

Surrebuttal Testimony
Richard Gonzalez

State of Minnesota
Before the Office of Administrative Hearings
For the Minnesota Public Utilities Commission

In the Matter of a Petition by Excelsior Energy Inc. for Approval of a Power Purchase Agreement Under Minn. Stat. § 216B.1694, Determination of Least Cost Technology, and Establishment of a Clean Energy Technology Minimum Under Minn. Stat. § 216B.1693

OAH Docket No. 12-2500-17260-2
PUC Docket No. E6472/M-05-1993

Transmission Costs and Timing

October 31, 2006

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1 **I. INTRODUCTION**

2
3 Q. PLEASE STATE YOUR NAME.

4 A. My name is Richard Gonzalez.

5
6 Q. HAVE YOU PROVIDED DIRECT TESTIMONY IN THIS CASE?

7 A. Yes. I provided Direct Testimony regarding transmission cost and timing
8 associated with the proposed Mesaba Unit 1. My analysis showed that:

- 9 • a new 345 kV transmission line between the Minnesota Power and
10 Xcel Energy transmission systems, as well as substation upgrades, are
11 required to deliver energy from Mesaba Unit 1 to Xcel Energy’s load in
12 the Twin Cities;
- 13 • the cost to construct these delivery facilities will be approximately \$180
14 million, which does not include the \$70 to \$73 million that Excelsior
15 Energy Inc. and MEP-I LLC (“Mesaba 1 LLC”) have estimated to
16 construct transmission to interconnect Mesaba Unit 1 to the Minnesota
17 Power system; and
- 18 • the construction will require from six to eight years to complete.

19
20 **II. PURPOSE**

21
22 Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY IN THIS
23 PROCEEDING?

24 A. I respond to issues raised in the Rebuttal Testimony of Stephen D. Sherner
25 regarding my analysis of transmission issues.

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3 **III. ASSESSMENT**

4 Q. MR. SHERNER QUESTIONS THE ACCURACY AND CREDIBILITY OF YOUR
5 ESTIMATES OF THE COSTS OF THE TRANSMISSION SYSTEM UPGRADES THAT
6 MAY BE NECESSARY TO INTEGRATE MESABA UNIT 1. DO YOU AGREE?

7 A. No. First, my total cost estimate falls within the range identified by Mr.
8 Sherner. Specifically, my total cost estimate of \$250 million (\$180 million for
9 “delivery” facilities and the \$70 million estimated by Mesaba 1 LLC for the
10 interconnection (e.g., Boswell-Riverton 230-kV line addition)) is within his
11 range of \$75-255 million. Given the consistency of our estimates, the basis
12 for his criticism is unclear and, I believe, unwarranted.

13 Q. MR. SHERNER CRITICIZES YOUR POWERFLOW MODELING. WHAT IS YOUR
14 RESPONSE?

15 A. My powerflow modeling methods were consistent with previous generation
16 accreditation studies and were conducted in the same manner as other studies
17 conducted for the purpose of determining whether generation capacity is fully
18 deliverable to a particular load. The applicable rules require that all existing
19 generation in the vicinity of a proposed generation addition be modeled at full
20 output. This is a long-standing MAPP accreditation requirement, to ensure
21 that all existing and proposed generating capability be available for delivery to
22 the reserve sharing pool during pool emergencies for both peak and off-peak
23 load conditions. Mr. Sherner’s argument that Minnesota Power may not
24 operate in such a manner during normal conditions does not override the
25 requirement that the output from Mesaba Unit 1 be deliverable
26 simultaneously with other generation at full output (e.g., during a pool
27 emergency).

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Q. MR. SHERNER QUESTIONS WHETHER YOUR ANALYSIS FOR DETERMINING THE TRANSMISSION REQUIREMENTS FOR MESABA UNIT 1 ARE COMPARABLE TO THAT USED TO ANALYZE THE REQUIREMENTS FOR A HYPOTHETICAL SHERCO 4 UNIT. PLEASE RESPOND.

A. I share Mr. Scherner’s concern for modeling comparability. For this reason, the modeling that I performed for the Mesaba Unit 1 transmission outlet evaluation was executed with a powerflow model that originated from the Xcel Energy multi-site study from which the Sherco 4 outlet costs were identified.

The only difference between the “Mesaba” model and the “Sherco 4” model is that the Big Stone II outlet facilities were updated for the Mesaba analysis to reflect the most recent Big Stone II outlet transmission details. This information was not available at the time of the Sherco 4 analysis.

