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UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System Operator) Docket No. ER07-1034-002
Corporation)

PREPARED REBUTTAL TESTIMONY
OF
SONGZHE ZHU

18 **Q. Are you the same Songzhe Zhu that previously submitted testimony in this**
19 **proceeding?**

20 **A.** Yes. I submitted direct testimony on behalf of the California Independent System
21 Operator Corporation (“CAISO”) in this proceeding on December 3, 2008 in
22 which I explained why certain telecommunications facilities necessary for the
23 interconnection of the Green Borders Geothermal generating facility should be
24 treated as Interconnection Facilities, the costs of which would be borne by Green
25 Borders.¹

26
27 **Q. What is the purpose of your rebuttal testimony?**

28 **A.** The purpose of my rebuttal testimony is to respond to the direct testimony of
29 James Kritikson on behalf of Green Borders Geothermal, LLC. Specifically, I

¹ Exhibit No. ISO-1.

1 respond to Mr. Kritikson's assertion that the telecommunications facilities at issue
2 in this proceeding should be treated as network upgrades, and the reasons
3 advanced by Mr. Kritikson for adopting this position.
4

5 **Q. Mr Kritikson describes the purpose of the telecommunications facilities at**
6 **issue as threefold: (1) to isolate Green Borders from the grid without**
7 **disturbing service to the other generator on the Dixie Valley-Oxbow line, (2)**
8 **to serve as an overall protective system to safeguard the operation of SCE's**
9 **transmission system, and (3) to mitigate line overloads, stability problems**
10 **and alleviate the need for more costly upgrades. Do you agree with this**
11 **description?**

12 **A.** Only in part. Mr. Kritikson is correct that the purpose of the telecommunications
13 facilities is to isolate Green Borders from the ISO Controlled Grid without
14 distributing service to the other generator connected on the Dixie Valley-Oxbow
15 line. However, I do not agree with Mr. Kritikson that the purpose of these
16 facilities is to safeguard the operation of SCE's transmission system and to
17 mitigate line overloads and stability problems. I believe that the flaw in Mr.
18 Kritikson's description is that he does not distinguish between the Remedial
19 Action Scheme ("RAS") facilities,² which do safeguard the operation of the
20 transmission system and mitigate overload and stability problems, and the

² As I explained in my direct testimony, RAS facilities, which consist of relays and other equipment designed to curtail generation in specific areas in order to prevent transmission line and transformer bank overloads and system instability when faced with transmission outages, are currently referred to as Special Protection Systems ("SPS") on the CAISO Controlled Grid. Exh. No. ISO-1 at 11, n. 7. I will use these terms interchangeably throughout my rebuttal testimony.

1 telecommunications facilities, which serve only to facilitate the ability of Green
2 Borders' to interconnect with the CAISO Controlled Grid through the customer-
3 owned Dixie Valley-Oxbow line, by holding harmless the generating facility
4 already connected to that radial line. Mr. Kritikson's testimony assumes that the
5 telecommunications facilities are part and parcel of the RAS. However, this
6 assumption is unwarranted.

7

8 **Q. Mr. Kritikson states that the location of these facilities is irrelevant and that**
9 **the sole test for whether the telecommunications facilities should be classified**
10 **as interconnection facilities or network upgrades is the use of these facilities**
11 **and whether these facilities provide benefits to the entire system. Do you**
12 **agree?**

13 **A.** I do not. Although I am not a lawyer, it is my understanding that the Commission
14 has, in analyzing the classification of facilities, often examined whether or not the
15 facilities at issue are located on the generator or transmission owner side of the
16 point of interconnection. Therefore, I believe that the location of the
17 telecommunications facilities, while not necessarily the sole determining factor, is
18 an important consideration in assessing whether or not they should be treated as
19 interconnection facilities or network upgrades. No party appears to dispute the
20 fact that the telecommunications facilities at issue are located on Green Borders'
21 side of the point of interconnection, and this fact is one of several that lead me to
22 the conclusion that these facilities are most properly treated as interconnection
23 facilities.

