



**Pacific Gas and  
Electric Company**<sup>®</sup>

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September 17, 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 #11

Dear Ms. Treis:

This letter responds to your September 2, 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 (project). The original text of the questions is followed by PG&E's response.

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

*Provide the load flow model files used in the analysis of the assessing the reliability improvement of a third 115 kV line to Rob Roy Substation from Green Valley Substation (Santa Cruz 115 kV Reinforcement Project) in electronic format. Specifically:*

*a) General Electric Positive Sequence Load Flow (GE-PSLF) model files (.sav, .epc, .dyd) used in the analysis of the Santa Cruz 115 kV Reinforcement Project justifying the reliability need for the third 115 kV line.*

*b) Change files (.epc, .sav) used to add the third 115 kV line project and transmission line between Rob Roy Substation from Green Valley Substation to the base models requested above.*

***PG&E's Response***

PG&E's analysis, set forth in its application and PEA for the project, was based on local studies for the Santa Cruz area that were conducted in August 2008 as part of the 2008 system assessment studies.

The following GE-PSLF power system model files were used to study the Santa Cruz 115 kV system:

- “a08\_summer\_154MW(pre-project)-2014.sav”<sup>1</sup>
- “a08\_winter\_163MW(pre-project)-2014.sav”

The system reinforcements that PG&E submitted to the California Independent System Operator (CAISO) in 2008 are modeled in the change file “Santacruz\_115kV\_Reinforcement\_Project(original).m.” The change file that includes the transmission line routing as ultimately proposed is included in the file named “Santacruz\_115kV\_Reinforcement\_Project(modified).m.” All of these files are included in the attached zip file “santa cruz – power system model files.” **These files are confidential pursuant to Public Utilities Code Section 583.**

### **CPUC Data Request Question #2**

*Provide technical studies/reports including power flow diagrams for pre and post implementation of the Santa Cruz 115 kV Reinforcement Project. Specifically:*

- c) PG&E System Impact Study Report for Santa Cruz 115 kV Reinforcement Project.*
- d) Provide all appendices and exhibits. Specifically include all power flow plots, draw files and diagrams reflecting pre and post project power flows and system voltages.*
- e) Study assumptions, including load forecast, specific years studied, generation levels and generation type, import assumptions, and transmission configurations.*
- f) Any and all sensitivity studies performed in conjunction with the System Impact Study. Specifically, any analysis associated with the alternative options identified in Chapter 5 – Alternatives of the Santa Cruz 115 kV Reinforcement Project PEA.*

### **PG&E’s Response**

System Impact Study Reports are not typically conducted for system reinforcement projects that are developed as part of the annual system assessment studies conducted by PG&E and the CAISO. As part of this response to the data request, PG&E is providing the attached proposed system reinforcement that was submitted to the CAISO on December 11, 2008. This document contains some of the results of the system assessment studies mentioned previously in the response to Question 1, and also includes power flow plots that show pre-project and post-project power flows and system voltages. **This file is confidential pursuant to Public Utilities Code Section 583.**

A draw file that models the Santa Cruz area is also included in this data response. **These files are confidential pursuant to Public Utilities Code Section 583.** The data is provided in the file

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<sup>1</sup> Note that the 2014 designation in the title is meant to highlight a slight change from the original cases. The change was a correction to the capabilities in the equipment connecting the STATCOM to the Paul Sweet 115 kV bus. This correction does not impact the original study results from 2008.

named “sc-watsonville(reinforced).drw” in the attached zip file “santa cruz – power system model files.”

PG&E did conduct some system analyses for the alternative options listed in Chapter 5 – Alternatives of the PEA. The alternatives evaluated in Chapter 5 – Alternatives include the following:

- Alternative 1 – “open” the existing Green Valley-Camp Evers Power Line near Cox Road, extending both line sections to Rob Roy Substation in a double-circuit configuration, thus creating the Green Valley-Rob Roy Power Line and Rob Roy-Camp Evers Power Line;
- Alternative 2 – create a tap connection between the existing Green Valley-Camp Evers Power Line near Cox Road, bringing a single-circuit tap to Rob Roy Substation;
- Alternative 3 – convert the existing 60 kV system into a 115 kV system from Monta Vista Substation in Cupertino down to Davenport, and construct a new 115 kV line to Camp Evers Substation; and
- Alternative 4 – construct a new 115 kV power line between Green Valley Substation and Rob Roy Substation.

For those analyses, PG&E developed the following change files to model Alternatives 1, 2, and 3:

- “santacruz\_115kv\_reinforcement\_Alternative1.m”
- “santacruz\_115kv\_reinforcement\_Alternative2.m”
- “santacruz\_115kv\_reinforcement\_Alternative3.m”

These files are included in the attached zip file “santa cruz – power system model files.” **These files are confidential pursuant to Public Utilities Code Section 583.**

Alternative 4 is a re-routing of PG&E’s proposed transmission lines; the overall system configuration is not materially changed by this alternative.

