# Comment Set PG, Attachment A



# Transportation and Traffic

## 1. General Comments

### 1.1 Modified Existing 230kV Underground ROW.

**DEIR pages 29-30**

This alternative appears to present a greater potential for significant impacts than is described in this analysis, in the areas of Produce Avenue, the Airport Boulevard underpass under 101, and the area between Oyster Point and Bayshore Boulevard, where it may not be physically possible to maintain access to hotels and businesses during construction, because of physically constrained rights–of-way and access roads. These issues are addressed below:

Modified Existing 230 kV Underground ROW: Environmental Setting

**DEIR page D.12-29, paragraph 2 reads,** ***"The alternative route would follow the existing 230 kV underground line in Bayshore Boulevard for 1.1 miles, around the east side of San Bruno Mountain. This route would rejoin the Proposed Project route for the last 0.8 miles into the Martin Substation."***

PG-51

There should be narrative descriptions of the roads that are used in this alternative that were not described in Section 12.1.1. For example, there is no description of Produce Avenue or Airport Boulevard, just the data in Table D.12-9. This is important to highlight any unusual features of the roadways. Since the proposed Modified Existing 230kV Route is located in some extremely problematic areas, additional description of these routes is needed. Usage along Produce Avenue, according to the City of South San Francisco, which is the main access to the Golden Gate Produce Terminal, is heavy from the time produce deliveries begin, at 2 or 3 am, to late in the evening. It is our understanding that the Modified Existing 230kV Underground ROW requires a bore under Colma Creek Bridge in Produce Avenue. The potential of encountering support piles is likely, and PG&E expects the crossing would need to be west of the bridge through private property. The receiving pit in the parking lot of the businesses north of Colma Creek will lead to an additional disruption of business access.

**Suggested revisions**: For example, text should be added to describe the importance of Produce Avenue in providing access to and from the Produce Terminal and in the delivery of produce throughout the Bay Area; the City of South San Francisco has expressed reservations over any lane closures along this important truck route. Other issues that should be described are the ongoing construction on Oyster Point Boulevard, the nature of the single access point to Van Waters and Rogers Road and therefore of the businesses along that road, and the extremely limited and narrow access to the two Marriott hotels north of Oyster Point. The 4-lane Airport Boulevard underpass at Highway 101 also deserves its own description, given the confined ROW and heavy traffic in that area.

# Comment Set PG, Attachment A, cont.



PG-52

Modified Existing 230 kV Underground ROW: Environmental Impacts and Mitigation Measures

**DEIR page D.12-30, paragraph 1, line 9 reads,** ***"...blocking of access (T-4) would require implementation of Mitigation Measures L-7a and L-7b; reduction in emergency access (T-6) would require implementation of Mitigation Measure T-6a."***

This analysis fails to address significant access issues at the area north of Oyster Point Boulevard and again north of Sierra Point Boulevard, where these mitigation measures may not be feasible. In these areas, narrow private access roads adjacent to the railroad or to steep slopes along Bayshore Boulevard may not allow passage of vehicles during construction.

For access to the Marriott hotel complex north of Oyster Point Boulevard at the end of Veteran's Boulevard (a private roadway, Hines Corporation, pers. comm to B. Masuoka, PG&E), the South San Francisco Fire Department is requiring continuous maintenance of emergency services access of 12 feet, at all times. The available width of the roadways varies between 29 and 38 feet, between the respective hotels and the edge of the railroad ROW. Because of the buildings' proximity to the Bay, there is no alternate route at the back side of these buildings, and because the access road is immediately adjacent to the Caltrain ROW, there is no room on the east to expand the work area either without causing significant impacts to train operations. Field observations and utility drawings indicate the presence of water, sewer, gas, and electric facilities along this road. Depending on the location of these utilities in the roadway and the available trench location, PG&E may not be able to maintain the required emergency services access requirement of 12 feet, and may require closure of public access to the hotels for some period of time during construction, creating a Class I impact.

Compensation for loss of use of two hotels (the Courtyard Marriott and the Marriott Residence Inn) may render this alternative infeasible. Note that the fire department will require access to the hotel even when it is closed, and if access cannot be maintained, the fire department will not approve construction to proceed; this would become a significant, unmitigable Class I impact.

On the Van Waters and Rogers Road access, the Brisbane Fire Department has indicated that they would require a 20-foot minimum unrestricted access route. This would cause loss of use of the loading docks on the south part of the Van Waters & Rogers building, as trucks will not have the room to maneuver into those loading docks. This might affect up to one-third of the loading docks for a period of one to two weeks. In addition, the location of the bore under the railroad and location of the water line to the south will require a bore pit in the turn-around area near the south loading docks of the Cal-Rite building. This bore pit will likely prevent access to the loading docks and make it extremely difficult for trucks to turn around, for a minimum of 6 weeks. Therefore, for a period of about six weeks, the Cal-Rite company will not be able to serve many of its local customers with its shipping business. This is a potential Class I impact.

**Proposed revisions:** MM L-7a and L-7b do not address the loss of business access to the hotels and to the loading access at the Van Waters and Rogers/Cal-Rite complex, whether the hotels must be closed, and whether fire department access can be maintained. It is not clear whether adequate mitigation for the loss of access can be provided, or whether the SSF Fire Department will be able to permit the construction by the hotels.

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# Comment Set PG, Attachment A, cont.



Loss of access to the loading docks of the Cal-Rite and Van Waters and Rogers' loading docks may have significant repercussions on their business; since these are distributors, such an impact on their business could be significant and mitigation may not be feasible.

PG-52

Modified Existing 230 kV Underground ROW: Environmental Impacts and Mitigation Measures

PG-53

**DEIR page D.12-30, paragraph 1, line 6 reads,** ***"However, temporary lane and road closures (Impact T-1) would require implementation of Mitigation Measures T-1a and T-1b...."***

Any road closures will present a challenge in the South Airport Boulevard under US 101 (on the approach to Gateway Boulevard). Traffic volumes are high throughout the day, and the proximity of the ramp terminal intersections and other signalized intersection will present challenges for ensuring that queues do not back up through intersections. The cross-section of the underpass (4 lanes, no shoulders) will make any trenching activity problematic.

## 1.2 Alternative Comparisons to Proposed Project

PG-54

**Example: DEIR page D.12-30, paragraph 2, line 2**

***"Because the amount of underground construction work within roads is directly proportional to the amount and duration of traffic and transportation impacts, the Modified Existing 230 kV Underground ROW Alternative is preferred over the Proposed Project."***

This statement is inaccurate, and forms an inaccurate basis for comparing alternatives. The amount of construction work may be proportional to the length of the construction, but the amount, extent, and duration of any impacts is not. The magnitude of impacts is related to the type of roadway and number of lanes, traffic volumes, access restrictions, and other external factors that are not dependant on the amount of construction work. In comparing the two northern alternatives (for example, the Proposed Project and the Modified Existing 230kV Underground ROW), the traffic volumes are generally higher on the Modified Project roadways, and there are several areas where roadway width may be insufficient to maintain adequate traffic flows during construction (Produce Avenue, Marriott Hotel access road, Van Rogers and Waters access road, Seventh Avenue), described in greater detail below.

A quick calculation suggests that the vehicle-miles (as opposed to just miles) are slightly higher for the Proposed Project (88,000 vs. 75,000) but this difference is minor. The permitting challenges and access issues will also be more significant for the Modified Existing 230kV Underground ROW, especially around the El Camino/I-380 interchange (Caltrans) and the Airport Boulevard/Produce Avenue US 101 interchange, and in the area between Oyster Point Boulevard and Sierra Point Parkway, as described below.

**Suggested revisions:** A more balanced statement in this example might be: "The impacts of the construction on the roadways, parking, and access are more complex and potentially more significant for the Modified Existing 230 kV Underground ROW Alternative than for the Proposed Project. While most impacts can be mitigated to less than significant with appropriate mitigation measures, the mitigation measures may be less feasible and more

# Comment Set PG, Attachment A, cont.



costly for the Modified Existing 230 kV Underground ROW Alternative, as compared to the Proposed Project. As described below, impacts to the hotel complex north of Oyster Point Boulevard and the Van Water and Rogers industrial complex may be Class I (and potentially unmitigable) impacts."

PG-54

## 2. Specific Comments

### 2.1 Proposed Mitigation Measure T-9a

PG-55

**DEIR page D.12-28, paragraph 4; page D.12-29, Table D.12-9**

***"This alternative begins at San Bruno Avenue and Huntington Avenue. Either the Proposed Project route of the Sneath Lane Underground route (into Tanforan Avenue, boring under two railroad crossings to Shaw Road) could also connect with this Northern Segment Alternative. This route would be completely underground. The Modified Existing 230 kV Underground Alternative would be in San Bruno Avenue for 0.4 miles, then north into PG&E's 115 kV overhead line corridor just east of 7th Avenue (adjacent to Highway 101). Just south of the I-380, the route would jog west onto 7th Avenue then cross under I-380 and enter the City of South San Francisco where 7th Avenue becomes Shaw Road. After traveling on Shaw Road for 0.7 miles, the route would require a bored crossing of a tributary of Colma Creek and travel through a large parking lot east of Golden Gate Produce Terminal for approximately 0.3 miles before joining Produce Avenue."***

The proposed mitigation measure T-9a (described on page D.12-16) effectively modifies the Modified Existing 230 kV Underground Route (described on page D.12-29). Therefore, the description of the route and the table should include the additional roadways.

**Proposed revisions:** Descriptions of Sneath Lane and Tanforan Avenue should be included.

### 2.2 PG&E Route Option 1B—Underground: Environmental Setting

PG-56

**DEIR page D.12-17, paragraph 3**

***"Table D-12-4 provides a summary of the roadway characteristics along the PG&E Route Option 1B Alternative, including the names of the roadway segments, the general roadway classification, the number of lanes, and the daily and peak hour traffic volumes. The table also indicates the orientation of the proposed transmission line to the roads. Refer to Figure C-1 for the specific locations of the subject roadway segments along the PG&E Route Option 1B."***

There should be narrative descriptions of the roads that are used in this alternative that were not described in Section 12.1.1. For example, there is no description of Golf Course Road or Trousdale, just the data in Table D.12-4. This is important to highlight any unusual features of the roadways.

# Comment Set PG, Attachment A, cont.



**Suggested revisions:** For example, Cañada Road is a bike route that is closed to vehicular traffic on Sundays for a good portion of the year. Similarly, Trousdale was recently repaved; this information should be conveyed to the reader.

PG-56

## 3. Minor Comments and Clarifications

### 3.1 General Comment

PG-57

Average daily traffic volumes are typically reported in EIRs and environmental documents by number of vehicles, not trips.

**Suggested revisions:** Average daily traffic volumes.... from 111,000 to 116,000 vehicles.

# Responses to Comment Set PG – PG&E Attachment A: Transportation and Traffic

PG-51 Narrative descriptions of Produce Avenue, the intersection of Produce Avenue and South Airport Boulevard, Oyster Point Boulevard, the limited access to the Marriott Hotels north of Oyster Point Boulevard, and Van Waters and Rogers Road were added to Section D.12.5.6 of the Final EIR to highlight potential traffic related issues that could occur during construction of the Modified Existing 230 kV Underground ROW Alternative.

The Colma Creek bore associated with the originally proposed alternative would not be located in Produce Avenue under the Colma Creek Bridge. The south entrance pit would likely be in the parking lot or landscaped portion of the Shell Station property and the northern receiving pit would likely be in the western shoulder of the Produce Avenue right-of-way or on private property immediately west of the Produce Avenue right-of-way. Implementation of Draft EIR land use Mitigation Measures L-7a (Provide Continuous Access to Properties) and L-7b (Coordinate with Businesses) would reduce potential impacts associated with business access and parking to less than significant levels.

However, several optional segments for the Modified Existing 230 kV Alternative route have been identified based on comments on the Draft EIR. As illustrated in Figure Ap.1-8a of the Final EIR, Route Option A would avoid construction-related impacts along Produce Avenue, the Produce Avenue and South Airport intersection, and the South Airport Boulevard underpass. The entrance bore pit just north of Shaw Road would remain in the business parking lot south of the Colma Creek tributary; however, the bore would proceed to the northeast to Marco Way under the freeway and the tributary to Colma Creek. From Marco Way, the line would continue northeast to South Airport Boulevard where it would turn north-northwest. On South Airport Boulevard the line would continue north-northwest then north to Gateway Boulevard where it would meet the Modified Existing 230 kV Alternative route presented in the Draft EIR.

In addition, Route Option D would require the line to be installed on the east side of business facilities along Van Waters and Rogers Road, avoiding the active loading docks and paralleling the railroad ROW. Please refer to Responses PG-52 and PG-202 for discussion regarding public access issues near the Marriott hotels north of Veterans Boulevard

PG-52 The CPUC believes that maintaining emergency access from Veteran's Boulevard to Sierra Point Boulevard is feasible. However, there are several short portions along the alternative ROW on the Marriott hotel properties where implementation of Mitigation Measure T-6a (Ensuring Emergency Response Access) would be required to ensure emergency response access to the hotels as well as from Veterans Boulevard to Sierra Point Boulevard. The measure requires provisions to be ready at all times, such as plating over open excavations, in areas where access to nearby properties would be blocked. Please refer to Response PG-202 for discussion about maintaining public access in this area.

As described above, Route Option D would require the line to be installed on the east side of business facilities that are located along Van Waters and Rogers Road, avoiding the active loading docks and paralleling the railroad ROW. Implementation of this route option would avoid disturbing loading dock operations of the facilities along Van Waters and

Rodgers Road. The bore pit west of the railroad associated with Rout Option D could be located east of the Cal-Rite building so as to not disturb operations of the south loading docks. Please see Responses to Comments PG-202 and PG-206.