1 **Q. Even assuming that Mr. Kritikson is correct, do you agree with his**
2 **testimony that the telecommunications facilities provide “numerous benefits”**
3 **to SCE’s transmission system, including congestion management, greater**
4 **generation connectivity, and more reliable use of the transmission system?**

5 **A.** No, I do not. Again, I believe that Mr. Kritikson is treating the
6 telecommunications facilities as though they are one and the same with the RAS
7 upgrades. This is not the case. It is true that RAS provides the benefits discussed
8 by Mr. Kritikson – it provides for more reliable and efficient use of the
9 transmission system by allowing more generation capacity to be reliably
10 connected than otherwise. As such, it is appropriate that RAS facilities be treated
11 as network upgrades. This is reflected in the unexecuted LGIA that was filed
12 with the Commission by SCE, which lists as network upgrades the various
13 improvements relating to the RAS systems (Exhibit No JST-8 at 64-69) at
14 locations beyond the point of interconnection between Green Borders and the
15 CAISO Controlled Grid. However, unlike those upgrades, the
16 telecommunications facilities at issue do not provide a benefit to the system as a
17 whole, and therefore, should be classified and financed as interconnection
18 facilities.

19

20 **Q. Why is it that the telecommunications facilities do not provide a grid-wide**
21 **benefit, and thus separable from the RAS upgrades?**

22 **A.** As I explained in my direct testimony, the telecommunications facilities at issue
23 in this proceeding are necessary because of Green Borders’ decision to

1 interconnect to the CAISO Controlled Grid by means of a tie-in to the pre-
2 existing Dixie Valley-Oxbow 230 kV radial transmission line. Because of this
3 choice, the Green Borders project cannot be tripped at the point of interconnection
4 with the CAISO Controlled Grid without also tripping the Oxbow QF, which is
5 already interconnected via the Dixie Valley-Oxbow line. Therefore, fiber optic
6 cable and microwave equipment will be installed in order to allow the SPS
7 systems to monitor and control the circuit breakers at the Aurora switching station
8 and at the Green Borders switchyard, so that, in cases of emergency, the Green
9 Borders project can be isolated from the grid, without disturbing service to the
10 Oxbow QF. In other words, the only reason that this telecommunications
11 equipment is required is because of Green Borders' decision to interconnect via
12 the Dixie-Valley Oxbow line, and its sole purpose is to allow the tripping of the
13 Green Borders project, without impacting service to the existing Oxbow QF.
14 Therefore, the telecommunications equipment does not provide a grid-wide
15 benefit, but instead, is limited to facilitating Green Borders' decision to
16 interconnect via the Dixie Valley-Oxbow radial line, rather than connecting
17 directly to the CAISO Controlled Grid. Classifying these telecommunications
18 facilities as network upgrades would mean that other network customers would
19 simply be subsidizing Green Borders' decision, without deriving any benefit. I do
20 not believe that this would be an appropriate result. This would be analogous to
21 spreading the costs to the entire network for all or a portion of a customer's radial
22 line because that customer chose to site its generator at a location particularly
23 distant from the point at which it interconnects with the grid.

1

2 **Q. Mr. Kritikson discusses the Commission's decision in *Wildflower Energy***
3 **(Docket No. ER01-2609-000) relating to the classification of RAS. What, in**
4 **your opinion, is the relevance of this decision in the context of the Green**
5 **Borders facility interconnection?**

6 **A.** I agree with Mr. Kritikson that, in the *Wildflower* decision, the Commission
7 determined that certain RAS equipment should be treated as network upgrades,
8 because, in that case, the RAS allowed a cost effective expansion of the grid in
9 lieu of more expensive upgrades that would otherwise have been borne by all
10 customers taking service on the network. The reasoning underlying this decision
11 is appropriately reflected in the Green Borders LGIA (Exhibit No. JST-8), which
12 characterizes the RAS upgrades required by the Green Borders interconnection as
13 network upgrades. However, I do not believe that the *Wildflower* decision speaks
14 to the proper classification of the telecommunications facilities at issue in Green
15 Borders. I come to this conclusion after having reviewed the interconnection
16 agreement filed by SCE in the *Wildflower* proceeding. Based on this review, I
17 understand that the *Wildflower* generator interconnected directly to the CAISO
18 Controlled Grid, and as a result, there was no need for telecommunications
19 facilities of the sort required for Green Borders. Therefore, I do not believe the
20 *Wildflower* decision requires any modifications to the unexecuted LGIA filed for
21 Green Borders.

