/S5, and S1. This is because the alternative routes are generally within or following existing roadways which do not provide suitable habitat for these threatened species. These routes avoid Alameda whipsnake critical habitat, proposed California red-legged frog habitat, and potential California tiger salamander habitat that would be encountered along PG&E's proposed project and S4. As explained in the FEIR, "avoidance is preferable to creating an impact (even those that are not considered significant) and subsequently mitigating the impact." (Exhibit 1003, p. H-98.)

In fact, the FEIR finds that the S4 alternative has greater potential impacts to special status species than PG&E's proposed project because it will be constructed through more Alameda whipsnake critical habitat and proposed California red-legged frog critical habitat than PG&E's proposed project. As part of its support for why its proposed project or S4 are preferred to other alternatives, PG&E argues that the area adjacent to Vineyard Avenue is California red-legged frog habitat, and thus, construction of the project along Vineyard would require a consultation with the USACE and USFWS regarding threatened species. PG&E's biologists did not study any of the Vineyard Avenue routes to determine whether suitable habitat exists along Vineyard Avenue. (PG&E:DiVittorio, RT 429-430.) PG&E relies on the Vineyard Avenue Corridor Specific Plan Draft Environmental Impact Report, identified as Reference Item 18 during this proceeding, as evidence that suitable habitat for the California red-legged frog exists along Vineyard Avenue.[32] However, the Vineyard Avenue

[32] The Vineyard Avenue Corridor Specific Plan DEIR (November 1998) covers a Plan Area that was being considered for development. The development plans have subsequently been approved and are proceeding. The Neal Elementary School and

Footnote continued on next page

Corridor Specific Plan DEIR indicates: "(N)o California red-legged frogs were observed in the Plan Area during field surveys, and this species is unlikely to occur because of the lack of adequate cover and the absence of perennial open water. The seasonal wetlands onsite appear to be unsuitable breeding habitat for this species because surface water is not present for sufficient periods to allow completion of larval development." (Reference Item 18, p. 4.4-10.) In addition, the FEIR concludes that because frogs would not likely survive road crossings, Vineyard Avenue is likely to be a barrier to dispersal, a critical element in the determination of whether California red-legged frog habitat exists pursuant to rules proposed by the USFWS at 65 Federal Register 54908 (2000) (to be codified at 50 C.F.R. §17.95 (d) (proposed Sept. 11, 2000) and as further described at 65 Federal Register 54896. (Primary Constituent Elements).

The S2A transition station is located within approximately 100 yards of a perennial creek with California red-legged frog habitat. There is the potential for some adverse impact to the frog due to construction and maintenance of the underground line in relatively close proximity to the perennial creek. However, these impacts can be mitigated to less than significant levels with implementation of Mitigation Measure B-9, which requires delineation of habitat, avoidance of this habitat during all construction and operations, and coordination with the USFWS. On brief, PG&E raises concerns about this transition station location and the possibility of required studies and consultations with the USACE and USFWS taking approximately

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Vineyard Avenue realignment are part of this development plan, as well as residential development.

one year to complete if they are required. We note that this mitigation measure is also required of PG&E's proposed route and S4.[33]

There are no significant and unavoidable biological impacts associated with the S1 alternative. Most impacts associated with the S1 alternative route are considered to be less than significant because much of the route would follow roadways. The S5 alternative would have an open cut crossing of Del Valle Creek and the transmission lines would be overhead through the quarry area along the western edge of Shadow Cliffs Regional Recreation Area, which could increase the potential for bird strikes. However, the potential increase in bird strike impacts would be slight since the area is a highly disturbed industrial area with existing overhead lines. The open cut crossing of Arroyo del Valle Creek could potentially impact the quality of the aquatic habitat but implementation of a mitigation measure requiring a pre-construction survey of the area and the presence of a biological monitor during construction would ensure that impacts would not be significant.

We cannot conclude whether USFWS would require consultation were S2A/S2, S2A/S2/S5, or S1 selected, which seems to drive PG&E's concern over selection of S2A/S2, S2A/S2/S5, and S1. However we note that in the Methods section of the Supplementary Information of the USFWS proposed rule, related to proposed California red-legged frog habitat, it states:

> "Areas of existing features and structures within the boundaries of the mapped units, such as buildings, roads, . . . other paved areas,

[33] On brief, PG&E states that it has already begun the necessary consultations with the USACE and USFWS for its proposed project and the S4 alternative and thus is less of a concern. (PG&E Opening Brief, p. 25, fn 8.)

> lawns, and other urban landscaped areas, and uplands removed from suitable aquatic and dispersal habitat, will not contain one or more of the primary constituent elements. Federal actions limited to these areas, therefore, *would not trigger a section 7 consultation*, unless they affect the species and/or primary constituent elements in adjacent critical habitat." (65 Federal Register 54898, emphasis added.)

This leads us to believe that, at least for routes traveling along established roadways and urban landscapes, consultation with USFWS will not present an impediment to the alternatives. The evidence supports a finding that there are more potential biological impacts, albeit, at a less than significant level, resulting from PG&E's proposed project and S4 than the S2A/S2, S2A/S2/S5, and S1 alternatives.

10.4.1.2 Dublin Area

PG&E's proposed Dublin substation would be located in an area zoned for agricultural uses. The transmission line would travel east from the substation for 6.9 miles until it reaches the Contra Costa-Newark transmission line. The route travels over non-native grassland areas that are interspersed with alkali-freshwater marshes and seasonal wetlands. The same types of species as occur in the Pleasanton area would generally be expected to be present along PG&E's proposed Dublin route along with some additional species. The FEIR identified potential impacts to biological resources along the proposed project, specifically to wetland and California red-legged frog habitat, but indicated that all impacts could be mitigated to less than significant levels. In addition, until a hydrologic study of the proposed substation is conducted, the DEIR concludes that the impacts of increased runoff and channel erosion, due to the substation, are considered significant. The DEIR concludes that it may be

possible to mitigate these impacts to a less than significant level, but cannot determine this with certainty until a hydrologic analysis is conducted.

The D2 alternative would utilize the same substation location as PG&E's proposed project but the associated transmission facilities would travel west to connect with the existing San Ramon Substation. Reconductoring of approximately 20 miles of the San Ramon-Pittsburg 230 kV line would also be required as part of this alternate. The FEIR finds that this alternative introduces more potential biological impacts compared to PG&E's proposed project in the Dublin area, although all impacts can be mitigated to less than significant levels.

The D1 alternative substation location and attendant transmission facilities would generally traverse along developed, or soon to be developed areas. The D1 alternative would reduce potential impacts to all biological resources compared to PG&E's proposed project because of its use of already developed corridors.

10.4.1.3 North Livermore Area

There are six potentially significant biological impacts along the all-overhead proposed transmission line route in the North Livermore area. However, all can be mitigated to less than significant levels with mitigation proposed in the EIR. These impacts include mortality or disturbance of wildlife during construction, impacts to a seasonal wetland along Manning Road, disturbance of wildlife during breeding seasons, temporary and permanent loss of small amounts of special status plant species and their habitats, destruction of habitat by overland travel, and potential impacts to California red-legged frogs and their habitat.

Biological impacts of the P1 and P2 alternatives would be similar to those of the proposed project, because the same route would be followed, but the habitat disturbance would be greater due to the more extensive construction activities required for underground lines.

The environmentally preferred P3 route runs along an existing dirt road, Dagnino Road, and May School Road, an existing disturbed roadway, so habitat disturbance would be minimal. However, undergrounding along this route has the potential to affect the hydrology of the Springtown Alkali Sink, 1.5 miles to the south. This area supports an endangered plant, the Palmate-bracted bird's beak, and is sensitive to changes in shallow subsurface groundwater flow. Mitigation Measure B-12 would need to be implemented to define the specific hydrologic characteristics of this area. It is likely that the underground transmission line along May School Road is located far enough north of the sensitive area that the line would not affect shallow subsurface flow, and impacts to the sink would be less than significant.

Other impacts of the P3 transmission line route through the North Livermore area are the same as those for the proposed project, described above. Due to the extensive undergrounding involved in the P3 and P2 alternatives, the P3 route would have little likelihood of bird collision.

The L1 alternative would also have the same general types of impacts as the proposed project, P1, P2, and P3. However, this route has much greater potential to disrupt shallow subsurface hydrologic flow to the bird's beak preserve area. While Mitigation Measure B-12 may reduce this impact to less than significant levels, preliminary hydrologic analysis of groundwater conditions indicated that the flow would likely be affected by the underground transmission line installed in the concrete duct bank. Such flow

disruption would create conditions in which the special status plants in the area south of Raymond Road could not survive.

The biological resources affected by the L2 alternative would be most severe in the southernmost segment (through Sycamore Grove Regional Park) and the northernmost segment (north of the I-580). After the route crossed under the I-580, this underground portion would follow a future roadway that has not yet been constructed, to the L2 Substation location in current open space. This area would be developed under the North Livermore Specific Plan, but implementation of that plan is uncertain at this time. A wetlands mitigation area has been established near the L2 substation site and this area is within California red-legged frog critical habitat as designated by the USFWS. In addition to general impacts identified above, Heritage Trees could be affected along this route (but impacts would be less than significant with implementation of mitigation).

Other impacts of the transmission line route through the North Livermore area are all less than significant with implementation of recommended mitigation, and include potential for direct mortality or disturbance to wildlife during construction, impacts to a seasonal wetland at Cayetano Creek (near North Livermore Avenue), and avoiding construction during breeding seasons. There is also the potential for impacts to the California red-legged frog or its habitat along the transmission line route north and west of the North Livermore substation, but these impacts could be mitigated with mitigation recommended in the EIR.

Biological impacts for PG&E's proposed project in North Livermore, P1, P2, and P3 would all be limited, less than significant and temporary in nature. Each of these alternatives should be considered to have

equivalent impacts. Biological impacts of L1 would be significant and impact an endangered plant. The impacts of L2 would be similar to S1 and would also locate a substation within a California Red-Legged Frog habitat area, which should be avoided.

10.4.2 Visual Impacts

Section C.12 of Exhibit 1000 and Section C of Exhibit 1003 describe the visual impacts of the proposed project and all alternatives studied. When assessing visual impacts we evaluate how a new structure would affect views in comparison to the existing visual setting, the public's exposure and sensitivity to views of a new structure, and the dominance of a new structure in the viewshed, among other factors. For these reasons, the impacts of new structures in undeveloped natural settings tend to have higher visual impacts than locating an additional structure in an already developed or industrial setting. We now describe the visual impacts of the various options studied and parties' positions on the significance of those impacts.

10.4.2.1 Pleasanton Area

In general, the DEIR finds visual impacts of routes in the Pleasanton area to be adverse, but not significant, or insignificant, given the existing visual settings, surrounding terrain, and viewer exposure. The exceptions are with respect to S1 and S2 where the routes are proposed to be located overhead within Sycamore Grove Park, and S4, prior to its transition to underground. S2A was developed to mitigate the visual impact to Sycamore Grove Park and locates the transmission facilities underground outside of the park boundaries. With the adoption of this mitigation measure, the potentially significant visual impact of this segment would be eliminated. With respect to S4, the DEIR adopts a mitigation measure that requires lowered transmission

structure heights or additional undergrounding to minimize views of the S4 alternative from the Ruby Hills area. With the adoption of this mitigation measure, the potentially significant visual impact of this segment would be eliminated. However, if this mitigation measure is infeasible due to engineering or construction constraints, the S4 alternative would result in a significant visual impact.

The Foley Intervenors make much of the possibility that the overhead portion and the transition station of PG&E's proposed project and the S4 alternative may be visible to residents of Pleasanton and thus these routes should not be selected. The Foley Intervenors state that PG&E did not construct "story" poles to mimic the heights of the structures proposed, despite having been given permission to construct such poles by property owners. The Foley Intervenors assert that constructing story poles would have been the best evidence of whether the proposed project or S4 would have been visible to Pleasanton residents. The Foley Intervenors assert that since PG&E chose not to construct such poles, "a strong inference must be drawn that the proposed towers and line will in fact be visible from various residential areas and other well-traveled locations." (Foley Opening Brief, p. 4.) Additional evidence submitted during the hearings (Exhibit 304) and the DEIR analysis generally supports PG&E's argument that visibility of transmission structures will be very limited to Pleasanton residents.

Alternative S1 would require the installation of tubular steel poles along the west side of Isabel Avenue. Isabel Avenue is being widened by CalTrans to become a six-lane thoroughfare. There are currently electric distribution poles located on the east side of Isabel Avenue and gravel mining operations on the west side. Numerous residents spoke in opposition to

locating poles on Isabel Avenue and expressed their opinions regarding the visual impact of the S1 route. Centex describes the setting as follows: "the homes along Isabel Avenue are in a valley so there is no natural screening, such as hills, to shield the residents from seeing the proposed … poles and overhead lines." (Centex Opening Brief, p. 6.) The visual simulation prepared for the DEIR (Exhibit 1000, Figure C.12-5) makes clear that poles and overhead lines associated with S1 would be visible from residences along Isabel Avenue. Although the DEIR finds that these visual impacts are adverse, but not significant, S1 clearly has the most visual impact on the most residents of any other the Pleasanton area alternatives studied.

The S5 alternative would be located outside of parkland in an active quarry area but would result in the establishment of an overhead transmission line that would be visible to users of Shadow Cliffs Regional Recreation Area. The FEIR provides a detailed description of its analysis of visual impacts on park users given the existing setting and why the visual impact does not reach the level of significance. (Exhibit 1003, p. 3C-8-c-9.) Although the S5 alternative travels through an industrial area, it is visible from the heavily used Shadow Cliffs Regional Recreation Area. Thus this alternative would have more visibility, albeit at the less than significant level, than an all underground route like S2A/S2.

We need not find that the proposed project or alternatives will not be visible at all to agree with the findings in the DEIR and FEIR that visual impacts of the routes are less than significant or can be mitigated to be less than significant. The question is not whether the structures will be visible, but whether that visibility causes a significant impact that is important here. We agree with the DEIR and FEIR analysis that visual impacts along all

routes studied will not be significant, or can be mitigated to be less than significant. Assuming Mitigation Measure V-2 (for the S4 alternative) can be implemented, all routes would result in impacts that are not considered significant. S4 would result in a significant impact if Mitigation Measure V-2 cannot be adopted because it would be more visible to Pleasanton residents than PG&E's proposed project, S2A/S2, or S2A/S2/S5. S1 would be visible to residents along Isabel Avenue and motorists traveling along Isabel Avenue. Although these impacts are considered to be less than significant, S1 would certainly be more visible than routes with significant portions of undergrounding or routes where overhead structures would be located in an area with limited viewers. In addition, although use of the S5 route would not result in a significant impact, it would be visible to users of Shadow Cliffs Regional Recreation Area, and thus clearly has more impact than an all-underground route on the viewing public.

Thus, with respect to visual impacts, we find that S2A/S2 would result in the least impacts. PG&E's proposed project and S4, although containing significant portions of overhead facilities, have less potential viewers than S1 and S2A/S2/S5. S1 and S2A/S2/S5 would have the possibility to impact the most viewers, although at less than significant levels.

10.4.2.2 Dublin Area

PG&E's proposed Dublin substation would be located on the floor of a small canyon near existing ranch facilities in a generally undeveloped area. Locating an unscreened substation (as PG&E proposed) in such an area would have a high impact in terms of visual contrast to the existing setting. However, because of the lack of public access to the substation location, the DEIR concludes that the overall visual impact of PG&E's proposed Dublin

substation location would be adverse but not significant. However, the DEIR concludes that there are significant, visual impacts associated with the 6.9 miles of overhead transmission lines required to connect PG&E's proposed Dublin substation to the Contra Costa-Newark line.[34]

The D2 alternative, which utilizes the same substation location as proposed by PG&E would have substantially similar impacts, although reduced visual impacts along the transmission line route. The transmission line would convert to underground as it approaches populated areas of San Ramon, reducing the visual impacts to adverse but not significant.

For D1, the substation would be located in a commercially zoned section of the Dublin Ranch development. Although the area is currently undeveloped, this area zoned for office buildings, business and commercial services, some light manufacturing, warehousing and distribution activities, and other supporting business like restaurants, gas stations, or banking services. Conditional uses for the property include medium to high-density residential development and public and semi-public facilities, among other uses. (Dublin Opening Brief, Exhibit B.) Because substations can be screened by façade walls in a manner compatible with other development, the DEIR describes the visual impact of a substation in this location as adverse but not significant.[35] (Exhibit 1000, C.12-34.) Additionally, the D1 substation would be served by an

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[34] The significant visual impacts of the proposed route could be eliminated with implementation of the P2 alternative, which requires underground construction in North Livermore. Until its comments on the proposed decision, PG&E has opposed this mitigation measure.

[35] For example, see D.01-03-071 where the Commission authorized construction of a substation in a residential area with façade wall and landscape screening.

underground transmission line, further minimizing visual impacts on the developing areas of Dublin. South of I-580, the D1 transmission line would transition to overhead. Similar to S5, which would traverse active quarry operations, the overhead portions of D1 would primarily be located in quarry operations.

Dublin argues that the DEIR fails to adequately report on the visual impacts of the D1 substation location and fails to assess the potential impacts of a substation on the I-580 and Fallon Road scenic corridors. The FEIR addresses the comments raised by Dublin in detail (see Exhibit 1003, p. H-30-35). Given the high rates of speed of motorists on I-580 and the fact that the substation will likely be partially screened by other structures in the development, visual impacts of the substation from I-580 should be limited. In addition, Mitigation Measure L-14 specifies that PG&E is to work with Dublin to develop screening for the substation, including the use of façade walls, to ensure that the substation is visually consistent with other development. Thus, the environmentally superior D1 alternative substation location should appear to viewers as another building in the commercially zoned area. Given this requirement, it is difficult to see how the substation could be considered to have significant visual impacts.

The Pleasanton Parties argue in comments on the proposed decision that they have grave concerns regarding the visual impacts of the transmission lines associated with D1. The Pleasanton Parties raise this concern for the first time in their comments on the proposed decision and neglected to mention this concern in their comments on the DEIR (see Exhibit 1004, pp. Ap.2-49 to Ap.2-80) or their testimony (see Exhibit 204-A). In addition, the Pleasanton Parties base their concerns about visual impacts on future

development, not the current environment. Evaluation of visual impacts is conducted based on the existing environment, not on future speculative land uses. Therefore the potential visual impacts newly identified by the Pleasanton Parties were properly excluded from consideration in the DEIR.

Like PG&E's proposed substation, the visual impacts of the D1 substation would be adverse, but not significant. However, unlike PG&E's proposed transmission line to serve its proposed Dublin substation, the transmission line to serve D1 would not present any significant visual impacts because the overhead portion runs through disturbed corridors. We conclude that taken as a whole, D1 is superior to PG&E's proposed Dublin project with regard to visual impacts.

10.4.2.3 North Livermore Area

The existing landscapes of the North Livermore area are primarily composed of level to rolling grasslands and bordering hills, with dispersed residential properties and agricultural uses. Views tend to be panoramic, encompassing valley vistas and the hills and ridges that ring the larger Livermore Valley. The North Livermore substation would be located adjacent to North Livermore Avenue, which is popular with bicyclists, joggers, and recreational drivers who enjoy North Livermore for its picturesque rural qualities. North Livermore Avenue is a county-designated scenic route. As a result, significant and unmitigable visual impacts are identified for the proposed North Livermore substation and the overhead transmission lines along Manning Road and North Livermore Avenue.

The P1 and P2 alternatives would not have significant visual impacts, since they would be installed underground to the proposed North Livermore Substation. These alternatives would eliminate the significant

impact of the overhead transmission line, but the significant and unmitigable impact of the substation would remain.

There are no visual impacts associated with the underground transmission line along North Livermore Avenue, but after the line transitions to overhead, it passes through a scenic valley near the intersection of Manning Road and Carneal Road. In this area, the visual impact of the overhead transmission lines would also be significant. This impact is mitigable to less than significant levels, but mitigation (as defined in Mitigation Measure V-3) would require either that the transmission line be installed underground for an additional nearly 2 miles west of the transition point described above, or that the line be re-routed almost one mile to the south so it is not within the viewshed from this point.

The L1 alternative would have an underground transmission line, so no visual impacts would result after the transition station. However, as is the case for the Proposed North Livermore substation, the L1 substation would be located in a rural area with expansive views, and the industrial nature of the substation would be inconsistent with the surroundings. Therefore, the L1 substation would also create significant and unmitigable visual impacts.

The L2 alternative would have significant visual impacts in Sycamore Grove Regional Park, as would the S1 alternative. But much of the remainder of the L2 transmission line route would pass through more developed areas with existing industrial structures, creating impacts that would be less than significant. The L2 substation location would be in a hilly area, and not highly visible. Therefore no significant visual impacts would result from the substation.

Both L1 and PG&E's proposed North Livermore substation result in significant unmitigable visual impacts. The L2 substation would not present the same visual impact because of its location in a more remote area. PG&E's proposed North Livermore transmission lines would result in significant visual impacts, which P1, P2, and P3 could mitigate. L2 would also result in high visibility, although at less than significant levels, of the line, along Isabel Avenue.

10.4.3 Land Use Impacts

10.4.3.1 Pleasanton Area

PG&E's proposed project in Pleasanton would travel overhead through land currently dedicated to cattle grazing in unincorporated Alameda County. From the transition station located near the Pleasanton city limits, the project moves underground where it runs along a water tank access road before entering city streets. Benedict Court, Smallwood Court, and Hearst Drive are located within a single-family residential subdivision and are generally bordered on at least one side by homes. The line then enters Bernal Avenue, also a residential street (single-family and condominiums), but with two travel lanes in each direction and a landscaped median. Bernal Avenue narrows to two lanes as it crosses Arroyo del Valle Creek and then enters a light industrial area.

The S1 alternative begins in Sycamore Grove Park. Once the line leaves the park it would travel along 20-acre vineyard estates. Before crossing Highway 84, the line would convert to underground and travel within a dirt access road beside vineyard acreage. The north side of this section of Vineyard Avenue is devoted to gravel mining. After transitioning to overhead, the line would head north on the west side of Isabel Avenue within property actively being mined for gravel. Gravel pits extend north to Stanley Boulevard

and west along Stanley until reaching Shadow Cliffs Regional Recreation Area. Additional gravel pits are also located on the north side of Stanley Boulevard, as well as railroad lines (active and inactive). Shadow Cliffs Regional Recreation Area was formerly a gravel mining operation and now provides lake swimming, fishing, and waterslides for recreation.

The S2A/S2 alternative would begin near Sycamore Grove Park on private property. The line would travel underground west of Foley Road within currently disturbed, vacant, unvegetated areas of private property adjacent to Vineyard estates. The area where the line would be located is currently restricted to agricultural uses. The line would continue to border vineyard estates, cross Highway 84 and travel along Vineyard Avenue, which is flanked by vineyards on the south and gravel operations to the north. The route would follow the path of New Vineyard Avenue, which is being rerouted to accommodate development as part of the Vineyard Avenue Corridor Specific Plan. (This route allows further distance from the line and the new Neal Elementary School that is being constructed as part of the development project.) The line would be located underground, within or immediately adjacent to the road, in buffer land where construction of residences is prohibited. Once New Vineyard Avenue reconverges with Old Vineyard Avenue the line would be located within the roadway, a divided road with two travel lanes in each direction. Heading further west Vineyard Avenue remains as a divided road with two travel lanes each way and is bordered by residential housing (a motor home park, condominiums, and senior housing). Once the line turns onto Bernal Avenue, it covers the same area as PG&E's proposed project.