PG-53 Once a project route is selected, PG&E would be required to work with the appropriate jurisdictions on the final design of the project that would be built within public road ROWs through each jurisdiction's permit process. To ensure that crossings of high traffic volume roadways (e.g., Highway 101 overpass along South Airport Boulevard) are not too disruptive to local traffic patterns, the following sentence has been added to Mitigation Measure T-1b:

> PG&E shall implement bored crossings or nighttime construction if the appropriate jurisdiction determines that trenched and/or daytime roadway crossings would be too disruptive to local traffic patterns.

In addition, as described in response to Comment PG-51 above, Route Option A for the Modified Existing 230 kV Alternative route would avoid construction-related impacts in the vicinity of the Highway 101 overpass along South Airport Boulevard.

PG-54 Although it is acknowledged that certain road segments and areas may involve more traffic related issues than others, both the Modified Existing 230 kV Underground ROW Alternative and the Proposed Project have unique traffic related issues. Heavy traffic volumes also exist on some of the roads that would be disturbed associated with implementation of the Proposed Project. The CPUC believes that a comparison of the distance of underground roadway construction work that would be necessary for the Modified Existing 230 kV Underground ROW Alternative and the Proposed Project is an adequate method for comparing routes when construction of the routes (in this case the Modified Existing 230 kV Underground ROW Alternative and the Proposed Project) would cause approximately the same level of short-term impacts.

The Modified Existing 230 kV Underground ROW Alternative with Route Options A and D and the Proposed Project would both result in less than significant transportation and traffic related impacts with mitigation incorporated. Because neither of the routes would involve potentially significant, unmitigable construction impacts, a simple examination of the lengths of the routes is appropriate for a comparison of the routes with respect to transportation and traffic issues. Additional text has been added to Section D.12.5.6 of the Final EIR to more clearly indicate that a comparison of route lengths is appropriate in this case because both routes would result in similar less than significant impacts with mitigation incorporated and neither of the routes would result in potentially significant and unmitigable impacts.

There are no access related issues associated with the Modified Existing 230 kV Underground ROW Alternative that cannot be mitigated to less than significant levels (see Responses PG-52 and PG-202). In addition, the CPUC does not believe that there are any transportation related permit challenges that would lead to potentially significant, unmitigable impacts or to the infeasibility of the Modified Existing 230 kV Underground ROW Alternative.

PG-55 Brief text descriptions of Sneath Lane and Tanforan Avenue have been added to the Impact T-9 discussion in Section D.12.3.5 of the Final EIR. Section D.12.5.6 of the Final EIR.

PG-56 The CPUC believes that the roadway characteristic information in Table D.12-4 for Golf Course Road and Trousdale Drive provides an adequate level of summary information about the subject roads for the scope of this EIR. In addition, Table D.2-9 in Section D.2, Land Use, also lists the land uses and sensitive receptors along alternative routes, including Golf Course Road and Trousdale Drive.

PG-57 Though the terminology differs, the terms "trip" and "vehicle" reflect the same unit of measurement. The CPUC believes its descriptions of average daily traffic volumes in the form of trips instead of vehicles are appropriate and common in EIRs and other environmental documents.

# Comment Set PG, Attachment A, cont.

## Geology, Soils, and Paleontology

### 1. Specific Comments

#### 1.1 Excavation Characteristics

**Table D.6-1, General Geotechnical Characteristics of the Geologic Formations. Page D.6-2**

PG-58

On page D.6-2, the fourth column of Table D.6-1 describes excavation characteristics using the terms "easy", "moderate" and "difficult". The criteria for evaluating excavation characteristics are not discussed in the text. However, it appears that the descriptions only refer to the ease with which material may be removed from the ground using excavation equipment. Other criteria, such as the potential to encounter soft or loose soils, unstable materials, groundwater, running or flowing soils, debris, and variable soil conditions do not appear to be considered, although these conditions are likely to be encountered in some of the formations listed and such conditions are critical to the duration, cost, and feasibility of excavation. The column title is misleading, as extremely difficult excavation conditions may be encountered in artificial fill, bay mud, and stream channel deposits as a result of the conditions listed above.

The criteria used to evaluate "excavation characteristics" should be described in the text. If the potential for unstable or difficult ground conditions is considered in evaluating excavation characteristics, the classification of artificial fill, bay mud, and stream channel deposits as "easy" should be revised to indicate more difficult conditions that are likely to be present. It should be discussed that the excavation characteristics described are general in nature and the actual ease of excavation may vary widely depending on site-specific subsurface conditions.

#### 1.2a Slope Stability

**Subsection D.6.1, Environmental Setting for the Proposed Project, under subheading Slope Stability. Page D.6-5**

PG-59

On page D.6-5, the second paragraph under the subheading Slope Stability states: "The proposed alignment and the alternatives do not cross any areas identified as an existing landslide area or susceptible to landslides, with the exception of a few very steep areas on either side of the San Mateo Creek canyon near Crystal Springs Reservoir". In addition to the slopes of San Mateo Creek canyon, areas of existing landslides or areas mapped as susceptible to landslides are also identified by Wentworth et al. in the hills south of Crystal Springs Reservoir adjacent to Canada Road (Proposed Project Overhead Alignment, Underground Option 1B, and Partial Underground Alternative) and along Trousdale Drive east of Skyline Boulevard (Underground Option 1B). Serpentine deposits, frequently encountered within the southern project area, are also known for poor strength and slope stability characteristics. Unmapped landslides and areas of localized slope instability may be encountered in the hills traversed by the proposed and alternative alignments in the southern

# Comment Set PG, Attachment A, cont.



portion of the project area. The description of potential landslide areas should be revised to include these areas and discuss the potential for unmapped landslides to be encountered in the hills of the southern project area. PG-59

## 1.2b Slope Stability

**Subsection D.6.1, Environmental Setting for the Proposed Project, under subheading Slope Stability. Page D.6-5** PG-60

Debris flow hazards are not discussed in this section, but are referred to later in the text (see Mitigation Measure G-7a). Some discussion of debris flow hazards should be provided as part of the slope stability section.

## 1.3 Fault Rupture

**Subsection D.6.1, Environmental Setting for the Proposed Project, under subheading Fault Rupture. Page D.6-6** PG-61

On page D.6-6, the paragraph under the subheading Fault Rupture states: "Movement on the active San Andreas Fault was responsible for the 1906 San Francisco Earthquake and exhibited as much as 20 feet of right lateral displacement (Lawson, 1908)".

At what location did this displacement occur? Was the displacement on a single trace of the fault, or was it distributed over the entire width of the fault zone? In the vicinity of the project area, the maximum reported offset along a single fault trace as a result of the 1906 earthquake was less than 10 feet. Up to 17 feet of displacement was observed across the width of the fault zone; however, this total displacement included rupture along the main fault trace, rupture along secondary traces, and adjacent ground distortion.

The DEIR should provide additional details regarding the location and nature of anticipated displacement within the San Andreas Fault Zone. Potential displacement along the main trace of the fault should be distinguished from potential displacement along secondary fault traces and other forms of ground distortion within the fault zone. The criteria for evaluating active, potentially active, main, and secondary traces of the fault should be consistently applied throughout the DEIR (see Secondary Comment #50) An explanation and clear understanding of these issues is central to later comparisons between various alternatives for locating project facilities within and adjacent to the San Andreas Fault Zone.

## 1.4 Active and Potentially Active Fault Crossings

**Table D.6-3, Active and Potentially Active Fault Crossings. Page D.6-11** PG-62

On page D.6-11, the sixth column of Table D.6-1 lists potential fault displacement of up to 10 feet for the Serra Fault. What is the source and reasoning behind this estimate? The estimate seems at odds with the statement on page D.6-26 (second to the last sentence of the second paragraph under the subheading San Bruno Avenue) that an underground crossing of the Serra fault can be mitigated to a less than significant level.

A geologic hazard evaluation for PG&E's gas transmission lines 109 and 132 (PG&E, 1992) estimated maximum displacements of one foot over several feet for the Serra Fault zone. The Serra fault likely intersects the San Andreas fault at a relatively shallow depth and it is therefore unlikely that the Serra fault is capable of acting as an independent seismic source.

# Comment Set PG, Attachment A, cont.



Coseismic rupture may occur on the Serra fault during a major earthquake on the San Andreas fault. PG&E's displacement estimate is consistent with this type of coseismic slip. Further explanation of the source and reasoning behind the fault displacement estimate in the DEIR should be provided and the estimate should be reevaluated if necessary. PG-62

## 1.5 Active and Potentially Active Fault Crossings

**Table D.6-3, Active and Potentially Active Fault Crossings. Page D.6-11** PG-63

On page D.6-11, in Table D.6-3, the San Bruno fault is listed as a fault crossed by the project alignment. However, the location or locations where the San Bruno fault crosses the alignment are not discussed in the text (See Secondary Comment #14 below). Other fault crossings related to the San Andreas, Serra, and Hillside faults are discussed in subsequent sections. No positive evidence supporting the existence of the San Bruno fault was found as part of a study performed for the San Francisco Bay Area Rapid Transit (BART) line from Colma to the San Francisco Airport (USGS, 1997). The San Bruno fault should either be discussed in subsequent sections describing fault rupture potential along the project alignment or it should be deleted from the table.

## 1.6a Liquefaction

**Subsection D.6.1, Environmental Setting for the Proposed Project, under subheading Liquefaction. Page D.6-12** PG-64

On page D.6-12, the second paragraph under the subheading Liquefaction identifies low-lying alluvial deposits, and creek and river deposits as meeting the criteria for liquefaction. Artificial fill materials found in low-lying areas along the margins of San Francisco Bay are typically highly susceptible to liquefaction and should be added to the list of deposits in the project area that meet the criteria for liquefaction.

## 1.6b Liquefaction

**Subsection D.6.1, Environmental Setting for the Proposed Project, under subheading Liquefaction. Page D.6-12** PG-65

Other seismically-induced forms of ground failure, such as ground cracking and seismic slope instability are not discussed in this section but are referred to later in the text (see Mitigation Measure G-6a). Some discussion of ground cracking and seismic slope instability should be provided either as part of this liquefaction section or as a separate section on other forms of seismically-induced ground failure.

## 1.7 Subsidence/Differential Settlement

**Subsection D.6.1, Environmental Setting for the Proposed Project, under subheading Subsidence/Differential Settlement. Page D.6-12** PG-66

On page D.6-12, under the subheading Subsidence/Differential Settlement, it is stated that "Stream channel and recent valley alluvium are generally most susceptible to earthquake-induced subsidence." Artificial fill materials, particularly those placed prior to 1965, such as the majority of the fill along the margins of the Bay are also highly susceptible to earthquake-induced subsidence and settlement. Artificial fill materials should be included for discussion in this section.

# Comment Set PG, Attachment A, cont.



## 1.8 Soils

**Subsection D.6.1, Environmental Setting for the Proposed Project, under subheading Soils. Page D.6-13**

PG-67

On page D.6-13, the last sentence under the subheading Soils states that "None of the soils are identified by the Soil Survey as suitable for construction materials." As presented, this statement is misleading. The soil survey evaluates soils for use under the specific construction applications of roadfill, sand, gravel, and topsoil. Fagan-Obispo and Barnabe-Candlestick-Buriburi soils were rated poor to improbable for use in these applications. However, Urban Land-Orthents soils were not rated as part of the soil survey. This should be mentioned in the text. Soils encountered during the project may be suitable for construction applications other than those identified in the soil survey, such as trench backfill or general earthfill. The statement should either be deleted or clarified to identify the specific soil types and construction applications studied in the soil survey. This section should recognize the potential for reuse of excavated soils if they meet project-specific earth material specifications.

## 1.9 Jefferson Substation to Ralston Substation—Slope Stability

**Subsection D.6.1.1, Jefferson Substation to Ralston Substation, under subheading Slope Stability. Page D.6-14**

PG-68

On page D.6-14, the sentence following the subheading Slope Stability states that "Due to the rolling topography and lack of steep slopes, this route has no apparent risk from slope instability." This understates the situation. Available sources (Wentworth, et al. 1997, Brabb and Pampeyan, 1972, Ellen, et al. 1997) indicate the presence of landslide and debris flow areas along and adjacent to the Proposed Project alignment. Due to the hilly terrain and presence of weak and unstable bedrock materials (i.e. weathered serpentine, fault gouge, sheared rock) along portions of the alignment, unmapped landslides and unstable slopes may exist. Mapped landslide and debris flow areas are not abundant along this section of the alignment. However, based on the available topographic, geologic, and landslide mapping data, it is inappropriate to suggest that there is no apparent risk from slope instability. Some risk of slope instability exists for all portions of the proposed alignment between Jefferson Substation and the proposed transition station. Implementation of standard engineering design measures will reduce this impact to a less than significant level, as stated in the PEA.

## 1.10 Ralston Substation to Carolands Substation—Slope Stability

**Subsection D.6.1.2, Ralston Substation to Carolands Substation, under subheading Slope Stability. Page D.6-14**

PG-69

On page D.6-14, the sentence following the subheading Slope Stability states that "This route has no apparent risk from slope instability." Secondary Comment #9 above applies to this statement. Some risk of slope instability should be considered for all portions of the proposed alignment between Jefferson Substation and the proposed transition station.

## 1.11 Carolands Substation to Transition Station—Slope Stability

**Subsection D.6.1.3, Carolands Substation to Transition Station, under subheading Slope Stability. Page D.6-15**

PG-70

# Comment Set PG, Attachment A, cont.



An appropriate discussion of slope stability hazards between the Carolands Substation and the Transition station should be provided in this section (See Tertiary Comments #5 and #7). Secondary Comment #9 above applies to this section. Some risk of slope instability should be considered for all portions of the proposed alignment between Jefferson Substation and the proposed transition station.

