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October 31, 2014

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 #12

Dear Ms. Treis:

This letter responds to your September 24, 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 (PEA) for a Permit to Construct the Santa Cruz 115 Kilovolt (kV) Reinforcement Project (proposed project). The original text of the questions is followed by PG&E's response.

California Public Utilities Commission (CPUC) Data Request Question #1a

Has PG&E considered, as an alternative to the proposed route, constructing the single circuit 115 kV line segment to Rob Roy Substation along Freedom Boulevard from about its intersection with Hames Road? The alignment could be built from the Northern Alignment down Hames Road (for a distance of approximately 0.6 miles), where there is existing distribution, or overland to the west of Hames Road (for a distance of about 1,600 feet).

- a) If this route was determined infeasible or did not pass initial screening, please identify why. Approximately 0.7 miles of Freedom Boulevard is included in the proposed project. Are transmission lines not typically constructed on an arterial roadway? If not, please identify why not, and support with data/evidence (i.e., number of car collisions per mile that could damage or take the line out of service). Please identify any environmental impacts that were considered.*

PG&E's Response:

PG&E did initially consider two alternatives along Freedom Boulevard near the intersection of Hames Road (collectively, the "Freedom Alternatives"). The first alternative alignment, Freedom Alternative 1, would begin near the proposed project structure C-56, which is approximately 2,000 feet northwest of Hames Road. The alternative would continue cross-country over the ridge between Hames Road and Day Valley Road for approximately 1,800 feet to a location near

the Hames Road and Freedom Boulevard intersection. The alternative would then continue along Freedom Boulevard for approximately 2 miles, overbuilding the existing distribution line along Freedom Boulevard from McDonald Road to Rob Roy Substation.

The second alternative, Freedom Alternative 2, would begin at the intersection of Hames Road and the proposed project and then overbuild southwest along the existing distribution line along Hames Road for approximately 2,000 feet. At the end of the distribution line, the single-circuit line would continue adjacent to Hames Road for approximately 1,300 feet to the intersection of Freedom Boulevard. The alternative would then continue along Freedom Boulevard for approximately 2 miles, overbuilding the existing distribution line along Freedom Boulevard from McDonald Road to Rob Roy Substation.

Freedom Boulevard is designated as a County of Santa Cruz arterial, supports large truck traffic as well as commuter vehicles, and has a posted speed limit of 45 miles per hour. In addition, Freedom Boulevard interconnects the communities of northwest Watsonville, Freedom, Corralitos Valley, and Upper Aptos Hills with State Highway 1 at the Rob Roy interchange, and is rated with an average daily traffic volume of approximately 26,860 vehicles per day. Both Freedom Alternatives would be within the Freedom Boulevard right-of-way (ROW) for an approximately 1.3 miles more than the proposed project alignment.

During the initial routing feasibility study, PG&E determined that the Freedom Alternatives would be more sensitive to vehicle-pole collisions, which poses a risk for failure of the electrical supply line. Therefore, the Freedom Alternative were not carried forward for analysis in the PEA. However, PG&E considers both Freedom Alternatives to be feasible. While PG&E typically tries to avoid routes that are more sensitive to vehicle-pole collisions, transmission lines can be and are constructed along arterial roadways, particularly when no other suitable lower-speed roadway option exists.

Freedom Alternative 1 would require approximately 0.3 mile of greenfield construction in an area determined to have a high potential of aestivation habitat for Santa Cruz long-toed salamander (*Ambystoma macrodactylum*)—a federally and state-listed endangered species. However, potential for this species to occur is considered low due to the fact that the closest documented breeding pond is located 0.75 mile away. Localized habitat fragmentation north and east of the breeding pond, and arterial traffic on Freedom Boulevard are additional constraints to salamander movement into the greenfield site.

