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Ms. Tania Treis
Principal
Panorama Environmental, Inc.
One Embarcadero Center, Suite 740
San Francisco, CA 94111

Re: Santa Cruz 115 kV Reinforcement Project (A.12-01-012) Response to Data Request #10, Questions 5 and 7

Dear Ms. Treis:

This letter responds to Questions #5 and #7 of your July 16, 2014 request for additional information and data regarding Pacific Gas and Electric Company's (PG&E's) application (A. 12-01-012) and Proponent's Environmental Assessment for a Permit to Construct the Santa Cruz 115 Kilovolt (kV) Reinforcement Project (project). The original text of the questions is followed by PG&E's response.

California Public Utilities Commission (CPUC) Data Request Question #5

Under the No Project Alternative, the project would not be implemented. In this case, would PG&E implement some type of system alternative as a temporary fix as demand increases? Please provide a description of what this system alternative would be, if applicable. If PG&E could/would not make any other changes, please explain why and the consequences of not making any changes to reliability, growth, etc.

PG&E's Response

If the project is not implemented, PG&E would need to carry out several sub-optimal actions in the near-term.

First, PG&E would need to develop a voltage support plan to ensure that sufficient transmission and distribution voltage support equipment is online during summer and winter peak demand periods so that the distribution transformers in the area have a unity power factor or slightly leading power factor during these periods. This would ensure that an overlapping outage of the Paul Sweet STATCOM and the Green Valley-Rob Roy Power Line section does not result in a potential area voltage collapse (during winter peak demand) or a line overload (during summer peak demand). This voltage support plan would also need to ensure that the voltage support equipment is taken offline during off-peak and partial-peak loading periods, so that the system

does not experience an overvoltage condition during these times. By implementing this voltage support plan, PG&E would essentially need to juggle the system to ensure appropriate equipment is in place depending on the particular time of day or year.

Second, PG&E would need to dedicate additional resources to conduct more frequent inspections of the two existing 115 kV lines to ensure that the 40-year old line conductors remain in working condition. Inspections might also be needed soon after a line outage occurs if the other line experiences very heavy loading.

Third, PG&E might have to disable the automatic restoration features at Rob Roy Substation if the STATCOM is out of service during a summer peak demand period. This action would be necessary to protect against potential overload problems, should there be overlapping outages of the STATCOM and the Green Valley-Rob Roy Power Line section. Consequently, an outage of the line between Green Valley and Paul Sweet substations would result in an extended outage to Rob Roy Substation. Service restoration for some of the Rob Roy Substation load would be conducted manually by system operators, depending on system conditions. However, if the Green Valley-Rob Roy Power Line section is out during a summer peak demand period, PG&E system operators might need to immediately drop Rob Roy Substation if the STATCOM also goes out.

Note as well that as area loads continue to grow, PG&E would need to reinforce its transmission system. At a summer peak demand level of 155 megawatts (MW)—which is a less than 7-percent increase over the current peak demand level of 147 MW—a single outage of the Green Valley-Rob Roy Power Line section would result in the Green Valley-Camp Evers 115 kV Power Line loading up to 100 percent of its summer emergency rating. A single outage of the Green Valley-Camp Evers 115 kV Power Line would result in the Green Valley-Rob Roy Power Line section loading up to 98 percent of its summer emergency rating. If either of these scenarios were to occur, PG&E would be in violation of North American Energy Reliability Corporation transmission system reliability criteria, which does not allow equipment overloads for an outage of a single element in the transmission system.

At that point, PG&E would have the following three options to help reinforce its transmission system:

1. reconductor the existing two 115 kV transmission lines (note this would not provide equivalent system benefits as the proposed Project);
2. install generation in the area, which would be available during evening peak demand periods; or
3. install large utility-scale energy storage facilities in the area, requiring the substantial expansion of an existing substation or the construction of a new substation along the alignment.

Implementation of either option 2 or 3 would still necessitate future replacement of the existing conductors on the 115 kV lines.

Also note that there are several potential complications with reconductoring the approximately 25.9 circuit miles comprising the two existing 115 kV lines. The first complication is that the

Green Valley-Rob Roy Power Line section is located close to a gas transmission pipeline for more than 4 miles of its length. A major upgrade in the electric transmission line conductor could require replacement of the existing wood pole structures of the line with tubular steel poles (TSPs). Per PG&E's engineering guidelines, that would necessitate moving the electric transmission line more than 10 feet away from the gas pipeline. This would significantly increase the reconductoring cost and the number of trees that would need to be removed to accommodate the relocated line.

The second complication is that there are several sensitive habitat locations for the Santa Cruz long-toed salamander along the Green Valley-Rob Roy Power Line section, which would be disturbed by the activities associated with construction in this area. The third complication is that there would be a significant customer outage risk during the reconductoring of the two existing line sections. With one line out of service for reconductoring, an outage of the other line would result in most of Santa Cruz County being without power.