The S4 alternative is identical to PG&E's proposed project for 2 miles with the overhead component traveling through cattle grazing

land the entire duration. Once it converts to underground it would continue through grazing land and open space until it connects with Vineyard Avenue. The remainder of the route would cover the same land uses as the S2A/S2 alternative.

The S5 alternative can be combined with either S2A/S2 or S4. It would begin along New Vineyard Avenue and head north where the existing 60 kV line crosses Arroyo del Valle Creek and enter gravel mining land. The line would then transition to overhead, still on quarry property, and head in a northerly direction along a road until reaching Stanley Boulevard where it would converge with the S1 alternative along the northern side of Stanley Boulevard.

PG&E's proposed project, S2A/S2, and S4/S2 border the most residential land uses. Residential areas would be somewhat less impacted by S2A/S2 and S4/S2 than PG&E's proposed project because of the larger streets utilized and the setbacks of residential uses from the roadways. S1 would have most impact on gravel mining operations, followed by the S5 alternative.

10.4.3.2 Dublin Area

Selection of PG&E's proposed Dublin substation location does not present any land use conflicts. However, the attendant transmission facilities would result in conflicts (and a significant impact) with the Alameda County Scenic Route and Open Space Policies unless an underground mitigation measure is adopted (which PG&E opposes). The D2 alternative would result in less land use conflicts than the eastward connection proposed by PG&E. The D1 substation location presents the possibility of visual intrusion on planned adjacent land uses. This would occur if the substation were conspicuous from the

roadway and residential neighborhoods and appeared industrial in character. The DEIR recommends mitigation measure L-14 (enclosure by façade walls and screening) to reduce this potentially significant impact to less than significant. On balance, the DEIR finds that the D1 alternative, looking at both the substation and transmission line components, has fewer conflicts with land use policies than PG&E's proposed project for Dublin.

The D1 alternative transmission line route would parallel approximately one mile of land designated by the State Department of Conservation as Prime Farmland (immediately south of the I-580 freeway). If the transmission towers were constructed within productive land, small areas of the land could be removed from potential production. Some of the designated farmland is currently being quarried for gravel. While there is currently agricultural land along the west side of El Charro Road for about one mile south of I-580, the transmission line support towers would be placed in the fire break along the edge of the roadway. Consequently, no active agricultural land is expected to be removed from production. No mitigation would be required.

The D1 alternative transmission line route is located within an area designated to become a "Chain of Lakes" once the current gravel mining operation cease production. No date has been established for this conversion. Potential impacts to this future land use is not evaluated in the FEIR because it is not part of the existing environment. CEQA does not require evaluation of future impacts with land uses not in existence at the time the EIR is prepared. However, as the FEIR noted, (Exhibit 1003, p.H-37) utilities must frequently respond to changing development conditions over time and the D1 alternative presents no different situation than any other project in that regard.

PG&E, the City of Dublin, the Lin Family, and the City of Livermore all raise issues with respect to the compatibility of the environmentally superior D1 substation and attendant transmission facilities with local land use designations. First, the City of Dublin and the Lin Family argue that a substation is an incompatible or unpermitted use for the proposed location. Second, the City of Dublin argues that the loss of 5 acres of commercially zoned land will result in a loss of development fees which will in turn impact the services that can be offered by the City of Dublin to its residents. Third, the City of Dublin argues that the Eastern Dublin Specific Plan provides a balanced residential and employment development mix which is disrupted by the use of five acres for a substation. Fourth, the City of Livermore and PG&E argue that placement of overhead transmission towers/poles along El Charro Road would interfere with safety requirements for the Livermore Municipal Airport.

The City of Dublin states that extensive zoning and planning work has been conducted for the Dublin Ranch area where D1 would be located. Unlike the Dublin Ranch area, little planning has occurred for the land located where PG&E proposes to locate the Dublin substation. The City of Dublin argues that because little planning has occurred there, whereas much has occurred in Dublin Ranch, the substation should be located in PG&E's proposed location. The City of Dublin argues that the zoning for the D1 location would prohibit construction of a substation. The City of Dublin states that "the public and semi-public uses contemplated for Area C [where D1 is located] are supposed to be like office buildings, residences, and warehouses." (Dublin Opening Brief, p. 10.) While a screened or enclosed substation might have the look and scale of a commercial or warehouse building,it may not be possible to

make the building look like it is anything other than an imitation. In addition, it would be a building supporting little day-to-day activity as one would expect at other structures in such a business complex. The City of Dublin doubts that any screening can make a substation compatible with surrounding development and says it will be a "hulking, gray, cement cube". (City of Dublin comments on Proposed Decision, p. 7.)

We agree that construction of a substation on the D1 location would remove five acres of commercially zoned land from that particular location , and may have some deleterious impacts on city services and the housing/employment mix. According to the City of Dublin, the Eastern Dublin Specific Plan encompasses 4176 acres. (Dublin Opening Brief, p. 5.) Five acres represents only 0.12 % of the total acreage encompassed by the plan. While removal of this percentage of land from the jobs and residential mix could certainly change the mix in some manner, it is unlikely that such a small percentage change "undermines the Council's plans and conflicts with the community's values." (Dublin Opening Brief, p. 12.) In fact, such a change could easily be attributable to an economic downturn or numerous other reasons.

The potential conflicts with the Livermore Municipal Airport are more difficult to determine. The Alameda County Airport Land Use Commission (ALUC) has a "west safety zone" for the Livermore Municipal Airport that extends 5300 feet from the end of the runway. (Reference Item 5, p. 9.) El Charro Road, where the D1 overhead segment is located, is located approximately one mile from the end of the airport runway. Based on the safety zone dimensions and a map prepared by the City of Livermore (Reference Item 13), D1 is located just outside of the designated safety zone. Safety zones are established to restrict population density and structural development in the area,

in order to limit harm to people on the ground or in aircraft in the event of an accident. (Reference Item 5, p. 9.) The safety zone policies only describe height limitations within 1320 feet of the end of the runway.

The location of the D1 transmission line does fall within the Height Referral Area for the Livermore Municipal Airport. The purpose of the height referral area is to preserve unimpeded airspace required for safe air operation near the airport. The applicable policy is B7: "ALUC Height Referral Area Planning Boundaries". (Reference Item 5, p. 11.) The referral area encompasses the following airspace:

> For an airport runway more than 3,200 feet in length, a sloping surface identifies the airspace above one foot in height for each 100 feet (100:1) horizontally from the nearest point of the nearest runway, up to 20,000 feet.

Because the transmission towers and lines would be approximately 80 feet tall and the west side of El Charro Road is approximately one mile west of the end of the runway, the D1 alternative would exceed the height referral guidelines and be subject to additional review.

The ALUC adopts height restriction policies on new structures and vegetation within the height referral boundary consistent with the standards set forth in 14 CFR 77, Subparts C and D. The FAA requires any sponsor who proposes to construct or alter any facility of a height greater than described above to alert the FAA by submitting FAA Form 7460-1 (14 CFR 77.13), which the FEIR proposes as Mitigation Measure L-11. Neither the FAA nor the ALUC establish specific height limitations for where D1 would be located, only the requirement that they submit forms for consideration. The City of Livermore does have a Planning and Zoning Code (Section 3-05-770 C) that limits the height of structures located within 5000 feet of an airport runway to 40 feet. (Reference

Item 2.)[36] Because D1 is more than 5000 feet from the airport runway, Section 3-05-770 C would not apply. However, based on our review of the relevant regulations, we cannot determine whether the FAA or ALUC would permit or not permit D1 to be constructed as proposed. No definitive regulations are in place with would prohibit construction of the line as proposed.

For this reason, Mitigation Measure L-11 was identified which would require PG&E to immediately initiate an FAA Aeronautical Study and comply with any requirements identified by the FAA, including those pertaining to the marking and lighting of transmission line support towers and submit the project to the Alameda County ALUC for review, and comply with the recommendations of that agency, including disapproval of the alternative if the ALUC determines that the alternative would create an obstruction to air navigation and no suitable mitigation is feasible.[37]

If the ALUC says that a transmission line would be incompatible in that location, there are (at least) two mitigation options: (a) shorten the transmission poles or (b) pursue additional undergrounding along El Charro Road. Thus we cannot conclude that there is a conflict with the airport or not, but it is clear that mitigation measures are possible to eliminate potential conflict. These potential mitigation measures have not been studied during the

[36] We note that the east side of El Charro Road already contains a set of PG&E overhead distribution lines of approximately 50 feet in height.

[37] In fact, PG&E could already have initiated this study which would have allowed us to adopt a more specific mitigation measure. PG&E has thus far not initiated the study.

environmental review process and are not adopted today. Rather they are potential conditions of approval by the FAA or Alameda County ALUC.[38]

10.4.3.3 North Livermore Area

Land uses in the North Livermore area are primarily agricultural and open grazing land, with scattered residences. Construction of PG&E's proposed transmission line would conflict with Alameda County Scenic Route and Open Space policies, resulting in a significant and unmitigable impact.

The proposed North Livermore substation would conflict with policies of the *North Livermore Specific Plan*, as it would be located within the May School Road Greenbelt identified in that plan. Mitigation would require relocation of the substation 500 feet to the north. The substation site would also conflict with the North Livermore Trail Policy, which calls for development of a regional multi-use trail corridor west of North Livermore Avenue. This is a potentially significant impact, requiring implementation of mitigation in which PG&E would deed an easement across the substation site for use as a trail. Another potentially significant impact results from conflict with a local policy requiring use of drought-resistant landscaping, but recommended mitigation would reduce that impact to less than significant levels.

The P1, P2, and P3 alternatives would not create the policy conflicts described above for PG&E's proposed overhead transmission line

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[38] In fact, modifications to approved projects are often required as a result of additional design or construction work or permit conditions. Such modifications are handled administratively or through an addendum to the FEIR. In addition, federal permits and studies are frequently required, for example, from USFWS or USACE before construction can begin or as a mitigation measure. These are routine requirements that cannot logically be considered illegal mitigation measures as PG&E argues in its comments on the proposed decision.

route, and would have no significant land use impacts. Construction of any underground transmission line through the North Livermore area would result in several land use impacts that can be mitigated to less than significant levels; these impacts relate to construction impacts on cattle grazing, and noise and dust impacts to residences.

The L1 alternative would be located adjacent to an operating Federal Communications Commission monitoring station, and the electrical equipment in the substation could affect FCC operations. Mitigation is proposed to ensure that operations would be minimally affected, so the impact would be less than significant. This alternative would also conflict with the North Livermore Specific Plan Alkali Sink Reserve Policy because of the potential for the underground duct bank to disturb subsurface water flow into the Reserve. This policy conflict is a significant and unmitigable impact. Other impacts (mitigable to less than significant levels) would exist due to conflicts with lighting policies in this rural area.

The L2 alternative would have the same impacts as the S1 alternative from the south end to Stanley Boulevard. North of that point, the only identified land use impact results from height of the overhead towers adjacent to the Livermore Municipal Airport. While the alternative was designed to minimize impacts to the airport, a mitigation measures in the land use analysis recommends 4,000 feet of additional undergrounding to increase airport safety.

10.4.4 Construction Impacts

There is a range of construction impacts that would affect any alternative requiring underground construction within roadways. The following

impacts are considered to be potentially significant, but mitigable to less than significant levels with implementation of mitigation presented in the EIR:

- Potential impacts associated with fugitive dust emissions generated during construction activities;
- Road and lane closures;
- Physical damage to roads and sidewalks;
- Impaired property access;
- Increased traffic safety risks to pedestrians and bicyclists;
- Potential interference with emergency response vehicles;
- Use of public roads and parking for construction activities and interference with public transit; and
- Construction equipment utilized to construct transmission towers and/or underground segments could have adverse impacts on access roads not built to handle heavy trucks.

Other construction impacts were identified in the EIR, but were found to be less than significant. These impacts include:

- Short-term exhaust emissions from construction equipment;
- Intermittent and continuous noise levels during transmission line and substation upgrade construction;
- Noise associated with passing trucks and commuting worker vehicles during construction activities.

In comparison to an underground transmission line, construction impacts are substantially reduced for an overhead transmission line because construction occurs primarily at tower sites which are spaced about 1,000 feet apart.

10.4.4.1 Pleasanton Area

PG&E's proposed project includes a combination of overhead and underground construction. Because of the narrow streets utilized for the underground portion of PG&E's proposed project, the construction impacts for residents along that portion of the project would be magnified,

although would still be considered mitigable to less than significant levels with implementation of mitigation measures.

Types of construction impacts caused by all routes would be similar, the differences will occur in the duration and intensity of the impacts. Because the S1 alternative is primarily overhead (5.5 miles of the 6.6 mile long route), construction would occur more quickly and with less extensive impacts than PG&E's proposed project. Because alternative S1 would be constructed along major roadways (Isabel Avenue and Stanley Boulevard), there may be more traffic impacts than for the proposed project, but because these are overhead segments and there will be no construction within the roadway itself, impacts would be less than significant. Construction along Isabel Avenue may conflict with ongoing roadway construction. The installation of overhead transmission lines along the north side of Stanley Boulevard to the Vineyard Substation could interfere with passenger and freight train operations on the Union Pacific Railroad (UPRR) tracks but these impacts can be mitigated to less than significant levels.

The greater extent of underground construction for the S2A/S2 alternative (5.9 miles) would result in more extensive construction impacts (though impacts would still be less than significant with implementation of recommended mitigation). Underground construction activities involve earth-moving operations (e.g., trenching, augering, grading) and soil disturbance from construction equipment (especially over unpaved roads adjacent to Vineyard Avenue) that would generate dust (PM_{10} emissions). Exhaust emissions from construction equipment would also create adverse, but less than significant impacts.

Alternative S2A/S2 could potentially intensify the impacts associated with trenching and earth moving activities in the planned realignment of Vineyard Avenue between Clara Lane to east of the Ruby Hills area if the two projects coincide. These impacts are less than significant with implementation of mitigation. If Neal Elementary School is in operation at the time of construction, there could be temporary noise disturbance around the school. However, this disturbance would be reduced with the use of New Vineyard Avenue (located further from the school buildings) and with implementation of mitigation measures L-1 and L-2.

The trenching needed to construct the S2A/S2 alternative is expected to have an impact on the physical condition of the roadways and on traffic flows. Diversion of through traffic flows away from Vineyard Avenue and onto Stanley Boulevard and other streets could cause increased traffic delays and increase the potential for operational and safety problems.

Construction impacts of the S4 alternative would be similar to those of PG&E's proposed project to the point where the route meets Vineyard Avenue, and then similar to those of the S2A/S2 alternative along Vineyard Avenue and Bernal Avenue. Because the S4 alternative would require underground construction through 0.8 miles of open space south of Vineyard Avenue, resulting in construction traffic and disturbance of unpaved areas, air quality impacts would be greater than for construction along roadways (though still mitigable to less than significant levels). However, noise impacts may be reduced because of the lack of sensitive receptors along the underground portion of the route.

The S5 alternative would have the same types of construction impacts as the proposed route. However, because this alternative is nearly all overhead (so limited trenching would be required except for the creek crossing) and would pass through unpopulated areas (through the quarry and along Stanley Boulevard), fewer people would experience construction impacts and they would be less severe than those along Vineyard Avenue and Bernal Avenue.

10.4.4.2 Dublin Area

PG&E's proposed project for Dublin would require grading and leveling of the substation site, rebuilding of existing and construction of new roads to reach the substation site and transmission line facilities. These construction requirements will have some impact on hydrology because of the increased sedimentation in streams. Because the proposed Dublin transmission facilities are overhead, and located in remote areas, exposure to construction impacts will be limited. For the D1 alternative, the substation site is relatively flat, and is located in an area undergoing development. D1 contains some underground construction, in developing areas and near mining facilities and away from residential uses. The D1 alternative does require boring under I-580 which would result in construction of a bore pit and receiving pit adjacent to the freeway. There would be short-term noise and dust associated with these activities.

10.4.4.3 North Livermore Area

Construction in the North Livermore area would involve installation of the underground transmission line along existing roadways, construction of a new five-acre substation, and construction of underground and overhead transmission lines connecting North Livermore to

the proposed Dublin Substation. Because there is sparse residential development and relatively little traffic in this area, exposure to construction impacts (i.e., noise, dust, and traffic disruption) would be limited. There is one residence within 200 feet of the substation and two others within 300 feet of the environmentally superior underground transmission line, but because construction impacts would be short-term and several Applicant Proposed Measures would reduce the level of these impacts, impacts are considered to be less than significant.

10.4.5 Growth Inducing Impacts

Although population and employment growth in the Tri Valley area is growing rapidly and is not driven by PG&E's proposed project, there is potential for PG&E's proposed project in Dublin and North Livermore to accommodate growth beyond levels currently permitted by local regional plans and policies. The FEIR finds that PG&E's proposed project locations in Dublin and North Livermore present a significant, unavoidable growth inducing impact. This conclusion is based on existing regional plans and policies, the location of development in these and surrounding areas, and PG&E's load projections.

The passage of Measure D prohibits intensive development of land in the North Livermore area because it is outside of the urban growth boundary. Given this prohibition, it makes minimal sense to site a substation in the North Livermore area unless the capacity resulting from the construction of the new substation and transmission lines is designed to induce growth beyond that which is already permitted.

Likewise, with respect to PG&E's proposed Dublin substation location, PG&E projects much higher distribution feeder costs for that location than for the D1 location. (Exhibit 2, p. 9.) These estimates indicate that the load

expected to be served by the substation is located more remotely from PG&E's proposed Dublin substation than the D1 alternative. "The commercial and industrial growth in Dublin is concentrated along the I-580 freeway corridor, and the high-tech companies locating in this area have very high demands for electric power." (Exhibit 1000, p. B-55.)

Thus we agree with the FEIR analysis that PG&E's proposed Dublin and North Livermore substations, specifically at PG&E's proposed locations, present a significant growth inducing potential. By locating the substation closer to the planned and permitted load, the D1 alternative eliminates this growth inducing potential. With respect to North Livermore, it is not that load in the Livermore-Las Positas DPA is not growing or will not do so absent PG&E's proposed project, it is a matter of where the load is growing. North Livermore is not where the load growth is. This assessment is confirmed by the materials PG&E sought official notice of on June 6, 2001. Given the development projections, a significant growth inducing impact would occur if PG&E's proposed North Livermore substation and attendant transmission lines were constructed.

10.5 Health and Safety Issues

The prevalent concerns raised by parties and by the public at public participation hearings focused on two areas: electric and magnetic fields (EMF) and the safety of high-voltage electric facilities.

10.5.1 Electric and Magnetic Fields

Electric and magnetic fields (EMF) are present in the existing environment both naturally and as a result of human activities that use electricity. According to the DEIR, research on ambient magnetic fields in homes in several western states found average magnetic field levels to be approximately

1 milligauss (mG), while in the immediate area of appliances, the measured levels ranged from 9 to 20 mG. Electric and magnetic fields above and beyond ambient levels will be generated as a result of the project. (Exhibit 1000, p. C.9-4.) The EMF levels from the project are within the range anticipated for power lines of this type and size. The fields from the project will be very localized since field strength attenuates rapidly as distance from the source increases.

Presently, there is no scientifically established cause and effect relationship between EMF exposure and health effects, although significant research and discussion continues on the subject. EMF levels from transmission lines are not regulated nationally although several states have established maximum electric and magnetic field levels, for transmission lines, maximum magnetic field exposure levels are generally 150 mG or greater at the edge of the right of way. (Exhibit 1000, C.9-8.) The Commission has not adopted any specific limits on EMF. Instead, we have directed the utilities to fund a research program on the health effects of EMFs, and we require utilities to adopt "low-cost" or "no-cost" EMF mitigation measures for transmission lines and substations such as those included in the proposed project and alternatives.

D.93-11-013 created the California Electric and Magnetic Fields Program to research and provides education and technical assistance on the possible health effects of exposure to electric and magnetic fields from powerlines and other uses of electricity. Ongoing research and policy analysis for this program is being led by the California Department of Health Services (DHS). In addition to funding research and policy analysis on this issue, the EMF program provides education and technical assistance to government agencies, professional organizations, businesses, and members of the general public.

During this case, there was extensive testimony and cross-examination regarding EMF issues. For example, the Pleasanton Parties recommend that the transmission line be sited away from residential areas as one means of mitigating EMF exposure, even if such transmission lines are located underground. The Pleasanton Parties argue that PG&E has not fully evaluated the EMF impacts of locating its proposed project in a residential neighborhood. The Pleasanton Parties stress that the neighborhood most affected by PG&E's proposed project, Kottinger Ranch, is home to numerous children, and that the children walk and ride their bicycles to the neighborhood school along the route the transmission line would traverse. PG&E Witness Herz described PG&E's EMF mitigation procedures during the design process (once a route is certified by the Commission), but indicated that EMF levels are not considered as part of the initial routing decisions by PG&E. (PG&E:Herz, RT 584.)

During cross-examination of PG&E witness Herz, the Pleasanton Parties introduced excerpts from a study prepared by the National Institute of Environmental Health Sciences (NIEHS) entitled "Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields" as evidence that care should be given when siting transmission line near homes and children. The study concludes:

> The scientific evidence suggesting that [extremely low frequency] ELF-EMF exposures pose any health risk is weak. The strongest evidence for health effects comes from associations observed in human populations with two forms of cancer: childhood leukemia and chronic lymphocytic leukemia in occupationally exposed adults… The NIEHS concludes that ELF-EMF exposure cannot be recognized as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard. In our opinion, this finding is insufficient to warrant aggressive regulatory concern. However, because virtually everyone in the United States uses electricity and

> therefore is routinely exposed to ELF-EMF, passive regulatory action is warranted …. The NIEHS does not believe that other cancers or non-cancer health outcomes provide sufficient evidence of a risk to currently warrant concern. (Exhibit 201, pp. ii-iii.)

The same study, in its recommended actions section, states:

> The NIEHS suggests that the level and strength of evidence supporting ELF-EMF exposure as a human health hazard are insufficient to warrant aggressive regulatory actions; thus, we do not recommend actions such as … a national program to bury all transmission and distribution lines. Instead the evidence suggest passive measures such as a continued emphasis on educating both the public and the regulated community on means aimed at reducing exposures. NIEHS suggests that the power industry continue its current practice of siting power lines to reduce exposures and continue to explore ways to reduce the creation of magnetic fields around transmission and distribution lines without creating new hazards. (Exhibit 201, pp. 37-38.)

Based on this paragraph, it appears that NIEHS considers a program of undergrounding of transmission lines as an aggressive regulatory response to the current scientific evidence regarding EMF exposure. From this language we conclude that NIEHS also would consider undergrounding transmission lines a means of minimizing EMF exposure. PG&E's proposed project and a number of the alternatives studied include the use of underground transmission construction. Although the use of underground transmission is not proposed to address EMF levels, placing transmission lines underground does reduce EMF levels. Where underground transmission is used in lieu of overhead, electric fields from the line would essentially be eliminated. In addition, undergrounding results in a substantial decrease in the magnetic field strength. For example, according to the DEIR, burying the underground portion of the Pleasanton area transmission segment 2 feet deeper reduces the magnetic field

21%, from 6.3 mG to 5.0 mG, at a cost of approximately $1.6 million. (Exhibit 1000, p. ES-23.)

The DEIR describes the expected magnetic field levels for the project. The magnetic field from the proposed overhead transmission lines is below 20 mG at the edge of the right-of-way, dropping to approximately 6 mG at 50 feet from the edge of the right-of-way. The magnetic field from the proposed underground transmission lines is 6 mG at the edge of the right-of-way, dropping to below 1 mG at 50 feet from the edge of the right-of-way.[39] (See Exhibit 1000, p. ES-23.) These levels are well within the maximum levels established by other states as maximum exposure levels.