Construction of the Freedom Alternative 2 would require full lane closures along portions of Hames Road due to safety issues from the sinuous and narrow road width. However, access for local residents and emergency vehicles would be maintained, and lane closure hours would likely be restricted to between 8:30 a.m. and 4:40 p.m., as required by the County of Santa Cruz Public Works Department local encroachment permit restrictions. Construction along Freedom Boulevard would require similar single-lane closures as the proposed project. The Freedom Alternatives would generally have similar potential visual impacts to the proposed project. Both the proposed project and the Freedom Alternatives are located in close proximity to residences, resulting in similar impacts to visual resources from these areas. An initial review determined that the Freedom Alternatives may have fewer residences in close proximity to their respective routes than the proposed project, which would minimize the number of potentially affected

viewers, resulting in a decrease in visual impacts. However, the poles associated with the Freedom Alternatives may require micro siting to ensure views from homes along Hames Road and Freedom Boulevard are not obstructed. In addition, the higher traffic volumes along Freedom Boulevard would result in more people viewing the line. As with the proposed project, the Freedom Alternatives do not cross and would not be seen from any scenic highways.

Both Freedom Alternatives were included in PG&E's initial assessment for cultural and paleontological resources, which entailed a records search at the regional Information Center of the California Historical Resources Information System, and buried prehistoric site and paleontological resource sensitivity studies. No previously recorded cultural resources are known to occur along either of the Freedom Alternatives, and overall there is a low to moderate sensitivity for buried archaeological sites and a moderate potential for fossils.

A possible historic resource—a building located at 1760 Hames Road that once housed Pleasant Valley School—lies adjacent to the Freedom Alternative 2. The school was built in 1910 and reportedly closed in 1915. A review of Google Earth shows that the building is intact and integrated into a privately owned residential compound. It is approximately 40 meters north of Hames Road and is visible from the roadway. An earlier school building dating circa 1863 apparently once existed at the site, when it was named Union School. It was rebuilt in 1910 and named Pleasant Valley at that time¹.

Additional, unrecorded, cultural resources could potentially lie along either of the Freedom Alternatives. It is recommended that an inventory comprising field survey and focused historical research be conducted should any one or more of the three alternatives under consideration be selected. It is also recommended that the records search be updated to identify any resources that have been recorded since 2010.

CPUC Data Request Question #1b

- b) *If this route is feasible, please provide additional information on this route, including the number of poles that would be required and the types of poles, any special construction or design considerations that would be different from the proposed project, the right-of-way needs for the project, and whether homes or structures would fall within that right-of-way that could be impacted. Please identify any environmental impacts that were considered, including any information on public notification or input ascertained by PG&E, if available.*

PG&E's Response

While PG&E believes construction of both Freedom Alternatives is feasible, a full engineering study would be required to provide the level of detail requested in Question 1b. Nonetheless, without the benefit of an engineering study, PG&E estimates the Freedom Alternative 1 alignment would require installation of approximately 5 to 7 new single-circuit wood, direct-bury light-duty steel, or tubular steel poles (TSPs) from the proposed project C-56 Pole to the intersection of Freedom Boulevard. PG&E would need to analyze final span lengths, line angles at the point of intersection of the poles, and soil stability to determine the appropriate pole type

¹ This information was obtained from <http://www.santacruzpl.org/history/articles/372/>.

to use at each location. And again, without the benefit of an engineering study, PG&E estimates the Freedom Alternative 2 alignment would require installation of approximately 14 to 17 new single-circuit wood, direct-bury light-duty steel, or TSPs along Hames Road. Pole construction along Hames Road would require the use of cross-roadway stub and guy construction due to the number of angles in the roadway. This requires an anchor pole with a down guy to support the power pole on the opposite side of the roadway. Although a common utility practice for distribution lines that are 50 kV or less, it is not a preferred method for lines between 50 kV and 200 kV as the design requires more maintenance and increases the number of poles subject to vehicle-pole accidents. The loss of a supporting stub pole will generally cause a failure in the power pole across the road that it supports.

From the Hames Road and Freedom Boulevard intersection, both Freedom Alternatives would be within the Freedom Boulevard ROW for a total of approximately 2.1 miles, ending at Rob Roy Substation. The segment of the Freedom Alternatives within Freedom Boulevard would require approximately 27 new single-circuit wood poles and approximately three new single-circuit TSPs. The types of poles used for this alignment would most likely be the same as those to be used on the existing design for the proposed project, as shown in Attachment A: Proposed Project Wood Pole and TSP Design. New wood power poles would likely range in height from approximately 79 feet to 93 feet, and new TSPs would likely range in height from approximately 90 feet to 105 feet.