Q. DOES THE ADDITION OF THE BIG STONE II OUTLET TRANSMISSION DETAILS MATERIALLY IMPACT THE MODELING RESULTS AND THE COMPARISON BETWEEN THE MESABA MODEL AND THE SHERCO 4 MODEL?

A. No. Given Sherco’s proximity to Xcel Energy’s Twin Cities load center, I do not believe that the absence of the Big Stone II outlet transmission details in the Sherco 4 model substantially changes those results. In contrast, Mesaba Unit 1 is much more distant from the Twin Cities load center, and I concluded it was appropriate to update the Big Stone II outlet facilities because of the possibility that the Big Stone II transmission facilities would help facilitate Mesaba Unit 1 power deliveries to the Twin Cities load center (i.e., potentially reduce the costs). Making this model update ensured that the

1 results would show Mesaba Unit 1 deliveries in the most advantageous light
2 while maintaining comparability with the Sherco 4 analysis.

3
4 Q. MR. SHERNER DISAGREES WITH YOUR ASSESSMENT OF THE EXPECTED TIMING
5 TO IMPLEMENT THE REQUIRED TRANSMISSION UPGRADES. PLEASE RESPOND.

6 A. Mr. Sherner's testimony does not change my opinion that it will take six to
7 eight years to develop the transmission infrastructure needed to deliver
8 Mesaba Unit 1's output to Xcel Energy's customers. Regardless of whether a
9 Minnesota Certificate of Need is required, the development, permitting, and
10 construction of major transmission infrastructure is a challenging and time-
11 consuming undertaking because:

- 12 • *It must still be developed pursuant to various MISO and MAPP processes*
13 *and requirements.* The specific transmission additions and upgrades for
14 the delivery of power to Xcel Energy from Mesaba Unit 1 have not yet
15 been identified or endorsed by MISO and MAPP.
- 16 • *It must still comply with the requirements of other states for upgrades*
17 *located in those jurisdictions.* While Minnesota may have exempted
18 Mesaba 1 LLC from Certificate of Need requirements, it is not certain
19 that the transmission upgrades necessary for the project will be limited
20 to Minnesota. To implement all of the transmission upgrades required
21 to deliver the output of Mesaba Unit 1, approvals may still be required
22 in other jurisdictions. Multi jurisdictional projects are fairly common in
23 my experience.
- 24 • *Minnesota may require a Certificate of Need.* Mr. Sherner concludes that
25 because Mesaba 1 LLC is exempted from the state's Certificate of
26 Need requirements, it will take less time to develop the required
27 transmission resources. As noted in my Direct Testimony, however,

1 Mesaba 1 LLC currently has no plan for developing these needed
2 transmission additions and upgrades, and submitted the testimony of
3 Mr. Sherner indicating that Mesaba 1 LLC believed Xcel Energy may
4 be in the best position to develop these facilities. If Xcel Energy or
5 other utilities develop these facilities, I would expect that the Certificate
6 of Need requirements would still apply.

7
8 Consequently, Mr. Sherner's Rebuttal Testimony did not provide any
9 information that would lead me to modify my conclusion that it will take six
10 to eight years to development the transmission infrastructure required to
11 deliver Mesaba Unit 1's output to Xcel Energy's system.

12
13 Q. MR. SHERNER STATES THAT "EXCELSIOR HAS BEEN IN THE [TRANSMISSION]
14 PLANNING PROCESS FOR TWO YEARS NOW" AND SUGGESTS THAT THIS TIME
15 SHOULD BE DISCOUNTED FROM YOUR TIME ESTIMATES FOR IMPLEMENTATION
16 OF MESABA UNIT 1 TRANSMISSION OUTLET FACILITIES. DO YOU AGREE?

17 A. No. The MISO interconnection study process is not a transmission planning
18 process. Significant planning must be undertaken by the affected parties to
19 design and implement transmission in addition to the MISO process. Since
20 Mesaba 1 LLC apparently now intends to permit its own transmission
21 facilities (to avoid a certificate of need), it is incumbent on Mesaba 1 LLC to
22 proactively work with MISO and affected parties in developing a plan to get
23 the work done. Therefore, the time spent in the MISO interconnection queue
24 and study process does not count against my 6-8 year planning and
25 implementation schedule.

26

1 Q. MR. SHERNER OPINES THAT LOSSES FROM MESABA UNIT 1 WOULD BE ABOUT
2 3-4 PERCENT OF ENERGY GENERATED. DO YOU AGREE?

3 A. No. The average annual energy losses will be dependent on:

- 4 • how much new transmission is added between the Mesaba Unit 1 site
5 and the Xcel Energy power system;
- 6 • the pattern of energy deliveries from Mesaba Unit 1 to the Xcel Energy
7 system; and
- 8 • other power transactions and generation-to-load deliveries.