For the overhead portions of PG&E's proposed project and all alternatives, with the exception of S1, the routes are located far more than 110 feet from residences, thus minimizing exposure. (The transmission line would be located in the center of the right of way of 120 feet, i.e., at 60 feet, plus the 50 foot buffer described above.) For S1, without a specific placement of tubular steel poles identified along Isabel Avenue, it is unclear the number of residences located within 110 feet of the S1 alternative route, but it is likely that this alternative would have more exposure, albeit at low levels, on residences than other overhead routes.

Because the underground portion of PG&E's proposed project in Pleasanton is located in relatively narrow residential streets with limitations on where it can be placed due to existing utilities, the possibilities for higher

[39] The overhead right of way proposed for this project is 120 feet wide. The underground right of way proposed for this project is 40 feet wide. (Exhibit 204-A, p. D-4.)

exposure levels are greater than on other underground alternatives. For example, the streets in the Kottinger Ranch neighborhood where PG&E's proposed project is located, are generally about 36 feet wide. (Exhibit 204-A, p. 3-2.) This means that the edge of a standard 40-foot right of way could easily be located within a residence in this neighborhood (depending on where the line is located within the street and the proximity of the home to the street).

In contrast, the routes that travel along the eastern portion of Vineyard Avenue are significantly more distant from residences. Even in the western portion of Vineyard Avenue (as it approaches Bernal Avenue) where residences are located along this street, they are located further from the possible transmission line routes than in PG&E's proposed project. The western portion of Vineyard Avenue has two lanes in each direction and a narrow median. Motor homes, condominiums, and senior housing units in a trailer park border this portion of the roadway with a small setback. (See generally, Exhibit 1000, p. C.7-7.) However, use of a wider road for this route results less exposure to EMFs from the underground transmission line than for PG&E's proposed project. Likewise, the underground transmission components of D1 would be located away from residences, thus minimizing exposure.

We cannot conclude, based on the scientific evidence, whether this level of exposure (approximately 6 mG) associated with PG&E's proposed project in the Pleasanton area would result in a health risk. Near appliances, the ambient magnetic level is higher than the level resulting from installation of the underground transmission line at the edge of the right of way. We can conclude however that PG&E's proposed project's underground portion through Pleasanton, and the S1 overhead alternative along Isabel Avenue, would result in the most exposure to magnetic fields, compared to other alternatives.

10.5.2 Safety of Solid Dieletric Cable Technology

As insulated cable technology has developed, placing electric power lines underground, either directly in the ground or in conduit systems, has become more common. At voltages under 50 kV, the cost differential between overhead and underground construction has decreased to a point where the use of underground distribution has become more prevalent. From a reliability perspective, distribution line failures typically affect only a relatively small number of customers and stocking spare distribution cable is not cost-prohibitive, so failure repair time can be kept to a minimum.

From a technical standpoint, improvements in underground cable insulation and use of concrete encased duct bank construction have both resulted in improved reliability for high-voltage underground lines. Unlike distribution failures, that loss of a transmission circuit can affect a very large number of customers. This fact, coupled with the longer repair time associated with more complex transmission systems, results in limited application of underground transmission lines. In addition, the cost differential between overhead and underground construction for transmission lines remains significant and is the primary reason that underground technology has not seen widespread use at transmission voltage.

Electricity, whether from house wiring, neighborhood distribution lines, or transmission lines, is a potential shock and fire hazard. Local, state, and national codes regulate the design, construction and operation of all electrical facilities. These codes include minimum insulation levels and clearances that needed to be provided for correct operation and to safeguard workers and the public. Overhead and underground lines each must meet different code requirements. Overhead lines typically use a bare overhead wire

attached to insulators supported on wood or steel structures. For underground lines an insulated cable is used, which is either direct-buried or placed in ducts.

The primary differences between underground distribution lines, which are very common in cities and neighborhoods across the country, and underground transmission lines is the size of cable used and the type and amount of insulation on the cable. Underground transmission lines have been much less common because of their high relative cost and the time needed to develop insulation materials for higher voltages. However, experience with underground transmission lines covers over 30 years of installation in a range of land uses, from congested downtown areas, to commercial, residential, and even submarine environments. Within PG&E's service area there are several underground 230 kV segments. Sacramento Municipal Utility District's service area includes eight different underground transmission segments (between 115 kV and 230 kV) totaling 17.5 miles.

In the event of transmission line failures or cable faults, the public is protected from shocks through high speed relaying and circuit breakers that detect faults and de-energize the transmission line in fractions of a second. Further, for underground installations of the type proposed by PG&E, several feet of earth and concrete separate the public from the cables.

Underground power lines provide a reliable means to transmit power. A reliability benefit of underground lines is that they are protected from vehicle collisions or wind-blown debris, which both contribute to outages for overhead lines. Underground lines are susceptible to dig-in by construction contractor's equipment; however, in new transmission installations it is typical to place a concrete cap above the cables or to encase them in a concrete duct entirely (as proposed by PG&E) to protect from this type of outage.

In the event of a transmission line outage, overhead facilities are typically quicker to repair since the materials needed are much more common.

PG&E has proposed to utilize solid dielectric cable for the underground portion of its proposed project. The cable would be placed in a concrete duct bank for protection. Because this project is a 230 kV double circuit transmission line, it would consist of 6 single-phase cables. Solid dielectric cables generally consist of a conductor (the energized part of the cable), a conductor shield (to reduce stress in the conductor-insulation interface), insulation, and outer shields. Solid dielectric cables use an extruded polyethelene material for insulation.[40]

In the United States, the most widely used underground transmission technology utilized has been high-pressure oil-filled pipe-type cable. (The underground transmission facilities PG&E currently operates are oil-filled.) In contrast, in Japan, solid dielectric cable is increasingly replacing existing oil-filled cable types. Technology developments over the past two decades have improved the costs and reliability of solid dielectric cable. (Exhibit 1002, p. F-3.) The main advantages of solid dielectric cables compared to oil-filled cables are a decrease in fire hazard, less maintenance, reduction in transition space requirements, easier and less expensive cable installation, and shorter repair time. The main disadvantage of this technology was seen in the 1970s when insulation deteriorated and caused an eventual breakdown of the cable as

[40] Insulation is the most critical cable component because it isolates the energized conductor from electrical ground and the environment.

a result of "treeing".[41] This treeing phenomenon has been greatly reduced by modern dry curing techniques resulting in reliable operation of solid dielectric cable operations in France and Japan at the 225 kV to 500 kV levels since the 1980s. (Exhibit 1002, p. 1-6.)

PG&E argues that solid dielectric cables are extremely reliable at the 230 kV voltage and includes failure statistics for installations in France and Japan. Relay, fault detection and protection equipment de-energize the system within milliseconds of a fault occurring, which virtually eliminates the possibility for damage to the cable system or other property. (Exhibit 1, p. 126.) In addition, installation of each cable in separate ducts encased in concrete prevents an electrical fault in one cable from damaging another cable. PG&E indicated that the first United States installation of 230 kV solid dielectric cable (1992) failed twice shortly after being energized due to inadequate electrical connections between the cable sheath and cable core, but that the problem was corrected and no failures have occurred in the United States since then. In addition, PG&E argues that solid dielectric cables, due to their lack of insulating oil, are environmentally superior to use of oil-filled cable types.

Witness Phil Richardson, for the Pleasanton Parties, testified that residents in his neighborhood (Kottinger Ranch) are worried about failure of underground transmission facilities endangering their families. The Pleasanton Parties included copies of newspaper articles about explosions and fires caused by PG&E electrical equipment as evidence of the validity of their fears. They indicate that although failure rates may be low, the impact of a catastrophic

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[41] Treeing occurs when conductor surface imperfections result in points of electrical stress concentration that cause flaws in insulation.

failure would be more significant within small residential streets than in open fields or industrial areas. The Pleasanton Parties indicate there is really no way to mitigate this risk other than by siting transmission lines in non-residential areas. The Pleasanton Parties also argue that since this is PG&E's first experience installing solid dielectric cable, additional caution is warranted with respect to safety concerns. (See generally Exhibit 204-A, pp. 3-16-18.)

PG&E counters that the fears expressed by the Pleasanton Parties are unfounded. PG&E argues that the news articles included by the Pleasanton Parties were not related to solid dielectric transmission lines or 230 kV facilities and thus are not relevant to the safety of this technology. In addition, PG&E argues that because the protection equipment PG&E will install will immediately de-energize the line, energy will not build up that could cause a fire or explosion as described in the Pleasanton Parties' articles.

We find that solid dielectric cable technology is safe for installation in all types of land uses, including residential areas, as long as it is protected by a concrete duct bank and appropriate relay, fault detection and protection equipment. Based on the record developed here, solid dielectric cable has significant advantages over oil-filled underground transmission cable types, both in terms of environmental and reliability impacts. The fears of the Pleasanton Parties about explosions and fire caused by solid dielectric cable do not have support in the record. Thus we find that no underground routes should be eliminated due to safety concerns associated with use of solid dielectric cable.

10.6 Cost

PG&E prepared cost estimates for its proposed project and all alternatives studied. (See Exhibits 2, 16, 17, C17, C306, and C307 and PG&E's June 4, 2001 Cost Information Filing.) For purposes of the cost estimates, two

primary cost areas varied: transmission line construction and land costs. Each are addressed in turn.

10.6.1 Construction Costs

For purposes of its proposed project, PG&E developed "project specific unit cost estimates". PG&E developed detailed cost estimates for its proposed project in Pleasanton, Dublin, and North Livermore based on the proposed route specifics, terrain, and construction requirements. This approach resulted in a $/mile construction cost specific to PG&E's proposed project. For example, for PG&E's proposed project in Pleasanton, PG&E's unit cost for underground construction is $6,281,829/mile and for overhead construction is $1,146,051/mile. Overhead construction costs for PG&E's proposed project in Dublin and North Livermore are $824,581/mile and $788,006/mile for PG&E's Phase 2. These costs differ between phases and locations because of differing construction settings, the need to construct roads in order to build the project, and the difficulty getting materials to the site. PG&E then applied these "unit costs" to the alternatives developed in order to arrive at an estimate of construction costs for each alternative. PG&E did not adjust its estimates to account for construction in easier (or more difficult) terrain or other construction requirements. In addition, PG&E's cost estimates for construction costs include a 25% contingency factor to account for unforeseen construction costs. ORA raised issues with the contingency factor[42] but no other party addressed PG&E's overhead construction cost estimates.

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[42] ORA recommended PG&E's Phase 1 total project costs be reduced due to overstated inflation and contingency factors (Exhibit 100). ORA developed its reduction by cutting

Footnote continued on next page

As we can see from PG&E's own estimates of overhead construction costs, the route selected can have a significant impact on construction costs. It stands to reason that if routing can result in a significantly different unit cost for overhead transmission line construction, such a result could also occur along an underground route. Thus to assess the validity of PG&E's cost estimates for underground alternatives we must compare the routes and the difficulty of construction. In the Pleasanton area, PG&E's proposed project travels underground along an area of some geologic instability, which PG&E admitted may require special excavation and construction techniques. (PG&E:Johnson, RT 501, 502, 506, 509.) Likewise, once PG&E's proposed project enters city streets it will be subject to work hour restrictions, narrow streets, and utility conflicts below the streets. Because of conflicts with existing utilities and the narrow area within which the duct bank can be located, hand excavation work will be required. (PG&E:Johnson, RT 486, 520-522.) In contrast, along the S2A/S2 alternative, trenching will occur along flat, easy to excavate routes that are not subject to the same work restrictions as PG&E's proposed route. Thus we conclude that PG&E's unit cost estimate likely overstates the per mile construction costs of the S2A/S2 alternative. Since the underground segments of S1 and S2A/S2/S5 correspond to the S2A/S2 route, overstatement of costs for these alternatives also results from use of PG&E's unit cost estimate.

In its reply brief PG&E argues that the S2A/S2 alternative shares similarities of terrain and construction impediments with PG&E's proposed route. Based on our review of the record developed in this case, we

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the costs associated with contingency and inflation factors for both overhead and underground construction.

disagree, and find that PG&E's underground unit cost estimate overstates the cost per mile to construct the alternative Pleasanton area routes, except for S4. S4, like PG&E's proposed project, traverses a very hilly area once it converts to underground until it converges with S2. We conclude that PG&E's unit cost estimate is applicable to the S4 route until it reaches Vineyard Avenue and then we should adopt a reduced per mile cost for the remainder of the underground route.

We cannot conclude exactly what the appropriate cost per mile of underground construction is for the S2A/S2 route based on the record. The Foley Intervenors proposed an alternative cost per mile that is based on an estimated cost for undergrounding a single circuit made by one of PG&E's engineers (Exhibit 305) and then adding the cost of purchasing an additional circuit worth of cable. We do not adopt this methodology because it does not reflect certain key aspects of cable installation like splices and manholes and thus underestimates the cost per mile of underground construction. However, the Foley Intervenors are correct that PG&E's unit cost estimate includes items that are likely to be one time costs rather than recurring per mile costs.[43] We conclude that it is appropriate to adjust the cost estimate for underground construction for S1, S2A/S2, and S2A/S2/S5 downward by 10%. The resulting cost estimate is $5,653,646/mile. This adjustment is well within the 25% contingency established by PG&E and still allows for a 15% contingency factor. For S4/S2, 0.8 miles of

[43] For example, PG&E's unit cost estimate includes the cost of a horizontal bore under Arroyo del Valle Creek before its proposed project enters the Vineyard substation. This is not required again as the miles of underground construction increase. In theory, to arrive at a proper cost per mile, this cost element should be removed.

underground construction should be calculated at PG&E's unit cost rate[44] and 2.1 miles at the lower cost described for S2A/S2. For S4/S5, 0.8 underground miles should be calculated at PG&E's unit cost rate and 0.8 miles at the lower S2A/S2 rate. In its comments on the proposed decision, PG&E argues that this adjustment is unsupported by the evidence. Multiple parties presented testimony regarding overstatement of costs to construct (ORA, Foley Intervenors, Pleasanton Parties). The 10% adjustment adopted by the proposed decision is well within the range of positions advocated by parties and is supported by the record.

For the environmentally superior D1, we will rely on PG&E's underground unit cost estimate. Although the terrain is generally flat for this route, it requires an underground bore under I-580 that increases its complexity compared to typical flat routes. Therefore it appears comparable to PG&E's proposed project in Pleasanton in terms of difficulty of construction. However, we note that instead of using the overhead unit cost estimate it derived for its proposed Dublin substation to estimate construction costs for D1, PG&E instead utilized its Pleasanton area overhead unit cost. In addition, PG&E's cost estimate for its proposed project in Dublin only includes 4.9 miles of overhead construction. This would only bring the line to the intersection of North Livermore and Manning Road, to reach the Contra Costa-Newark line is another two miles. In comparing alternatives we will adjust PG&E's proposed project cost estimate to reflect construction costs for the entire length of the project (6.9 miles) using the same unit cost basis PG&E used in its estimate for D1. We also

[44] It is approximately 0.8 miles from the S4 transition station to Vineyard Avenue.

note that PG&E does not explain the cost differences for construction of the different Dublin substations or distribution feeder costs. However, based on the screening requirements for D1 compared to PG&E's proposed Dublin substation, we find it reasonable to assume that the cost for D1 will be higher than for PG&E's proposed project. Likewise, given that D1 is much closer than PG&E's proposed project to the Dublin load it is designed to serve it also is reasonable to assume that the D1 distribution feeder costs will be less than for PG&E's proposed project. Therefore, we make no adjustments to PG&E's estimates for these two line items.

PG&E's cost estimates for North Livermore alternatives do not always allow for direct comparison to one another. For example, PG&E's P2 estimate in Exhibit C17 included costs associated with part of the line west of North Livermore Avenue whereas PG&E's proposed North Livermore project cost estimate included construction and land costs only to the east of North Livermore Avenue. For purposes of comparison, we have included in the Dublin alternatives table, several transmission configurations to serve Dublin once the transmission line reaches the North Livermore area. We have utilized the same overhead construction cost estimates for North Livermore as for Pleasanton and Dublin. For underground construction cost for North Livermore alternatives (and for Dublin alternative once they enter the North Livermore area), we have relied on the same 10% adjustment we adopted for Pleasanton area alternatives. PG&E's proposed North Livermore project cost includes the cost associated with undergrounding existing distribution facilities along North Livermore Avenue as part of its proposed visual mitigation.

10.6.2 Land Costs

As part of its cost estimates, PG&E estimated the cost of acquiring easements along its proposed project and the alternatives studied. PG&E based the estimates on an appraisal of land values throughout the Tri Valley area. The appraisal developed cost ranges for various types of land uses, for example, agricultural, residential, gravel lands are each valued differently in the appraisal. PG&E then selected a cost for the easement acquisition based on the appraisal range and additional information it obtained through consultations with landowners, municipalities, and others. (Exhibit 3, p. 14.) PG&E states that its estimates include costs associated with eminent domain proceedings, if required. (Exhibit 3, p. 14.) PG&E's land cost estimates reflect its assessment of the current highest and best uses of the properties over which it would need to acquire an easement.[45] PG&E's estimates include contingency costs, eminent domain payments, and filing fees in the event an eminent domain proceeding is necessary.

There was considerable dispute over the proper valuation of several portions of the Pleasanton area routes. For example, the Pleasanton Parties and the Foley Intervenors take issue with the value PG&E estimates for portions of its proposed project on Foley and other landowners' property. PG&E

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[45] The specific figures for each land use from the appraisal are included in Confidential Exhibits C307 and C17 and PG&E's June 4, 2001 Cost Information Filing. Likewise, PG&E's estimated costs for specific parcels along each alternative studied are identified in the same exhibits. The assigned ALJ allowed confidential treatment for those figures so as not to provide an advantage to any party in negotiations for an easement. However the aggregate land cost data is public, allowing for a discussion of the costs of the different alternatives.

has valued the property as agricultural land. The Pleasanton Parties assert that the highest and best use of the property is as high-end residential development and should be valued at $100,000 per acre. (Exhibit 204-A, p. D-3.) In addition, the Pleasanton Parties argue that PG&E must calculate severance damages for EMF impairment and visual impairment. The Pleasanton Parties calculate EMF impairment by determining how much land outside of the actual easement would have EMF exposure levels above 1 mG. This amount of acreage is then multiplied by the $100,000 per acre land value to arrive at the severance damages for EMF impairment. A similar approach was used to calculate severance damages for visual impairment except that the Pleasanton Parties assumed that the loss in value per acre is only 15% of the $100,000 per acre value. PG&E calculated land costs of $2,097,000 for its proposed project in Pleasanton; the Pleasanton Parties calculate $4,073,000 for the value of the easement, $18,457,000 for EMF impairment, and $8,580,000 for visual impairment for a total of $31,110,000 for PG&E's proposed project. (Ex 204-A; p.D-10.)

The Foley Intervenors argue that it makes no sense for PG&E to assume that the cost of acquiring an underground easement along a fire break or dirt frontage road (like the S2A/SA alternative) is more than the cost of acquiring an easement for placement of overhead transmission facilities. (Foley Opening Brief, p.21.) Specifically the Foley Intervenors compare costs to acquire easements along the S2A/S2 route (all underground) to PG&E's proposed Project in Pleasanton.

The Foley Intervenors argue that set back requirements along Vineyard Avenue limit the ability of property owners to develop their properties along the S2A/S2 alternative (Exhibit 1000, C.7-7, PG&E:Jones, RT 1499.) Thus, the Foley Intervenors argue, there is no permanent effect associated with granting an easement underground along the S2A/S2 route. In contrast, the Foley Intervenors argue, overhead lines will permanently affect the development potential of the Foley property allowing a claim of severance damages. Therefore the Foley Intervenors argue that either the valuation of the right of way for PG&E's proposed project is too low, or the valuation is too high in the costs it assigns to the S2A/S2 alternative.

Centex offered testimony by an appraiser who valued the Foley property at between $12,000 and $40,000 per acre based on his assessment of the highest and most profitable use, current zoning, status of development efforts, and comparable properties. (Exhibit 701 at Exh A.)

It is not our role to assess the actual value of the easements PG&E must acquire for its proposed project or the alternatives studied. However, we engage in this discussion in order to assess the validity of the land cost estimates offered by PG&E in order to arrive at a legitimate cost estimate for

each route under consideration. For this reason, we provide some brief background on assessing the fair market value of an easement.

First, the fee simple[46] of the strip taken, before and after imposition of the easement, is valued. Pacific Gas & Electric Co., v. Hufford, 49 Cal. 2d 545, 553, 319 P.2d 1033 (1957). The difference in the before and after values is the value of the easement. Id. This computation is made based on the quantity and quality of the rights in the fee taken by the easement, equated to a percentage of the fee value. County Sanitation District No. 8 of Los Angeles County v. Watson Land Company, 17 Cal. App. 4th 1268, 22 Cal. Rptr. 2d 117 (1993). For example, a right to use the surface of the land takes essentially the entire fee interest, leaving the owner of the fee with only a nominal value or right of reverter. People ex rel. Dept. Pub. Works v. Schultz Co., 123 Cal. App. 2d 925, 268 P.2d 117 (1954). In such a case, the value of the easement may be 99 percent of the fee value. On the other hand, an underground sewer easement may leave the fee owner with substantial use of the strip. In such a case, the value of the easement may be a much smaller percentage of the fee value, e.g., 25 to 50 percent. Hufford, at 553.

BAJI No. 11.78 offers the following jury instruction on how to determine the fair market value of an easement:

> In this proceeding the plaintiff seeks to acquire an easement in [a portion of the] land owned by the defendant. The term "easement" means a right to use the land of another for certain specific purposes. The defendant will retain the right to use this land in which the easement is sought for any and all purposes which are not

[46] The fee simple or fee interest is ownership of the subject property. An easement is the right to use property owned by another.

> inconsistent with the construction and maintenance thereon of a (highway, storm drain, power line, etc.).
>
> If the land subject to the easement will still have some market value after the taking of the easement and the construction of the improvement in the manner proposed, the plaintiff is required to pay only the decrease in market value that results from the easement.
>
> Thus, in determining the compensation to be awarded for taking the easement, you must first determine the fair market value of the land in which the easement is sought and then determine the value of the same land as it will be subject to the easement and the construction of the proposed improvement. The difference between these amounts will be the value of the easement.

Of the property types affected, gravel mining property has one of the highest values in PG&E's appraisal. Gravel is considered a mineral and "[i]n determining just compensation in eminent domain proceedings, the existence of valuable mineral deposits in the land taken constitutes an element which may be considered insofar as it influences the market value of the land." (26 Am.Jur.2d, Eminent Domain, § 338 p. 751.)

The Foley Intervenors' arguments about the relative value of land costs along Vineyard Avenue appear to be supported by the legal framework for valuing easements. The record demonstrates that the route that S2A/S2 would follow could not be developed to its full potential given existing setback requirements. Given this fact, the before and after value of the properties along Vineyard Avenue would appear quite similar, arguing for a easement cost well below the fee interest in the properties.

The Pleasanton Parties argue that the Foley, Lin, and General Electric Property should be valued based on residential uses rather than as

agricultural land as PG&E has estimated. PG&E and Centex disagree, arguing that such a use is too speculative at this time for that use to be considered the highest and best use of the Foley property. PG&E has however valued the adjacent Lin property as residential potential. PG&E places a higher value on the Lin property because a development plan has been completed for the property, even though Pleasanton voters adopted a law prohibiting residential development proposed on the property. We cannot determine whether a jury in an eminent domain action would agree with PG&E's assessment of the highest and best use of the property along its proposed route.