PG-70

## 1.12 Carolands Substation to Transition Station—Faults and Seismicity

**Subsection D.6.1.3, Carolands Substation to Transition Station, under subheading Faults and Seismicity. Page D.6-15**

PG-71

On page D.6-15, under the subheading Faults and Seismicity, the last sentence reads: "Ground rupture of up to 20 feet could occur depending on the size of the earthquake and the location of the epicenter with respect to the Proposed Project". This statement is not specific in regards to the potential magnitude and location of ground displacement within the fault zone and, in the context of the paragraph, suggests the erroneous conclusion that 20 feet of ground rupture could occur anywhere within the fault zone. During a major earthquake, rupture of the ground surface is expected to primarily occur along active, main traces of the fault. These main, active traces have been mapped and are shown on Alquist-Priolo Earthquake Fault Zone maps prepared and maintained by the California Geological Survey (CGS). Additionally, as part of a site-specific fault rupture hazard evaluation (Geomatrix Consultants, 2003, see Secondary Comment #13), main, active traces of the fault have been identified in the vicinity of the proposed transition station.

The discussion provided in this section should be more specific. If 20 feet of total displacement is anticipated as a result of a major earthquake on the San Andreas fault, the majority of this displacement would be expected to occur on main, active traces of the fault. Specific locations where the proposed overhead alignment crosses these main, active traces of the fault should be identified in the text.

## 1.13 Underground Segments—General Comment

**Subsection D.6.1.4, Underground Segments. Pages D.6-15 through D.6-17**

PG-72

In the discussion for each of the underground segments (San Bruno Avenue, BART ROW, and Colma to Martin Substation), Liquefaction and Subsidence/Differential Settlement are not addressed. The text of these sections should be revised to address these topics.

## 1.14 Underground Segments, San Bruno Avenue—Faults and Seismicity

**Subsection D.6.1.4, Underground Segments, under subheadings San Bruno Avenue and Faults and Seismicity. Page D.6-16**

PG-73

On page D.6-16, under the subheadings San Bruno Avenue and Faults and Seismicity, it is stated that "This proposed segment crosses the San Andreas Fault at the Skyline-San Bruno intersection." This statement is not correct. The proposed transition station is approximately 200 feet east of the Skyline-San Bruno intersection. The main trace of the San Andreas fault, near the Skyline-San Bruno intersection, is spanned by the overhead portion of the proposed alignment west of the transition station. East of the transition station, the underground portion of the proposed alignment crosses several mapped fault traces. However, recent site-specific studies performed for PG&E (Geomatrix Consultants, 2003 Draft Assessment of

# Comment Set PG, Attachment A, cont.



Fault Rupture Hazards, Jefferson-Martin 230 kV Transition Station Site, San Bruno, San Mateo County, California) indicate the following:

- The nearest active, main trace of the San Andreas fault is more than 100 feet west of the proposed transition station location. No active or potentially active faults cross the proposed transition station site.
- The proposed site is bounded on the west by a probable Reidel shear and on the east by a probable secondary fault. Both of these secondary faults are considered to be potentially active. The estimated maximum oblique net slip across either of these faults is $\leq 1$ foot. The eastern fault crosses the proposed alignment of the 230 kV underground transmission line.
- Ground deformation associated with slip on the secondary faults that bound the proposed site could consist of warping, tilting, and/or settlement. Maximum estimated displacement across the proposed site is $\leq 1$ foot.
- A bedrock contact located 450 feet east of the proposed site crosses the proposed alignment of the San Bruno 230 kV underground transmission line. There is a potential for sympathetic movement on this contact resulting from triggered slip on the Serra fault during an earthquake on the San Andreas fault zone. The estimated maximum net sympathetic slip on this fault is $\leq 1$ foot.

The wording of this section should be modified to indicate that the underground portion of the proposed alignment crosses potentially active, secondary faults associated with the San Andreas fault zone. Based on site-specific fault studies of fault rupture hazards, the underground portion of the proposed alignment does not cross main, active traces of the San Andreas fault. It is noted that a discussion of fault rupture potential for active versus potentially active traces of the San Andreas fault is already provided in Subsection D.6.4.1, PG&E Route Option 1B—Underground of the DEIR. It seems appropriate that a similar discussion would be provided for active and potentially active fault traces crossed in the vicinity of the proposed transition station (See Secondary Comment #50).

PG-73

## 1.15 Underground Segments, BART ROW—Faults and Seismicity

**Subsection D.6.1.4, Underground Segments, under subheadings BART ROW and Faults and Seismicity. Page D.6-16**

PG-74

On page D.6-16, under the subheadings BART ROW and Faults and Seismicity, it is stated that "No faults cross the alignment of the proposed underground segment in the BART ROW". This statement is inconsistent with Table D.6-3 (See Secondary Comment #5 above). In Table D.6-3, the San Bruno fault is listed as a fault crossed by the project alignment (See Secondary Comment #5 above). However, no positive evidence supporting the existence of the San Bruno fault was found as part of a study performed for the San Francisco Bay Area Rapid Transit (BART) line from Colma to the San Francisco Airport (USGS, 1997). The San Bruno fault should either be discussed in this subsection or it should be deleted from the table.

# Comment Set PG, Attachment A, cont.



## 1.16 Underground Segments, Colma to Martin Substation—Faults and Seismicity

**Subsection D.6.1.4, Underground Segments, under subheadings Colma to Martin Substation and Faults and Seismicity. Page D.6-17**

PG-75

On page D.6-17, under the subheadings Colma to Martin Substation and Faults and Seismicity, it is stated that "No faults cross the alignment of this proposed underground segment." This statement is incorrect. Mapped traces of the Hillside fault cross the project alignment near the north side of the Colma valley. Unnamed pre-Quaternary faults are mapped beneath or adjacent to the project alignment on the north side of San Bruno Mountain. This statement should be revised to either include these faults or to state that "No active faults are mapped crossing the alignment..."

## 1.17 Significance Criteria—Geology

**Subsection D.6.3.1, Definition and Use of Significance Criteria, under subheading Geology. Page D.6-19**

PG-76

On page D.6-19, under the subheading Geology, the second bulleted list, "Impacts of the following geologic hazards on the project would also be considered significant:", is incomplete, and should include several items listed in the Significance Criteria used in the PEA as follows. Landslides, earthflows, and debris flows present significant geologic hazards to project facilities and should be included on the list. Naturally occurring asbestos fibers present significant hazards during project construction and should also be included on the list. In addition to impacting construction excavations, the presence of soft, loose, and/or compressible soils may significantly impact project facilities. Ground deformation and settlement may occur when soft, loose and/or compressible soils are loaded, resulting in damage to project structures and other improvements. This should be added into the list as a stand-alone item or incorporated into the third bullet item, which discussed the impact of soft and loose soils on construction excavations

## 1.18 Impacts and Mitigation Measures—230 kV / 60 kV Overhead Transmission Line

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-20**

PG-77

On page D.6-20, the first sentence of section D6.3.3 reads: "This segment of the proposed route lies... within one mile of the fault trace." Multiple traces of the fault are mapped within the fault zone. Clarify what fault trace (or traces) is (are) being referenced. Is it the main, active trace of the fault, or is it the nearest mapped fault trace (potentially active and active traces included)?

## 1.19 Impacts and Mitigation Measures—General Comment #1

**Section D.6.3, Environmental Impacts and Mitigation Measures for the Proposed Project.**

PG-78

In general, where geotechnical studies, engineering designs, and construction procedures consistent with standards of local practice are sufficient to mitigate potential impacts, the impacts are considered less than significant (Class III). It is unnecessarily redundant to

# Comment Set PG, Attachment A, cont.



explicitly identify standard engineering design and construction practices as specific mitigation measures in the DEIR. PG-78

### 1.20a Impacts and Mitigation Measures—General Comment #2

**Section D.6.3, Environmental Impacts and Mitigation Measures for the Proposed Project.** PG-79

A number of mitigation measures proposed in the DEIR require PG&E to submit geotechnical and other reports to the CPUC for review and approval prior to construction. However, the DEIR does not discuss why CPUC review is needed or identify what, if any, impact the review and approval process will mitigate. PG&E hires professionals to perform the geotechnical surveys and prepare the reports. Thus, a secondary review by the CPUC is unlikely to enhance the reliability or substantive quality of the reports. Moreover, this extra review process will likely delay the completion of the Project and increase the Project's overall cost. PG&E, therefore, suggests requiring submittal of these reports to CPUC for the record, eliminating the CPUC review process from mitigation measures detailed in this section. If the review process is not eliminated, PG&E recommends that the CPUC's review of the geotechnical studies and reports be limited to verifying that the reports have been completed and that the CPUC review be completed within 15 days of its receipt of the reports.

### 1.20b Impacts and Mitigation Measures—Impact G-1

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-21** PG-80

Standard design and construction practices are sufficient to mitigate Impact G-1 to a less than significant level (Class III, See Secondary Comment #19).

### 1.21 Impacts and Mitigation Measures—Mitigation Measure G-1a

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-21** PG-81

Conducting a design-level geotechnical study to identify areas of soft and loose soils that may impact construction and operation of project facilities is a standard design practice. Similarly, Best Management Practices (BMPs) are, by their nature, standard, generally accepted design and construction procedures used to mitigate potential impacts to a less than significant level. As a result, it is unnecessary to identify these practices as specific mitigation measures (See Secondary Comment #19).

Per Secondary Comment #20, PG&E suggests eliminating the requirement for CPUC review and approval of BMPs for avoidance, improvement, or replacement of soft or loose soils that may affect the Project. This would eliminate the need for Mitigation Measure G-1a.

### 1.22 Impacts and Mitigation Measures—Impact G-2

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-22** PG-82

Standard design and construction practices are sufficient to mitigate Impact G-2 to a less than significant level (Class III, See Secondary Comment #19).

# Comment Set PG, Attachment A, cont.



### 1.23 Impacts and Mitigation Measures—Mitigation Measure G-2a

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-22**

PG-83

Support and protection measures for excavations are governed by State and federal health and safety codes. Following applicable State and federal codes is considered standard construction practice. It is not anticipated that excavation support and protection measures outside the limits of standard construction practice will be necessary for the project. Conducting a design-level geotechnical study to identify areas of soft and loose soils that may impact construction and operation of project facilities is a standard design practice. As a result, it is unnecessary to identify these practices as specific mitigation measures (See Secondary Comment #19).

Per Secondary Comment #20, PG&E suggests eliminating the requirement for CPUC review and approval of results of the geotechnical study and specific support and protection measures that will be implemented. This would eliminate the need for Mitigation Measure G-2a.

### 1.24 Impacts and Mitigation Measures—Mitigation Measure G-3a

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-22**

PG-84

As written, Mitigation Measure 3a is open to an interpretation that may become excessively restrictive and costly to implement. A paleontologic monitor should only be required for excavations that penetrate undisturbed, native deposits of moderately to highly sensitive formations (i.e. Whiskey Hill and Colma Formations) that have been identified by the qualified paleontologist as likely to contain significant fossils. As written, the mitigation measure could require a monitor for nearly all excavations that encounter native soil or rock, regardless of the likelihood that significant fossils will be encountered. Only significant fossils encountered during construction should be prepared for curation and donated to a public museum, as it is likely a public museum would be reluctant to devote curation time and storage space to fossils of poor quality and/or low informational value.

It is not possible for PG&E to fully document compliance with this measure prior to the start of construction, as the measure includes both pre-construction (paleontologic study) and construction (monitoring and fossil handling) components. If the requirement to document compliance is only intended to include pre-construction components of the measure, then it is redundant with the requirement to submit the paleontologist's report to the CPUC. If the requirement to document compliance is intended to include all components of the measure, the documentation cannot be completed until the end of construction. Per Secondary Comment #20, PG&E suggests eliminating the requirement for CPUC review and approval of results of the qualified paleontologist's report.

### 1.25 Impacts and Mitigation Measures—Mitigation Measure G-4

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-23 (Cross Reference Impact A-3 and Mitigation Measure A-3a, DEIR Section 10.3.3)**

PG-85

Under discussion of Impact A-3, the second sentence of the first paragraph states: "The extent of the serpentinite rock is limited mainly to areas near the Jefferson Substation, the Ralston Substation, and San Bruno Mountain". This is not correct. Based on available geologic mapping, serpentinite rock is common in areas in Edgewood Park and from Ralston

# Comment Set PG, Attachment A, cont.



to Carolands Substations. Serpentinite rock is not identified in the vicinity of San Bruno Mountain. The text should be corrected to reflect this.

PG-85

### 1.26 Impacts and Mitigation Measures—Impact G-5

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-23**

PG-86

Standard design practices are sufficient to mitigate Impact G-5 to a less than significant level (Class III, See Secondary Comment #19).

### 1.27 Impacts and Mitigation Measures—Mitigation Measure G-5a

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-22**

PG-87

Conducting design-level investigations and performing site-specific seismic analyses to evaluate peak ground accelerations for design of project components are standard engineering design practices for projects of this type. IEEE 693 and UBC code requirements also represent standard design practices. As a result, it is unnecessary to identify these design requirements as specific mitigation measures (See Secondary Comment #19).

The mitigation measure requires PG&E to submit documentation to the CPUC to show compliance with this measure. However, the format and content of the required documentation is not specified. The measure should clearly state what documents will be required by the CPUC to show compliance with this measure. Per Secondary Comment #20, PG&E suggests eliminating the requirement for CPUC review of the requested design documentation. This would eliminate the need for Mitigation Measure G-5a.