PG&E has not identified any residences or other structures that would fall within the necessary ROW. PG&E estimates that up to a 30-foot-wide ROW could be required from the road shoulder along this alternative, depending upon the present franchise width. The preliminary estimate of trees that would require removal along the Freedom Alternative 1 route is 118 and along the Freedom Alternative 2 route is 108 trees. PG&E anticipates that vegetation trimming and tree removal requirements would be similar to that of the proposed project.

PG&E's response to Question 1.a provides a discussion of the potential environmental considerations for both Freedom Alternatives. As these alternatives were not carried forward for analysis in the PEA, there has been no public notification regarding them.

CPUC Data Request Question #2

Please provide additional information on the Valencia Alternative, including the types and number of poles that would be needed, any construction methods or design considerations that would be different from the proposed project, staging and landing zones, an estimation of tree removal and trimming, and right-of-way needs and considerations. Provide any environmental information that you may have available and/or environmental considerations. Please provide any information on public notification or input ascertained by PG&E, if available.

PG&E's Response

The Valencia Alternative, as described in Section 5.3.1.2 of the PEA, involves rebuilding the Northern Alignment from Green Valley Substation to the intersection of Fern Flat Road and Valencia School Road, near the community of Day Valley. From the intersection of Fern Flat Road and Valencia School Road, a new 115 kV single-circuit line would be constructed to the southwest for approximately 0.4 mile before joining the Southern Alignment 0.27 mile east of the intersection of Trout Gulch Road and Valencia School Road. The Rob Roy-Paul Sweet

existing 115 kV single-circuit line would then be rebuilt with two circuits back to Rob Roy Substation for approximately 1.6 miles.

The Valencia Alternative was not studied in the same detail as the proposed project. A full engineering study would be required to provide the level of detail requested in Question 2. Nonetheless, without the benefit of an engineering design, PG&E anticipates that the Valencia Alternative would be constructed as follows:

- The Valencia Alternative would initially extend along the same alignment as the proposed project in a northwesterly direction from the Green Valley Substation until the proposed Cox Road transition TSP, using similar TSP construction methods. This segment would then continue for approximately 1.2 miles northwest beyond the proposed project's crossover pole at Cox Road, replacing the existing single-circuit wood pole structures with approximately six new double-circuit TSPs. These TSPs would range in height from approximately 85 feet to 125 feet. The existing 60-foot ROW would likely suffice for a double-circuit power line configuration in most circumstances.
- The alignment would then turn southwest at the intersection of Valencia School Road and Fern Flat Road for approximately 0.4 mile, requiring approximately four to six new single-circuit wood, light-duty direct-bury, or TSPs. PG&E would need to analyze final span lengths, line angles at the point of intersection of the poles, and soil stability to determine the appropriate pole type to use at each location. Approximately 0.1 mile of this alignment would overbuild a wood distribution circuit, using poles ranging in height from 65 feet to 85 feet, interconnecting with the Paul Sweet – Rob Roy 115 kV wood pole line near existing structures 9/91 and 9/92. An approximately 60-foot-wide ROW would be required for the crossover with extensive tree removal to maintain General Order (GO) 95 clearance requirements.
- To interconnect with Rob Roy Substation, approximately 14 existing wood multiple-pole guyed structures would be replaced with approximately 14 new double-circuit TSPs ranging in height from approximately 65 feet to 85 feet.

PG&E estimates approximately 1.8 acres of tree removal and trimming could be required for the 0.4-mile greenfield crossover segment. However, because the existing 115 kV wood pole segment (from Cox Road to Fern Flat Road) to be replaced is a horizontal wire configuration and has been cleared appropriately, PG&E estimates that 140 trees would require removal for the Valencia Alternative. The types of poles used for this alignment would most likely be the same as used on the proposed project design, as shown in Attachment A: Proposed Project Wood Pole and TSP Design.

Due to the close proximity of three residences on View Court, off of Huntington Drive, to the alignment near structures 7/80 through 7/84, PG&E recommends further engineering design for a double-circuit configuration to insure compliance with CPUC GO 95, which contains rules regarding the safety of overhead line design, construction, maintenance, and use. Construction of the new segment near View Court would likely require evacuation of the adjacent residences during TSP installation and conductor stringing. A potential re-route of the segment near View Court to a location southwest of the neighborhood was evaluated. This location contained dense

stands of mature redwood and Douglas fir trees situated on steep heavily incised slopes above Aptos Creek. Due to slope incision and erosion, trees growing on these slopes are precariously located and likely prone to fall into the wires. From a reliability standpoint, any line passing through the riparian corridor above Aptos Creek would be susceptible to tree failure necessitating significant removal of trees. Furthermore, Aptos Creek supports a run of federally threatened steelhead (Central California Coast DPS) (*Onchorhynchus mykiss irideus*). Removal of overhead canopy could increase light penetration and sedimentation into Aptos Creek.