Because alternatives that travel through gravel mining areas may impact the ability of the property owner to extract the gravel, the land costs associated with routes through these areas are high. However, PG&E has not adopted consistent values for gravel resources throughout its work papers, even for the same segment of a route.[47] In the case of its gravel preserve cost estimates, PG&E does appear to have made some adjustment to its fee simple valuation, likely due to the fact that for the overhead portions of the project, gravel can still be mined throughout the majority of the easement without undermining the safety of the transmission facilities.

Based on a review of Exhibits C17, C307 and PG&E's June 4, 2001 Cost Information Filing prepared for this proceeding, it is clear that PG&E afforded a significantly higher easement value to the alternatives that pass

[47] See for example PG&E's June 4, 2001 Cost Information Filing - Unredacted Version and compare the Job Estimate – Detail Sheet, line item "O/H Gravel Quarry" on the cost estimate for S4 + S5 FEIR East Open Spc + Quarry w Var to the same line item on the estimate for S2AS255 FEIR UG E. Vyrd + Quarry.

underground along Vineyard Avenue than to its proposed project in the Pleasanton area. In addition, PG&E included not just one contingency allocation for land costs, but two.[48] Rather than debate which specific land use should be applied for valuation purposes, we will rely on PG&E's assessment. However, we will adjust PG&E's estimates to remove the ED Contingency line item that appears on the Job Estimate – Detail Sheet.[49] This is further justified because PG&E appears to have generally utilized a fee simple valuation for land over which it seeks an easement without adjustment for the limited decrease in value associated with underground easements. In comments on the proposed decision, PG&E argues that we should not eliminate the Eminent Domain Contingency line item because it relates to the potential for additional costs associated with jury awards in an eminent domain proceeding. Because a property owner is, at most, entitled to fee interest valuation for the easement, and PG&E has utilized fee simple valuation for its initial easement cost estimates, we conclude that it is appropriate to remove the Eminent Domain Contingency from its estimates. We

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[48] This double assessment of contingency costs is clear from a review of PG&E's June 4, 2001 Cost Information Filing and Exhibits C307 and C17. Each alternative costed out in the Response contains four pages of workpapers. Referring to the page entitled Job Estimate – Detail Sheet for each alternative we see a line item called "ED Contingency" which is the Eminent Domain Contingency. That line item is part of the Property and Improvements total that is carried over to the page entitled Job Estimate-Summary Sheet. We see on that sheet that an additional 10% contingency factor is also applied to the entire Property & Improvements line item. Thus PG&E has accounted for contingency costs twice in its estimates. In addition to the contingency factor, PG&E also applies an escalation factor of 5.3%.

[49] On some workpapers in C307 and C17 this item is referred to as "ED Payment", on workpapers in PG&E's June 4, 2001 Cost filing this item is referred to as "ED Contingency".

retain the general 10% land acquisition contingency from PG&E's estimate. As a result of this adjustment, there is further change in the total land costs because PG&E's escalation, capital A & G, and contingency factors are applied to a new value.

PG&E summarized its estimates for alternatives analyzed in the FEIR in Exhibit A to its reply brief. Costs for alternatives are also found in PG&E's Exhibit 2. We summarize PG&E's estimates and our adjustments for the Pleasanton, Dublin, and North Livermore area alternatives in Table 1, 2, and 3. We have relied on the cost adjustments described herein to adjust all of PG&E's estimates for Dublin, Pleasanton, and North Livermore.[50]

[50] In its comments on the proposed decision, PG&E attempts to introduce new evidence regarding land costs in Dublin, parcel size required to be purchased, and new electrical configurations needed to serve a substation at D1. We do not make adjustments to the cost estimates as a result of this late information. PG&E can exercise its rights pursuant to Pub. Util. Code § 1005.5(b) to seek an increase to the project cost cap should it experience increased costs from the estimates it projected during the proceeding.

TABLE 1
ADJUSTED* Project Cost Estimates – PLEASANTON
(Proposed and Alternative Projects)

Phase 1 Project-Pleasanton Area	PG&E's Proposed Project	S1	S2A/S2 w/New Vineyard	S4/S2 w/New Vineyard	S4/S5 w/New Vineyard	S2A/S2/S5 w/New Vineyard
Transmission Line Construction	**$20,169,881.10**	**$12,717,800.11**	**$32,338,855.69**	**$23,905,730.94**	**$17,039,692.35**	**$26,886,228.62**
Overhead	$3,208,942.80	$6,295,258.14	$-	$4,011,178.50	$6,360,583.05	$2,349,404.55
Underground	$16,960,938.30	$6,422,541.97	$32,338,855.69	$19,894,552.44	$10,679,109.30	$24,536,824.07
Land Costs	**$505,494.00**	**$25,911,541.66**	**$6,350,139.18**	**$3,848,597.28**	**$1,191,692.27**	**$16,358,622.19**
Transition Station(s)	**$1,982,885.00**	**$3,965,770.00**	**$1,982,885.00**	**$1,982,885.00**	**$3,965,770.00**	**$3,965,770.00**
Substation Engineering and Construction	**$5,192,734.00**	**$5,192,734.00**	**$5,192,734.00**	**$5,192,734.00**	**$5,192,734.00**	**$5,192,734.00**
Distribution Feeders	**$4,847,000.00**	**$4,847,000.00**	**$4,847,000.00**	**$4,847,000.00**	**$4,847,000.00**	**$4,847,000.00**
Remote Terminal Protection Upgrades	**$427,000.00**	**$427,000.00**	**$427,000.00**	**$427,000.00**	**$427,000.00**	**$427,000.00**
Pleasanton Area Subtotal	**$33,124,994.10**	**$53,061,845.77**	**$51,138,613.87**	**$40,203,947.22**	**$32,663,888.62**	**$57,677,354.81**

*Adjustments derived consistent with the text descriptions.
Underground construction $/mile reduced by 10% for certain alternatives.
Land costs adjusted to remove double contingency factor.
Adjustments rely on data included in Confidential Exhibits C306 and C307, and PG&E's Unredacted June 4, 2001 filing.

TABLE 2
ADJUSTED* Project Cost Estimates – Dublin
(Proposed and Alternative Projects)

Phase 1 Project-Dublin Area	PG&E's Proposed Project	D1	D2	PG&E's Proposed w/P2 (no NL Sub)	PG&E's Proposed w/P2 & P3 (no NL Sub)
Transmission Line Construction	**$7,907,752**	**$7,781,716**	**$13,234,987**	**$20,660,661**	**$27,716,411**
Overhead	$7,907,752	$2,756,253	$4,536,070	$4,819,144	$4,819,144
Underground	$-	$5,025,463	$3,699,997	$15,841,516	$22,897,267
Reconductoring	$-	$-	$4,998,920	$-	$-
Land Costs	**$2,196,009**	**$17,184,201**	**$1,327,889**	**$2,542,866**	**$2,664,484**
Transition Stations		**$1,982,885**	**$1,982,885**	**$3,965,770**	**$3,965,770**
Substation Engineering and Construction	**$7,654,000**	**$8,069,969**	**$7,654,000**	**$7,654,000**	**$7,654,000**
Distribution Feeders	**$4,885,000**	**$1,474,880**	**$4,885,000**	**$4,885,000**	**$4,885,000**
Existing Substation Modifications			**$1,000,000**		
Dublin Area Subtotal	**$22,642,760**	**$36,493,651**	**$30,084,762**	**$39,708,297**	**$46,885,666**

*Adjustments derived consistent with the text descriptions.
Overhead construction costs utilize PG&E South Area $/mile unit cost.
Underground construction costs utilize PG&E $/mile unit cost for D1 and D2, but are adjusted downward for other alternates.
Land costs adjusted to remove double contingency factor.
Adjustments rely on data included in Confidential Exhibits C17, C306, and C307 and PG&E's Unredacted June 4, 2001 filing.
PG&E's Proposed w/P2 includes the land costs associated with North Livermore Substation, but not construction costs.
PG&E's Proposed w/P2/P3 includes the land costs associated with North Livermore Substation, but not construction costs.

TABLE 3
ADJUSTED* Project Cost Estimates – North Livermore
(Proposed and Alternative Projects)

Phase 1 Project-North Livermore Area	PG&E's Proposed Project	PG&E's Proposed Project w/P1 (NL Ave. UG)	PG&E's Proposed Project w/P2 (NL Ave/Manning Rd UG)	PG&E's Proposed Project w/P3	L1	L2
Transmission Line Construction	**$5,206,758**	**$8,060,353**	**$17,526,303**	**$13,286,068**	**$5,653,646**	**$24,854,039**
Overhead	$3,552,758	$2,406,707	$-	$-	$-	$4,189,962
Underground	$-	$5,653,646	$17,526,303	$13,286,068	$5,653,646	$20,664,077
Distribution Undergrounding	$1,654,000	$-	$-	$-	$-	$-
Land Costs	**$823,251**	**$951,483**	**$806,126**	**$853,788**	**$1,010,665**	**$24,827,095**
Transition Station(s)	**$-**	**$1,982,885**	**$1,982,885**	**$1,982,885**	**$1,982,885**	**$5,948,655**
Substation Engineering and Construction	**$6,599,735**	**$6,599,735**	**$6,599,735**	**$6,599,735**	**$6,599,735**	**$6,599,735**
Distribution Feeders	**$3,403,000**	**$3,403,000**	**$3,403,000**	**$3,403,000**	**$4,154,340**	**$2,583,020**
Pleasanton Area Subtotal	**$16,032,744**	**$20,997,457**	**$30,318,049**	**$26,125,477**	**$19,401,271**	**$64,812,544**

*Adjustments derived consistent with the text descriptions.
Overhead construction costs utilize PG&E's South Area $/mile unit cost.
Underground construction $/mile reduced by 10% for all alternatives.
Land costs adjusted to remove double contingency factor.
Adjustments rely on data included in Confidential Exhibits C17, C306, and C307 and PG&E's Unredacted June 4, 2001 filing.
North Livermore estimates are standalone for connecting North Livermore substation only.

10.7 Selected Routes

We concluded that the project proposed by PG&E for Phase 2 is not needed at this time, based on power flow modeling. However, we did conclude that a 230 kV transmission connection to the existing Vineyard Substation was needed, as well as a new substation and attendant transmission lines to serve Dublin and North Livermore. We have provided a detailed discussion of the environmental findings and community positions on them, cost, and timing issues for PG&E's proposed project and each of the alternatives studied.

Our job is to balance the need for additional facilities with their impact on the environment, the community, and ratepayers. In this case, the significant environmental impacts are limited. In the Pleasanton area, the only significant impact is the potential for flooding of the facilities due to a catastrophic break of the Del Valle Dam and it is shared equally by PG&E's proposed project and all alternatives. However, although environmental impacts are found to be adverse, but not significant, the various alternatives studied do have different degrees of adverse impact on the environment and the community. As a whole, we would prefer to avoid impacts, even less than significant impacts, when possible when selecting a project route. However, we must balance this interest in avoiding impacts with the cost impacts to ratepayers.

Based on our review of the environmental impacts, we eliminate the S4 and S1 alternatives. S4 has the most potential impact on biological resources of the Pleasanton area routes, without providing any appreciable advantage over PG&E's proposed project. In addition, there are potential visual impacts associated with the overhead portion of this alternative that make it inferior to PG&E's proposed project. S1 clearly has the most visual impacts, albeit at less

than significant levels, of any of the Pleasanton area routes given its long overhead segment along Isabel Avenue and the proximity of residences along the roadway. Neither S1 nor S4 offer advantages from an environmental standpoint over PG&E's project and in fact, appear to result in more adverse impacts than PG&E's proposed project.

We then compare the remaining alternatives, S2A/S2 and S2A/S2/S5, to PG&E's proposed project. The FEIR finds these two alternatives to be the environmentally superior alternatives for the Pleasanton area. Our review of the record supports that conclusion. Because these alternatives travel in or along existing roadways and disturbed corridors, they result in less potential impacts to biological resources than PG&E's proposed project. Because both alternatives utilize wider streets with easy construction access and are located further away from residences, the construction impacts are less than for PG&E's proposed project. In addition, the routes for both alternatives, because of the use of wider roadways, have less potential utility conflicts, making construction along these alternatives easier. S2A/S2 will be entirely underground, eliminating any visual impacts, which is preferred over PG&E's proposed project. Both of these alternatives, because of their longer underground segments, will have more short-term negative impacts on air quality and traffic due to construction compared to PG&E's proposed project. S2A/S2 will travel along a divided four-lane street bordered by residential areas for a short distance. Although short term there will be some residential areas impacted from the construction, placement of S2A/S2 along this route would have fewer impacts than PG&E's proposed project because of the wider thoroughfare nature of the streets. S2A/S2/S5 would eliminate construction impacts to residential neighborhoods by converting to overhead and running within a gravel quarry operation and then

along a heavily traveled industrial corridor. Thus S2A/S2/S5 would be preferred over both PG&E's proposed project and S2A/S2 from a standpoint of short term impacts on residents. However, S2A/S2/S5 would introduce a new long term visual impact, albeit not significant, along the overhead portion of the route. Compared to each other S2A/S2 and S2A/S2/S5 offer tradeoffs. S2A/S2 has more short-term impacts on residences because of construction along Vineyard Avenue. S2A/S2/S5 has more long-term impacts associated with visual impacts and less impact on residential neighborhoods. Each of the environmentally superior alternatives offers improvements over PG&E's proposed project.

The Pleasanton Parties support selection of S2A/S2/S5. They argue that this alternative is most consistent with the values of the community because it avoids locating a high voltage transmission line in residential areas. The Pleasanton Parties argue that the long term adverse visual impact associated with overhead transmission facilities from this route should be weighed against the impacts to residential areas of locating an underground line in the neighborhood.

PG&E argues that because its proposed project does not result in significant environmental impacts we need not adopt any alternative route. It argues that because its proposed project is the least expensive and has had the most engineering work conducted for it, it best meets the need for additional capacity in the Pleasanton area with the least impact to ratepayers. PG&E argues that there are no safety reasons not to locate a high voltage transmission line in residential areas and that the narrow streets of its proposed project do not represent an impediment to construction. PG&E reiterates this argument in its comments on the proposed decision focusing on the fact that there is only one significant impact identified for its proposed route and S2A/S2. PG&E seems to

imply that therefore the impacts are the same. However, the adverse impacts, although not considered significant, do differ between PG&E's proposed project and S2A/S2. The fact that only one significant impact was identified does not make the impacts from the alternatives the same.

As described in Table 1, we have concluded that the cost to construct PG&E's proposed project in the Pleasanton area is $33,124,994. The cost to construct S2A/S2 is $51,138,614. The cost to construct S2A/S2/S5 is $57,677,355. We note that the adjustments we made to the undergrounding cost per mile for S2A/S2 and S2A/S2/S5 are conservative adjustments and likely overstate the actual construction costs given the differences in the difficulty of the construction work compared to PG&E's proposed project. PG&E argues in comments on the proposed decision that the cost differential between PG&E's proposed project and the alternatives should be given more weight in determining which route should be selected. As we describe below, our selection process included a balancing of various factors, one of which is cost.

Although we have concluded that it is possible to construct PG&E's proposed project through narrow residential streets with significant existing utility conflicts and that the solid dielectric cable technology is safe, we will not authorize PG&E's proposed project route despite its cost advantages. First, PG&E's proposed project is not environmentally superior as described above. Second, this is PG&E's first experience installing solid dielectric cable at the 230 kV level. Both S2A/S2 and S2A/S2/S5 offer superior benefits in terms of ease of constructability over PG&E's proposed project. The routes the alternatives traverse are generally flat and straight without significant utility conflicts. Roads the alternatives travel on are wider or under development and thus will have many less impacts on residential neighborhoods. Although short term, the

construction impacts to residents along Benedict Court, Smallwood Court, and Hearst Drive would result in major disruption. This disruption would be much more significant along PG&E's proposed route than on residences along Vineyard Avenue (S2A/S2) where traffic can be routed into other lanes along a much wider street.

Third, although the scientific evidence regarding EMFs is inconclusive and the level of magnetic fields generated from this project will be extremely low, given the other benefits associated with S2A/S2 and S2A/S2/S5, we feel it is prudent to adopt an alternative that avoids placement of a high voltage transmission line within narrow residential streets. This conclusion does not mean that high voltage transmission lines should never be placed underground in the vicinity of residential areas, but simply that given the facts presented here, PG&E's proposed project is inferior to other alternatives available. It is the narrowness of the street, the construction impacts on the neighborhood, the newness of the technology to PG&E, and the fact that it is not environmentally superior that together lead us to conclude that PG&E's proposed project should not be adopted despite its cost advantages.

Thus for the Pleasanton area we are left with S2A/S2 and S2A/S2/S5, the environmentally superior alternatives, to select between. The Pleasanton Parties support S2A/S2/S5 if the Commission does not select its "Improved Isabel-Stanley" route, which was rejected by the FEIR. The Pleasanton Parties argue that this route is preferred over S2A/S2 because of its avoidance of impacts on residential areas. PG&E supports S5, but only if it is combined with S4 which we have previously rejected. PG&E argues that both S2A/S2 and S2A/S2/S5 will require additional consultations with governmental agencies regarding species impacts which PG&E has already begun for its preferred route

and S4 and thus are infeasible from a timing perspective. In addition, PG&E argues that both alternatives include significantly more undergrounding than its proposed project which will inevitably lead to delay. However, we would assume, given this concern by PG&E, that it would prefer S2A/S2/S5 over S2A/S2 because it contains only 4.3 miles of underground construction versus the 5.72 miles[51] of undergrounding.

Despite the fact that S2A/S2/S5 includes less underground construction, PG&E estimates the cost to be higher for this alternative than S2A/S2. This is because the S5 portion of the route traverses gravel mining operations, which increases the land costs for this alternative compared to S2A/S2.

Thus we must evaluate whether the increased cost associated with the S2A/S2/S5 alternative provides sufficient benefits over S2A/S2 to justify its additional costs. We conclude that it does not. Unlike PG&E's proposed project, the S2A/S2 alternative does not involve narrow residential streets. Although there are residences bordering Vineyard Avenue, the construction project, and transmission line upon completion, will be much farther away from them than from residences along PG&E's proposed project, thus the impacts are diminished. The impacts of the S2A/S2 alternative on residential areas are all short term in nature. On the contrary, although not significant, the visual impact of the S5 portion of S2A/S2/S5 is long term. For these reasons, we select the

[51] On June 4, 2001 PG&E filed costs estimates for the routes identified in the FEIR in response to and ALJ Ruling. In that response, PG&E used 5.72 miles to prepare its cost estimate for the S2A/S2 alternative utilizing New Vineyard. We utilize PG&E's figure for purposes of describing this alternative.

S2A/S2 alternative for the Pleasanton area. In comments on the proposed decision, the Pleasanton Parties argue that the S2A/S2/S5 alternative has less impacts on the Neal Elementary School site than S2A/S2 as a reason to reject the S2A/S2 alternative. A review of the record (see specifically Exhibit 1003, Figure B-4 and Exhibit 204, Tab B, Figure 5) shows that both alternatives abut the school property in the exact same manner along New Vineyard Avenue. It is through use of New Vineyard Avenue that impacts to the school site are reduced and is the reason the Pleasanton Parties advocated use of New Vineyard Avenue rather than Old Vineyard Avenue. Thus, we do not modify our conclusion that S2A/S2 is the superior alternative for the Pleasanton area.

In the Dublin area, the FEIR concludes that there is a significant visual impact associated with PG&E's proposed project route. The FEIR proposes several undergrounding variants on PG&E's proposed project that could mitigate the significant visual impacts (all of which PG&E opposes). The D2 alternative, which utilizes PG&E's proposed Dublin substation site would connect the substation to the 230 kV system to the west. However, the D2 alternative carries with it the most impacts on biological resources than any of the routes studied due to reconductoring. However, if reconductoring is not required the majority of D2's biological resource impacts would be eliminated, and D2 would present less overall environmental impacts than PG&E's proposed project for Dublin. PG&E's proposed Dublin substation also carries with it a significant impact of increased runoff and channel erosion due to its location. The FEIR found that locating the Dublin substation in the northern location (as proposed by PG&E) could also carry with it growth inducing impacts that would be mitigated by locating the substation closer to the already developing load it

will serve. No significant environmental impacts were associated with the D1 alternative for either the substation location or transmission route.

From an environmental and need standpoint, the D1 substation location is the most logical. The D1 alternative avoids impacts to sensitive species and hydrological issues. The necessary D1 transmission line is much shorter than PG&E's proposed project (3.1 miles versus 6.9 miles). The load in Dublin is developing near I-580 and D1 is well situated to serve this known growth. D1 utilizes a disturbed industrial corridor rather than open space. The primary difference in the cost between PG&E's proposed project and the D1 alternative (approximately $14 million) is a result of the D1 route passing through the gravel quarries.

PG&E argues that its proposed substation location will allow it to serve future growth in the Tassajara and Dougherty Valleys. As described in the FEIR, no development is currently planned for the Tassajara Valley due to the withdrawal of earlier development plans. Development is occurring in the Dougherty Valley but it is located within two miles of the San Ramon Substation and approximately four miles west of PG&E's proposed Dublin substation. (Exhibit 1003, p. H-35.) Thus by PG&E's own distribution planning guidelines, the San Ramon Substation, not a new Dublin substation, would serve this load. With expansion of the Vineyard Substation, San Ramon Substation will easily have sufficient capacity to serve this growth. In its comments on the proposed decision, PG&E appears to argue that the primary purpose of constructing a Dublin substation is to serve future growth in Tassajara and Dougherty Valleys thus resulting in shorter distribution feeder lines from their proposed substation location than D1. However, this argument is contradicted by PG&E's cost testimony (Exhibit 2, showing distribution feeder costs for D1 to be

approximately 3 times less than PG&E's proposed Dublin project) and its opening testimony (Exhibit 1, pp. 19-20) explaining how the East Dublin Annexation development project alone will demand approximately one-fourth of the total capacity of the Dublin substation.

The cities of Dublin and Livermore oppose the D1 substation location and attendant transmission facilities, as do PG&E and the Lin Family. The City of Dublin and the Lin Family argue that location of a substation in the D1 location would conflict with Dublin's community values as expressed by its planning documents for the area. We agree. Pursuant to Public Utilities Code Section 1002, this commission must consider the impact of a proposed project on community values when approving a Certificate of Public Convenience and Necessity. While D1 represents the environmentally preferred choice for the new Dublin substation, it is not compatible with community values as reflected in local zoning ordinances, or development plans as approved by voters.

We also are uncertain about whether the FAA or Alameda County ALUC would find D1 consistent with its requirements at the standard 230 kV line height. Finally, PG&E should experience reduced land acquisition costs by building the Dublin substation and related lines along the proposed route, where land uses are less economically-intensive and where PG&E already has preserved rights of way. For all of these reasons, we conclude that the D2 substation site should be selected.

The FEIR makes clear that the environmentally preferable North Livermore substation location under a "build" scenario is the location proposed by PG&E, despite the significant visual impacts it causes. Undergrounding the transmission line serving the North Livermore substation would serve to minimize additional visual impacts to this area. Although the L1 alternative

would be the shortest transmission line, it would have a significant impact on groundwater flow and significantly impact habitat for the endangered Palmate-bracted birds beak. L1 would also result in a significant visual impact. L2 has the longest transmission line and carries with it all of the flaws of the S1 alternative which we eliminated in the Pleasanton area. Therefore, we should select PG&E's proposed North Livermore substation location to meet the need we have identified for North Livermore. In order to reduce the visual impacts to the area, the transmission facilities serving the North Livermore substation should be underground along the environmentally preferred P3 route. Visual impacts should be further reduced by undergrounding the transmission facilities between the North Livermore and Dublin substations as described in the P2 alternative.