### 1.28 Impacts and Mitigation Measures—Impact G-6

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-23**

PG-88

Standard design practices are sufficient to mitigate Impact G-6 to a less than significant level (Class III, See Secondary Comment #19).

### 1.29 Impacts and Mitigation Measures—Mitigation Measure G-6a

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-24**

PG-89

Conducting a design-level investigation to assess the potential for liquefaction, lateral spreading, seismic slope instability, and ground cracking hazards is a standard engineering design practice for projects of this type. It is not anticipated that conditions requiring non-standard design modifications to address seismic-related ground failure issues will be encountered during the Project. As a result, it is unnecessary to identify these design requirements as specific mitigation measures (See Secondary Comment #19).

Per Secondary Comment #20, PG&E suggests eliminating the requirement for CPUC review and approval of the requested investigation report(s). This would eliminate the need for Mitigation Measure G-6a.

### 1.30 Impacts and Mitigation Measures—Ralston Substation to Carolands Substation

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-24**

PG-90

# Comment Set PG, Attachment A, cont.



Under the subheading Ralston Substation, the first sentence reads: "No evidence of … slope instability… has been identified along this portion of the route. This is incorrect. (See Secondary Comments #2, #9, #10, #11 and Tertiary Comments #5 and #7). Slope stability should be identified as a potential hazard along this portion of the alignment.

PG-90

### 1.31a Impacts and Mitigation Measures—Ralston Substation to Carolands Substation

PG-91

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-24**

Impact G-1 should be added to the list of impacts affecting this portion of the alignment.

### 1.31. Impacts and Mitigation Measures—Impact G-7

PG-92

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-24**

The potential for this impact extends beyond the limits of San Mateo Creek canyon. (See Secondary Comments #2, #9, #10, #11 and Tertiary Comments #5 and #7). The text should be revised to include other areas of potential landslide and slope instability hazards. Impact G-7 should be added as an impact under the Jefferson Substation to Ralston Substation and the Carolands Substation to Transition Station subheadings. Standard design practices are sufficient to mitigate Impact G-7 to a less than significant level (Class III, See Secondary Comment #19).

### 1.32a Impacts and Mitigation Measures—Mitigation Measure G-7a

PG-93

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-24**

Conducting a design-level survey to evaluate the potential for unstable slopes, landslides, earth flows, and debris flows is a standard engineering design practice for projects of this type. It is not anticipated that conditions requiring non-standard design modifications to address slope stability issues will be encountered during the Project. As a result, it is unnecessary to identify these design requirements as specific mitigation measures (See Secondary Comment #19).

Although Mitigation Measure G-7a requires submission of the geotechnical survey report prior to construction, it is not stated in the mitigation measure that the CPUC will review or approve the report. As CPUC review and approval of the report are not specified, PG&E suggests eliminating the requirement for submission of the survey report. This is consistent with the intent of Secondary Comment #20 and would eliminate the need for Mitigation Measure G-7a.

### 1.32b Impacts and Mitigation Measures—Carolands Substation to Transition Station

PG-94

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-25**

The first sentence under the subheading Carolands Substation to Transition Station states that "This portion of the overhead line route would cross the steep-sided San Mateo Creek Canyon." This is incorrect. San Mateo Creek canyon is crossed by the proposed alignment between the Ralston and Carolands substations. The first sentence should be deleted.

# Comment Set PG, Attachment A, cont.



### 1.33a Impacts and Mitigation Measures—Carolands Substation to Transition Station

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-25**

PG-95

Impacts G-1 and G-7 should be added to the list of impacts affecting this portion of the alignment.

### 1.33b Impacts and Mitigation Measures—Proposed Transition Station Location

**Subsection D.6.3.4, Transition Station. Page D.6-26**

PG-96

On page D.6-26, the first sentence of the page reads: "The proposed transition station site is located immediately adjacent to two active traces of the San Andreas fault." The third sentence reads: "...because of the possible large offsets of up to 20 feet... that could occur along these active traces, structures and equipment... would unavoidably be susceptible to impacts..."

Based on the findings of a recent site-specific fault rupture study, these statements significantly overstate the magnitude of potential surface displacement at the proposed transition station site. Relevant conclusions of the site-specific study (Geomatrix Consultants, 2003 Draft Assessment of Fault Rupture Hazards, Jefferson-Martin 230 kV Transition Station Site, San Bruno, San Mateo County, California) are summarized in Secondary Comment #14. Secondary Comments #3 (concerning the 20-foot offset estimate) and #12 (concerning the distribution of ground rupture and distortion within the fault zone) are also relevant to the above statements.

Based on results of the site-specific study, fault traces mapped immediately adjacent to the site are potentially active secondary faults, with estimated maximum oblique net slip less than or equal to one foot. No active or potentially active faults were identified crossing the transition station site, and ground deformation across the site associated with slip on the secondary faults that bound the site is estimated to be less than or equal to one foot. During a major earthquake on the fault, large ground displacements are most likely to occur along active, main traces of the fault, the nearest of which has been identified more than 100 feet west of the transition site. Based on these findings, it is doubtful that the transition station site would be subjected to ground offsets greater than 1 foot during a major earthquake.

### 1.34 Impacts and Mitigation Measures—Proposed Transition Station Location

**Subsection D.6.3.4, Transition Station. Page D.6-26**

PG-97

On page D.6-26, the final sentence of the first paragraph states: "Fault rupture impacts to the proposed transition station would be significant and not mitigable to less than significant (Class I)." PG&E strongly disagrees with this statement.

As discussed in Secondary Comment #33 above, PG&E believes that the potential magnitude of ground displacement at the transition site is significantly overstated in the DEIR. Based on findings of the site-specific fault-rupture study, estimated surface displacements on fault traces adjacent to the transition station site are more than an order of magnitude lower than those presented in the DEIR. Because traces of the fault adjacent to the transition station are potentially active secondary fault traces, they present significantly less hazard than active,

# Comment Set PG, Attachment A, cont.



main traces of the fault. No fault traces were identified within the transition station area itself. As a result, with implementation of APM 10.2, PG&E believes that fault rupture impacts at the site can be mitigated to a less than significant level (Class II).

PG-97

### 1.35 Impacts and Mitigation Measures—San Bruno Avenue

**Subsection D.6.3.5, 230 kV Underground Transmission Line. Page D.6-26**

PG-98

On page D.6-26, the first two sentences under the subheading San Bruno Avenue imply the potential for destruction of paleontologic resources in the Merced formation. However, no discussion of the potential sensitivity of paleontological resources in the Merced formation is provided under the subheading Paleontologic Resources for the proposed alignment (Page D.6-13). The paleontological sensitivities of the Whiskey Hill and Colma formations are described as moderate to high in this section. The only previous mention of Merced formation fossils is on page D.6-16, where it is only stated that fossils are known to occur in the Merced formation. No mention is made of the degree of sensitivity. If mitigation measure G-3a applies to excavations in the Merced formation, discussion of the paleontological sensitivity of the Merced formation should be provided.

### 1.36 Impacts and Mitigation Measures—San Bruno Avenue

**Subsection D.6.3.5, 230 kV Underground Transmission Line. Page D.6-26**

PG-99

On page D.6-26, the second to last sentence of the second paragraph under the subheading San Bruno Avenue reads: "However, Impact G-8 (fault rupture at crossings of active and potentially active fault traces) would be significant and unavoidable at the active San Andreas Fault trace crossings near the transition station..." Findings of the site-specific fault study for the transition station location (see Secondary Comment #33 above) concluded the following:

- The proposed site is bounded on the west by a probable Reidel shear and on the east by a probable secondary fault. Both of these secondary faults are considered to be potentially active. The estimated maximum oblique net slip across either of these faults is $\leq 1$ foot. The eastern fault crosses the proposed alignment of the 230 kV underground transmission line.
- A bedrock contact located 450 feet east of the proposed site crosses the proposed alignment of the San Bruno 230 kV underground transmission line. There is a potential for sympathetic movement on this contact resulting from triggered slip on the Serra fault during an earthquake on the San Andreas fault zone. The estimated maximum net sympathetic slip on this fault is $\leq 1$ foot.

These findings indicate that the level of fault rupture hazard presented by the two San Andreas fault traces east of the proposed transition station is similar to the level of fault rupture hazard presented by underground crossings of the Serra fault and the Canada trace of the San Andreas fault. As stated in the DEIR, fault rupture hazards at these two crossings (Serra fault—page D.6-26; Canada trace—page D.6-31) are mitigable to a less than significant level (Class II). Therefore, PG&E believes that fault rupture hazards at the two fault crossings east of the proposed transition station should also be considered mitigable to a less than significant level.

# Comment Set PG, Attachment A, cont.



### 1.37 Impacts and Mitigation Measures—Impact G-9

**Subsection D.6.3.5, 230 kV Underground Transmission Line. Page D.6-27**

PG-100

Expansive, Soft, Loose, and/or Compressible soils may be encountered in any portion of the project area, not just the proposed alignment between Colma and the Martin Substation. Impact G-9 should be included in references to other portions of the proposed and alternate underground and overhead alignments.

### 1.38 Impacts and Mitigation Measures—Impact G-9

**Subsection D.6.3.5, 230 kV Underground Transmission Line. Page D.6-27**

PG-101

Standard design and construction practices are sufficient to mitigate Impact G-9 to a less than significant level (Class III, See Secondary Comment #19).

### 1.39 Impacts and Mitigation Measures—Mitigation Measure G-9a

**Subsection D.6.3.5, 230 kV Underground Transmission Line. Page D.6-27**

PG-102

Conducting a design-level investigation to identify areas with potentially problematic soils is a standard design practice for projects of this type. Excavation and replacement, in-situ ground treatment, and control of surface and subsurface water are all standard, generally accepted design and construction procedures for addressing problematic soil conditions. As a result, it is unnecessary to identify these design requirements as specific mitigation measures (See Secondary Comment #19).

Per Secondary Comment #20, PG&E suggests eliminating the requirement for CPUC review and approval of the requested investigation results and design solutions. This would eliminate the need for Mitigation Measure G-9a.

### 1.40 Impacts and Mitigation Measures—Impact G-11

**Subsection D.6.3.5, 230 kV Underground Transmission Line. Page D.6-27**

PG-103

Corrosive soils may be encountered in other portions of the project area, not just the proposed alignment between Colma and the Martin Substation. Buried tower foundations and underground portions of the alignment would be most affected. Impact G-11 should be included in references to other portions of the proposed and alternate underground and overhead alignments.

### 1.41 Impacts and Mitigation Measures—Impact G-11

**Subsection D.6.3.5, 230 kV Underground Transmission Line. Page D.6-27**

PG-104

Standard design and construction practices are sufficient to mitigate Impact G-11 to a less than significant level (Class III, See Secondary Comment #19).

### 1.42 Impacts and Mitigation Measures—Mitigation Measure G-11a

**Subsection D.6.3.5, 230 kV Underground Transmission Line. Page D.6-28**

PG-105

Conducting a design-level investigation to identify areas with potentially corrosive soils is a standard design practice for projects of this type. Design measures described in Mitigation Measure G-11a are generally accepted solutions for addressing corrosive soil conditions. As

# Comment Set PG, Attachment A, cont.



a result, it is unnecessary to identify these design requirements as specific mitigation measures (See Secondary Comment #19).

PG-105

Per Secondary Comment #20, PG&E suggests eliminating the requirement for CPUC review and approval of the requested investigation results and design solutions. This would eliminate the need for Mitigation Measure G-11a.

### 1.43 Impacts and Mitigation Measures—Hillsdale Junction Switchyard

**Subsection D.6.3.6, Substations, Switchyards, and Taps. Page D.6-29**

PG-106

The substation is located at the top of the ridge just south of the steep-sided San Mateo Creek canyon. Potential landslide hazards at the site (or outside of the site where the new tubular steel pole is to be located) should be addressed (Impacts G-6 and G-7). See Secondary Comment #9. Impacts G-1 and G-2 may also apply for construction of the new tubular steel pole.

### 1.44 Impacts and Mitigation Measures—Carolands Substation

**Subsection D.6.3.6, Substations, Switchyards, and Taps.**

PG-107

### 1.45 Impacts and Mitigation Measures—Martin Substation

**Subsection D.6.3.6, Substations, Switchyards, and Taps. Page D.6-29**

### 1.46 Impacts and Mitigation Measures—Tap locations

**Subsection D.6.3.6, Substations, Switchyards, and Taps. Page D.6-30**

Impact G-5 (strong ground shaking) should be included in the discussion of impacts associated with the Carolands and Martin substation and all of the listed taps.

### 1.47 PG&E Route Option 1B—Underground, Environmental Setting

**Subsection D.6.4.1, PG&E Route Option 1B—Underground, under subheading Environmental Setting. Page D.6-30**

PG-108

On page D.6-30, the last sentence of the second paragraph under the heading Environmental Setting reads: "There are no mapped or potential slope stability problems along this portion of the alternative." This is incorrect. Available sources (Wentworth, et al. 1997, Brabb and Pampeyan, 1972) indicate the presence of landslide areas along and adjacent to the proposed underground alignment, particularly near the Jefferson substation and on both sides of Trousdale Drive east of Skyline Boulevard. Due to the hilly terrain and presence of weak and unstable bedrock materials (i.e. weathered serpentine, fault gouge, sheared rock) along portions of the alignment, unmapped landslides and unstable slopes may exist, including engineered roadway cut slopes and earthfill embankments.