9

10 My power system modeling performed for Mesaba Unit 1 shows that even
11 with the addition of a new 345-kV line between northern Minnesota and the
12 Twin Cities, incremental demand (MW) losses during high loading conditions
13 would be 11.4 %.

14

15 Although incremental energy losses would be lower during periods of lighter
16 loading on the Minnesota Power-Xcel Energy interface, a reasonable
17 weighted average energy (MWh) loss figure for the entire year would be
18 significantly higher than Mr. Scherner's suggested 3 to 4 %. Loss figures such
19 as these could only be achieved for the Mesaba Unit 1 deliveries at the
20 expense of further transmission line additions, the costs of which are not
21 included in Mr. Scherner's or my transmission cost estimates.

22

23 Q. HOW DO THESE LOSS FIGURES FOR MESABA UNIT 1 COMPARE TO ESTIMATES
24 FOR A FACILITY AT THE SHERCO SITE?

25 A. The Xcel Energy 2005 Baseload Siting Study indicates the Sherco 4 on-peak
26 demand (MW) losses would be 0.7%. Average annual energy (MWh) losses

1 were not calculated for the Sherco site, but would be somewhat lower than
2 this 0.7% demand loss figure; I expect it would be approximately 0.5%.

3
4 Q. WHAT IS THE ECONOMIC SIGNIFICANCE OF THIS DIFFERENCE IN BOTH
5 CAPACITY (MW) AND ENERGY (MWh) LOSSES BETWEEN GENERATION
6 ADDITIONS AT THE MESABA UNIT 1 SITE AND THE SHERCO 4 SITE?

7 A. The demand loss difference between the two plant sites is 10.7% (11.4 - 0.7),
8 and when this is applied to the 603 MW capacity of Mesaba Unit 1 amounts
9 to over 64 MW of additional losses from the Mesaba Unit 1 site over the
10 Sherco 4 site. Assuming a capacity value of \$60/kW-yr (as used in recent
11 transmission planning studies), this 64 MW difference in demand losses
12 amounts to \$3,840,000 per year.

13
14 The difference in annual energy losses associated with this 64 MW demand
15 loss difference would be approximately 300,000 – 500,000 MWh per year; the
16 exact amount cannot be predicted because it is dependent on Mesaba unit
17 dispatch pattern and transmission system loading pattern throughout the
18 course of the year. Using an average energy value of \$25/MWh (as used in
19 recent transmission planning studies) yields an annual cost of energy losses of
20 \$7,500,000 to \$12,500,000 per year.

21
22 Considering both the demand and energy loss differences, the total annual
23 incremental cost associated with the Mesaba Unit 1 excess losses compared to
24 the Sherco site is therefore approximately \$11.3 – \$16.3 million. This range is
25 a low-end estimate based on conservative demand and energy values used in
26 recent regional transmission planning studies.

1 Using Mesaba 1 LLC's actual charges (which I am not privy to) would result
2 in different numbers. If Mesaba 1 LLC's public claims of an "all-in"
3 (capacity and energy) cost of \$63/MWh from the plant are accurate, the cost
4 to ratepayers to replace both the capacity and energy losses using the
5 \$63/MWh all-in figure (using 64 MW capacity losses and assuming a 40 -
6 60% transmission system annual loss factor for a presumed 90% Mesaba
7 Unit 1 capacity factor) would be \$14.1 to \$21.2 million per year.

8 9 IV. CONCLUSION

10
11 Q. PLEASE SUMMARIZE YOUR SURREBUTTAL TESTIMONY.

12 A. Nothing in Mr. Sherner's testimony changes the conclusions I offered in my
13 Direct Testimony, namely that:

- 14 • Significant mileage of high voltage transmission lines must be added to
15 enable Mesaba Unit 1's output to be reliably deliverable to the Xcel Energy
16 power system. This is in addition to the Boswell-Riverton 230 kV line
17 addition already identified by Excelsior Energy.
- 18 • It will cost approximately \$250 million to interconnect Mesaba Unit 1 and
19 transmit its output to Xcel Energy's system.
- 20 • It will most likely take six to eight years to develop the transmission
21 facilities necessary to deliver Mesaba Unit 1's output to Xcel Energy's
22 customers.
- 23 • Power and energy losses would be significantly higher for Mesaba Unit 1
24 deliveries to the Twin Cities than suggested by Mr. Sherner's testimony.

25
26 Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?

27 A. Yes, it does.