Because we have also selected PG&E's proposed Dublin substation location, the transmission line serving the proposed North Livermore and Dublin substations would originate at the existing Contra Costa-Newark 230 kV line in the North Livermore area. A tap and an overhead/underground transition station would be constructed approximately 0.25 miles north of where the eastern extension of May School would meet the Contra Costa-Newark line, just west of the existing transmission line. The transmission line would be installed underground, due west to Dagnino Road, then south along the road to May School Road where it would turn west again, following May School Road to the North Livermore substation. The substation would be located immediately west of the intersection of May School Road at North Livermore Avenue.

The transmission line to the proposed Dublin substation would leave the North Livermore substation underground, heading north, parallel to and just west of North Livermore Avenue, to Manning Road where the route would turn

west. From the corner of Manning Road and North Livermore Avenue, the route would remain underground, as defined in the P2 alternative for just less than one mile.

Just west of the edge of the valley, as proposed, the transmission line would transition to overhead (with use of a transition station), and continue to route would follow PG&E's existing but vacant right-of-way for approximately 4 miles overhead, nearly due west, to the proposed Dublin substation. However, the FEIR identifies significant visual impacts related to the portion of this route identified as running from B15 to B14. The FEIR identifies 2 potential mitigation measures for these impacts. One would site this segment further to the south. The other would involve placing this portion of the line underground along PG&E's existing right of way. We find it more consistent with the overall design of the project to place this portion of the line underground, as well as the segment from B14 to B13 providing the connection to the rest of the underground route. Thus, the only portion of the approved transmission lines to run above ground will cover the segment from B15 to the new Dublin substation.

In summary, we conclude that PG&E should be authorized to construct a 230 kV double circuit transmission line along the environmentally superior S2A/S2 alternative described herein, a new substation in Dublin at its proposed northern location, and a 230 kV double circuit transmission line connecting the Dublin substation to the Contra Costa-Newark transmission line to the east along PG&E's proposed route initially and then underground, via a new North Livermore substation, as described herein.

11. Consistency with Public Utilities Code Section 1002

As discussed above, Pub. Util. Code § 1002 requires the Commission to give consideration to community values, recreational and park areas, historical

and aesthetic values, and influence on the environment. Our efforts here represent a balancing of these factors. By selecting S2A/S2 1 we have adopted environmentally superior alternatives identified by our CEQA process. These routes have no impact on recreational and park resources. With respect to historic and aesthetic values, these routes have limited impacts. S2A/S2 does not impact any cultural resources and is underground thus limiting visual impacts. By selecting the proposed Dublin substation location over the D1 alternative, we have selected the route that appears to most closely reflect the values of the community.

In this case we have carefully examined the concerns expressed by residents and local leaders regarding siting of high voltage transmission lines and/or substations in their communities. As described above, we have eliminated the S1 alternative and PG&E's proposed project in Pleasanton, largely based on concerns over impacts to residential neighborhoods. Although the Pleasanton Parties prefer the S2A/S2/S5 alternative over the S2A/S2 alternative, we believe that taken as a whole, the all underground alternative S2A/S2 provides the best long-term solution to the Pleasanton area need for additional transmission capacity. The S2A/S2 alternative has the least visual impacts of the alternatives and although a portion of the route would be located within a roadway that is bordered by residential housing, it provides a sufficient buffer between the transmission line and residences. It also costs less than the S2A/S2/S5 alternative. As we discussed above, the proposed location for the Dublin substation and related transmission lines is the most compatible with community values as reflected by voters in approving the guidelines with which the Dublin Ranch development is consistent. A substation sited at D1 would be incompatible with that development.

Thus we have weighed all the factors required under § 1002 and find that PG&E should be granted a certificate of public convenience and necessity for the S2A/S2 alternatives identified herein, as well as the proposed Dublin and North Livermore substations and the supporting transmission lines described herein.

12. Applicability of Section 625

Parties argued over the applicability of Pub. Util. Code § 625 to PG&E's proposed project and alternatives and over the impact on timing such applicability might have. A public utility that offers competitive services may not condemn any property for the purpose of competing with another entity unless the commission finds that such an action would serve the public interest based on a hearing for which the owner of the property to be condemned has been noticed and the public has the opportunity to participate. (Pub. Util. Code §625(a)(1)(A).) However, an exception is made for condemnation actions that are necessary solely for an electric or gas company to meet a commission-ordered obligation to serve. Pub. Util. Code §625(a)(1)(B).) The question of applicability of § 625 turns on whether the installation of facilities by PG&E includes the provision of competitive services. In our case, the issue before the Commission is whether PG&E intends to provide a competitive service when it exercises its eminent domain authority to construct a commission-ordered obligation, and if so, what type of notice must be given.

PG&E argues that "any eminent domain proceedings will be necessitated solely by PG&E's efforts to fulfill its own regulatory obligation to serve by constructing needed transmission facilities, facilities that remain fully regulated and not subject to "competitive" conditions. The fact that the Project facilities may, by their design, allow for such additional telecommunications service uses

at some unknown time in the future does not change this result. Any other use of the Tri Valley Project's facilities, for fiber optic cables, for example, are not part of this Project, and if added at some later date, would be secondary to the Project's electrical purposes for which the power of eminent domain would have been exercised. At most, Section 625 would require only that PG&E provide notice of any such future installation on the Commission calendar." (PG&E Opening Brief, pp. 28-29.)

Section 625 of the Public Utilities Code provides an exception to its requirements only for condemnation actions that are "solely" for an electric or gas company to meet a commission-ordered obligation to serve. The legislature deliberately used the word "solely" because commission-ordered obligations to serve were going to be the only exception to § 625 since it was enacted to prevent public utilities from abusing the power of eminent domain. Policy and Fiscal Impact Report: Hearing on SB 177 Before the Pub. Util. Comm'n (CA. 1999) (statement by Senator Peace). The legislature did not want to give the electric and gas corporation a complete exemption from § 625 because electric and gas corporations can use their rights of way to construct a telecommunications network and provide competitive services. Assembly Comm. on Utilities and Commerce: Hearing on SB 177 Before the Senate Comm (CA. 1999) (statement by Roderick Wright, Chair).

> Cited as one example is the fact that Southern California Edison, an Electric Utility, has sought authority to offer telecommunication services over its facilities. Additionally, the Williams Company indicated that it used the rights of way of gas pipeline corridor in eight states to lay approximately 1,890 miles of fiber to construct a linear telecommunication system from Houston to Washington D.C…and that without eminent domain, one landowner could have prevented the system from being built. According to the legislature,

> while some instances may occur where the energy companies need to be absolved from this process, a blanket exception is not an appropriate manner. Id.

Because PG&E has no current intent to lease the fiber optic cables for telecommunication purposes, it argues that section 625 is inapplicable. However, § 625(a)(1)(B) of the Pub. Util. Code states that the electric or gas company shall provide notice if they intend to install telecommunication equipment on property for the purpose of providing competitive telecommunications services when land is acquired through eminent domain solely to meet its commission-ordered obligation. Section 625 is silent with regard to subsequent use of facilities for competitive services after the utility meets its commission-ordered obligation. But the statute focuses on what the gas or electric company intends to do, and PG&E currently states that it has no intention to install excess fiber optic cables to provide competitive services. Because PG&E states it has no current intention to provide a competitive service, C625 would be inapplicable.

On the other hand, not subjecting a public utility that installs excess capacity when carrying out a commission-ordered obligation to the requirements of § 625, allows § 625 to be circumvented. The electric or gas company carrying out a commission-ordered obligation would need only state it had no intention of leasing its facilities but could sign subsequent contracts with competitive carriers. Section 625(a)(1)(B), which requires the gas or electric company to give notice to the Commission when installing equipment for the purpose of providing competitive services would then be avoided.

Although PG&E argues it has no intent to install additional telecommunications facilities as part of its proposed project, we should look to PG&E's past practices to establish whether the company intends to provide competitive services through the excess capacity designed as part of the project.

It has become a common practice for PG&E to lease out the excess capacity and it is also not economically sensible for PG&E not to utilize the excess capacity. If § 625 were inapplicable in all respects, gas and electric companies would be gaining a competitive as well as an economic advantage over new entrants into the market place desiring to construct a telecommunications network. Thus we conclude that PG&E's past practice indicates that it will likely lease out excess capacity for competitive purposes. Therefore, Pub. Util. Code § 625 is applicable to an electric transmission project that is designed to serve an electric demand, but could carry a competitive fiber/telco component.

Section 625 provides for two different levels of notice and oversight. The more difficult and time consuming standard requires that a public utility that offers competitive services may not condemn any property for the purpose of competing with another entity unless the commission finds that such an action would serve the public interest based on a hearing for which the owner of the property to be condemned has been noticed and the public has the opportunity to participate. Pub. Util. Code §625(a)(1)(A). The lesser standard requires that when condemning properties to carry out a commission-ordered obligation, § 625 (a)(1)(B) is applicable, which only requires notice be provided to the Commission Calendar. We conclude that the lesser standard, notice, applies here.

13. Jurisdiction Over Costs

ORA seeks imposition of a cost cap on the project at a level of $74.4 million. ORA also asks the Commission to revoke the CPCN if PG&E seeks recovery through FERC-approved transmission rates of any costs that might exceed the adopted cost estimate. ORA claims the Commission has jurisdiction to impose such a cap pursuant to Cal. Pub. Util. Code § 1005.5, which provides:

> Whenever the commission issues to an electrical . . . corporation a certificate authorizing the new construction of any addition to or extension of the corporation's plant estimated to cost greater than fifty million dollars ($50,000,000), *the commission shall specify in the certificate a maximum cost determined to be reasonable and prudent for the facility*. (Emphasis added.)

PG&E claims this Commission "has no jurisdiction to set a cost cap over transmission components of the project, and that any such cap would be inconsistent with applicable law and legislative intent." (PG&E Opening Brief, p. 77.)

PG&E's jurisdictional argument is based on AB 1890. It claims that when the Commission lost jurisdiction over transmission rates and jurisdiction transferred to the FERC, we lost the ability to impose cost caps. Thus, PG&E asserts, "FERC's authority over this question [the amount of transmission project costs that may be recovered through rates] completely occupies the field, preempting all state regulation that intrudes even indirectly into this sphere." (PG&E Opening Brief, p. 78, citing *Pub. Util. Comm'n v. FERC*, 900 F.2d 269, 274 (D.C. Cir. 1990); *Florida Power & Light Co.*, 40 FERC P61, 045 (1987); *Calif. Power Exchange Corp.*, 85 FERC P61, 263 (1998).

PG&E's argument is not based on the language of AB 1890 or the CPCN statutes. Rather, PG&E asserts the following:

> In 1985, when these cost cap provisions were enacted, the CPUC had jurisdiction over distribution <u>and</u> transmission rates. By enacting AB 1890, however, the legislature made clear its intent to limit the CPUC's ratemaking jurisdiction to distribution rates, rendering the imposition of section 1005.5's cost capping and rate adjusting mechanisms irrelevant to transmission projects for which CPUC no longer bears ratemaking responsibility. (<u>See</u> D.97-08-056, 74 CPUC 2d 1 (Dec. 2, 1997) (CPUC implementation (AB 1890 by unbundling

> of transmission rates).) Because the CPUC has no jurisdiction over transmission rates, it may not legally attempt to "cap" or otherwise prejudice FERC's ratemaking decisions. (PG&E Opening Brief, pp. 77-78.)

The Commission has jurisdiction pursuant to Pub. Util. Code § 1005.5 to cap the project's costs. We do not agree that the Legislature stripped this Commission of all authority under Pub. Util. Code § 1001 *et seq.* when it promulgated AB 1890. Thus, while the FERC ultimately will decide how much of the costs for this project PG&E may recoup in transmission rates, we believe our cost cap has bearing on the amount PG&E may seek from the FERC.

14. Project Cost Cap

We will adopt a project cost cap based on the record developed in this case. We recognize that detailed engineering estimates have not been completed for the routes we select, so there is some uncertainty associated with the firmness of the cost cap we adopt today. However, we believe that the cost cap contains sufficient contingency factors in the estimating procedure to make the estimates of a sufficient level of reliability that we can adopt a cost cap. We have relied on PG&E's construction cost estimates, which were based on detailed engineering estimates for the project through difficult terrain (with minor adjustments for routing through flatter terrain), we have relied on PG&E's land cost estimates using a fee interest valuation, rather than an easement interest, and we have included significant contingency factors for each of these project cost areas. We have no reason to believe that PG&E cannot complete its project within the cost cap we adopt today.

If, upon completion of the final, detailed engineering design-based construction estimates for the alternatives selected, PG&E concludes that the costs will be materially (*i.e.*, one percent or more) lower than the cost cap we

adopt, PG&E shall submit with the estimate an explanation of why we should not revise the cost cap downward to reflect the new estimate. If the final estimate exceeds the cost cap we have adopted, then PG&E is free to exercise its rights to seek an increase in the cost cap pursuant to Pub. Util. Code § 1005.5(b). However, the cost cap will not automatically adjust upward even if the final, detailed costs exceed the cost cap.

We authorize a total project cost cap of $118,359,015 for the adopted Tri Valley 2002 Capacity Increase Project as reflected in Table 4.

TABLE 4
Project Cost Cap
Adopted Routing Alternatives

Pleasanton Area Project - S2A/S2

Transmission Line Construction	**$ 32,338,856**
Overhead	$ -
Underground	$ 32,338,856
Land Costs	**$ 6,350,139**
Transition Station(s)	**$ 1,982,885**
Substation Engineering and Construction	**$ 5,192,734**
Distribution Feeders	**$ 4,847,000**
Remote Terminal Protection Upgrades	**$ 427,000**
Pleasanton Area Subtotal	**$ 51,138,614**

Dublin Area Project - PG&E Proposed +P2/P3

Transmission Line Construction	**$ 27,716,411**
Overhead	$ 4,819,144
Underground	$ 22,897,267
Land Costs	**$ 2,664,484**
Transition Stations	**$ 3,965,770**
Substation Engineering and Construction	**$ 7,654,000**
Distribution Feeders	**$ 4,885,000**
Dublin Area Subtotal	**$ 46,885,666**

North Livermore Area Project - Substation/Feeder Costs Only

Substation Engineering and Construction	**$ 6,599,735**
Distribution Feeders	**$ 3,403,000**
North Livermore Area Subtotal	**$ 10,002,735**

Costs Independent of Route Selected

Project Planning and Certification Costs	$ 10,332,000

Project Cost Cap	$ 118,359,015

15. Other Issues

Parts of the S1, S2, and S4 alternatives would parallel an existing 60 kV transmission line that runs from the Tesla-Newark Corridor in Sycamore Grove Park to the Vineyard Substation, primarily along Vineyard Avenue. This 60 kV line is 5.6 miles long between the park and the Vineyard Substation. Along much of its length, the poles supporting the 60 kV line also support 21 kV distribution lines (the distribution circuit is on the lower position and the 60 kV circuit on the top of the poles). Once a 230 kV transmission connection to Vineyard Substation is established, the 60 kV line along Vineyard Avenue would no longer be required to serve the Vineyard Substation. The 21 kV distribution line would still be needed, but approximately 1.3 miles adjacent to the Vineyard Avenue Corridor Specific Plan will be moved underground by the developer of that area. A portion of the 60kV line will still be required to serve the Iuka Substation, either from the Vineyard Substation <u>or</u> the southern tap point in Sycamore Grove Park.

PG&E has offered to remove the entire 5.6-mile long 60 kV line if the Commission adopts the S4/S5 alternative. However, because the 21 kV distribution circuit is on the same poles, removal of the 60 kV line would not result in elimination of all of the poles. The poles would remain along 4.3 miles of this route; in these areas, the 60 kV line would be removed from the top of the poles and the poles would be "topped" (the part above the supports for the distribution lines would be cut off). The visual impact of the shorter poles would be somewhat reduced. However, in the 1.3-mile long area of the Vineyard Avenue Corridor Specific Plan, the poles would be completely removed and the lines moved underground by the developer.

Removal of the 60 kV line is not a mitigation measure required as a condition of the project. However, potential for removal of the 60 kV line is addressed because the 60 kV line makes a turn to the north at the southwest corner of the school site and follows two sides of the Neal Elementary School lot. State law requires a 100-foot setback from a 60 kV power line on school property, so the existence of this line means that the School District would lose the use of one acre of their approximately 13-acre parcel. The elimination of the 60 kV line around the school would allow fuller use of the school parcel. In addition, the 60 kV line passes adjacent to and in places, directly through, the housing development and mobile home park north of Vineyard Avenue and east of Bernal Avenue.

PG&E does not explain why it proposes to remove the 60 kV line only if the S4/S5 alternative is adopted and not other alternatives. In comments on the proposed decision PG&E indicates that removal of the 60 kV line would strand the Iuka Substation and cannot be implemented. However, it appears that at least a portion of the 60kV line will become redundant once the 230 kV connection to Vineyard Substation becomes operational.

The potential removal of the 60 kV line (and the complete removal of poles and distribution circuits for 1.3 miles) is a project benefit that we should pursue irregardless of the route selected. Removal of the 60 kV line contributes to enhancement of community values through the possibility of providing fuller use of the proposed school site, removal of transmission facilities in residential neighborhoods, and general visual improvements. As a condition of our authorization, we direct PG&E to remove the portions of the existing 60 kV line between Tesla-Newark and Vineyard Substation that are no longer needed to serve Iuka Substation once the Pleasanton area project is operational.

16. Environmental Findings and Statement of Overriding Considerations

As required by CEQA, we cannot approve PG&E's proposed project or an alternative unless we find that the project has been modified to mitigate or avoid each significant effect on the environment; or that specific considerations make the mitigation measures or alternatives identified in the FEIR infeasible; and specific overriding economic, legal, social, technological, or other benefits of the proposed project outweigh the significant effects on the environment.

16.1 Mitigation Measures Recommended in EIR

The mitigation measures recommended in the EIR for the alternatives adopted are presented in Appendix C. The adoption and implementation of these mitigation measures was assumed in the determination of impact levels in the EIR. Therefore, implementation of these mitigation measures is a condition of the approval of this project.

In addition to the mitigation measures, additional impact-reduction measures proposed by PG&E in its Proponent's Environmental Assessment were assumed to be implemented as a basis for the impact conclusions in the EIR. These measures, called Applicant Proposed Measures and presenting Appendix D, would reduce impacts in a range of environmental disciplines, and their implementation is monitored by the Commission as part of its Mitigation Monitoring, Compliance and Reporting Program.

The FEIR includes a Mitigation Monitoring, Compliance, and Reporting Program, which presents the process for monitoring the implementation of the recommended mitigation measures and Applicant Proposed Measures.

16.2 Significant Effects of the Adopted Project

The only significant impact resulting from the adopted environmentally superior alternatives in Pleasanton that cannot be avoided or eliminated is the hazard of seismic failure of Del Valle Dam. The alternatives studied would not increase the potential for dam failure but rather that this hazard could affect the project alternative if the dam should fail. This is a risk that exists for construction of any facility in the Pleasanton area.

Construction and operation of the proposed North Livermore substation would result in a significant and unavoidable visual impact due to the imposition of an industrial facility with structures up to 45 feet high in a scenic area with existing panoramic views. In addition, installation of the overhead transmission line between North Livermore Avenue and the proposed Dublin substation would create a second significant visual impact as the line crossed the valley south of the intersection of Manning and Carneal Roads, avoidable only if two additional miles of the transmission line were installed underground or if the overhead route were moved one mile south (per the route defined in DEIR Figure C.12-15C). We will direct PG&E to install this additional segment underground, which will result in a continuous underground line from the existing Contra Costa-Newark line, to the place designated as B15.

Construction and operation of the proposed Dublin substation has the potential to create a significant and unmitigable impact related to increased runoff and severe channel erosion in the area. Mitigation measure H-10 proposes a hydrologic study of the area, after which information may be developed to reduce the erosion impacts to less than significant levels; however, without study results, it is not possible to know whether mitigation would be successful.

Selection of PG&E's proposed Dublin and North Livermore substations will result significant growth inducing impacts.

The benefits of the transmission line and substation project, provision of increased electric supply, increased reliability to the Tri Valley area and the importance of developing the project in a manner that is consistent with community values, outweigh the potential significant impacts.

17. Request to Intervene

On August 13, 2001, the County of Alameda Flood Control and Water Conservation District – Zone 7 (Zone 7) filed a Petition to Intervene. Zone 7 states that its basis for intervention is the proposed decision's selection of D1 to increase transmission capacity to serve the Dublin area. Zone 7's motion does not describe why it has waited to intervene until a proposed decision was issued. D1 has been an alternative under consideration since PG&E included the alternative in its PEA. In fact, Exhibit 1004, which includes copies of comments on the DEIR, includes a copy of letters from Zone 7 referencing the same issues raised in Zone 7's comments. (See pp. Ap. 2-28 to 2-40.) Thus Zone 7 had constructive notice at least as early as release of the DEIR in December 2000 that this alternative was under consideration. The FEIR (Exhibit 1003, pp. H-37) responds specifically to issues raised by Zone 7 regarding D1. Zone 7 has not justified its late request to intervene and we deny its petition to intervene.

18. Comments on Alternate Decision of Commissioner Wood

The Alternate Decision of Commissioner Wood in this matter was mailed to the parties in accordance with Section 311of the Pub. Util. Code and Rule 77.6 of the Rules of Practice and Procedure. Opening comments were filed by _____. Reply comments were filed by _____.

Findings of Fact

1. The project elements in Pleasanton, North Livermore and Dublin are needed to maintain reliability of the electric transmission system in the Tri Valley area.

2. 2. Measure D limits growth in the vicinity of PG&E's proposed North Livermore substation. 3. The most likely near-term growth in the Livermore/Las Positas DPA is primarily occurring more than four miles from the location of PG&E's proposed North Livermore substation

3. Phase 2 of PG&E's proposed project is not needed until at least 2009.

4. There is a need for additional capacity in North Livermore at this time to help serve anticipated load between North Livermore and the Las Positas substation and to provide flexibility to meet potential future demand in the North Livermore Specific Plan area.

5. PG&E did not construct a 230 kV transmission line connection to Vineyard Substation for which it received a CPCN in 1988.

6. The environmentally superior transmission line routes we select, S2A/S2 , in their entirety, pose less harm to the environment than do the alternate routes proposed by PG&E and other parties to this proceeding.

7. PG&E's proposed Dublin substation location, which we select, more accurately reflects community values in the Dublin area.

8. Construction of PG&E's proposed North Livermore and Dublin projects results in significant and unavoidable visual and growth inducing impacts.

9. Solid dielectric cable technology is safe for installation in all types of land uses as long as it is protected by a concrete duct bank and appropriate relay, fault detection and protection equipment.

10. PG&E's project specific unit cost estimate for underground construction overstates the per mile cost of construction along relatively flat terrain that is without significant utility conflicts.

11. PG&E's land acquisition cost estimates assume payment for purchases of easements at fee interest.

12. PG&E's land acquisition cost estimates include two separate contingency factors.

13. PG&E's land acquisition cost estimates overstate the costs of acquiring easements for the alternatives studied.

14. Removal of the existing 60 kV transmission line between Tesla-Newark and Vineyard substation will allow full use of the Neal Elementary School site for school uses.