### 1.48 PG&E Route Option 1B—Underground, Environmental Setting

**Subsection D.6.4.1, PG&E Route Option 1B—Underground, under subheading Environmental Setting. Page D.6-30**

PG-109

On page D.6-30, the third paragraph under the heading Environmental Setting discusses the Canada trace of the San Andreas fault. Although there is some uncertainty concerning the existence, nature, and age of the Canada trace, it is currently considered an active fault by the

# Comment Set PG, Attachment A, cont.



California Geological Survey (CGS) and has an Alquist-Priolo zone associated with it. This should be stated in the text, along with an explanation of the reason for referring to the Canada trace as only potentially active in subsequent discussions. PG-109

## 1.49 PG&E Route Option 1B—Underground, Environmental Impacts and Mitigation Measures PG-110

**Subsection D.6.4.1, PG&E Route Option 1B—Underground, under subheading Environmental Impacts and Mitigation Measures. Page D.6-31**

The following potential impacts should be added to the discussion in this section:

- Impact G-1—soft and/or loose soils may be encountered during trenching. Although trenches will generally be performed within existing roadways, areas of variable and/or poorly compacted fill, cohesionless utility backfill, and soft or loose native soils beneath fill materials may be encountered.
- Impact G-2—Excavation related slope stability is a significant potential impact as the entire alignment under this alternative will be installed by trenching.
- Impact G-7—Slope stability (See secondary Comment #47 above)
- Impact G-9—Expansive, soft, loose, and/or compressible soils may be encountered in roadway embankments and native materials along the underground alignment.
- Impact G-11—Corrosive soils may also be encountered.

## 1.50 PG&E Route Option 1B—Underground, Environmental Impacts and Mitigation Measures PG-111

**Subsection D.6.4.1, PG&E Route Option 1B—Underground, under subheading Environmental Impacts and Mitigation Measures. Page D.6-31**

The second paragraph under the heading Environmental Setting indirectly refers to the Canada trace of the San Andreas fault as a potentially active fault and uses this classification as the basis for declaring that fault rupture hazards associated with the Canada trace can be mitigated to a less than significant level through Mitigation Measure G-8a. As discussed above in Secondary Comment #48, the Canada trace is considered active by the CGS. The reason (and supporting source documentation) for classifying the Canada trace as potentially active within the DEIR should be provided in the text.

When compared with the DEIR's treatment of fault traces near the proposed transition station, there appears to be inconsistency in the way fault crossings are evaluated and compared within the DEIR. Fault rupture hazards associated with underground transmission lines in the vicinity of the proposed transition station seem to be overstated, while those associated with this crossing of the Canada trace seem to be understated.

## 1.51 Comparisons to Proposed Route Segment—Areas of Difficult Excavation PG-112

**Subsection D.6.4.1, PG&E Route Option 1B—Underground, under subheading Comparison to Proposed Route Segment. Page D.6-31**

# Comment Set PG, Attachment A, cont.



PG-112

**Subsection D.6.4.2, Partial Underground Alternative, under subheading Comparison to Proposed Route Segment. Page D.6-32**

**Subsection D.6.5.6, Modified Existing 230 kV Underground ROW, under subheading Comparison to Proposed Route Segment. Page D.6-41**

In each of these subsections, the following statement is made: "There is no area of difficult excavation along this route..." Is this a reference to the discussion of excavation characteristics in Table D.6-1 (See Secondary Comment #1)? This statement should be accompanied by a definition of "difficult excavation". As written, this statement does not appear to correctly reflect the potential for difficulty in excavating trenches along the alignment. For a variety of reasons, difficult excavation conditions may be encountered anywhere along the proposed or alternative alignments. There are many areas along these routes where extremely difficult excavation is likely to be encountered for the following reasons:

- Excavations within existing roadways, particularly in urban areas, will likely encounter existing underground utilities. Extreme care will be required during excavation and backfill operations to avoid damage to existing buried utilities. Where existing utilities cross or run adjacent to project excavations, special shoring measures will be necessary to maintain the stability of excavation walls. Granular backfill materials, frequently used around buried utility lines may tend to run into excavations, creating unstable conditions and undermining the existing utilities. Existing backfill around existing utility lines may also act as a preferred pathway for subsurface drainage, directing groundwater and seepage flows into project excavations. A high concentration of underground utilities should be expected along Trousdale Drive, El Camino Real, San Bruno Avenue, Produce Avenue, Airport Boulevard, Gateway Boulevard, and Bayshore Boulevard.
- Difficult excavation conditions may be found in roadway cuts and along hillsides and ridges where shallow bedrock may be encountered. Such conditions may be found along underground portions of alternative southern alignments.
- Artificial fill materials, through which most of the Modified Underground alternative passes, are known to be highly variable and may contain large construction debris, refuse, and other deleterious materials. These materials, particularly large pieces of debris, may present significant difficulty for both excavation and disposal during construction. Largely uncontrolled when it was placed around the margins of the bay, artificial fill may contain areas of soft and/or loose materials that may impact the stability of trenches and other excavations. Highly variable and poorly controlled artificial fill materials may also be encountered in roadway embankments and other fills traversed by these alternative alignments.
- Artificial fill materials along the Modified Underground alternative are likely underlain by former marsh and bay mud deposits. These deposits are typically extremely soft and present significant challenges to excavation stability. If encountered in the bottom of excavations, bay mud and marsh deposits will require stabilization prior to installation of the transmission line. Potential stabilization measures, such as overexcavation and replacement of soft soils, installation of geosyntetic materials, and placement of large-diameter granular materials, would likely be difficult and costly to implement.

# Comment Set PG, Attachment A, cont.



- A significant portion (between approximately 2000 and 3000 feet) of the Modified Underground alignment crosses the Sierra Point landfill. An engineered clay cap has been placed over the landfill as a hydraulic barrier between landfill wastes and the ground surface. Based on the required depth of burial for the proposed transmission line, excavation for the transmission line will penetrate the landfill cap and will likely encounter refuse. Excavation within the landfill area is anticipated to be extremely difficult, as measures to stabilize excavations in refuse, limit exposure to waste materials, control leachate entry into excavations, and repair the existing clay cap will likely be extremely difficult to implement during construction. A microtunneling pit, likely necessary for the bay crossing between Oyster Point and Sierra Point will likely be constructed in landfill waste.
- The Modified Underground alignment will require major underground crossings of busy roadways, stream channels, railroad tracks, and a portion of San Francisco bay. At each of these underground crossings, two major excavations (a boring pit and a receiving pit) will likely be necessary. These excavations will be significantly larger and deeper than normal trench excavations and will have to be maintained in an open condition for an extended period of time during construction operations. Shoring and dewatering measures at these locations will be extensive. By comparison, no major jack and bore or directional drilling operations are planned along the proposed alignment.
- Much of the Modified Underground alignment traverses lowlands adjacent to the bay where groundwater is likely near the ground surface. Excavations below the groundwater surface are highly susceptible to running and or caving soils and require extensive shoring and dewatering measures to maintain stability of the excavation walls. Loose sands below the water table, as may be encountered near historic and ancient stream channels crossed by the alignment, present significant challenges to excavation operations. Management of dewatering systems, particularly where groundwater may contain chemical contaminants (see comments regarding public health and safety), is a difficult process and requires facilities and procedures for collection, treatment, and/or disposal of groundwater collected from dewatering systems.

PG-112

## 1.52 PG&E Route Option 1B—Underground, Comparison to Proposed Route Segment

**Subsection D.6.4.1, PG&E Route Option 1B—Underground, under subheading Comparison to Proposed Route Segment. Page D.6-31**

PG-113

This brief comparison of overhead and underground alternatives is seriously flawed in that it does not take into account the vast differences between overhead and underground lines in the level of exposure to geological impacts. By their nature, underground transmission lines have significantly greater exposure to all eleven potential impacts discussed in this section of the EIR (with the possible exception of G-5, strong groundshaking). This must be addressed in the comparison with the proposed overhead route.

# Comment Set PG, Attachment A, cont.



### 1.53 PG&E Route Option 1B—Underground, Comparison to Proposed Route Segment

PG-114

**Subsection D.6.4.1, PG&E Route Option 1B—Underground, under subheading Comparison to Proposed Route Segment. Page D.6-31**

The statements and conclusions of this section should be re-evaluated based on Secondary Comments #47 through #52 above.

### 1.54 Partial Underground Alternative, Environmental Impacts and Mitigation Measures

PG-115

**Subsection D.6.4.2, Partial Underground Alternative, under subheading Environmental Impacts and Mitigation Measures. Page D.6-32**

The fourth sentence under the subheading Environmental Impacts and Mitigation Measures states that Impact G-2 would most likely occur at the San Mateo Creek canyon crossing. Impact G-2 is also significant for underground portions of the alternative that will be installed by trenching.

The following potential impacts should be added to the discussion in this section:

- Impact G-7—(See Secondary Comment #9)
- Impact G-9—Expansive, soft, loose, and/or compressible soils may be encountered in roadway embankments and native materials along the underground alignment.
- Impact G-11—Corrosive soils may also be encountered.

### 1.55 Partial Underground Alternative, Environmental Impacts and Mitigation Measures

PG-116

**Subsection D.6.4.2, Partial Underground Alternative, under subheading Environmental Impacts and Mitigation Measures. Page D.6-32**

The second paragraph under the subheading Environmental Impacts and Mitigation Measures discusses the proposed crossing of the Canada trace of the San Andreas fault. Secondary Comments #48 and #50 are applicable to this discussion of the Canada trace.

### 1.56 Partial Underground Alternative, Environmental Impacts and Mitigation Measures

PG-117

**Subsection D.6.4.2, Partial Underground Alternative, under subheading Environmental Impacts and Mitigation Measures. Page D.6-32**

It should be noted in this section that the northern portion of this alternative is the same as the proposed alternative and is therefore subject to the same fault rupture impacts (and mitigation measures) associated with overhead crossing of the main, active traces of the San Andreas fault.

# Comment Set PG, Attachment A, cont.



## 1.57 Partial Underground Alternative, Comparison to Proposed Route Segment

PG-118

**Subsection D.6.4.2, Partial Underground Alternative, under subheading Comparison to Proposed Route Segment. Page D.6-32**

The statements and conclusions of this section should be re-evaluated based on Secondary Comments #54 through #57 above.

## 1.58 Transition Station Alternatives and Proposed Underground Routes—General Comments

PG-119

**Subsections D.6.5.1 and D.6.5.2, West of Skyline Transition Station and Sneath Lane Transition Station. Pages D.6-32 through D.6-38**

The following general comments are applicable to these two sections:

In general, the environmental setting, impacts, and mitigation measures applicable to both alternative transition stations are similar to those for the proposed transition station. Potential impacts affecting all three transition station alternatives include G-5 (strong ground shaking), G-6 (seismic-related ground failure, primarily ground distortion and cracking), G-8 (fault rupture), G-9 (expansive, soft, loose and/or compressible soils), and G-11 (corrosive soils). Each of these impacts should be discussed as they relate to the transition station alternatives. However, based on the proximity of the transition station locations to each other and in relation to active and potentially active traces of the San Andreas fault, the levels of impact for G-5, G-6, G-9, and G-11 are likely similar for all of the alternative transition stations. Therefore, comparison of the transition station alternatives should be based on comparison of fault rupture hazards (G-8) at each location.

Similarly, alternative underground routes (Proposed - San Bruno Avenue, Sneath Lane, and Westborough Boulevard) are also generally affected by the same potential impacts (G-1, G-2, G-3, G-5, G-6, G-8, G-9, and G-11). The only exception is a portion of the Westborough Boulevard alignment that crosses a mapped landslide area (Impact G-7, discussed in specific comments below) Each of these impacts should be discussed as they relate to the alternative underground alignments. In general, with the exception of potential landslide hazards along Westborough Boulevard, the levels of impact for G-1, G-2, G-3, G-5, G-6, G-9, and G-11 are comparable between the three alternative routes. Therefore, comparison of route alternatives should be primarily based on comparison of fault rupture hazards (G-8) at each location.

As discussed in Secondary Comments #3 and #12, distinction should be made between potential displacements along main, active traces and secondary, potentially active traces of the San Andreas fault. PG&E understands that ground displacements or deformations on the order of up to a foot can be accommodated for the transition station and underground cable, particularly if spread out over several feet. PG&E does not believe that transition stations and/or underground transmission lines can be constructed to accommodate displacements or deformations on the order of 10 feet that may be expected along main, active traces of the fault. Therefore, transition stations and underground transmission line alternatives that overlie or cross main, active traces of the fault are considered subject to significant and unmitigable (Class I) impacts. Transition stations and underground transmission lines that overlie or cross secondary, potentially active traces of the fault are considered significant and mitigable (Class II) impacts.

# Comment Set PG, Attachment A, cont.



As discussed in Secondary Comments #33 and #34, a site-specific fault rupture evaluation performed for PG&E indicates the proposed transition station is located greater than 100 feet east of the nearest main, active traces of the San Andreas fault. No active or potentially active fault traces were identified within the proposed transition station site. Estimated maximum ground displacement at the transition site, as a result of offset on potentially active, secondary traces of the fault on either side of the site, is less than or equal to one foot. Based on these findings, PG&E considers fault rupture impacts at the proposed transition station site mitigable to a less than significant level (Class II). PG-119

## 1.59 Transition Station Alternatives and Proposed Underground Routes—Specific Comments PG-120

**Subsections D.6.5.1 and D.6.5.2, West of Skyline Transition Station and Sneath Lane Transition Station. Pages D.6-32 through D.6-38**

Based on the general comments discussed in Secondary Comment #59 above, the following specific comments are applicable to Subsections D.6.5.1 and D.6.5.2:

Page D.6-33, Comparison to Proposed Transition Station

> Based on the findings of a site-specific fault rupture evaluation, PG&E considers fault rupture impacts at the proposed transition station site mitigable to a less than significant level (Class II).

