

December 3, 2008

Honorable Kimberly D. Bose  
Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, DC 20426

Southern California Edison Company  
Docket No. ER07-1034-002  
Re:

Dear Secretary Bose:

Pursuant to the October 1, 2008, Order Adopting Rules for Conduct of the Proceeding, please accept for filing the Prepared Direct Testimony of Jorge Chacon on Behalf of Southern California Edison Company. Please note that pursuant to those instructions, two copies of the testimony have been delivered to Judge Coffman's chambers as well as have been email to Judge Coffman and his law clerk, Diana Jeschke.

Very truly yours,

/s/

Rebecca Austin Furman

Enclosure(s)

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

Southern California Edison Company

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Dkt. No. ER07-1034-002

**PREPARED DIRECT TESTIMONY OF  
JORGE CHACON  
ON BEHALF OF  
SOUTHERN CALIFORNIA EDISON COMPANY**

**(EXHIBIT SCE-1)**

**DECEMBER 3, 2008**





1 transmission system in order to meet load growth requirements. In April 2002, I left  
2 SCE and joined a consulting firm where my primary responsibilities were to provide  
3 technical support to a number of utilities including SCE. On November 2003, I  
4 returned to SCE's Transmission Interconnection Planning Department as a senior  
5 transmission planner with primary responsibilities for developing new large scale  
6 transmission projects including the Tehachapi Renewable Transmission Project. In  
7 February 2007, I was promoted to my current position of Project Manager.

8 **Q. Have you submitted testimony to the Commission previously?**

9 A. I submitted an affidavit in 2005 as part of SCE's Petition for Declaratory Order in  
10 Docket EL-5-80-000. In that affidavit, I applied FERC's "seven factor" test as laid  
11 out in Order 888, *Promoting Wholesale Competition through Open Access Non-*  
12 *Discriminatory Transmission Service by Public Utilities and Transmitting Utilities*,  
13 Order 888, FERC Stats and Regs ¶ 38,038 at 31,777 to three segments of the  
14 Antelope Project Transmission Project to request that FERC declare those segments  
15 to be network facilities.

16 **I. PURPOSE OF TESTIMONY**

17 **Q. What is the purpose of your testimony in this proceeding?**

18 A. The purpose of this testimony is to describe SCE's proposed method of service for  
19 interconnecting the Green Borders Geothermal Project ("GBGP") to SCE's  
20 transmission facilities which are part of the California Independent System Operator  
21 Corporation ("CAISO") controlled grid, including the required telecommunications  
22 facilities.

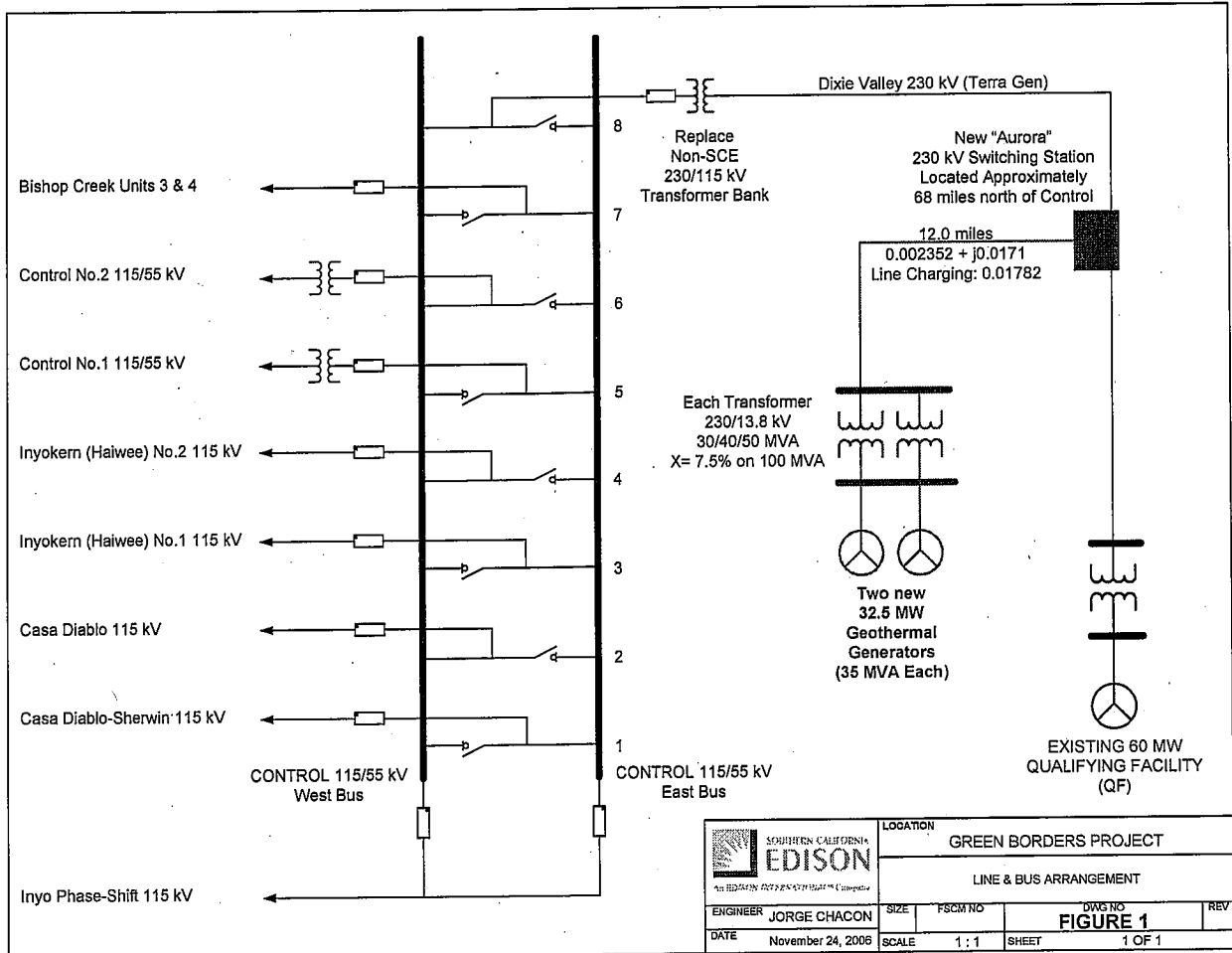
1 **Q. Please explain the proposed interconnection of the GBGP to SCE's transmission**  
2 **system.**