15. We are not obligated to choose the least costly route if that route causes greater environmental harm than more costly routes or if some other route most closely reflects the prevalent community values.

16. The Commission has reviewed and considered the information in the FEIR before approving the project.

17. The FEIR identifies significant environmental effects of the environmentally superior route that can be mitigated or avoided to the extent that they become not significant. The FEIR describes measures that will reduce or avoid such effects.

18. The mitigation measures identified in the FEIR are reasonable.

19. As lead agency under CEQA, the Commission is required to monitor the implementation of mitigation measures adopted for this project to ensure full compliance with the provisions of the monitoring program.

20. The Mitigation Monitoring, Compliance, and Reporting Plan in Section F of the FEIR conforms to the recommendations of the FEIR for measures required to mitigate or avoid environmental effects of the project that can be reduced or avoided.

21. The Commission will develop a detailed implementation plan for the Mitigation Monitoring, Compliance, and Reporting Plan.

22. The FEIR identifies the S2A/S2 and S2A/S2/S5 and D1 as environmentally superior alternatives to PG&E's proposed project.

23. The FEIR identifies only one significant environmental impact of the environmentally superior route that cannot be mitigated or avoided, the hazard of seismic failure of Del Valle Dam, which is not affected by adoption of the project or any alternative.

24. The FEIR identifies significant growth inducing impacts related to the proposed Dublin and North Livermore substations.

25. The FEIR identifies significant visual impacts related to the North Livermore substation.

26. No feasible mitigation exists to reduce the significant environmental effects to less than significant.

27. The specific overriding benefits of the environmentally superior route outweigh the significant effects on the environment. The benefits of the transmission line and substation projects, provision of increased electric supply, and increased reliability to the Tri Valley area, outweigh the potential environmental impacts. The community values in the Dublin area outwegh the potential environmental impacts of PG&E's proposed Dublin substation.

28. We have considered and approve of the discussion in the FEIR covering parks and recreation, cultural and historic resources, environmental impacts

generally, and the public comment and response section, and find that it adequately reflects our consideration of the Section 1002 factors.

29. A reasonable price cap for this project is $118,359,015.

Conclusions of Law

1. The Commission has jurisdiction over the proposed project pursuant to Pub. Util. Code § 1001 et seq.

2. The Commission has authority to cap project costs pursuant to Pub. Util. Code § 1005.5.

3. The Commission does not have authority to impose a "hard" cost cap that may never be increased in view of Pub. Util. Code § 1005.5(b)'s provision for increases in the cost cap.

4. The Commission should approve a price cap of $118,359,015 for this project.

5. The ISO has responsibility to ensure the reliability of the State's electrical system pursuant to Pub. Util. Code § 345. However, ensuring reliability and deciding that a particular transmission project should be built are two separate issues.

6. This Commission's cost cap set pursuant to Pub. Util. Code § 1005.5 has bearing on the amount of cost recovery PG&E may seek from the FERC.

7. The Commission retains authority to approve PG&E's EMF mitigation plan to ensure that it does not create other adverse environmental impacts.

8. Commission approval of PG&E's application, as modified herein, is in the public interest.

9. PG&E's project specific unit cost estimate for underground construction should be adjusted downward by 10% for certain alternatives.

10. PG&E's land acquisition costs should be adjusted to remove the duplicate contingency factor because the estimates already assume payment of fee interest for purchase of easements.

11. The approval of the application, as provided herein, should be conditioned upon construction according to the environmentally superior routes S2A/S2 ,and the completion of the mitigation measures identified in the FEIR and Appendix C and D hereto. The mitigation measures are feasible and will minimize or avoid significant environmental impacts. Those mitigation measures should be adopted and made conditions of project approval.

12. Removal of the portions of the existing 60 kV transmission line between Tesla-Newark and Vineyard Substation that are no longer required to serve Iuka Substation should be a condition of project approval.

13. After considering and weighing the values of the community, benefits to parks and recreational areas, the impacts on cultural and historic resources, and the environmental impacts caused by the project, we conclude that the CPCN for the S2A/S2, the Proposed North Livermore Substation and related lines as described in this decision, and the proposed Dublin Substation location and related lines as described in this decision, should be approved.

14. Based on the completed record before us, we conclude that other alternatives identified in the FEIR are infeasible, pose more significant environmental impacts, or are less consistent with community values than the route we select in this decision.

15. Pub. Util. Code § 625(a)(l)(A) does not apply to this project. However, PG&E must provide notice pursuant to § 625 (a)(l)(B) if and when it pursues installation of facilities for purposes of providing competitive services.

16. The petition to intervene filed by Zone 7 should be denied.

O R D E R

IT IS ORDERED that:

1. A Certificate of Public Convenience and Necessity is granted to Pacific Gas and Electric Company (PG&E) to construct an approximately 5.7 mile underground 230 kV double circuit transmission line from PG&E's Contra Costa-Newark transmission line in Alameda County to its existing Vineyard Substation and associated substation upgrades.

2. A Certificate of Public Convenience and Necessity is granted to PG&E to construct its proposed new substation in Dublin, as well as the overhead and underground 230 kV double circuit transmission line as described in this decision to connect the new Dublin substation to the North Livermore substation and then to the existingContra Costa-Newark 230 kV transmission line.

3. PG&E shall, as a condition of approval, build the project in accordance with the environmentally superior route identified as S2A/S2. In addition, PG&E shall comply with all mitigation measures specified in Appendix C and D attached hereto, and removal of the portions of the existing 60 kV line between Tesla-Newark and Vineyard Substation that are no longer required to serve Iuka Substation, as directed by the Commission's Executive Director or his designee(s). PG&E shall work with the Commission's Energy Division to create more detailed maps for use in construction and mitigation monitoring of the selected route to supplement those provided in Appendix A to this decision.

4. PG&E's project costs shall be capped at $118,359,015 for the project authorized.

5. Once PG&E has developed a final detailed engineering design-based construction estimate for the adopted route, if this estimate is one percent or

more lower than the adopted cost cap, PG&E must, within 30 days, show cause why we should not lower the Pub. Util. Code § 1005.5 cost cap to reflect the final estimate.

6. PG&E shall, prior to commencing construction, submit a detailed EMF mitigation plan for approval of the Commission's Energy Division. The plan shall describe in detail each mitigation element, the cost of each element, and the percentage by which that mitigation will reduce EMF levels.

7. The Executive Director shall supervise and oversee construction of the project insofar as it relates to monitoring and enforcement of the mitigation conditions described in Appendix C and D to this decision. The Executive Director may delegate his duties to one or more Commission staff members or outside staff. The Executive Director is authorized to employ staff independent of the Commission staff to carry out such functions, including, without limitation, the on-site environmental inspection, environmental monitoring, and environmental mitigation supervision of the construction of the project. Such staff may be individually qualified professional environmental monitors or may be employed by one or more firms or organizations. In monitoring the implementation of the environmental mitigation measures described in Appendix C and D, the Executive Director shall attribute the acts and omissions of PG&E's employees, contractors, subcontractors, or other agents to PG&E. PG&E shall comply with all orders and directives of the Executive Director concerning implementation of the environmental mitigation measures described in Appendix C and D.

8. The Executive Director shall not authorize PG&E to commence actual construction until PG&E has entered into a cost reimbursement agreement with the Commission for the recovery of the costs of the mitigation monitoring

program described in Section F of the Final Environmental Impact Report, including, but not limited to, special studies, outside staff, or Commission staff costs directly attributable to mitigation monitoring. The Executive Director is authorized to enter into an agreement with PG&E that provides for such reimbursement on terms and conditions consistent with this decision in a form satisfactory to the Executive Director. The terms and conditions of such agreement shall be deemed conditions of approval of the application to the same extent as if they were set forth in full in this decision.

9. PG&E's right to construct the project as set forth in this decision shall be subject to all other necessary state and local permitting processes and approvals.

10. PG&E shall file a written notice with the Commission, served on all parties to this proceeding, of its agreement, executed by an officer of PG&E duly authorized (as evidenced by a resolution of its board of directors duly authenticated by a secretary or assistant secretary of PG&E) to acknowledge PG&E's acceptance of the conditions set forth in Ordering Paragraphs 1 through 9, inclusive, of this decision. Failure to file such notice within 75 days of the effective date of this decision shall result in the lapse of the authority granted by this decision.

11. The Executive Director shall file a Notice of Determination for the project as required by the California Environmental Quality Act and the regulations promulgated pursuant thereto.

12. Upon satisfactory completion of the project, a notice of completion shall be filed with the Executive Director by the Energy Division.

13. The Petition to Intervene filed by the County of Alameda Flood Control and Water Conservation District-Zone 7 is denied.

14. Application 99-11-025 is closed.

This order becomes effective 30 days from today.

Dated _____, at San Francisco, California.

GLOSSARY

A.	Application
ALUC	Airport Land Use Commission
CalTrans	California Department of Transportation
CEQA	California Environmental Quality Act
CPCN	Certificate of Public Convenience and Necessity
D.	Decision
DEIR	Draft Environmental Impact Report
DHS	California Department of Health Services
DPA	Distribution Planning Area
ELF	Extremely low frequency
EMF	Electric and magnetic field
FAA	Federal Aviation Administration
FEIR	Final Environmental Impact Report
GO	General Order
ISO	California Independent System Operator
kV	kilovolt
mG	milligauss
MVA	Megavolt-ampere
MW	Megawatt
NIEHS	National Institute of Environmental Health Sciences
OSHA	California Occupational Safety and Health Administration
PEA	Proponent's Environmental Assessment
PG&E	Pacific Gas and Electric Company
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

APPENDIX A

Figure B-2

Proposed Project and

All EIR Alternatives

NOTE: See CPUC Formal Files for Appendix A

APPENDIX A

(See Figure B-2, Exhibit 1003)

APPENDIX B

Figure B-1

Proposed Transmission Line

Routes and Substations

NOTE: See CPUC Formal Files for Appendix B

APPENDIX B

(See Figure B-1, Exhibit 1003)

APPENDIX C

Measure	Mitigation	Applicable Route or Substation
A-1	Apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.	All
A-2	Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.	All
A-3	Install sandbags or other erosion control measures to prevent silt runoff to public roadways.	All
A-4	Replant vegetation in disturbed areas within 30 days of completion of construction.	All
B-1	**a:** The initial step for this measure will be completion of a jurisdictional wetlands delineation of the Proposed transmission line route by a qualified biologist/wetland scientist prior to the initiation of any construction activities. Once the delineated wetlands have been verified by the U.S. Army Corps of Engineers (USACE), site-specific avoidance measures will be finalized. Avoidance will consist of flagging or fencing designated travel routes and construction areas to minimize impacts to wetland plant communities. Flagging will be used to designate travel routes and work areas in portions of the Project route that are not immediately adjacent to wetland plant communities. Protective fencing will be installed to designate travel routes in those portions of the Proposed transmission line route that are immediately adjacent to wetlands. Construction work areas within or immediately adjacent to wetlands will be located and fenced to avoid or minimize wetland impacts. **b:** Unavoidable temporary loss of wetland plant communities during construction shall be mitigated by restoration of the affected area to pre-construction conditions, as established in the jurisdictional wetland delineation. Where tower installation will permanently impact wetlands, compensatory mitigation shall be provided at a 2:1 ratio. Additional compensation will be required if the responsible agencies determine that restoration of temporary impacts has failed. A Restoration Plan/Compensatory Mitigation Plan shall be developed by PG&E Co. The plan shall be submitted to and approved by the USACE and Regional Water Quality Control Board (RWQCB) prior to the start of any construction activities. Implementation of the Restoration Plan/Compensatory Mitigation Plan shall be prior to or concurrent with project construction. The Plan will contain information for wetland mitigation location and wetland type to be created for any proposed off-site wetland creation, and details on soil preparation, seed collection, planting, maintenance, and monitoring for on-site restoration efforts and off-site wetland creation. **c:** Wetland restoration and creation shall be monitored by a qualified biologist for five years after mitigation site construction to assess progress and identify problems. Remediation actions shall be required if determined necessary by a qualified biologist to ensure the success of the restoration effort.	All
B-2	**a:** A qualified biologist will determine if any of the trees located within the vicinity of the proposed access roads and within the 100-foot disturbance radius surrounding the proposed tower locations (PG&E 1999) qualify as Heritage Trees as defined by the governing jurisdiction (either the City of Pleasanton or Alameda County). If it is determined that the proposed access roads, transmission line towers, or surrounding impact areas will impact any Heritage Trees (due to trimming, removal, etc.), the following avoidance measures will be taken: re-routing or relocating access roads or towers and flagging or fencing designated travel routes and construction areas to ensure avoidance of Heritage Trees (supplemental CEQA review may be required if reroute/relocation not previously assessed in this EIR); protective fencing will be installed at the dripline of any Heritage Tree that will be avoided but may be indirectly affected by construction activities; excavation, grading, leveling, and disposal or deposition of harmful materials will be prohibited inside the dripline fence. Attachment of wires, ropes, or signs to Heritage Trees shall also be prohibited. A qualified biologist or arborist shall verify compliance with these protective measures prior to initiation of construction activities near Heritage Trees. **b:** If Heritage Tree trimming or removal is unavoidable, the governing jurisdiction will be consulted. Further actions may require a permit that will include fees and/or replacement for affected trees. The City of Pleasanton Heritage Tree removal permit process requires payment of a fee in the amount of the appraised value of the tree in addition to 6:1 replacement with 24-inch boxed trees. Alameda County may require 1:1 tree replacement. These and other local jurisdictions, such as the City of Livermore, may apply their tree preservation ordinances on a case-by-case basis, so the replacement ratios and permit fees may vary. If the Proposed Project requires removal of any Heritage Trees, a Tree Replacement Plan will be prepared by a qualified forester, arborist, or restoration ecologist. This plan shall include: • Discussion of appropriate tree replacement ratios • Identification of suitable tree replacement locations within or adjacent to the affected plant community • Tree specifications, planting methodology, and timing of planting	All

APPENDIX C

Measure	Mitigation	Applicable Route or Substation
	• Description of protective staking and caging measures • Description of five-year monitoring effort to measure replacement success • Success criteria and contingency measures The Tree Replacement Plan shall be submitted to and approved by the governing jurisdiction (either the City of Pleasanton or Alameda County) prior to the start of any construction activities. Implementation of the Tree Replacement Plan shall be concurrent with project construction.	
B-3	To reduce direct mortality impacts during construction, construction specifications will include the following conditions: • Vehicles will not exceed 10 mph on designated access roads or in the ROW • Litter or other debris that may attract animals will be removed from the project area; organic waste will be stored in enclosed receptacles, removed from the project site daily, and disposed of at a suitable waste facility • No pets will be allowed in the construction area, including access routes and staging areas • Construction crews will be monitored by a qualified biologist approved by the CPUC. • No weapons will be allowed in the project area, including air or conventional firearms, archery equipment, or knives.	All
B-4	PG&E Co. shall map and flag overland travel routes prior to construction and periodic maintenance during operation to identify and avoid impacts to sensitive habitats (i.e., Seasonal Wetland) and minimize total impact area. Vehicles shall follow only the pre-approved travel routes marked by flags, including a recommended buffer distance (with a minimum of 25 feet) that construction-related activities shall occur from the identified individual or population. The mapping/flagging shall be reviewed by a CPUC-approved biologist prior to use of these routes for construction or maintenance to ensure adequate protection for sensitive plant communities.	All
B-5	**a:** Construction and maintenance activities shall be scheduled to avoid critical seasons. Raptor nests, vernal pools, riparian communities, sensitive habitats, and sensitive wildlife species will be avoided during specific seasons throughout the construction, operation, and maintenance of the Proposed Project. Avoidance periods and buffer distances for special status wildlife and plant species are shown in Table C.3-20 of the Draft EIR; this table shall be updated by PG&E prior to the start of construction to reflect any changes in special status species. These buffer distances and avoidance periods are subject to review and modification by CDFG and are in accordance with the Applicant Proposed Measures. **b**: Surveys conducted prior to any construction activities will be performed by qualified biologists to locate raptor nests and other resources in/or adjacent to the ROW and access road areas. The burrowing owl is a ground nesting bird known to occur in the project area. To avoid disturbance to ground nests, pre-construction surveys will be conducted to identify current locations of these resources and to flag allowable travel routes. If nests are observed, the avoidance period and buffer distances shown in Table C.3-20 of the Draft EIR (as updated in (a) above) will be observed. Surveys will be based on the CDFG survey protocol established for baseline surveys on the Proposed Project. **c:** Specific distances from resources (see Table C.3-20 and updates) will be maintained during construction, maintenance, and overflights. Designated existing roads will be used; if such roads are not present, flagged routes that have been surveyed by a qualified biologist will be used (as in Mitigation Measure B-4). **d:** Biological monitors as specified by CPUC will be present during construction to verify that no vehicular travel occurs outside flagged areas. These biological monitors will have the authority to terminate construction activities if any adverse effect on special status species is observed or anticipated.	All
B-6	Surveys for special status plant species shall be conducted by a qualified biologist along the Proposed South Area route at the proposed tower construction sites and along proposed access roads according to the protocol developed by the California Native Plant Society (Nelson 1994, 1986). These surveys shall be conducted prior to the initiation of any construction activities and coincide with the appropriate flowering period of the special status plant species with the potential to occur in the area (Table C.3-3, updated by PG&E prior to the start of construction to include species listed after completion of the EIR). Maps depicting the results of these surveys will be prepared and will include other recently mapped special status plant occurrences in the area to ensure that the full scope of rare plant habitat in the project route vicinity is delineated, including a recommended buffer distance (with a minimum of 25 feet) that construction-related activities shall occur from the identified individual or population. Any special status plant occurrences located within 200 feet of the proposed tower construction sites and along the proposed access roads will be fenced prior to the start of any construction. Maps and reports, as well as proposed fence locations, shall be provided to and approved by the CPUC's	All

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	biological monitor prior to the start of construction.	
B-7	Surveys for special status plant species shall be conducted prior to initiation of any construction and maintenance activities as described in Mitigation Measure **B-6**. Occurrences of special status plant species shall be flagged and overland travel shall be prohibited in these areas, including a recommended buffer distance (with a minimum of 25 feet) that construction-related activities shall occur from the identified individual or population. Travel routes which avoid special status plant species occurrences shall be flagged and mapped following approval consistent with Mitigation Measure **B-4**. Vehicles shall follow only the pre-approved travel routes marked by flags. Approval of survey reports and maps shall be consistent with Mitigation Measure **B-6**.	All
B-9	Pre-construction and pre-maintenance mapping and marking of proposed critical habitat areas shall be conducted in areas susceptible to construction and maintenance disturbance. Results of this delineation of critical habitat shall be submitted to the USFWS for review and approval. In the event that excavation activities occur in areas identified as California red-legged frog critical habitat, PG&E Co. will enter into formal consultation with the USFWS and implement avoidance and minimization measures outlined in a Biological Assessment prepared for the frog. Avoidance and minimization measures that the USFWS would likely require include the following: • Prior to ground-disturbing activities, a qualified biologist will provide environmental training to all project personnel, including recognition of the California red-legged frog and its habitat. Under this program, workers shall be informed about the presence of the frog and critical habitat associated with the species, and that unlawful take of the animal or destruction of its habitat is a violation of the federal Endangered Species Act. The biologist shall instruct all construction personnel regarding the life history of the frog, the importance of aquatic and upland habitats to the species, and the terms and conditions of the Biological Opinion issued by the USFWS. • A qualified biologist will be present during construction activities to monitor and determine the extent of ground-disturbing activities within 50 feet of suitable habitat. • All proposed California red-legged frog critical habitat that could be lost due to construction activities will be calculated and reported to the USFWS and CDFG. This acreage will be mitigated at a 3:1 ratio with the purchase of habitat credits or the purchase of offsite mitigation land.	All
B-12	Prior to construction, PG&E Co. shall use a qualified hydrologist to conduct groundwater flow studies to determine if the proposed underground line design will interfere with groundwater flows into the Springtown Wetlands Preserve. If the study determines that the underground transmission line and its associated trench and insulation will inhibit groundwater flows downslope, then a revised underground design that does not restrict flow will be required. Results of the studies will be provided to the Preserve Manager, CDFG and USFWS for review. The hydrologic assessment conducted for this environmental review has concluded it is unlikely that feasible undergrounding design can be developed (Section C.6.5.4, Impact 6-26). If no feasible design can be developed, implementation of the L1 Alternative would result in an unavoidable significant impact.	P3
C-1	PG&E Co. shall develop a Cultural Resources Treatment Plan (CRTP) for the project including procedures for protection and avoidance of Environmentally Sensitive Areas (ESAs), evaluation and treatment of the unexpected discovery of cultural resources including Native American burials; detail reporting requirements by the Project Archaeologist; discuss the curation of any cultural materials collected during the project; and, specify that archaeologists and other discipline specialists meet the Professional Qualifications Standards mandated by the California Office of Historic Preservation (OHP). Areas where known cultural resources are present shall be avoided during construction and operation/maintenance. If avoidance is not possible, specific protective measures (which shall be defined in the CRTP) shall be implemented to reduce the potential adverse impacts on cultural resources to a less-than-significant level. The CRTP shall be submitted to the CPUC for review and approval at least 30 days before the start of construction. The CRTP shall define construction procedures for areas near cultural sites. Wherever a tower, access road, equipment, etc. must be placed or accessed within 100 feet of a recorded, reported or known archaeological site eligible or potentially eligible for the CRHR, the site will be flagged on the ground as an Environmentally Sensitive Area (ESA). Construction equipment shall then be directed away from the ESA, and construction personnel shall be directed not to enter the ESA. (*Supersedes PG&E Co.'s Applicant Proposed Measure 9.1.*)	All
C-2	All construction personnel shall be trained regarding the recognition of possible buried cultural remains, including prehistoric and historic resources during construction. Prior to the initiation of construction or ground-disturbing activities, PG&E Co. shall complete training for all construction personnel. Training shall inform all construction personnel of the procedures to be followed upon the discovery of archaeological materials including Native American burials. The following issues shall be addressed in training or in preparation for construction: ▪ Any excavation contract (or contracts for other activities that may have subsurface soil impacts) shall include clauses that require construction personnel to attend training so they are aware of the potential for inadvertently exposing buried archaeological deposits. ▪ PG&E Co. shall provide a background briefing for supervisory construction personnel describing the potential for exposing cultural resources, the location of any potential Environmentally Sensitive Areas (ESA) and anticipated	All