The Valencia Alternative has a high potential for several special-status species—steelhead (*Oncorhynchus mykiss irideus*), Santa Cruz long-toed salamander, Monterey spineflower (*Chorizanthe pungens pungens*), and Robust spineflower (*Chorizanthe robusta robusta*)—to occur within the impact area of the alternative. As discussed in Chapter 5 of the PEA, the Valencia Alternative route has a high biological sensitivity, would not comply with local planning objectives, and is not accessible from existing PG&E facilities and access roads, and therefore was not chosen as the preferred alternative. As previously mentioned, approximately 0.4 mile of new ROW would be necessary for this alternative.

Because the Valencia Alternative would require cross-country areas that may not have adequate existing access to pole sites, construction materials—such as concrete, equipment, and pole structures—may need to be flown into several remote pole locations from landing zones. Landing zones that would be utilized by the Valencia Alternative would be the same as those identified for the proposed project in addition to several new proposed landing zones west of Cox Road. PG&E anticipates a subset of these new locations would be selected based on final engineering and construction requirements; potential agricultural and future land use development; and nesting birds in the immediate area during the construction season.

The Valencia Alternative was included in PG&E’s initial assessment for cultural and paleontological resources, which entailed a records search at the regional Information Center of the California Historical Resources Information System, and buried prehistoric site and paleontological resource sensitivity studies. No previously recorded cultural resources are known to occur along the Valencia Alternative, and overall there is a low to moderate sensitivity for buried archaeological sites and a moderate potential for fossils.

A local resident near Fern Flat provided information to PG&E concerning a schoolhouse that was once located near Valencia School Road and Fern Flat Road, in or near the Valencia Alternative. According to this resident, the schoolhouse burned down, but the foundation remains. Additional research would be required to confirm its location, period of construction, and association.

CPUC Data Request Question #3

In Data Response 10, question #5, PG&E discussed reconductoring 25.9 miles of the existing Green Valley-Camp Evers line and Green Valley-Rob Roy line. The response indicated some technical and environmental difficulties associated with a reconductoring project, but did not state whether it was an infeasible alternative. Please provide more information on a reconductoring project and its feasibility. The response indicated that steel poles may need to replace wooden poles due to the weight of the conductor. Please indicate where steel poles may be required and how many. Please provide a project description for reconductoring that includes

the pole types and design required, any construction methods that differ from those of the proposed project, and any right-of-way and environmental issues (beyond those listed in Data Response 10).

PG&E's Response

While reconductoring is feasible, it will not meet the proposed project objective, so it was not considered as an alternative to the proposed project. Reconductoring of 25.9 miles of the existing Green Valley-Camp Evers Line and Green Valley-Roby Line does not support the proposed project objective of increasing reliability, which is discussed in Section 2.3 of the PEA:

“The objective of the project is to add a second 115 kV circuit between Green Valley Substation and Rob Roy Substation to increase system reliability and prevent potential large-scale service interruptions if there are overlapping outages in the existing local electric supply system.”

Reconductoring would increase the area capacity and could provide additional area support depending upon what type of failure occurred; however, it would not provide the flexibility supplied by the proposed project's second circuit between the Green Valley and Rob Roy Substations, nor would it implement the California Independent System Operator (CAISO)-approved electric solution. The additional circuit provided by the proposed project is necessary to provide two sources of power flow from Green Valley Substation to Rob Roy Substation in the event of an outage of the existing southern line between Green Valley Substation and Rob Roy Substation or an outage of the existing northern line between Green Valley Substation and Camp Evers Substation. A second circuit between Green Valley Substation and Rob Roy Substation will increase the reliability of electrical service in the region during contingency situations. Therefore, simply reconductoring the existing lines without constructing a second circuit would not meet the proposed project objective and was not carried forward for analysis as a project alternative. In addition, the CAISO has not authorized PG&E to add such a project to the CAISO-controlled grid.