Pages D.6-33, D.6-34, D.6-35, D.6-36, D.6-37, and D.6-38: Comparison to Proposed Route Segment PG-121

> It should be noted in this section that the proposed underground route (leaving the proposed transition station) crosses two potentially active secondary traces, but no main, active traces of the San Andreas fault. Thus, fault rupture impacts for the overhead (to the transition station) and underground (east of the transition station) portions of the proposed alignment through the fault zone are considered mitigable to a less than significant level (Class II). Fault rupture impacts to the alternative route, which crosses at least one main, active trace of the fault are considered significant and unmitigable (Class I).

Page D.6-36, Comparison to Proposed Transition Station: PG-122

> Based on available fault maps, the Sneath Lane transition station location appears slightly nearer to a main, active trace of the San Andreas fault than the proposed transition station. However, a site-specific fault rupture evaluation is not available for this alternative site. It does not appear that the Sneath Lane transition station site is crossed by any mapped fault traces (active or potentially active). Therefore, fault rupture impacts at the Sneath Lane transition station site may be mitigable to a less than significant level (Class II) and may be comparable to the proposed transition station location. However, a site-specific investigation, similar to that performed for the proposed transition station site, would be necessary for a balanced comparison of the two sites.

# Comment Set PG, Attachment A, cont.



### 1.60 Transition Station Alternatives and Proposed Underground Routes—Proposed Westborough Boulevard Underground Route

PG-123

**Subsections D.6.5.1 and D.6.5.2, Discussion of Westborough Boulevard Underground Route. Pages D.6-34 and D.6-37**

Available sources (Wentworth, et al. 1997, Brabb and Pampeyan, 1972, Wentworth, et al. 1985) indicate the presence of a large landslide area mapped on Westborough Boulevard between Callan and Gellert Boulevards. This landslide area is not mentioned in the discussions of environmental setting and environmental impacts and mitigation measures for the alternative underground Westborough Boulevard alignment. These two sections should provide appropriate discussion of the landslide area and potential G-7 impacts and mitigation measures. In comparing the Westborough Boulevard and proposed route segments, potential G-7 impacts should be considered.

### 1.61 Cherry Avenue Alternative, Environmental Impacts and Mitigation Measures

PG-124

**Subsection D.6.5.3, Cherry Avenue Alternative, under subheading Environmental Impacts and Mitigation Measures. Page D.6-39**

Impacts G-1, G-2, and G-11 should be added to the discussion in this section.

### 1.62 PG&E's Route Option 4B—East Market Street, Environmental Impacts and Mitigation Measures

PG-125

**Subsection D.6.5.4, PG&E's Route Option 4B—East Market Street, under subheading Environmental Impacts and Mitigation Measures. Page D.6-39**

Impacts G-1, G-2, G-6, G-9, and G-11 should be added to the discussion in this section.

### 1.63 Junipero Serra Alternative, Environmental Impacts and Mitigation Measures

PG-126

**Subsection D.6.5.5, Junipero Serra Alternative, under subheading Environmental Impacts and Mitigation Measures. Page D.6-40**

Impacts G-1, G-2, G-7, and G-11 should be added to the discussion in this section. Secondary Comment #61, regarding landslides mapped along Westborough Boulevard is applicable to this section as well.

### 1.64 Junipero Serra Alternative, Comparison to Proposed Route Segment

PG-127

**Subsection D.6.5.5, Junipero Serra Alternative, under subheading Proposed Route Segment. Page D.6-40**

It should be noted in this section that the proposed underground route (leaving the proposed transition station) crosses two potentially active secondary traces, but no main, active traces of the San Andreas fault. Thus, fault rupture impacts for the overhead (to the transition station) and underground (east of the transition station) portions of the proposed alignment through the fault zone are considered mitigable to a less than significant level (Class II). Fault rupture impacts to the alternative route, which crosses at least one main, active trace of the fault are considered significant and unmitigable (Class I).

# Comment Set PG, Attachment A, cont.



## 1.65 Modified Existing 230 kV Underground ROW, General Comment

PG-128

**Subsection D.6.5.6, Modified Existing 230 kV Underground ROW. Pages D.6-40 and D.6-41**

As the Environmentally superior alternative, this section should be more completely developed in regards to the environmental setting, environmental impacts, and mitigation measures. Detailed descriptions should be provided. The Modified Underground alternative cannot be reasonably evaluated against the proposed alternative unless there is a comparable level of detail in the description and analysis of environmental conditions and potential impacts. It does not appear that the Modified Underground alternative was sufficiently researched for potential geologic hazards and related project impacts.

## 1.66a Modified Existing 230 kV Underground ROW, Environmental Setting

PG-129

**Subsection D.6.5.6, Modified Existing 230 kV Underground ROW, under subheading Environmental Setting. Page D.6-40**

Because comparison of soil conditions (See Secondary Comment #71) is central to selection of the Modified Underground alternative as the environmentally superior alternative, it is essential that sufficient information be presented to support that selection. The discussion of environmental setting for the Modified Underground alternative should therefore include a detailed description of where the proposed alignment traverses different geologic materials (i.e. sandstone, Colma formation, artificial fill, bay mud, and stream channel deposits). The section should also include a detailed and specific description of potential hazards and impacts associated with each of the materials. Without such descriptions, the ability to compare soil conditions along the Modified Underground alignment with conditions along the proposed alignment is severely limited.

For example, artificial fill materials along the margins of San Francisco Bay, which are likely underlain by young bay mud/marsh deposits and a high groundwater table, present significantly greater challenges to design and construction of the underground transmission line than alluvial deposits or even bedrock materials (See Secondary Comments #51 and #71). Artificial fill materials are found in significantly greater abundance along the Modified Underground alignment than along the proposed alignment. Comparisons such as this are critical to support the conclusions of the DEIR. However, sufficient information to make these comparisons is not provided in the text.

## 1.67 Modified Existing 230 kV Underground ROW, Environmental Setting

PG-130

**Subsection D.6.5.6, Modified Existing 230 kV Underground ROW, under subheading Environmental Setting. Page D.6-40**

The primary alternative alignment and optional route segments all appear to traverse the Sierra Point landfill for a distance of approximately 2000 to 3000 feet. Based on available drawings of the landfill, it appears that the landfill cover system extends to the property boundary near the toe of the western landfill slope. It is therefore likely that the landfill cover system and refuse will be encountered during trenching activities. A description of the landfill final cover system and underlying waste materials should be provided.

# Comment Set PG, Attachment A, cont.



## 1.68 Modified Existing 230 kV Underground ROW, Environmental Impacts and Mitigation Measures

PG-131

**Subsection D.6.5.6, Modified Existing 230 kV Underground ROW, under subheading Environmental Impacts and Mitigation Measures. Page D.6-41**

Impacts G-1, G-2, G-9, and G-11 should be added to the discussion in this section.

The discussion of potential impacts in this section is insufficient for adequate comparison with the proposed alternative (See Secondary Comment #67a). Numerous potential impacts are not addressed, and the impacts that are addressed have generally not been sufficiently investigated. This section should further address the following issues:

- Impact G-1. Soft or loose soils are likely to be encountered, particularly in areas of artificial fill (typically underlain by bay mud deposits) and stream channel deposits. Highly variable materials, including large construction debris may be encountered in artificial fill deposits. Based on available mapping, artificial fill materials are common along the Modified Underground alignment. These deposits, particularly when saturated, are prone to instability in trenches and other excavations. Miscellaneous fills with large pieces of construction debris (concrete, bricks, steel, wood, etc.) or large rock will be impossible or very difficult to bore by directional drilling, jack and bore, or microtunneling techniques, except where shallow fill can be excavated from the surface. Controlling the pilot drill (directional drilling) or tunneling machine (microtunneling) will be very difficult in soft Bay Mud or very loose sediments, thus the exit point may not be able to be controlled to the desired location.
- Impact G-2. As mentioned under Impact G-1, artificial fill, bay mud, and stream channel deposits present significant challenges to construction of trenches and other project excavations. Construction activities associated with the proposed directional bores or microtunneling operations (excavation of jacking/receiving pits, drilling, etc.) will significantly increase exposure to geological and geotechnical hazards during construction. These operations are more affected by subsurface conditions than typical trenching operations as they include larger and deeper excavations, excavations that must be supported for a greater amount of time (potentially weeks as opposed to days), and greater potential for contact with groundwater.
- Impact G-5. Indirect mention is made (in the environmental setting section) of the potential for soft soils underlying artificial fill materials to amplify earthquake ground motions. This phenomenon should be explained more thoroughly. Portions of the alignment underlain by these deposits may experience significantly stronger ground motion than portions of the proposed alternative underlain by stiff soils or bedrock.
- Impact G-6. Very high potential for liquefaction and related forms of seismic ground failure exists along the Modified Underground Alignment. Liquefaction-related ground failure may seriously damage project facilities in the event of a major earthquake. The relative liquefaction susceptibility of soils occurring along

# Comment Set PG, Attachment A, cont.



the alignment should be identified and the location and extent of potentially liquefiable materials along the alignment should be discussed. The DEIR does not adequately address liquefaction hazards along the Modified Underground alignment, nor does it specifically address the comparative difference in liquefaction potential between this alternative and the proposed route.

PG-131

- Impact G-9. The potential impact of soft, compressible bay mud deposits is not considered. Settlement of these deposits beneath artificial fill materials is likely ongoing in some locations along the Modified Underground alignment. Appropriate mitigation measures are necessary to prevent this settlement from damaging project facilities. Landfill wastes underlying Sierra Point are also highly likely to settle significantly over time as a result of consolidation and decomposition.
- Additional Impact—Buried Structures. Existing box culverts, bridges, and other structures along the proposed alignment may be supported on deep pile foundations. The proximity of the alternative alignment to these structures may result in structural conflicts, particularly for underground stream channel and railroad crossings. Underground crossings may be difficult or infeasible where piling (both in use and abandoned) is encountered. Near bridges, buildings, and existing structures special excavation shoring and/or underpinning measures may be necessary.
- Additional Impact—An existing landfill cover system (clay cap) and underlying refuse will likely be encountered in excavations in the Sierra Point area. This is also a hazardous materials issue and is discussed further in comments regarding public health and safety.

## 1.69 Modified Existing 230 kV Underground ROW, Comparison to Proposed Route Segment

PG-132

**Subsection D.6.5.6, Modified Existing 230 kV Underground ROW, under subheading Comparison to Proposed Route Segment. Page D.6-41**

No comparison is made to liquefaction potential along the proposed and alternate routes. (See discussion of Impact G-6 in Secondary Comment #68). Based on liquefaction susceptibility maps by Knudsen, et al. (1997), approximately 60% of the Modified Underground alternative between the intersection of San Bruno Avenue and Jefferson Substation is underlain by soils with very high liquefaction potential. By comparison, less than 5% of the proposed route is underlain by soils with very high liquefaction potential. Another approximately 15% of the proposed alignment is underlain by soils with high liquefaction potential. However, most of the soils with high liquefaction potential are identified along the BART ROW portion of the alignment. As a result, they have likely been excavated and removed or otherwise stabilized as part of BART construction. Therefore, the potential for liquefaction and seismic-related ground failure is significantly higher for the Modified Underground alternative, which traverses areas of very high liquefaction potential.

# Comment Set PG, Attachment A, cont.



### 1.70 Chapter E—Comparison of Alternatives, Proposed Project vs. Modified Underground Alternative.

PG-133

**Table E-7, Page E-9.**

In comparing the two alignments in terms of geology, it is stated in the table that the Modified Underground alternative is "preferred because of soil conditions". No further basis or explanation for this conclusion is made. What is the reasoning behind this statement? To reach the stated conclusion, only a very narrow range of soil conditions must have been considered (See Secondary Comment #1). The criteria used to evaluate soil conditions should be described in the text.

As discussed in Secondary Comments #51 and #68 above, soil conditions along the Modified Underground alignment are generally extremely poor. The potential to encounter soft and/or loose material, variable fill materials, high groundwater, landfill waste, construction debris, liquefiable materials, and other difficult soil conditions is vastly higher along the Modified Underground alignment than along the proposed alignment.

Difficult soil conditions that may be encountered in greater abundance along the proposed route than the Modified Underground route include excavation in potentially fossil-bearing soils and excavation in rock. However, both of these conditions are mitigated with significantly less expense and effort than the difficult soil conditions expected in greater abundance along the Modified Underground route.

## 2. Specific Tertiary Comments

PG-134

### 2.1 Artificial Fill

**Subsection D.6.1, Environmental Setting for the Proposed Project, under subheading Artificial Fill. Page D.6-3**

On page D.6-3, under the subheading Artificial Fill, it is stated that "...fill made before 1965 is nearly always compacted and consists..." The text should be revised to indicate that artificial fill placed before 1965 is nearly always uncompacted.

### 2.2 Slope Stability

PG-135

**Subsection D.6.1, Environmental Setting for the Proposed Project, under subheading Slope Stability. Page D.6-5**

On page D.6-5, the second paragraph under the subheading Slope Stability states: "The proposed alignment and the alternatives do not cross any areas identified as an existing landslide area or susceptible to landslides and slips." Technical problems with this statement are discussed in Secondary Comment #2. This subsection of the chapter deals only with the proposed project. Conditions related to the alternatives are discussed elsewhere. The statement should be revised to delete reference to the alternatives.