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Measure	Mitigation	Applicable Route or Substation
	procedures to treat unexpected discoveries. ▪ Upon discovery of potential buried cultural materials, work in the immediate area of the find shall be halted and PG&E Co.'s archaeologist notified. Once the find has been identified, PG&E Co.'s archaeologist will make the necessary plans for treatment of the find(s) and for the evaluation and mitigation of impacts if the finds are found to be important according to CEQA.	
C-3	PG&E Co. shall inventory areas that were not surveyed for this EIR areas (as defined in Table C.4-3, and in the CRTP) for archaeological resources within proposed or existing corridors that could not be field-checked during EIR preparation due to property owner access constraints.	All
C-4	PG&E Co. shall implement archaeological monitoring by a Professional Archaeologist during subsurface construction disturbance at all locations identified in or adjacent with potential for significant buried cultural materials. These locations and their protection boundaries are listed in Table C.4-3, and shall be further defined in the CRTP.	All
C-5	PG&E Co. shall consult with and implement any site-specific cultural resources requirements mandated by the East Bay Regional Park District (EBRPD) and the California Department of Parks and Recreation for project areas within EBRPD and State of California parks. The results of these consultations shall be documented in the CRTP. The following parks may be affected: EBRPD Shadow Cliffs Regional Recreation Area; EBRPD Brushy Peak Preserve; EBRPD Black Diamond Mines Regional Preserve; EBRPD Morgan Territory Regional Preserve; Mount Diablo State Park (State of California); and Livermore Area Regional Parks District Sycamore Grove Park.	All
G-1	PG&E Co. should perform corrosivity testing on a site-specific basis for each support structure to be located within areas mapped as having high potential for corrosive soils by the USDA. Remediation measures or soil treatment procedures shall be implemented on a site-specific basis dependent upon the soil test results.	All
H-2	Excavated or disturbed soil shall be temporarily collected and placed in a controlled area surrounded by siltation fencing, hay bales, or a similarly effective erosion control technique that prevents the transport of sediment. The following provisions shall be documented to the CPUC and the Alameda County Water District. • The Storm Water Pollution Prevention Plan (SWPPP) shall be designed specifically for the hydrologic setting of the Proposed Project, which includes upland slopes, tributary creeks, and larger streams. • The staging of construction materials, equipment, and excavation spoils will be performed at least 100 feet outside of drainage channels or tributaries. • Where tower or substation construction activities occur near a creek or channel, sediment containment methods shall be performed at least 100 feet from the channel. • Upon completion of construction activities, excavated soil shall be replaced and graded to match the surroundings. • Surplus soil shall be transported from the site and disposed of appropriately.	All
H-3	The training program prescribed in Applicant Proposed Measure 8.2 shall not only describe general environmental concerns and procedures, but shall emphasize site-specific physical conditions to improve hazard prevention. For example, all flow paths to the nearest water bodies should be identified to workers and where hazardous materials specifically impact the site shall be identified. This provision shall be documented to the CPUC and the Alameda County Water District.	All
H-4	All refueling, lubrication, and other machinery or vehicular maintenance activities shall be performed at least 100 feet from any tributary or stream channel, or slough. Excess concrete shall be removed from tower foundations.	All
H-5	The staging of underground trench related construction materials, equipment, and excavation spoils will occur at least 100 feet outside of tributaries, creeks, or drainage channels.	All
H-6	Groundwater levels along the underground transmission line route shall be tested by drilling pilot borings. The location, distribution, or frequency of such tests shall be determined to give adequate representation of the conditions along the underground line. For example, along the route south of Arroyo Valle, tests could be conducted at four locations at 500-foot intervals. North of Arroyo Valle, one test could occur between the creek and the Vineyard Substation. In the other project areas (Dublin, North Livermore) suitable testing locations may also be determined (for example at 1,000 or 1,500 ft intervals). Locations where groundwater depth is less than 8 ft deep shall be identified prior to trenching activities and avoided, where possible, for the underground route. Avoidance is especially recommended where shallow groundwater flow direction is not parallel to the orientation of the underground line. Where avoidance is not possible, PG&E Co. shall consider construction in a shallower trench, depending upon structural requirements of the underground method and other practical concerns. PG&E Co. shall document results of test drilling in a letter report to the CPUC at least 30 days before construction starts and shall propose specific means to minimize the impact on groundwater if shallow groundwater is found. These measures must be approved by the CPUC prior to the start of construction of the	All

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Measure	Mitigation	Applicable Route or Substation
	underground segment.	
H-8	A spill prevention containment and countermeasure (SPCC) pond will be designed to collect all runoff from the substation (Vineyard, Dublin, San Ramon, North Livermore, Hartman Rd., or Tesla), including the proposed modifications. Surface drains and subsurface piping will convey runoff to the lined on-site SPCC pond. Water held in the SPCC pond shall be tested for contaminant levels prior to its release. Released water from the SPCC pond should pass through an oil/water separator. If contaminated water is allowed to evaporate on-site in the pond, then the pond lining shall be inspected and cleaned according to standard procedure prior to subsequent runoff events. SPCC ponds shall be designed specifically for site runoff conditions and how discharge enters receiving creeks or drainage channels.	Vineyard, North Livermore, and Dublin Substations
H-9	A site-specific Erosion Control Plan shall be written in coordination with the design and construction of the creek crossing near the Proposed Dublin Substation. This plan shall outline techniques and methods to reduce immediate erosional impacts to the stream's banks and bed during the construction process. Longer term considerations about preserving creek stability and channel form shall also be considered as part of the design process for this creek crossing. The site-specific erosion control plan and the design of the crossing shall be approved by the relevant local jurisdiction (Alameda County Flood Control and Water Conservation District, Zone 7 or the Contra Costa County Flood Control District).	Dublin Substation
H-10	Mitigation Measure H-10 directs a more thorough hydrologic and geomorphic analysis of the Proposed Dublin Substation and creek crossing and an evaluation of the magnitude of potential increases in runoff and channel erosion in the adjacent tributary channel. Analytical methods including hydrologic, hydraulic, and sediment transport modeling which are acceptable to the Contra Costa County Flood Control District shall be utilized to assess the significance of the substation on the 5, 10, 25, and 100-year runoff events. This site-specific information should then be used to evaluate, and modify if needed, the design of the substation, the on-site storm basin, and the creek crossing. If the analysis suggests potential creek instability, concepts and methods to provide additional stream stability shall be included in the final substation and creek crossing design that shall be reviewed and approved by the Flood Control District and the CPUC (including the analysis required by this Mitigation Measure).	Dublin Substation
H-11	Several groundwater test borings shall be made for the S2 route. PG&E Co. shall document results of test drilling in a letter repot to the CPUC and shall propose specific means to minimize the impact on groundwater if shallow groundwater is found. These measures must be approved by the CPUC prior to the start of construction of the underground segment.	S2
L-1	PG&E Co. or its construction contractor shall provide advance notice, between two and eight weeks prior to construction, by mail to all residents and property owners within 300 feet of the construction right-of-way. The announcement shall state specifically where and when construction will occur in the area. If construction delays of more than seven days occur, an additional notice shall be made, either in person or by mail. Notices shall provide tips on reducing noise intrusion, for example, by closing windows facing the planned construction. PG&E Co. shall also publish a notice of impending construction in local newspapers, stating when and where construction will occur.	All
L-2	PG&E Co. shall identify and provide a public liaison person before and during construction to respond to concerns of neighboring residents about noise, dust, and other construction disturbance. PG&E Co. shall also establish a toll-free telephone number for receiving questions or complaints during construction and develop procedures for promptly responding to callers and recording the disposition of calls (procedures to be approved by the CPUC). Procedures for reaching the public liaison officer via telephone or in person shall be included in notices distributed to the public in accordance with Mitigation Measure L-1.	All
L-5	Construction of the underground alignment along Vineyard Avenue shall be coordinated with property owners to reduce impact to the grape harvest.	S2
L-12	If the planned elementary school is occupied prior to or during construction of the underground transmission line, construction activities within 1,000 feet of the school property's frontage on Vineyard Avenue shall be coordinated with the Pleasanton Unified School District. PG&E Co. shall submit such schedule to the CPUC no less than 30 days prior to start of construction activities.	S2
L-12a	If the S2 or S4 Alternatives are selected and if Old Vineyard Avenue is identified as the selected route, the transmission line shall be located as follows: 1. West from Highway 84, the underground route would be located in the firebreak road south of Vineyard, past Isabel Avenue to the western boundary of the Ruby Hill property (where the fire station is located). 2. West from the fire station, where the road narrows and New Vineyard diverges towards the northwest, the transmission line would be installed within the roadway. Where New and Old Vineyard converge and the road becomes a divided roadway, the transmission line would be installed within the roadway (with the final location to be determined in consultation with the City of Pleasanton as required in Mitigation Measure S-1).	S2
L-16	The North Livermore substation shall be relocated at least 500 feet to the north, outside of the May School Road Greenbelt, and shall be screened along the southern exposure by sufficient landscaping to render it inconspicuous as a manmade element, as viewed from the adjacent greenbelt. As required by 6.0. 131-D, PG&E Co. shall consult with the	North Livermore Substation

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	relevant local jurisdiction and make every reasonable effort to comply with local design standards. See also Mitigation Measure **L-18** regarding landscaping.	
L-17	PG&E Co. shall deed a 25-foot-wide easement across the North Livermore substation site frontage to the relevant entity for dedication as a multi-use trail corridor (applies with adoption of Mitigation Measure **L-16**, as well).	North Livermore Substation
L-18	PG&E Co. shall landscape the North Livermore substation with drought-tolerant, native plant species. Pursuant to 6.0 131-D, PG&E Co. shall consult with the relevant jurisdiction and make every reasonable effort to comply with local design standards.	North Livermore Substation
L-24	PG&E Co shall coordinate with affected agencies and proponents of proposed projects within or adjacent to the selected transmission route to minimize cumulative construction effects and avoid preclusion of other planned land uses to the maximum extent feasible. Said coordination shall take place during the final design and permitting stages of the transmission project and shall include, but not be limited to: ▪ Provision of transmission route and construction schedule to affected parties; ▪ Coordination of construction activities with other construction projects; ▪ Coordination of utility disruptions and road or lane closures.	All
L-25	The route of the easternmost 1,000 feet of the P3 Alternative (as modified in the Final EIR, Section B.5) shall be evaluated by PG&E Co. in conjunction with the adjacent landowners and the transition station shall be relocated to at least 500 feet from any residence, if feasible.	P3
PS-1	As part of the design and construction process, the Applicant shall limit the conductor surface electric gradient in accordance with the IEEE Radio Noise Design Guide.	All
PS-2	After energizing the transmission line, the Applicant shall respond to and document all radio/ television/equipment interference complaints received and the responsive action taken. These records shall be made available to the CPUC for review upon request. All unresolved disputes shall be referred by the Applicant, within 90 days, to the CPUC's Energy Division for resolution.	All
PS-3	As part of the siting and construction process, the Applicant shall identify objects (such as fences, conductors, and pipelines) that have the potential for induced voltages and work with the affected parties to determine proper grounding procedures (CPUC G095 and the NESC do not have specific requirements for grounding). The Applicant shall install all necessary grounding measures prior to energizing the line. Thirty days prior to energizing the line, the Applicant shall notify in writing, subject to the review and approval of the CPUC Energy Division, all property owners within and adjacent to the Proposed Project ROW of the date the line is to be energized. The written notice shall provide a contact person and telephone number for answering questions regarding the line and guidelines on what activities should be limited or restricted within the ROW. The Applicant shall respond to and document all complaints received and the responsive action taken. These records shall be made available to the Lead Agencies for review upon request. All unresolved disputes shall be deferred by the Applicant to the Lead Agencies for resolution. The written notice shall describe the nature and operation of the line, and the Applicant's responsibilities with respect to grounding all conducting objects. In addition, the notice shall describe the property owner's responsibilities with respect to notification for any new objects, which may require grounding, and guidelines for maintaining the safety of the ROW.	All
S-1	PG&E Co. shall consult with local jurisdictions and agencies responsible for all underground utilities in order to define the exact placement of the underground transmission line. In addition, PG&E Co. shall evaluate the potential for the underground transmission line to increase corrosion on existing pipelines. If this potential is determined to exist, PG&E Co. shall be responsible for installation of the required cathodic protection systems that would eliminate this risk. A letter documenting these consultations and their results, including concurrence by the affected jurisdiction(s) and other companies, shall be provided to the CPUC prior to the start of construction.	Underground portions of all routes (S2A/S2, P2, and P3)
T-1	Prior to the start of construction, PG&E Co. shall submit traffic control plans to the City of Pleasanton Public Works Department as part of the required traffic encroachment permits. Documentation of the approval of these plans and issuance of encroachment permits shall be provided to the CPUC prior to the start of construction on the underground portion of the project.	All
T-2	PG&E Co. shall restrict all necessary lane closures or obstructions on major roadways to off-peak period in urbanized areas to mitigate traffic congestion and delays that would be caused by lane closures during construction and by exploratory excavations. Lane closures must not occur between 6:00 and 9:30 a.m. and between 3:30 and 6:30 p.m., or as directed in writing by the affected public agency in the encroachment permit.	All
T-3	PG&E Co. shall develop and implement detailed Traffic Control Plans (TCPs) for the entire route at all locations where construction activities would interact with the existing transportation system. Input and approval from the responsible public agencies shall be obtained; copies of approval letters from each jurisdiction must be provided to the CPUC prior to the start of construction within that jurisdiction. The TCP shall define the use of flag persons, warning signs, lights, barricades, cones, etc. according to standard guidelines outlined in the Caltrans Traffic Manual, the Standard Specifications for Public Works Construction, and the Work Area Traffic Control Handbook (WATCH).	All

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Measure	Mitigation	Applicable Route or Substation
T-4	If damage to roads and sidewalks occurs, PG&E Co. will coordinate repairs with the affected public agencies to ensure that any impacts to area roads are adequately repaired. Roads disturbed by construction activities or construction vehicles shall be properly restored to ensure long-term protection of road surfaces. Care shall be taken to prevent damage to roadside drainage structures. Roadside drainage structures and road drainage features (e.g., rolling dips) shall be protected by regrading and reconstructing roads to drain properly. Said measures shall be incorporated into an access agreement/easement with the applicable governing agency prior to construction.	All
T-5	In conjunction with Mitigation Measure L-1, PG&E Co. shall notify affected parties of potential obstructions and make provisions for alternative access. Alternative access provisions and parking will be provided by PG&E Co. where feasible, with guide signs to inform the public. PG&E Co. shall give written notification to all landowners, tenants, business operators, and residents along the right-of-way of the construction schedule, and shall explain the exact location and duration of the transmission line and construction activities within each street (e.g., which lane/s will be blocked, at what times of day, and on what dates). PG&E Co. shall identify any potential obstructions to their access, and shall make alternative access provisions. The written notification shall include a toll-free telephone number for PG&E Co.'s public liaison (Mitigation Measure L-2) and shall encourage affected parties to discuss their concerns with PG&E Co. prior to the start of construction so individual problems and solutions can be identified. Alternative access provisions shall include PG&E Co. provided signage and alternate parking as provided and approved by local agencies.	All
T-6	PG&E Co. shall schedule construction on or adjacent to sensitive lands (e.g. hospitals, schools, residences, major employees, recreational areas) so that at least one access driveway is left unblocked during all business hours or hours of use. This scheduling shall be provided by PG&E Co. to the landowners or tenants so they can inform residents or customers. If access problems can be avoided by scheduling night construction in non-residential areas, this option should be considered.	All
T-7	PG&E Co. shall provide alternative pedestrian and bicycle access routes to avoid obstruction to pedestrian and bicycle circulation. Where existing pedestrian circulation routes or bike trails would be obstructed by transmission line construction, alternative access routes shall be developed and signed/marked appropriately, in conjunction with local agencies.	All
T-8	PG&E Co. shall coordinate in advance with emergency service providers to avoid restricting movements of emergency vehicles. Police departments, fire departments, ambulance services, and paramedic services shall be notified in advance by PG&E Co. of the proposed locations, nature, timing, and duration of any construction activities and advised of any access restrictions that could impact their effectiveness. At locations where access to nearby property is blocked, provision shall be ready at all times to accommodate emergency vehicles, such as plating over excavations, short detours, and alternate routes in conjunction with local agencies. Traffic Control Plans (T-3) shall include details regarding emergency services coordination and procedures, and copies shall be provided to all relevant service providers. Documentation of coordination with service providers shall be provided to the CPUC prior to the start of construction.	All
T-9	PG&E Co. shall coordinate with the Alameda Unified School District, the Pleasanton Unified School District, and the Livermore Valley Joint Unified School District at least one month prior to construction to coordinate construction activities adjacent to school bus stops. If necessary school bus stops will be temporarily relocated or buses will be rerouted until construction in the vicinity is complete. PG&E Co. will also consult with the Livermore Amador Valley Transit Authority at least one month prior to construction to reduce potential interruptions to transit service in the project area.	All
T-12	If the S2 or S4 Alternatives are selected in conjunction with the New Vineyard Avenue route, PG&E Co. shall coordinate with the City of Pleasanton regarding the status of New Vineyard construction. If PG&E Co. believes that construction of New Vineyard is not sufficiently advanced to allow timely installation of the underground transmission line, PG&E Co. shall present documentation of this finding to the CPUC Energy Division, supported by documentation from the City, at least 60 days before the start of construction. If the CPUC Energy Division concurs that road construction could delay installation of the transmission line, the Old Vineyard Avenue shall be utilized instead, as envisioned in the Draft EIR (and as defined and conditioned in Final EIR Section C.2.3).	S2
V-1	If the S1, S2, or L2 Alternatives are selected, the underground portion of these routes should be extended southeast so the overhead/underground transition station is located immediately adjacent to the tap point in the Tesla-Newark corridor.	S2
V-3	If the proposed transmission line route to the Dublin Substation is selected, the visual impact of the line east of Milepost B14.5 shall be reduced by the following method: Install the line underground from the tap to the Contra Costa-Newark line to approximately Milepost B14.5 to eliminate an overhead crossing of the scenic valley and hills visible from Key Viewpoint 13 on Manning Road.	Proposed overhead line to Dublin Substation

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Measure	APPLICANT PROPOSED MITIGATION MEASURES	Applicable Route or Substation
5.1	All new access roads will be gated and locked at fence lines.	All
5.2	All new access roads will have a "No Trespassing" sign posted at their entrance from a public roadway.	All
5.3	PG&E will pay restitution for relocating wind turbines and restricting wind farm operations that are currently located outside of PG&E's existing easement.	All
6.1	PG&E will keep construction-related activity as clean and inconspicuous as practical by generally storing building materials and equipment away from public view and removing construction debris promptly at regular levels	All
7.1	Any permanent loss of emergent wetlands resulting from the construction of access roads will be mitigated at a ratio of 1:1 through: • The purchase, restoration and protection of severely degraded wetlands in the vicinity of the project, • The creation of new emergent wetland from upland habitat within the vicinity of the project, and/or • The purchase from a mitigation bank of similar wetlands in the vicinity of the project.	All
7.2	Following the completion of all special status plant surveys, if it is determined that they occur within the project area, PG&E will modify the project to avoid impacts to the identified species. If identified special status plant species cannot be avoided, PG&E will: • Modify the project to minimize impacts to identified species • Acquire suitable habitat for identified species within the project vicinity • Develop a long term habitat enhancement plan (HEP) for identified species • Monitor the implementation of and the compliance with mitigation measures as outlined in the HEP.	All
7.3	PG&E will comply with the USFWS's "Standard Recommendations for the Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance," (USFWS, April 1, 1997). This document includes measures for preconstruction surveys and measures to minimize or eliminate mortality, harm, or harassment resulting from construction activity. All surveys and den excavations will be conducted by a qualified biologist. • Preconstruction/preactivity surveys will be conducted in the proposed active phase area no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities that are likely to impact the San Joaquin kit fox • Any potential den will be monitored for evidence of kit fox use by placing a tracking medium at den entrances for at least 3 consecutive nights. If a den is determined to be occupied, progressive plugging of the den may be employed to discourage use, and the den closed after it is determined to be unoccupied for a minimum of 3 consecutive nights (USFWS, 1997) • Potential dens that can be avoided during ground disturbing activities will have an exclusion zone established around them. The radius of the exclusion zone will be 100 feet for known dens and 50 feet for potential or atypical dens • Project-related vehicles will observe a 20-mph speed limit in project areas deemed to provide kit fox habitat (as per Construction and Operational Requirements, USFWS 1997), except as posted on county roads, and state and federal highways. Nighttime construction will be minimized. Vehicles will be limited to the designated project area to avoid kit fox habitat • The use of rodenticides and herbicides will be restricted by PG&E within project boundaries • To prevent accidental entrapment of kit fox during construction, all excavated holes or trenches will be covered at the end of each work day with plywood or similar materials. Before such holes are filled, they will be thoroughly inspected for trapped animals. In the event of a trapped animal, ramps or other structures will be installed immediately to allow the animal to escape, or the USFWS will be contacted for advice • PG&E will appoint a representative who will notify the USFWS and CDFG immediately in the event of an accidental death or injury to a kit fox during project-related activities, and a follow-up letter will be submitted within 3 working days of the accident • All temporary disturbance areas will be recontoured, if necessary, and revegetated to promote restoration of the area to pre-project conditions.	All
7.3(a)	All foraging and denning habitat that could be lost to construction activities will be calculated and reported to the USFWS and CDFG. This acreage will be mitigated at a 3:1 ratio with the purchase of habitat credits or the purchase of offsite mitigation land.	**All**

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7.4	If occupied habitat is detected either within the right-of-way or 250 feet from the project-impact area, measures to avoid, minimize, or if necessary, mitigate impacts will be incorporated into the project. For the burrowing owl (known to be present), specific mitigation measures are suggested by CDFG (Burrowing Owl Consortium, 1993) and are discussed separately under Measure 4(a). All species and subspecies of the families listed in the Migratory Bird Treaty Act and their nests are protected. In addition, the golden eagle is protected under the Bald Eagle Protection Act. Take of individual animals will be avoided by conducting pre-construction surveys before the spring breeding season (and prior to start of construction). A survey of the construction area for potential avian species will be performed by a qualified biologist. It is expected that if construction occurs in suitable habitat before the onset of the breeding season, the construction disturbance would cause bird species to seek alternate sites for breeding and nest construction. The following measures will reduce the likelihood of impacting either sensitive habitat or directly impacting birds that could be nesting. ▪ To the extent possible, transmission line towers and access roads will avoid sensitive habitat. Flexibility exists in the exact placement of these features ▪ To the extent possible, the breeding season (February to September) will be avoided; however, if avoidance of active nests is not practicable, a construction-free buffer of at least 250 feet around the nest will be maintained to protect breeding birds ▪ A biological monitor will remain onsite to monitor the activity of the nesting birds during work to determine if work could continue without causing significant disturbance to the birds and to ensure implementation of and compliance with all avoidance and mitigation measures ▪ Wetland habitat will be spanned by the transmission line. At Arroyo del Valle, a dry bore will be made under the riverbed. These methods are included to avoid direct impacts to breeding habitat ▪ Should nest abandonment during breeding occur, the biological monitors will notify the appropriate resource agencies.	All
7.4(a)	A pre-construction survey will be conducted by a qualified biologist in all areas providing suitable habitat at least 30 days prior to construction according to the most recent Burrowing Owl Survey Protocol and Mitigation Guidelines (Burrowing Owl Consortium, 1993), and as suggested by CDFG. Surveys will cover grassland areas within a 500-foot buffer along the proposed transmission line routes and substations, and they will include areas designated for temporary laydown areas and access roads. The survey will include checking for the burrowing owl and owl sign. If owls are found to be using the site and avoidance is not feasible, a passive relocation effort (displacing the owls from the site) may be conducted as described below, subject to the approval of the CDFG. If occupied habitat is found on or adjacent to the Proposed Project features, measures to avoid, minimize, or mitigate impacts to burrowing owls will be incorporated into the project. They will include: ▪ Confirmed unoccupied burrows along the route may be collapsed ▪ Establish areas around the occupied burrows where no disturbance may occur. The sensitive areas shall extend 160 feet around the occupied burrows during the non-breeding season of September 1 through January 31, and shall extend 250 feet around occupied burrows during the breeding season from February 1 through August 31. A barrier fence will be erected during the breeding season around occupied burrows. If this avoidance method is not possible, passive relocation of the owls may occur but only during the non-breeding season. Passive relocation would include installing one-way doors on the entrances of burrows located within 250 feet of the Proposed Project features. The one-way doors shall be left in for 48 hours to ensure the owls have vacated the burrow. Owls would not be relocated during the breeding season. ▪ For each active burrow that will be excavated by project construction, one natural or artificial burrow will be provided outside of the 250-foot buffer. These alternate burrows will be monitored daily for 1 week to ensure the owls have successfully moved ▪ Burrows within the construction area shall be excavated under the supervision of a biological monitor using hand tools and then refilled to prevent reoccupation. If any burrowing owls are discovered during excavation, the excavation shall cease and the owl allowed to escape. Excavation may be completed when the biological monitor confirms that the burrow is empty ▪ All work will be coordinated with CDFG.	All
7.5	• Before the spring breeding season (and prior to start of construction), a survey of the construction area for potential sensitive habitat will be performed by a qualified biologist. It is expected that if construction occurs in suitable habitat before the onset of the breeding season, the construction disturbance would cause mammal species to seek alternate sites for breeding and denning • To the extent possible, sensitive habitat, including burrows, would be avoided by moving the location of the	All