CPUC Data Request Question #7

Please provide a description of an additional alternative or alternatives along the Southern Alignment. An option may include undergrounding the portion of the alignment near the gas pipeline to avoid installation of the overhead lines in a new alignment that requires substantial tree removal and impacts to homes/extensive new easements. Were other alignments along the southern route that reduce visual impacts considered, and if so, can you describe these alignments?

PG&E's Response

PG&E understands the reference to the "Southern Alignment" to mean the existing 115 kV circuit that runs adjacent to Old Adobe Road from Green Valley Substation to pole 3/47. To respond to this question, PG&E preliminarily evaluated constructing a second circuit along the existing alignment supported by a double-circuit TSP line for both the existing 115 kV circuit and the second 115 kV circuit. This alternative would include undergrounding the portion of the alignment near the existing gas pipeline in order to avoid installation of the overhead lines in a new alignment, which would result in substantial tree removal, impacts to homes, and the need for extensive new easements. If this option is selected, PG&E would underground an approximately 2.24-mile portion of the alignment between existing poles 3/47 and 5/68. From pole 5/68, the existing gas lines leave the alignment for a distance of approximately 0.55 mile to a position near pole 6/71, where the gas lines return parallel with the pole line. Near pole 6/71, a new riser structure would be constructed and the alignment would resume underground for 1.25 miles from pole 6/71 to pole 7/75A at Rob Roy Substation. Without the benefit of an engineering survey, PG&E estimates that approximately 20 splice vaults—using 1,000- to 1,200-foot cable lengths would be necessary for an underground-overhead circuit—with two sets of TSP risers between Old Adobe Road and Rob Roy Substation.

Due to the undulating hilly terrain, which has a significant side slope, PG&E estimates that following the existing Southern Alignment could require the construction of approximately 2.9 miles of new construction access roads. These access roads would measure 15 to 20 feet wide and would have approximately 30-foot-wide passing lanes every 300 to 500 feet. Approximately 60 percent, or 1.7 miles, of the construction access roads would require bench cuts due to the

side slope of the alignment. In order to provide permanent access to the splice vaults for future maintenance and repair, this approximately 1.7-mile bench cut would remain as a permanent road. PG&E estimates that at least 8.5 acres of tree and brush cover would be permanently removed during trenching and construction of the access road system.

Where residences are located in close proximity to the existing line, alternating the trench from the south to the north side could avoid the removal of residential structures. PG&E would also propose deviating from the existing 115 kV overhead easement to limit ground disturbance in habitat by trenching in existing roads and following existing topographic contours. ¹These sections might include the following:

- portions of Old Adobe Road and the adjacent agricultural fields;
- between Wildwood Drive and pole 4/65, following hillside contours;
- within Winterwind Way and Senda Ladera Road; and
- within Aptos Ridge Circle, between TSP 6/71 and the intersection of Aptos Ridge Circle with the existing easement, approximately 0.13 mile northwest of Pole 6/72.

No other alignments south of the present power line were evaluated as no direct road system or other infrastructure exists between Old Adobe Road and Rob Roy Substation.

As part of this response, PG&E is providing preliminary geographic information system (GIS) shapefiles that roughly depict the described undergrounding scenario. These shapefiles are very preliminary; detailed engineering would need to be conducted to determine an actual alignment, as well as the feasibility of this alternative. A summary table of the GIS layers for the preliminary underground alignment is provided in Attachment A: GIS Transfer Summary Table. The GIS shapefiles are included with this submittal in the file named "Santa Cruz_Data_Request_10_Shapefiles_Southern UG Alt."

We trust that the information provided herein is fully responsive to your requests. Should you have any further questions, please do not hesitate to contact me at (415) 973-7475.

Sincerely,



Matthew Fogelson
Attorney

¹ The existing 115 kV overhead easement does not grant the necessary land rights to construct an underground circuit nor the necessary construction and access roads that would be required.

ATTACHMENT A: GIS TRANSFER SUMMARY TABLE

Santa Cruz 115 Kilovolt Reinforcement Project – Geographic Information System (GIS) Data Transfer Summary

The shapefiles provided in the file named "Santa Cruz_Data_Request_10_Shapefiles_Southern UG Alt" are described in the table that follows. All of the data is provided in the GCS_WGS_1984 coordinate system, in Meter units.

Shapefile Name	Description	Geometry Type	Source
SCR_Southern_Points	Southern Alignment vaults, riser poles, overhead structures	Points	PG&E, 2014; Insignia, 2014
SCR_Southern_Lines	Southern Alignment: benched road required sections, gas line, underground lines	Polyline	PG&E, 2014; Insignia, 2014