### 2.3 Subsidence/Differential Settlement

PG-136

**Subsection D.6.1, Environmental Setting for the Proposed Project, under subheading Subsidence/Differential Settlement. Page D.6-12**

# Comment Set PG, Attachment A, cont.



On page D.6-12, under the subheading Subsidence/Differential Settlement, it is stated that "Stream channel and recent valley alluvium are generally most susceptible to earthquake-induced subsidence. The word "deposits" should be inserted after the word "channel". PG-136

## 2.4 Faults and Seismicity

**Subsection D.6.1.1, Jefferson Substation to Ralston Substation, under subheading Faults and Seismicity. Page D.6-14** PG-137

On page D.6-14, under the subheading Faults and Seismicity, it is stated that "Jefferson Substation ...is not crossed by any trace of the San Andreas fault." This should be clarified to read "not crossed by any mapped trace of the San Andreas fault".

## 2.5 Ralston Substation to Carolands Substation—Slope Stability

**Subsection D.6.1.2, Ralston Substation to Carolands Substation, under subheading Slope Stability. Page D.6-14** PG-138

On page D.6-14, under the subheading Slope Stability, it appears that the discussion provided has been switched with the discussion provided under the subheading Slope Stability in subsection D.6.1.3. San Mateo Creek canyon is traversed by the proposed alignment between the Ralston and Carolands substations, not between the Carolands substation and the Transition station (See Comment #7 below).

## 2.6 Faults and Seismicity

**Subsection D.6.1.2, Ralston Substation to Carolands Substation, under subheading Faults and Seismicity. Page D.6-14** PG-139

On page D.6-14, under the subheading Faults and Seismicity, it is stated that "No faults cross this alignment of the Proposed Project." This should be clarified to read "No mapped faults..."

## 2.7 Carolands Substation to Transition Station—Slope Stability

**Subsection D.6.1.3, Carolands Substation to Transition Station, under subheading Slope Stability. Page D.6-15** PG-140

On page D.6-15, under the subheading Slope Stability, potential landslide hazards in San Mateo Creek canyon are discussed. San Mateo Creek canyon is traversed by the proposed alignment between the Ralston and Carolands substations, not between the Carolands substation and the Transition station. These hazards should be discussed in subsection 6.1.2 (See Comment #5 above). As the entire discussion provided in this section relates to the area of San Mateo Creek canyon, an appropriate discussion of slope stability hazards between the Carolands Substation and the Transition station should be provided.

## 2.8 Significance Criteria - Geology

**Subsection D.6.3.1, Definition and Use of Significance Criteria, under subheading Geology. Page D.6-18** PG-141

# Comment Set PG, Attachment A, cont.



On page D.6-18, under the subheading Geology, the first sentence reads, "...the impact that specific geologic hazards may have upon the pipeline and its related facilities." The word pipeline in this sentence should be changed to electric transmission line.

PG-141

## 2.9 Impacts and Mitigation Measures—Impact G-6

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-23**

PG-142

The second sentence under the subheading Impact G-8: Surface Fault Rupture at Crossings of Active and Potentially Active Fault Traces states: "Hazards would not be as great where the proposed alignment crosses traces of potentially active faults, such as... the Canada Trace of San Andreas Fault..." This sentence is inaccurate. The proposed alignment does not cross the Canada Trace of the San Andreas fault. However, the Canada Trace of the fault does approach within approximately 100 feet of the Jefferson substation. The Canada trace of the San Andreas fault is not mentioned in the general Fault Rupture subsection (page D.6-6) or under the Faults and Seismicity heading below the Jefferson Substation to Ralston Substation subsection (page D.6-14).

The reference to the Canada trace of the San Andreas fault should be deleted from the sentence. If, for some reason, a reference to the Canada trace is kept in this section, the trace should also be discussed in the general Fault Rupture subsection (page D.6-6), Table D.6-3, and under the Faults and Seismicity heading in the Jefferson Substation to Ralston Substation subsection (page D.6-14).

## 2.10 Impacts and Mitigation Measures—Impact G-6

**Subsection D.6.3.3, 230 kV / 60 kV Overhead Transmission Line. Page D.6-23**

PG-143

The second sentence under the subheading Impact G-8: Surface Fault Rupture at Crossings of Active and Potentially Active Fault Traces states: "Hazards would not be as great where the proposed alignment crosses traces of potentially active faults, such as... the unnamed fault trace near the Jefferson Substation." This potentially active fault trace is not mentioned in either the general Fault Rupture subsection (page D.6-6), in Table D.6-3, or under the Faults and Seismicity heading in the Jefferson Substation to Ralston Substation subsection (page D.6-14).

Information regarding the potentially active, unnamed fault trace should be added to the general Fault Rupture subsection (page D.6-6), Table D.6-3, and below the Faults and Seismicity heading in the Jefferson Substation to Ralston Substation subsection (page D.6-14).

# Responses to Comment Set PG – PG&E Attachment A: Geology, Soils, and Paleontology

PG-58 References to excavation characteristics in Table D.6-1 were altered to be consistent with the wider interpretation of soft and loose materials being also classified as "difficult" to excavate. Text was added to the paragraph following Table D.6-1 that defines the criteria used to describe excavation characteristics. A sentence was added to specify that excavation characteristics described in the table are general and that actual conditions will vary.

PG-59 The description of slope stability in Section D.6.1 on page D.6-5 has been modified to include mention of the possibility of encountering unmapped landslides and slope instability in the southern portion of the project area.

PG-60 A brief discussion of debris flow hazards is now included in the slope stability description in Section D.6.1 on page D.6-5 for a more complete description.

PG-61 Additional details about the San Andreas Fault Zone have been added to the fault rupture discussion in Section D.6.1 on pages D.6-6 and D.6-7, but excessive description and discussion of fault mechanics are not in the scope of an EIR. The reviewer's general questions are addressed below.

The San Andreas Fault is over 680 miles long. Major earthquakes have occurred in numerous places along its length. The epicenter of the 1906 earthquake has traditionally been identified as near Olema, but more recent work suggests it may have been offshore of the Golden Gate. The length of that rupture was at least 350 miles on-land and an undetermined amount in the ocean north of Point Arena. The maximum amount of offset measured was described by Lawson (1908) in the following quote:

"The road running southwest from Point Reyes Station and crossing the valley at the head of Papermill Creek delta was offset 20 feet. … As the fault-trace at this point was between 50 and 60 feet wide, and as the embankment of the road for that distance was broken into several pieces, it was not possible to make certain that the dissevered remnants of the road had originally been in exact alinement [*sic*]. It is probable, however, that the road was approximately straight before the earthquake, …" (Lawson, 1908, p. 71).

Other descriptions of narrow faults zones in the Olema area showed between 11 and 16 feet of displacement along a single fault trace. There are numerous accounts of distributed fault displacement as well as one or two fault traces carrying all the displacement along the described portions of the 1906 rupture. The next great earthquake could occur anywhere along the San Andreas Fault and expected offset in the project area should not be limited to the 10 distributed feet of offset described by Lawson in the area of today's San Bruno Ave and Skyline Blvd intersection. Whether 20 feet or 11 feet of displacement occur along a fault trace during a seismic event, a large-diameter underground cable would not likely accommodate the offset.

PG-62 The potential fault displacement information for Serra Fault in Table D.6-3 has been altered to read "Up to 3 ft", which is consistent with the evaluation in the second paragraph of Section D.6.3.5 that describes the hazard impact posed at the crossing of the Serra Fault as mitigable to a less than significant level.

PG-63 References to the San Bruno Fault in all text, including Table D.6-3, have been removed from the text in recognition that no evidence has been found to support its existence in recent investigations.

PG-64 The description of liquefaction susceptible materials in Section D.6.1 on page D.6-12 of the Draft EIR has been modified to include artificial fill and Bay mud deposits as being susceptible to liquefaction within the project area.

PG-65 A brief discussion of ground cracking and seismically induced landslides is now included in Section D.6.1 under Faults and Seismicity.

PG-66 A brief discussion of artificial fills is now included in the subsection Subsidence/Differential Settlement under Faults and Seismicity in Section D.6.1.

PG-67 A description of the lack of rating of the Urban Land-Orthents soil category was added to the text under the heading Soils in Section D.6.1. Descriptions of potential for reuse of excavated soils were added to the discussion in the section.

PG-68 The paragraph under Slope Stability in Section D.6.1.1 about landslide susceptibility has been modified to indicate some risk of slope instability exists for all portions of the alignment in this section of the project area. The Wentworth, et al., 1997 reference is cited.

PG-69 The paragraph under Slope Stability in Section D.6.1.2 about landslide susceptibility has been modified to indicate some risk of slope instability exists for all portions of the alignment in this section of the project area. The Wentworth, et al., 1997 reference is cited.

PG-70 The paragraph under Slope Stability in Section D.6.1.3 about landslide susceptibility has been modified to indicate some risk of slope instability exists for all portions of the alignment in this section of the project area. The Wentworth, et al., 1997 reference is cited.

PG-71 Text in Section D.6.1.3 under Faults and Seismicity has been edited to be more specific with regard to potential magnitude and location of ground displacement within the fault zone. Actual locations of where the overhead line would cross the known and mapped active trace are discussed.

PG-72 According to the format of the EIR, Section D.6.1.4 only discusses the general conditions or environment along the Proposed Project route. Impacts affecting the project, such as liquefaction and subsidence/differential settlement are addressed in the appropriate section, specifically Section D.6.3 Environmental Impacts and Mitigation Measures for the Proposed Project, Subsection D.6.3.5 230 kV Underground Transmission Line.

PG-73 The incorrect reference to fault crossing was deleted; more detail about active, potentially active, and secondary faults was added to the faults and seismicity discussion for San Bruno Boulevard in Section D.6.1.4. Relevant information from the Geomatrix (2002) report was also added.

PG-74 All references to the San Bruno Fault have been removed from the text (see response to Comment PG-63, above).

PG-75 The text of Section D.6.1.4, Underground Segments, under subheadings Colma to Martin Substation and Faults and Seismicity has been modified to read "No active or potentially active faults cross the alignment …".

PG-76 The suggested additions to the significance criteria were made to Section D.6.3.1 to include a more accurately reflect the types of impacts analyzed in the impact analysis discussions.

PG-77 The first sentence of Section D.6.3.3 has been modified to clarify that the overhead line route lies within one mile of the main active fault trace.

PG-78 Rational for less than significant with mitigation (Class II) impact classifications are provided in the responses below.

PG-79 The mitigation measure requirements for CPUC review and approval of submitted geotechnical reports and other studies are designed to ensure that the reports have been adequately completed. In addition, CPUC review of reports and associated measures allows for potential misinterpretations or misunderstandings to be worked out in advance, before construction begins. The CPUC will provide responses to PG&E as soon as the applicable reviews are complete.

PG-80 Applicant Proposed Measures (APM) do not include a requirement to conduct design-level geotechnical studies of soil conditions at all locations along the approved project route. Therefore, Mitigation Measure G-1a, which requires design level geotechnical studies to be performed, remains a requirement to ensure that impacts are mitigated to less than significant levels.

PG-81 Refer to Response PG-80, above.

PG-82 PG&E's APMs do not include requirements for design-level geotechnical studies of potentially problematic subsurface conditions to take place at each tower location and along the underground route. Therefore, Mitigation Measure G-2a, which requires measures to be implemented to protect against slope instability, remains a requirement to ensure that impacts are mitigated to less than significant levels. Also, please refer to Response PG-79, above.

PG-83 Refer to Response to Comment PG-82, above. It is common industry practice for permitting agencies to review and approve applicable construction and excavation plans to monitor permit compliance. (PG&E's request to perform the required construction and excavation without review of any excavation plan is tantamount to a request to perform the work without a permit.)

PG-84 Mitigation for loss of non-renewable resources is an essential element of compliance. The wording of Mitigation Measure G-3a has been revised to clarify which geologic units shall be monitored and what PG&E must document and provide to the CPUC to demonstrate initial compliance. Also, please refer to Response PG-79, above.

PG-85 Incorrect text in Draft EIR Section 10.3.3 under the Impact A-3 (encountering naturally occurring asbestos) discussion has been replaced so as to correctly describe the occurrence of serpentinite along the proposed route.

PG-86 Text has been added Mitigation Measure G-5a, which is designed to reduce the effects of ground shaking, to include the specific types of documentation required to demonstrate compliance. PG&E's APMs do not include requirements for site-specific seismic analyses to evaluate the peak ground accelerations for design of project components. Therefore, Mitigation Measure G-5a remains a requirement to ensure that impacts are mitigated to less than significant levels. Also, please refer to Response PG-79, above.

PG-87 Refer to Response PG-86, above.

PG-88 PG&E's APMs do not include a requirement to conduct design-level geotechnical studies for liquefaction and slope instability for all portions of the approved project and all associated facilities. Therefore, Mitigation Measure G-6a, which requires design level geotechnical studies to assess the potential for liquefaction, lateral spreading, seismic slope instability, and ground-cracking hazards to affect the project facilities, remains a requirement. Also, please refer to Response PG-79, above.

PG-89 Refer to Response PG-88, above.

PG-90 The reference in first sentence under Ralston Substation in Section D.6.3.3 that there is no evidence of slope instability in the segment has been deleted. The second paragraph under Ralston Substation to Carolands Substation contains the slope instability impact discussion (Impact G-7).

PG-91 Impact G-1, potential for soft and loose soils, has been added to the impact discussion under Ralston Substation to Carolands Substation in Section D.6.3.3.

PG-92 Impact G-7, Slope Instability Including Landslides, Earth Flows, and Debris Flows, has been added to the Jefferson Substation to Ralston Substation and the Carolands Substation to Transition Station impact discussion subsections to include other areas of potential landslide and slope instability hazards.

PG-93 PG&E's APMs do not include a requirement to conduct design-level geotechnical studies for evaluation of unstable slopes, landslides, earth flows, and debris flows at each tower location and along the underground trench route. Therefore, Mitigation Measure G-7a, which requires design level geotechnical studies to assess the potential for unstable slopes, landslides, earth flows, and debris flows to affect the project facilities, remains a requirement. Also, please refer to Response PG-79, above.