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	transmission pole or the location of access roads. Some flexibility exists in the exact placement of these features along the route • A biological monitor will be present to ensure implementation of, and compliance with, these mitigation measures • A minimum buffer of at least 300 feet will be maintained around known dens of the American badger during the breeding season (March to September) to avoid direct loss of individuals • Vehicular speeds will be kept to 20 mph in sensitive wildlife habitat • If sensitive species are located prior to construction, PG&E will consult with the USFWS and CDFG to coordinate avoidance.	
7.6	Prior to construction, surveys will be performed at aquatic sites that could potentially be impacted by project activities and for which presence or absence of the species has not yet been demonstrated. To avoid construction impacts to aquatic habitats, a buffer zone of 30 feet during the dry season (May to October) and 200 feet during the wet season (November to April) will be established around all ponds and drainages in the project area that contain this species and could potentially be impacted by project activities. Buffers are work exclusion areas. If work must be conducted in buffer zones, the type and duration of the work will be negotiated with the appropriate resource agency prior to construction in the area. To minimize impacts to the ephemeral drainage at Milepost B13.18, appropriate construction techniques will be employed to minimize disturbance of stream channels and banks. If significant impacts occur to breeding or estivation habitat of the CRLF, PG&E will replace the habitat at a ratio negotiated with USFWS. The permanent loss of estivation habitat (upland impacts) due to construction of access roads and towers could be considered a significant impact by the USFWS and could require a replacement ratio of 1:1. However, this would vary depending on the abundance of suitable habitat in the project vicinity. In the unlikely event that construction activities occur in wetlands identified as suitable CRLF habitat, PG&E will enter into formal consultation with the USFWS and implement the avoidance and minimization measures outlined in a Biological Assessment prepared for the CRLF. Avoidance and minimization measures that the USFWS would likely require include the following: ▪ Prior to the initial site investigation and subsequent ground-disturbing activities, a qualified biologist would instruct all project personnel in environmental training, including recognition of CRLF and their habitat. Under this program, workers shall be informed about the presence of CRLF and habitat associated with the species, and that unlawful take of the animal or destruction of its habitat is a violation of the federal Endangered Species Act. The biologist shall instruct all construction personnel regarding the life history of CRLF, the importance of marshes/wetlands to the frog, and the terms and conditions of the Biological Opinion ▪ A qualified biologist would be present during construction activities to monitor and determine the extent of potential ground-disturbing activities within 30 feet of suitable habitat ▪ Ground-disturbing activities within 30 feet of suitable habitat could only occur between May 1 and October 31 ▪ Between November 1 and April 30, ground-disturbing activities will not occur within 30 feet of suitable habitat ▪ Between May 1 and October 31, equipment will not be allowed within 30 feet of suitable habitat until a qualified biologist inspects the site to ensure the route was clear of CRLF ▪ Clearing of wetland vegetation will be confined to the minimal area necessary. Excavation activities will be accomplished by using equipment located on and operated from the side of the drainage with the least interference practicable for emergent vegetation ▪ If a CRLF is encountered during excavations, activities would cease until the frog was removed and relocated by a USFWS approved biologist. ▪ After completion of construction activities, any debris will be removed and, wherever feasible, disturbed areas will be restored to pre-project conditions. A restoration plan will be prepared for those sites where emergent vegetation is removed. The following elements will be included in the restoration plan: ▪ Prior to all construction activities, the site will be photographed to establish the pre-project condition ▪ After completion of construction activities, the site will be graded to the pre-existing contour or a contour that would improve the restoration potential of the site. ▪ The site will be replanted and hydro-seeded. Recommended plantings consist of wetland emergents, low-growing cover on or adjacent to banks, and upland plantings/hydro-seeding to encourage use by other wildlife. Replanting should involve the same species removed during construction. Plantings should be at least the same density and compositions as the pre-project level ▪ The restoration plan will identify success criteria for the restoration ▪ Habitat restoration will be monitored for 1 year from implementation. Monitoring reports documenting the restoration effort will be submitted to the USFWS upon completion of the restoration implementation and 1 year from restoration implementation. Monitoring reports will include photo documentation, the date restoration was completed, and the species used for plantings. Monitoring reports will also include recommendations for	All

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	remedial actions; approval from the USFWS, if necessary; and justification from release of any further monitoring, if requested.	
7.7	Prior to construction, surveys will be performed at aquatic sites that could potentially be impacted by project activities and for which presence or absence of the species has not yet been demonstrated. To avoid potential construction impacts to aquatic habitats, a buffer zone of 30 feet during the dry season (May to October) and 200 feet during the wet season (November to April) will be established around all ponds and drainages in the project area that contain this species and could potentially be impacted by project activities. Buffers are work exclusion areas. If work must be conducted in buffer zones, the type and duration of the work will be negotiated with the appropriate resource agency prior to construction in the area. If significant impacts occur to CTS estivation or breeding habitat, PG&E will replace the habitat at a ratio negotiated with CDFG. The permanent loss of estivation habitat usually requires a replacement ratio of 1:1; however, this may vary if estivation habitat is abundant in the general vicinity. In the unlikely event that excavation activities occur in wetlands identified as suitable CTS habitat, PG&E will enter into formal consultation with CDFG and USFWS and will implement avoidance and minimization measures. These measures could include the following: • Before construction begins, a qualified biologist will instruct all project personnel in environmental awareness training, including recognition of CTS and their habitat. Under this program, workers shall be informed about the presence of CTS and habitat associated with the species, and that unlawful take of the animal or destruction of its habitat would be a violation under state law. The biologist will instruct all construction personnel regarding the life history of CTS, the importance of wetlands to the salamander • A qualified biologist will be present during construction activities to monitor and determine the extent of potential ground-disturbing activities within 30 feet of suitable habitat • Ground-disturbing activities within 30 feet of suitable habitat could only occur between May 1 and October 31 • Between November 1 and April 30, ground-disturbing activities will not occur within 200 feet of suitable habitat • Clearing of wetland vegetation will be confined to the minimal area necessary. Excavation activities will be accomplished by using equipment located on and operated from the side of the drainage with the least interference practicable for emergent vegetation • Before allowing equipment within 30 feet of suitable habitat, a qualified biologist will inspect the site to ensure the route is clear of CTS • If a CTS is encountered during excavations, activities would cease until the salamander was removed and relocated by a CDFG-approved biologist • After completion of construction activities, any construction debris will be removed; wherever feasible, disturbed areas shall be restored to pre-project conditions.	All
7.8	Prior to construction, surveys will be performed at aquatic sites that could potentially be impacted by project activities and for which presence or absence of the species has not yet been determined. To avoid potential construction impacts to aquatic habitats, a buffer zone will be established around all ponds in the project area which contain this species and could potentially be impacted by project activities. Buffers are work exclusion areas. If work must be conducted in buffer zones, the type and duration of the work will be negotiated with the appropriate resource agency prior to construction in the area. This buffer zone will be a minimum of 30 feet during the dry season (May to October) and a minimum of 200 feet during the wet season (November to April).	**All**
7.9	Prior to construction, surveys will be performed at aquatic sites that could potentially be impacted by project activities and for which presence or absence of the species has not yet been determined. To avoid potential construction impacts to aquatic habitats, a buffer zone of 30 feet during the dry season (May to October) and 200 feet during the wet season (November to April) will be established around all ponds in the project area that contain this species and could potentially be impacted by project activities. Buffers are work exclusion areas. If work must be conducted in buffer zones, the type and duration of the work will be negotiated with the appropriate resource agency prior to construction in the area.	All
7.10	Prior to construction, surveys will be performed at aquatic sites that could potentially be impacted by project activities and for which presence or absence of the species has not yet been determined. To avoid potential construction impacts to aquatic habitats, a buffer zone will be established around all ponds and drainages in the project area which contain this species and could potentially be impacted by project activities. Buffers are work exclusion areas. If work must be conducted in buffer zones, the type and duration of the work will be negotiated with the appropriate resource agency prior to construction in the area. A 250-foot buffer will be maintained during the wet season (first substantial rainfall after October 31 until May 15), and a 100-foot buffer will be maintained during the remainder of the year. Construction monitoring will be done at each Seasonal Wetland with the potential to support listed shrimp. Monitoring of each site will occur during all construction activities within 250 feet of potential habitat. If the areas of potential shrimp habitat can be avoided, no additional mitigation measures are required. If the wetlands cannot be avoided, formal consultation with the USFWS would be required, and a Biological Assessment would need to be prepared.	All

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7.11	To avoid potential construction impacts to aquatic habitats, a buffer zone of 30 feet during the dry season (May to October) and 200 feet during the wet season (November to April) will be established around all ponds in the project area that contain this species and could potentially be impacted by project activities. Buffers are work exclusion areas. If work must be conducted in buffer zones, the type and duration of the work will be negotiated with the appropriate resource agency prior to construction in the area.	**All**
7.13	The following measure will be implemented to reduce perching and predation opportunities: ▪ Tubular steel poles will be used extensively throughout the project area to minimize perching and predation opportunities ▪ Predation opportunities will be further reduced through the use of deterrents such as bird guards (Nixalite) to discourage perching of raptors at all tower locations within areas containing suitable habitat for burrowing owls. This deterrent consists of rows of spring-tempered nickel stainless-steel prongs with sharp points extending outward at all angles, except where affixed, on potential perches on new poles.	All
8.1	An erosion control and sediment transport control plan will be submitted to Alameda County and Contra Costa County along with grading permit applications. This plan will be prepared in accordance with the standards provided in the Manual of Erosion and Sedimentation Control Measures (ABAG, 1981) and in compliance with practices recommended by the Natural Resources Conservation Service. Implementation of the plan will help stabilize graded areas and waterways, and reduce erosion and sedimentation. The plan will designate BMPs that will be adhered to during construction activities. Erosion minimizing efforts such as hay bales, water bars, covers, sediment fences, sensitive area access restrictions (for example, flagging), vehicle mats in wet areas, and retention/settlement ponds will be installed before extensive clearing and grading begins. Mulching, seeding, or other suitable stabilization measures will be used to protect exposed areas during construction activities. Revegetation plans, the design and location of retention ponds, and grading plans will be submitted to the CDFG for review in the event of construction near waterways. The plan will incorporate stipulations of the Alameda County grading erosion and sediment control ordinance, which requires that "trenching and grading associated with the construction and installation of underground pipelines be backfilled and the surface restored to its original condition, including reseeding or otherwise restoring vegetation on all disturbed slopes exceeding 2 percent," as soon as possible after such grading work is completed. Non-hazardous trench spoils from the underground transmission line will be stockpiled and used to backfill the trench where the material has appropriate thermal and geotechnical qualities. Open portions of the trench will be covered when not under active construction. Standard erosion and dust control practices will be used during construction according to Best Management Practices to protect biological and hydrological resources.	All
8.2	An environmental training program will be established to communicate environmental concerns and appropriate work practices, including spill prevention and response measures, to all field personnel. A monitoring program will be implemented to ensure that the plans are followed throughout the period of construction.	All
8.3	PG&E Co. will prepare a Hazardous Substance Control and Emergency Response Plan which will include preparations for quick and safe cleanup of accidental spills. This plan will be submitted with the grading permit application. It will prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and will include an emergency response program to ensure quick and safe cleanup of accidental spills. The plan will identify areas where refueling and vehicle maintenance activities and storage of hazardous materials, if any, will be permitted.	All
8.4	Oil-absorbent material, tarps, and storage drums will be used to contain and control any minor releases of transformer oil. In the event that excess water and liquid concrete escapes from pole foundations during pouring, it will be directed to bermed areas adjacent to the borings where the water will infiltrate or evaporate and the concrete will remain and begin to set. Once the excess concrete has been allowed to set up (but before it is dry), it will be removed and transported to an approved landfill for disposal.	All
8.5	Soil sampling and potholing will be conducted before construction begins, and soil information will be provided to construction crews to inform them about soil conditions and potential hazards. If hazardous materials are encountered in trench soils, work will be stopped until the material is properly characterized and appropriate measures are taken to protect human health and the environment. If excavation of hazardous materials is required, they will be handled, transported, and disposed of in accordance with federal, state, and local regulations. Prior to initiating excavation activities at pole locations, soil borings will be advanced to ensure that groundwater will not be contacted. If groundwater is encountered within the depths of the proposed foundations, samples will be collected and submitted for laboratory analysis of metals and halogenated volatile organic compounds. If necessary, groundwater will be collected during construction, stored in Baker tanks, and disposed of in accordance with state and local regulations. Appropriate personal protective equipment will be used and soils management will be performed in accordance with state and county regulations.	All
8.6	If groundwater is encountered while excavating or constructing the underground transmission line, it will be checked for contaminants, and if none are found, will either be released to one of Kaiser Sand and Gravel's sediment ponds	S2/S2A and D1

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	(with approval), released to the City of Pleasanton's storm water drainage system (with approval), or contained in a tank and disposed of in accordance with all applicable federal, state, and local regulations.	
9.1	The best mitigation measure is to avoid impacts to cultural resources that may be located in the project area. PG&E will have an archaeologist demarcate cultural resource site boundaries on the ground to ensure that proposed project improvements do not impinge on the resource(s). Although there are presently no known archaeological sites that would be subject to potential construction impact, PG&E will ensure that wherever a tower or access road must be placed within 100 feet of a known archaeological site, the site will be flagged on the ground as an Environmentally Sensitive Area (ESA). Construction equipment would then be directed away from the ESA, and construction personnel would be directed to avoid entering the ESA. Prior to starting construction near any designated ESA, the construction crew would be informed of the resource values involved and of the regulatory protections afforded to the resources. The crew would also be informed of procedures relating to designated ESAs and cautioned not to drive into these areas or operate construction equipment on them. The crew would be cautioned not to collect artifacts and would be asked to inform their supervisor if cultural remains are uncovered. If any cultural remains are discovered, work at the site will be halted, and a qualified archaeologist will be called to determine the significance of the find.	All
10.1a	All personnel working on the project will be trained prior to starting construction on methods for minimizing air quality impacts during construction.	All
10.1b	Water all active construction areas, access roads, and staging areas at least twice daily.	All
10.1c	Cover all trucks hauling soil and other loose material, or require at least 2 feet of freeboard.	All
10.1d	Construction vehicles will use paved roads to access the construction site when possible.	All
10.1e	Limit vehicle speeds to 15 mph on unpaved roads.	All
10.1f	Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets.	All
10.1g	Apply soil stabilizers to inactive construction areas on an as-needed basis.	All
10.1h	Enclose, cover, water twice daily, or add soil binders to exposed stockpiles of soil and other excavated materials.	All
10.1j	Construction workers will carpool when possible.	All
10.1k	Vehicle idling time will be minimized.	All
10.1i	Replant vegetation in disturbed areas following the completion of construction.	All
11.1	PG&E Co. will maintain the maximum amount of travel lane capacity possible during non-construction periods and will provide flagger-control at all construction sites to manage traffic control and flows.	All
11.2	During construction, PG&E Co. will limit the work zone to a width that, at a minimum, maintains alternate one-way traffic flow past the construction zone. Alternatively, PG&E Co. will use detour signing, where available, on alternate access streets in the event that temporary street closure is required.	All
11.3	Required permits for temporary lane closures will be obtained from the City of Pleasanton, Contra Costa County, and Alameda County. Before obtaining roadway encroachment permits from the cities and counties, PG&E Co. will submit a Traffic Management Plan subject to the local jurisdiction's review and approval. As part of this plan, traffic control measures and construction vehicle access routes will be identified. Construction of the underground portion of the transmission line will occur between 8 a.m. and 5 p.m., Monday through Friday, unless PG&E Co. obtains special permission from the City of Pleasanton. All property owners and residents of streets affected by construction will be notified prior to the start of construction. Advance public notification will include postings of notices and appropriate signage of construction activity.	All
11.4	All construction activities will be coordinated with local law enforcement and fire protection agencies. Emergency service providers will be notified of the timing, location, and duration of construction activities.	All
11.5	PG&E Co. will consult with the Alameda, Pleasanton, and Livermore Valley Joint Unified School Districts at least 1 month prior to construction to coordinate construction activities adjacent to school bus stops. If necessary, school bus stops will be temporarily relocated or buses will be rerouted until construction in the vicinity is complete. PG&E Co. will also consult with the Livermore/Amador Valley Transit Authority at least 1 month prior to construction to reduce potential interruption of transit service on Bernal Avenue.	**All**
12.1a	Compressors and other small stationary equipment will be shielded with portable barriers.	All
12.1b	"Quiet" equipment (i.e., equipment that incorporates noise control elements into the design; compressors and jackhammers have "quiet" models) will be used during construction.	All
12.1c	Equipment exhaust stacks/vents will be directed away from buildings.	All
12.1d	Truck traffic will be routed away from noise-sensitive areas where feasible.	All
12.1e	Temporary sound barriers or sound curtains will be employed if the other noise reduction methods are not effective or possible, or if sensitive receptors will be exposed to construction noise for more than 1 day.	All
13.1	PG&E Co. will perform design-level geotechnical studies to evaluate the potential for and effects of soft or loose soils, which will be over-excavated during construction and replaced with engineered backfill or other ground treatment. Where necessary, construction activities will be limited to the dry season. Incorporation of standard engineering	All

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	practices as part of the project shall ensure that people or structures are not exposed to geological hazards.	
13.2	PG&E Co. will develop an Erosion Control Plan which will be implemented throughout the construction period. Erosion control measures will include avoiding disturbance of steep slopes, using drainage control, controlling vehicular traffic, implementing dust control, and revegetating disturbed areas following construction.	All
13.3	PG&E Co. will use appropriate design features and construction procedures to maintain stable slope configurations during construction. Construction activities will be suspended during and immediately following periods of heavy precipitation. Development of grading plans and construction procedures will address access roads, substations, transmission towers, and the stability of temporary and permanent cut, fill, and otherwise impacted slopes. A design-level geotechnical investigation will be performed to evaluate subsurface conditions, identify potential hazards, and provide information for development of excavation plans and procedures to limit ground deformation, and protect the public and workers' safety during trenching and excavating operations. Incorporation of standard engineering practices as part of the project shall ensure that people or structures are not exposed to geological hazards.	All
13.4	PG&E Co. will contact a qualified paleontologist to examine and determine the significance of any fossils encountered during construction. If the find is deemed to have scientific value, the paleontologist and PG&E Co. will devise a plan to either avoid impacts or continue construction without disturbing the integrity of the find.	All
13.6	PG&E Co. will evaluate the potential for subsidence due to compaction from groundwater withdrawal, strong ground motions, and the presence of soft, loose compressible soils during design-level geotechnical investigations. The need to place additional fill or construct berms to reduce potential flooding from past subsidence will be evaluated and incorporated into design and construction plans. PG&E Co. will remove or rework near surface deposits likely to experience settlement prior to placing new fill. Incorporation of standard engineering practices as part of the project shall ensure that people or structures are not exposed to geological hazards.	All
13.7	PG&E Co. will conduct a design-level geotechnical investigation to evaluate the potential for settlement of approved project facilities. The results of the investigation will be used to develop appropriate foundation and structural designs to accommodate expected settlements. Soils found to be potentially susceptible during the investigation may be excavated, removed and replaced with engineered fill. Incorporation of standard engineering practices as part of the project shall ensure that people or structures are not exposed to geological hazards.	All
13.8	PG&E Co. will conduct design-level geotechnical studies to develop appropriate design features for locations where potential problems are known to exist. Appropriate design features may include excavation of problematic soils and replacement with engineered backfill, ground treatment processes for densification of soft or loose soils, direction of surface water and drainage away from foundation soils, and the use of deep foundations such as piers or piles. Incorporation of standard engineering practices as part of the project shall ensure that people or structures are not exposed to geological hazards.	All
13.9	PG&E Co. will perform a design-level geotechnical survey to evaluate the potential for unstable slopes, landslides, mudflows, and debris flows along the approved routes. Facilities will be located away from steep hillsides, debris flow source areas, the mouths of steep sidehill drainages, and the mouths of canyons that drain steep terrain. Specially designed deep foundations may be used in areas of shallow sliding where unstable slopes cannot be avoided. Incorporation of standard engineering practices as part of the project shall ensure that people or structures are not exposed to geological hazards.	All
13.10	PG&E Co. addressed the overhead crossings of four mapped faults with mitigation measures as follows: **Elk Ravine Fault:** Pre-Quaternary inactive fault; avoidance of mapped fault traces beneath transmission tower locations will avoid the hazard. **Greenville Fault:** Historically active fault; performance of geotechnical investigations at tower foundation sites to locate and avoid potential for surface fault rupture, design transmission lines to accommodate potential fault displacement. **Pleasanton Fault:** Holocene active fault; Proposed Project not located across or adjacent to fault. **Verona Fault:** Holocene active fault; performance of geotechnical investigations at tower foundation sites to locate and avoid potential for surface fault rupture, design transmission lines to accommodate potential fault displacement. Incorporation of standard engineering practices as part of the project shall ensure that people or structures are not exposed to geological hazards.	All
13.11	Some types of substation equipment are very susceptible to damage from earthquakes. To address this problem, PG&E Co. in conjunction with other utilities throughout the United States and Canada, and equipment vendors and consultants, have revised IEEE 693, "Recommended Practices for Seismic Design of Substations." Within this document are equipment and voltage-specific seismic qualification requirements. These requirements are much more stringent than those in the Uniform Building Code. Qualification includes shake table testing and dynamic analysis. PG&E Co. will purchase equipment for the substation using the seismic qualification requirements in IEEE 693. When these requirements are followed, very little structural damage from levels approaching 1.0 g peak ground acceleration are anticipated. PG&E Co. will design all substation control buildings in accordance with the Uniform Building Code.	All
13.12	PG&E Co. will perform design-level geotechnical investigations to evaluate the liquefaction potential of soils underlying all substation, transition station, transmission tower, and underground sites. Analysis of existing data will	All

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	examine the possibility of liquefaction, and develop appropriate engineering design and construction measures including pile foundations, ground improvement of liquefiable zones by densification, flexible bus connections, and slack in underground cables to allow ground deformations without damage to structures. Incorporation of standard engineering practices as part of the project shall ensure that people or structures are not exposed to geological hazards.	

CERTIFICATE OF SERVICE

I certify that I have by mail this day served a true copy of the original attached Alternate Proposed Decision of Commissioner Wood as on all parties of record in this proceeding or their attorneys of record.

Dated September 26, 2001, at San Francisco, California.

/s/ SUSIE TOY
Susie Toy

N O T I C E

Parties should notify the Process Office, Public Utilities Commission, 505 Van Ness Avenue, Room 2000, San Francisco, CA 94102, of any change of address to insure that they continue to receive documents. You must indicate the proceeding number on the service list on which your name appears.