A full engineering study would be required to provide the level of detail requested in Question 3. Nonetheless, without the benefit of an engineering design, PG&E anticipates that reconductoring the 25.9 miles of line would likely require either light-duty steel poles or TSPs to accommodate the existing power circuit span lengths and heavier 954 AAC conductor. PG&E would likely need to replace approximately 80 existing single-circuit wood pole locations along the 7.5 miles of existing 115 kV line between Green Valley and Rob Roy Substations. Approximately 115 existing single-circuit wood pole locations would be replaced along the 14.7 miles of existing 115 kV line between Green Valley and the intersection of the Green Valley- Camp Evers 115 kV Line/Camp Evers - Paul Sweet 115 kV double circuit line near Felicidad Drive. Lastly, PG&E could need to upgrade or replace approximately 20 existing double-circuit lattice structures and TSPs between the intersection of the double-circuit line near Felicidad Drive and Camp Evers Substation. Though the reconductoring alternative is not infeasible from a construction perspective, determining the number of steel poles or potentially four-legged standard lattice towers necessary for reconductoring would require a 30-percent engineering design. Therefore, PG&E is unable to definitively answer Question #3 without performing a detailed engineering analysis.

As previously described in the response to Question #5 of Data Request #10, should the reducted segment from Green Valley to Rob Roy Substation require TSP construction, the approximately 4-mile segment between Adobe Road and Rob Roy Substation would require relocating the alignment outside of the existing easement with additional tree removal due to the proximity to the existing gas distribution feeder mains. If this alternative were to be implemented, PG&E, due to the span lengths, would likely recommend replacing every multiple pole wood structure with either a TSP or four-legged lattice tower for the reducting of the Green Valley-Camp Evers Line and Green Valley-Rob Roy Line.

Reconducting requires the complete de-energization of the line segments being replaced. Because the Green Valley-Camp Evers-Paul Sweet-Rob Roy system is an interconnected loop, removing line segments of up to 10,000 feet at a time would leave the remaining line as the only power conductor to serve the greater Santa Cruz service territory. One equipment or second line failure would cause service failures over the entire service territory. Should there be a failure of any component on the remaining line that would take that line out of service, the entire service territory would experience a service interruption. Service to the entire area would only be restored when either the failed line was returned to service or the line being reducted was placed back into service.

Additional environmental review would also need to be conducted in order to assess the environmental feasibility of the reducting option. As previously mentioned, numerous additional TSPs would likely need to be installed in order to reduct the existing lines due to the likely need for larger conductors as well as the locations of existing underground utilities. The installation of the additional TSPs would result in additional temporary and permanent impacts from reducting. A preliminary geographic information system data search for the reducting alternative identified the following potential environmental constraints:

- The Green Valley-Camp Evers Line, including three existing double-circuit TSP structures, falls within approximately 0.4 mile of federally endangered Zayante band-winged grasshopper (*Trimerotropis infantilis*) designated critical habitat.
- The Green Valley-Rob Roy Line crosses approximately 0.2 mile of the City of Watsonville Pinto Lake Park.
- The Green Valley-Rob Roy Line crosses approximately 0.1 mile of the Ellicott National Wildlife Refuge, near Milky Way.
- The Green Valley-Rob Roy Line crosses approximately 0.3 mile of Aptos High School east of Freedom Boulevard.
- The Green Valley-Rob Roy Line, including 11 poles off of Amesti Road, crosses approximately 0.6 mile of an agricultural easement with the Land Trust of Santa Cruz County.
- The Green Valley-Rob Roy Line, including two poles, crosses approximately 0.3 mile of California Department of Fish and Wildlife (CDFW) conservation easements west of Senda Ladero Road.

- The Green Valley-Rob Roy Line, including two poles, crosses approximately 0.1 mile of CDFW conservation easement north of White Road.

PG&E estimates that 1.6 miles of the Green Valley-Camp Evers alignment would require construction through Nisene Marks State Park, which is described as a nearly 10,000-acre, rugged semi-wilderness. Although the park contains over 30 miles of wilderness trails, the approximately 1.6-mile segment crossing the park would need to be accessed via helicopter. The canyon spans range from 1,200 to 1,500 feet in length, and steel structures would be recommended for construction due to the increased wire weight, the remote location of the line, and the fire protection afforded in comparison to a wood pole design. Due to the increased wire weight, replacing the structures one for one would result in structure height increases from the heights of the existing structures.