3 A. Green Borders Geothermal, LLC ("Green Borders") applied to the CAISO for  
4 interconnection of the proposed 62 MW GBGP pursuant to Section 25 of the CAISO  
5 Tariff. Green Borders proposes to locate the GBGP in Mineral County, Nevada  
6 approximately 12 miles north of the existing non- SCE-owned Dixie Valley-Oxbow  
7 230 kV transmission line. The Dixie Valley-Oxbow 230 kV transmission line is an  
8 approximately 200 mile long generation tie-line which interconnects a 60 MW  
9 qualifying facility to SCE's Control 115 kV Substation ("Dixie Valley-Oxbow Gen-  
10 Tie Line"). Green Borders proposes to connect the GBGP to the Dixie Valley-Oxbow  
11 Gen-Tie Line by constructing a new 12-mile 230 kV transmission line (gen-tie) and a  
12 new switching station near Aurora, Nevada. The new switching station is anticipated  
13 to be adjacent to the existing Dixie Valley-Oxbow Gen-Tie Line, at a point that is  
14 approximately 68 miles northeast of Control Substation. Green Border's proposal is  
15 to loop the existing Dixie Valley-Oxbow Gen-Tie line in-and-out of the new  
16 switching station. The new 12-mile 230 kV generation tie-line would then be  
17 connected to this new switching station.

18 As shown below in Figure 1-1, two different generation projects will be  
19 connected to the non-SCE owned Dixie Valley-Oxbow Gen-Tie Line with ultimate  
20 delivery to SCE's Control 115 kV Substation. This line is connected to the SCE  
21 transmission system at Control Substation (position no.8) with a single circuit  
22 breaker.

Figure 1-1

Proposed Green Borders Geothermal Project



Q. Please describe SCE’s transmission system around SCE’s Control Substation.

A. SCE’s Control 115 kV Substation, located in the Bishop area, is connected to SCE’s Inyokern Substation to the south with two 125-mile long relatively low capacity and high impedance 115 kV lines. The Control 115 kV Substation is also connected to the Los Angeles Department of Water and Power (“LADWP”) through a single 3-mile 115 kV line that ties to an existing 56 MVA phase-shifting transformer bank used to minimize loop flows between SCE and LADWP. In addition, the Control

1 Substation connects to the NV Energy system (formerly Sierra Pacific) through two  
2 60-mile 55 kV subtransmission lines that tie to a phase-shifting transformer bank thus  
3 providing a relatively weak system inertia. The additional 115 kV lines that connect  
4 to Control Substation serve as local 115 kV collector lines that bring power from  
5 SCE's Bishop Hydro facilities and serve local load demand.

6 As a result of the relatively weak system connections, a special protection system  
7 (also referred to as a Remedial Action Scheme ("RAS")) is currently in place to  
8 mitigate existing reliability issues under specific outage conditions. The Bishop RAS  
9 is specifically designed to prevent system instability in the Bishop area by tripping  
10 local generation under loss of:

- 11 • Both of the CAISO-controlled Control-Haiwee-Inyokern No.1 and No. 2 115  
12 kV lines; or
- 13 • One of the two CAISO-controlled Control-Haiwee-Inyokern 115 kV lines  
14 when the SCE/LADWP Inyo Intertie is open.