The Category B and C contingency files used to evaluate the effectiveness of the project are provided in the following files:

- “sc\_contingencies(existing system).otg”
- “sc\_contingencies(proposed system).otg”
- “sc\_contingencies(alternative1).otg”
- “sc\_contingencies(alternative2).otg”
- “sc\_contingencies(alternative3).otg”

All of these files are included in the attached zip file “santa cruz – power system model files.” **These files are confidential pursuant to Public Utilities Code Section 583.**

### **CPUC Data Request Question #3**

*In PG&E's 2009 Electric Transmission Grid Expansion Plan it is noted that the Santa Cruz 115 kV Reinforcement Project has an expected cost of \$10M to \$15M and that the Paul Sweet, Camp Evers and Rob Roy Substations serve approximately 65,000 customers. Section 2.3 – Project Objective of the PEA states the original lines were put into service in the 1970s and served approximately 50,000 customers. From the 1970s to the 2009 Electric Transmission Grid Expansion Plan an increase of approximately 15,000 customers is noted. The PEA for the Santa Cruz 115 kV Reinforcement Project, submitted subsequently in the 2009/2010 timeframe, indicates approximately 90,000 customers served. Please clarify and/or reconcile the load assumptions used in the reliability analysis of the Project.*

#### ***PG&E's Response***

Question 3, as well as PG&E's 2009 Electric Transmission Grid Expansion Plan, references the number of "customers" served by PG&E in the project area, while the PEA references the "population" served. Because a single "customer" can include multiple people (e.g., a single-family house), the number of customers is typically less than the total population served by a transmission system.

### **CPUC Data Request Question #4**

*Was reconductoring the 115 kV system a part of the original transmission planning analysis conducted as part of PG&E's 2009 Electric Transmission Grid Expansion Plan? Given that the proposed single circuit line across the Cox-Freedom segment can be installed on wooden poles, could the reconductoring project be constructed entirely on wooden poles? Per Data Request Response 10, PG&E has indicated that it may need to put a reconducted project on TSPs. Can you clarify whether TSP would be necessary or not, as this affects the feasibility of the alternative?*

#### ***PG&E's Response***

As an initial matter, PG&E notes that, contrary to the statement in Data Request Question #4, the proposed single-circuit line across from the Cox-Freedom segment is not comprised entirely of wood poles; in fact, based on preliminary engineering, it would contain four tubular steel poles (TSPs). More information is provided in Section 2.5.2 Cox-Freedom Segment of the PEA.

PG&E considered reconductoring the 115 kV system as part of the original transmission planning analysis performed as part of PG&E's 2009 Electric Transmission Grid Expansion Plan. However, to meet the project objectives, both the approximately 18.4-mile Green Valley-Camp Evers Power Line and the approximately 7.5-mile Green Valley-Rob Roy Power Line would need to be reconducted with heavier conductor that has a larger diameter.

Although a detailed engineering analysis was not performed, PG&E's experience indicated that reconductoring either of the existing single circuits (Green Valley-Camp Evers and Green Valley-Rob Roy) most likely would require numerous TSPs. On the Green Valley-Rob Roy Power Line section, PG&E's existing wood-pole line is within 10 feet of a gas pipeline for approximately 4 miles. If TSPs were needed, that section of the 115 kV line would need to be moved farther away from the gas pipeline to prevent corrosion and other potential problems on the gas pipe. This would necessitate a wider right-of-way and significant tree removal in that approximately 4-mile section.

Given these issues, PG&E decided that constructing a new circuit between Green Valley Substation and Rob Roy Substation would be the best solution. Doing so would not only increase capacity and provide voltage support, it would also increase system reliability and operational flexibility by providing customers with a third supply line into the area, which is something that simply reconductoring the existing two lines would not provide.

### **CPUC Data Request Question #5**

*In consideration of the additional 115 kV circuit connecting to the Green Valley Substation, no specific work or modifications are identified for accommodating the new circuit in Green Valley Sub. The PEA indicates that modifications were being made to the Green Valley Sub as part of a separate, small project. How many 115 kV circuits presently feed into Green Valley and how many outgoing 115 kV circuits are there at Green Valley? Are there existing breaker(s) and/or bus segments to accommodate the additional circuit? Are any additional substation modifications anticipated for the Green Valley Sub?*

### ***PG&E's Response***

As indicated in the PEA, Green Valley Substation is being modified as part of a separate project. Currently, Green Valley Substation has three incoming 115 kV lines:

- Moss Landing-Green Valley #1,
- Moss Landing-Green Valley #2, and
- Metcalf-Green Valley.

Green Valley Substation also has three outgoing 115 kV lines:

- Green Valley-Camp Evers,
- Green Valley-Paul Sweet (to be renamed Green Valley-Rob Roy #1), and
- Green Valley-LLagas.

There is one active outgoing 60 kV subtransmission line—Green Valley-Watsonville—that will be converted to a 115 kV line as part of the separate project referenced in the PEA. Green Valley Substation is being rebuilt to a breaker-and-a-half scheme, which will add additional bus, breakers, and switches to accommodate additional circuit.

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