After completing a preliminary construction field assessment of the alternatives discussed herein, PG&E ranks the alternatives as follows based on line safety, constructability, and future maintenance:

1. The Proposed Project
2. Freedom Alternative 1
3. Freedom Alternative 2
4. Valencia Alternative
5. Reconductoring the Green Valley-Camp Evers and Green Valley-Rob Roy segments

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,

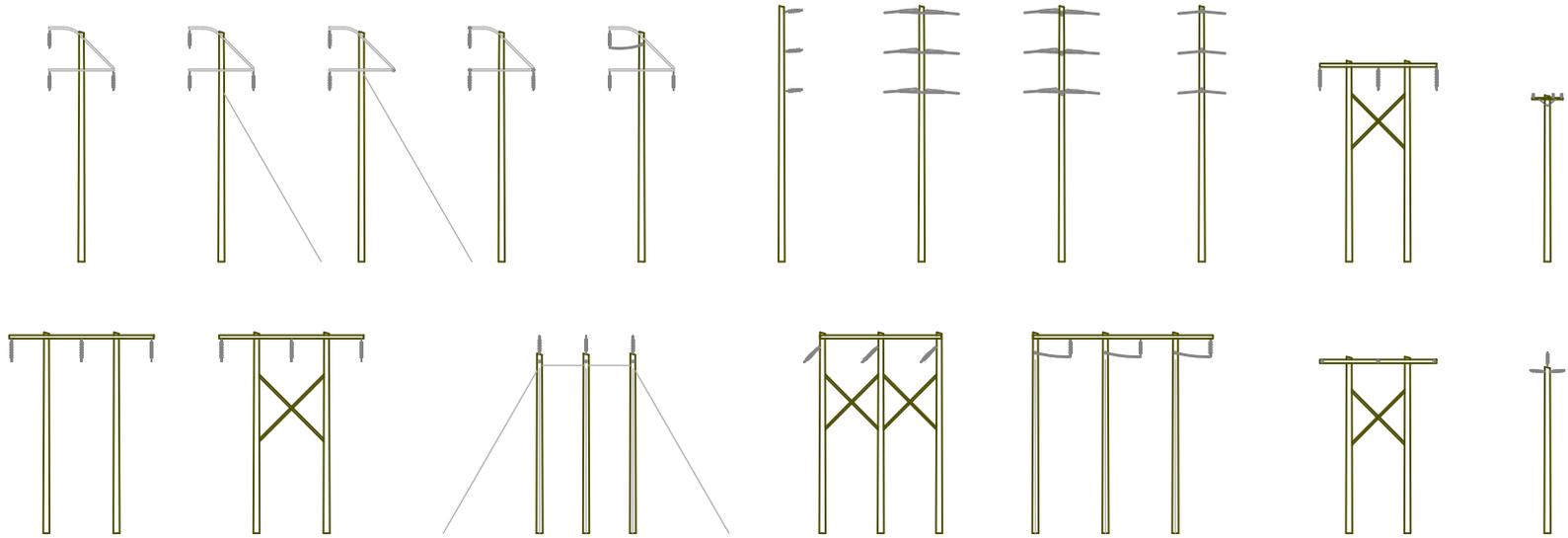
A handwritten signature in blue ink, appearing to read 'M. Fogelson', with a long horizontal flourish extending to the right.

Matthew Fogelson
Attorney

ATTACHMENT A: PROPOSED PROJECT WOOD POLE AND TSP DESIGN

EXISTING AND PROPOSED POLES FOR CURRENT SANTA CRUZ 115KV REINFORCEMENT PROJECT DESIGN.
 ANY NEW POLES FOR ALTERNATE ROUTES WOULD MOST LIKELY BE OF THE SAME OR SIMILAR DESIGN
 AND HAVE SIMILAR HEIGHTS AS THE PROPOSED POLES SHOWN BELOW.

EXISTING WOOD POLES - HEIGHT ABOVE GROUND 32.5' - 76.25'



PROPOSED POLES