15 Specifically, the Bishop RAS trips the existing 60 MW qualifying facility connected  
16 to the end of the Dixie Valley-Oxbow Gen-Tie Line as well as SCE's Bishop Creek  
17 Hydro Units 2, 3, 4, 5, and 6. All tripping is done locally at Control Substation by  
18 opening the corresponding 115 kV and 55 kV circuit breakers in the Control 115 kV  
19 and 55 kV switchyards.

20  
21 **Q. Please describe the current Bishop RAS?**

22 **A.** The current design of the Bishop RAS includes a three position roto switch used to  
23 select one of the following operating conditions:

1           1. OFF

2           2. N-1

3           3. N-2

4           Currently, the N-1 operating condition is only armed when the Inyo SCE-LADWP  
5           intertie is open (e.g. for maintenance) or the single LADWP 230 kV transmission line  
6           serving the area is not available. Under this operating condition, loss of any one of  
7           the two Control-Haiwee-Inyokern 115 kV lines results in tripping generation in the  
8           area. As discussed above, such tripping is currently implemented locally at Control  
9           by operating Control 115 kV and 55 kV circuit breakers.

10       **Q.    What network upgrades are required to the Bishop RAS as a result of**  
11       **interconnecting the GBGP?**

12       A.    GBGP interconnection studies have shown that there are telecommunication upgrades  
13       required from SCE's Lugo Substation, located in Hesperia, CA, to the Bishop area  
14       triggered by the GBGP in order to conform to current WECC RAS Task Force  
15       requirements. These telecommunication upgrades would serve multiple circuit  
16       breakers that control other generation tie-lines and support monitoring of CAISO-  
17       controlled facilities. These upgrades would be network upgrades because they are at  
18       or beyond the respective generators' point of interconnection and therefore provide  
19       system benefits.<sup>1</sup>

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<sup>1</sup> A full description of the facilities needed is available in the currently effective LGIA in this Docket.

1 Q. What non-network upgrades are required to the Bishop RAS as a result of  
2 interconnecting the GBGP?

3 A. With the addition of the GBGP, the N-1 operating status would need to be armed  
4 regardless of the status of the Inyo intertie or single LADWP 230 kV transmission  
5 line serving the area. The System Impact Study determined that even with the SCE-  
6 LADWP intertie available, loss of any one of the two Control-Haiwee-Inyokern 115  
7 kV lines would result in a thermal overload and system instability condition that does  
8 not exist today. Such condition would greatly increase the risk exposure of arming  
9 and operating the Bishop RAS because the RAS would always be armed for N-1  
10 whereas today it is only armed when the SCE-LADWP intertie is unavailable. This  
11 increase in arming and operating the Bishop RAS has a detrimental impact to the  
12 existing generation units (significant increase in tripping exposure) and, in particular,  
13 greatly increases the exposure of operating the Control 115 kV Position No. 8 circuit  
14 breaker which would result in disconnecting the non-SCE Dixie Valley-Oxbow Gen-  
15 Tie Line that connects the existing 60 MW qualifying facility.

16 To mitigate these impacts, SCE would require either: 1) concurrence from the  
17 existing generator connected at the end of the Dixie Valley-Oxbow Gen-Tie to allow  
18 for the continued operation of the existing Bishop RAS as currently designed (i.e.  
19 disconnect the Dixie Valley-Oxbow Gen-Tie line); or 2) mitigation of such  
20 detrimental impact by installing additional telecommunication facilities to eliminate  
21 the need to operate the Control 115 kV Position No. 8 circuit breaker under loss of  
22 any one of the two Control-Haiwee-Inyokern 115 kV lines when the SCE-LADWP  
23 intertie is available. As of today, SCE has not been informed by GBGP that the

1 owners of the existing generator connected at the end of the Dixie Valley-Oxbow  
2 Gen-Tie have provided concurrence to open the Control circuit breaker under these  
3 conditions.

4 The additional telecommunication facilities between Control Substation and  
5 the GBGP are required to support only tripping of the GBGP. These additional  
6 telecommunication facilities are needed in lieu of the ability to operate the circuit  
7 breaker at the SCE Control 115 kV position no. 8. These additional  
8 telecommunication facilities would be sole use facilities located before GBGP's point  
9 of interconnection to the CAISO-controlled grid and therefore be defined as  
10 Interconnection Facilities.

11 **Q. Is it reasonable to charge Green Borders the cost of the telecommunications**  
12 **facilities?**

13 A. Yes, because the cost is directly attributable to the interconnection configuration of  
14 the GBGP as proposed by Green Borders and the site where Green Borders has  
15 selected for the GBGP. The proposed site for the GBGP is located approximately 68-  
16 miles north of SCE's Control 115 kV Substation in Mineral County, Nevada. This  
17 location is beyond SCE's current service territory. Consequently, there are no SCE  
18 facilities available in the area that can be used to support telecommunication. As a  
19 result, the need and the cost for the telecommunication facilities are directly linked to  
20 physical generation site location as well as the method of interconnection desired (use  
21 of non-SCE owned gen-tie).

22  
23 **Q. Does this conclude your testimony?**

1 A. Yes, it does.