22

1 **Q. Mr. Kritikson also notes that SCE will own and operate the**
2 **telecommunications facilities, and he suggests that this is a reason that the**
3 **facilities should be treated as network upgrades. How do you respond?**

4 **A.** I do not believe that the fact that SCE will own and operate these
5 telecommunications facilities is a reason to classify them as network upgrades.
6 First of all, it is clear that ownership of facilities cannot be the sole reason for
7 classifying particular facilities as network upgrades, because both the CAISO and
8 FERC *pro forma* LGIA recognize a category of interconnection facilities that are
9 owned by the transmission provider. Although ownership might be a factor in
10 determining facility classification under certain circumstances, in this particular
11 case, I do not believe that SCE's ownership and operation of the facilities is
12 significant because, contrary to Mr. Kritikson's testimony, these facilities will be
13 operated for the sole benefit of Green Borders, and not for SCE or for the grid as a
14 whole.
15

16 **Q. Can you expand on the notion that the telecommunications facilities will be**
17 **operated for the sole benefit of Green Borders?**

18 **A.** Yes. As I explained above, the purpose of these facilities is to facilitate Green
19 Borders' decision to interconnect to the CAISO Controlled Grid via the existing
20 Dixie Valley-Oxbow radial transmission line, by ensuring that the Green Borders
21 project can be tripped without interrupting service to the Oxbow QF. The
22 telecommunications facilities have no other purpose, and therefore, they are
23 designed for the sole benefit of Green Borders.
24

25 **Q. Will other interconnection customers be able to utilize these facilities?**

1 **A.** Generally speaking, no. The fiber optic cable will be entirely dedicated to Green
2 Borders. It is technically possible that other customers could make use of some of
3 the microwave equipment, specifically the microwave dishes installed at the three
4 communication sites owned by the Los Angeles Department of Water and Power,
5 if separate channels were created for those customers.³ However, I am not aware
6 of any plans to do so, and in any event, I do not believe that this limited
7 functionality is sufficient reason to classify these facilities as network upgrades. I
8 would analogize this situation to a radial transmission line which, although
9 designed and built for the sole use of a particular generator, could hypothetically
10 be used as a means to interconnect additional customers (as is demonstrated by
11 the Green Borders interconnection).

12

13 **Q.** **Finally, Mr. Kritikson testifies that comparing the telecommunications**
14 **facilities to a radial line is not appropriate because the telecommunications**
15 **facilities “will be an integral part and parcel of both the RAS and SCE’s**
16 **system communications network” while a radial line “can be easily isolated**
17 **using circuit breakers.” Do you agree with this analysis?**

18 **A.** I do not. Although there is, of course, a difference between a radial line and
19 telecommunications facilities, in the sense that one transmits electrical energy
20 while the other transmits communications signals, it is fair to analogize the
21 telecommunications facilities to a radial line in this case because both facilities

³ In order to ensure the reliability of the RAS, all telecommunications channels used in RAS systems are dedicated to individual customers.

1 are dedicated to safely and reliably interconnecting a single interconnection
2 customer to the grid. I have already explained herein why the
3 telecommunications facilities are not “part and parcel” of the RAS and SCE’s
4 communications network. Also, because the only purpose of these
5 telecommunications facilities is so that it is possible to trip the Green Borders
6 project separately and independently, without also tripping the Oxbow QF, and
7 these facilities will be located on the Green Borders side of the point of
8 interconnection, I do not believe the telecommunications facilities are any more
9 difficult to “isolate” than a radial line, nor are they any more integral to the
10 network as a whole.

11

12 **Q.** Does this conclude your rebuttal testimony?

13 **A.** Yes.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing documents upon each person designated on the official service list for the captioned proceeding, in accordance with Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated this 29th day of January, 2009, at Washington, D.C.

/s/ Michael Kunselman
Michael Kunselman, Esq.
Alston & Bird LLP
The Atlantic Building
950 F Street, NW
Washington, D.C. 20004-1404
(202) 756-3300