PG-94 First sentence of the Carolands Substation to Transition Station impact discussion in Section D.6.3.3 has been deleted to correct the reference to the location of San Mateo Creek Canyon.

PG-95 Reference to Impacts G-1 (soft and loose soils) and G-7 (slope stability) were added to the Carolands Substation to Transition Station impact discussion in Section D.6.3.3 to more accurately describe the potential impacts that would be associated with the segment.

PG-96 The Geomatrix Report referenced in this comment provides detail regarding the location of active traces of the San Andreas fault, and how those traces could affect the proposed transition station. Section D.6.3.4 text has been revised to reflect the findings of the referenced Geomatrix Report, which indicates that no active or potentially active fault

traces cross the proposed transition station site. In addition, the description of the transition station site has been revised to more accurately describe its proposed location.

PG-97 The impact classification for fault rupture in Section D.6.3.4 at the proposed transition station site has been changed from Class I (significant and unmitigable) to Class II (less than significant with mitigation) based on the findings of the Geomatrix Report (also see Response PG-96, above).

PG-98 The Merced Formation was added as a unit that could contain potentially significant fossils in Section D.6.1, Table D.6-1, and in the subheading of Paleontologic Resources in Section D.6.1. A qualified paleontologist would identify the paleontologic sensitivity of each of the geologic units in the preliminary paleontological report as required in Mitigation Measure G-3a, thereby providing the most knowledgeable assessment of paleontologic sensitivity.

PG-99 The discussion in Section D.6.3.5 about potential fault rupture impacts (Impact G-8) to the underground transmission line has been corrected to exclude reference to San Andreas Fault and to include the inferred secondary fault traces noted in the referenced Geomatrix Report. The discussion in Section D.6.3.5 relative to the fault locations has also been modified to include better fault location descriptions. Based on the findings of the Geomatrix Report, the Class I (significant and unmitigable) impact level associated with potential fault rupture hazard to the underground line has been reduced to Class II (less than significant with mitigation) to reflect that the San Andreas Fault does not cross the proposed route.

In addition, Mitigation Measure G-8a (see Section D.6.3.3 under the Carolands Substation to Transition Station impact discussion), which would reduce fault rupture impacts to less than significant levels, has been modified to include consideration of engineering/design options for underground fault crossings, including: installing oversized cable vaults that can accommodate as much slack as possible; or installing the underground cable in shorter, more easily replaceable sections.

PG-100 Impact G-9, as applied to the Colma to Martin Substation of the Proposed alignment refers predominantly to the impacts of excavating for transmission line construction within the alluvium along Colma Creek and the Bay mud and artificial fill deposits mapped east and north of San Bruno Mountain. Impact G-9 is discussed in the appropriate sections for each component of the Proposed Project, and for each alternative segment or component where appropriate.

PG-101 Mitigation Measure G-9a, requiring standard engineering methods for problematic soils to be implemented, is recommended to mitigate potential impacts associated with expansive, soft, loose and/or compressible soils. because PG&E's APMs do not include requirements for design-level geotechnical studies for evaluation of expansive, soft/loose, and/or compressible soils to occur along all portions of the underground trench route. Therefore, Mitigation Measure G-9a remains a requirement. Also, please refer to Response PG-79, above.

PG-102 Refer to Response PG-101, above.

PG-103 Reference to Impact G-11 and Mitigation Measure G-11a has been added to all appropriate portions of the proposed route and alternative routes.

PG-104 PG&E's APMs do not include requirements for design-level geotechnical studies for evaluation of corrosive soils to occur along all portions of the underground trench route. Therefore, Mitigation Measure G-11a remains a requirement. Also, please refer to Response PG-79, above.

PG-105 Refer to Response PG-104, above

PG-106 Impact G-1 is not applicable to the Hillsdale Junction Switchyard site. The switchyard sits on Franciscan sandstone and is not susceptible to hazards resulting from soft or loose soil – there is no soft or loose soil, only hard, fractured sandstone. Impacts G-2, excavation slope stability; G-6, seismic slope stability; and G-7, landslides and debris flow, were added to the Hillsdale Junction Switchyard impact discussion in Section D.6.3.6.

PG-107 Impact G-5 (strong ground shaking) has been added to the Carolands Substation, Martin Substation, and Tap location impact discussions in Sections D.6.3.6 to more accurately describe the extent of the impact.

PG-108 The environmental setting discussion for the PG&E Route Option 1B-Underground Alternative (Section D.6.4.1) has been modified to include discussion about the hilly terrain and the presence of weak and unstable bedrock material along portions of the alignment, unmapped landslides and unstable slopes.

PG-109 The discussion of the Cañada trace in the environmental setting discussion for the PG&E Route Option 1B-Underground Alternative (Section D.6.4.1) has been expanded to include mention of its active status, and mention that it apparently did not rupture during the 1906 earthquake.

PG-110 Potential Impacts G-1 (soft and loose soils), G-2 (excavation related slope stability), G-7 (slope stability), G-9 (expansive, soft, loose, and compressible soils) and G-11 (corrosive soils) have been added to the impact discussion for the PG&E Route Option 1B – Underground Alternative (Section D.6.4.1) to more accurately describe impacts that would be associated with the alternative.

PG-111 References to the Cañada trace of the San Andreas Fault as an active trace have been made consistent in Section D.6.4.1. Discussion of potential fault crossing impacts (Impact G-8) has been expanded here to fully consider the effects of crossing the fault obliquely with underground cables.

PG-112 Some of the suggested additional text in this comment accurately reflects the conclusions of the section, and therefore was incorporated into the text of Sections D.6.4.1, D.6.4.2, and D.6.4.6. However, much of the comment addressed issues that are not covered in the geology section (e.g., traffic, utility conflicts, and contaminated soils). This language was not added as these topics are addressed in other parts of the EIR.

PG-113 The comparison was expanded to more realistically and completely address the impacts of undergrounding. Please also see response to PG-112.

PG-114 Please refer to Response PG-112.

PG-115 Potential Impacts G-7 (landslides), G-9 (expansive, soft, loose, and compressible soils), and G-11 (corrosive soils) have been added to the impact discussion for the Partial Underground Alternative (Section D.6.4.2) to more accurately describe impacts that would be associated with the alternative. In addition, the Impact G-2 (slope stability) discussion was modified to indicate that slope stability would also be a concern associated with underground construction.

PG-116 Reference to Cañada trace being a potentially active fault have been changed in Section D.6.4.2 (Partial Underground Alternative) to indicate that the Cañada trace is an active fault. Impacts associated with fault rupture (Impact G-8) are still considered less than significant with implementation of Mitigation Measure G-8a because the fault would be crossed by the overhead line rather than an underground line.

PG-117 Text in Section D.6.4.2 (Partial Underground Alternative) has been modified to describe the similarities in the alternative route and the proposed route and to include information regarding impacts from possible surface fault rupture of the San Andreas fault both at the Cañada trace and near the San Bruno Ave transition station.

PG-118 Section D.6.4.3 (Partial Underground Alternative), Comparison to Proposed Route Segment, has been modified to reflect other changes that were made to Section D.6.4.3.

PG-119 Comparison of the transition station alternatives included a comparison of fault rupture hazards at each location. A full discussion of all potential impacts at each alternative is redundant and not especially helpful. Only the most important impacts were mentioned and incorporated into the comparison – primarily the relative hazards associated with fault rupture. Text regarding fault impacts at the transition station locations were corrected to reflect the new information from the Geomatrix (2003) report.

PG-120 New information from the Geomatrix (2003) report has been incorporated into the Final EIR to indicate fault rupture hazard impacts at the proposed transition station site are mitigable to less than significant levels, and to correct the discussion of the arrangement of the main trace and secondary traces.

PG-121 Please refer to Response to Comment PG-120.

PG-122 The conclusions in Section D.6.5.2 (Sneath Lane Transition Station) acknowledge that the seismic risk of the underground route leaving this station is greater than that of the proposed transition station.

PG-123 The location, size, and potential impact of the landslide identified in Wentworth, et al. (1977) is incorporated into the EIR text of Section D.6.5.1 and D.6.5.2. Reference to Mitigation Measure G-7a (requiring geotechnical reports for landslides) has been added.

PG-124 The Section D.6.5.3 (Cherry Avenue Alternative) impact discussion has been modified to include impacts associated with soft and loose soils (Impact G-1), cohesive areas causing trench walls to become unstable (Impact G-2), and corrosive soils (Impact G-11).

PG-125 The Section D.6.5.4 (PG&E's Route Option 4B-East Market Street Alternative) impact discussion has been modified to include impacts associated with soft and loose soils (Impact G-1), cohesive areas causing trench walls to become unstable (Impact G-2), liquefaction or other seismically induced ground failure could occur in saturated soils (Impact G-6), expansive, loose, compressible, and corrosive soils (Impacts G-9 and G-11).

PG-126 The Section D.6.5.5 (Junipero Serra Alternative) impact discussion has been modified to include impacts associated with soft and loose soils (Impact G-1), cohesive areas causing trench walls to become unstable (Impact G-2), landslides (Impact G-7), and corrosive soils (Impact G-11). The landslide mentioned by the commenter occurs on the Westborough segment and is not considered a part of this alternative segment. The Westborough segment is included in the discussion of the Junipero Serra alternative and the landslide is described. Discussion of impacts G-1, G-2, G-7, and G-11 have been added for this alternative.

PG-127 The Comparison to the Proposed Project portion of Section D.6.5.5 (Junipero Serra Alternative) has been modified to reflect the impact changes associated with the Proposed Project and the Junipero Serra Alternative, per the comments received on the Draft EIR

PG-128 Additional information has been added to Section D.6.5.6 (Modified Existing 230 kV Underground ROW). The CPUC believes that the level of detail provided is adequate to assess potential impacts associated with the alternative. Under CEQA Guidelines 15126.6(a), Consideration and Discussion of Alternatives to the Proposed Project, the evaluation of alternative within the EIR, "shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed. (*County of Inyo v. City of Los Angeles* (1981) 124 Cal.App.3d 1)."

PG-129 Soil conditions played a very minor role in the selection of the environmentally superior alternative. However, additional information about the soils along Modified Existing 230 kV Underground ROW Alternative has been added to Section D.6.5.6. Also, please see Response to Comment PG-36 regarding the identification of both the Proposed Project's underground segment and the Modified Underground Existing 230 kV Alternative as environmentally superior to other northern segment alternatives.

PG-130 Impacts associated with encountering the cover system and refuse of the Sierra Point Landfill during construction of the Modified Existing 230 kV Underground ROW Alternative addressed in Section D.8.5.6, Public Health and Safety. Please see also the Response to Comment PG-44 regarding hazardous materials.

PG-131 The impact discussion in Section D.6.5.6 (Modified Existing 230 kV Underground ROW Alternative) has been modified to include impacts associated with soft and loose soils (Impact G-1), cohesive areas causing trench walls to become unstable (Impact G-2), and corrosive soils (Impact G-11). The CPUC believes that the level of detail provided in the Final EIR is adequate to assess potential impacts associated with the alternative. In addition, the level of detail provided is appropriate for the scope of an EIR.

PG-132 The impact comparison discussion in Section D.6.5.6 (Modified Existing 230 kV Underground ROW Alternative) has been modified to include liquefaction related impacts.

PG-133 The Comparison of Alternatives Section (Section E) has been modified to reflect the changes presented in the Final EIR Geology, Soils, and Paleontology Section as described above.

PG-134 Text in Section D.6.1 (Environmental Setting for the Proposed Project) under the heading of Artificial Fill has been modified to read " … fill made before 1965 is nearly always *un*compacted and consists …".

PG-135 Text in Section D.6.1 (Environmental Setting for the Proposed Project) under the heading of Slope Stability has been modified to eliminate references to the alternatives.

PG-136 The referenced text under the heading Subsidence/Differential Settlement in Section D.6.1 has been modified to read "Stream channel *deposits* and recent valley alluvium …".

PG-137 Text under the heading Faults and Seismicity in Section D.6.1.1 has been modified to clarify that the Jefferson Substation lies within an Alquist-Priolo Earthquake Hazard zone due to its proximity to the Cañada trace of the San Andreas Fault (approximately 100 feet west of the west edge of the site), but is not crossed by any mapped trace of the fault.

PG-138 Text descriptions under the headings of Slope Stability have been corrected in Sections D.6.1.2 (Ralston Substation to Carolands Substation) and D.6.1.3 (Carolands Substation to Transition Station) to correspond to the appropriate sections.

PG-139 Under the heading of Faults and Seismicity in Section D.6.1.2, the first sentence has been modified to indicate that no mapped faults cross the subject alignment of the proposed project."

PG-140 Please refer to Response PG-138, above.

PG-141 The word "pipeline" has been replaced with the words "transmission line" in the first sentence of Section D.6.3.1 (Definition and Use of Significance Criteria).

PG-142 Reference to the Cañada trace has been removed from the Impact G-8 (Surface Fault Rupture at Crossings of Active and Potentially Active Fault Traces) discussion in Section D.6.3.3. In addition, discussions have been modified under the general Fault Rupture heading in Section D.6.1 and under the Faults and Seismicity heading in Section D.6.1.1 Jefferson Substation to Ralston Substation to specifically reference the Cañada trace.

PG-143 The "unnamed" trace that was referenced in the Draft EIR Section D.6.3.3 under the Impact 8 (Surface Fault Rupture at Crossings of Active and Potentially Active Fault Traces) discussion is actually the Cañada trace. Reference to the unnamed trace has been eliminated from the Impact G-8 discussion.