

MPUC Docket No. E-6472-/M-05-1993
OAH Docket No. 12-2500-17260-2

BEFORE THE
MINNESOTA OFFICE OF ADMINISTRATIVE HEARINGS
100 Washington Square, Suite 1700
Minneapolis, Minnesota 55401-2138

FOR THE
MINNESOTA PUBLIC UTILITIES COMMISSION
127 7th Place East, Suite 350
St. Paul, Minnesota 55101-2147

In the Matter of the Petition of Excelsior Energy Inc.
and Its Wholly-Owned Subsidiary MEP-I, LLC For Approval of Terms and
Conditions For The Sale of Power From Its Innovative Energy Project Using
Clean Energy Technology Under Minn. Stat. § 216B.1694 and a
Determination That the Clean Energy Technology Is Or Is Likely To Be a
Least-Cost Alternative Under Minn. Stat. § 216B.1693

REBUTTAL TESTIMONY AND EXHIBITS OF
EXCELSIOR ENERGY INC. AND MEP-I LLC

STEPHEN D. SHERNER

OCTOBER 10, 2006

1 **EXCELSIOR ENERGY, INC.**

2 **BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION**

3 **PREPARED REBUTTAL TESTIMONY OF**

4 **STEPHEN D. SHERNER**

5 **Q Please state your name and business address.**

6 A My name is Stephen D. Sherner. My business address is Sherner Power
7 Consulting, LLC, 6890 Fitch Avenue, Lake Nebagamon, WI 54849.

8 **Q Have you previously provided testimony in this proceeding?**

9 A Yes. On June 19, 2006, I filed Supplemental Direct Testimony on behalf of
10 MEP-I LLC and Excelsior Energy Inc. (collectively "Excelsior") relating to
11 transmission infrastructure associated with the Mesaba Energy Project generally, and
12 Mesaba Unit One more specifically.

13 **I. SCOPE AND SUMMARY**

14 **Q What is the purpose of your Rebuttal Testimony in this proceeding?**

15 A The purpose of my rebuttal testimony is to respond to the Direct Testimony and
16 Schedules of Xcel Energy, Inc. ("Xcel") witnesses Dean Schiro and Richard Gonzalez,
17 the Direct Testimony of Minnesota Power ("MP") witness Dwight Anderson and the
18 Direct Testimony of the Department of Commerce ("DOC") witness Dr. Eilon Amit.
19 Each of these witnesses' testimony, in whole or in part, responds to my Supplemental
20 Direct Testimony discussing transmission issues associated with the Mesaba Energy
21 Project. In particular, I will respond to the following issues raised by these witnesses:

- 22
 - Concerns with respect to the availability of firm transmission service required to
23 deliver power from Mesaba Unit One to Xcel;

- 1 ▪ Concerns with respect to cost of Network Upgrades necessary to ensure the firm
2 delivery of power from Mesaba Unit One to Xcel;
- 3 ▪ Concerns with respect to the timing of transmission development associated
4 with Mesaba Unit One;
- 5 ▪ Issues regarding Mid-Continent Area Power Pool (“MAPP”) accreditation of
6 Mesaba Unit One’s installed capacity; and
- 7 ▪ Issues regarding Ancillary Services costs/benefits.

8 In addition, I provide updates to my Supplemental Direct Testimony where new
9 information has become available.

10 **Q What general observations do you have with respect to the concerns raised by**
11 **Xcel, MP and the DOC in this proceeding?**

12 A Initially, I am encouraged that each of the concerns raised by Xcel, MP, and the
13 DOC are already being comprehensively addressed through actions Excelsior has taken
14 to ensure that Mesaba Unit One is able to deliver firm power to Xcel beginning in 2011
15 under the terms and conditions set forth in the proposed Power Purchase Agreement
16 (“PPA”) at a reasonable cost. As discussed in detail below, Xcel, MP and the DOC’s
17 concerns have been (or are in the process of being) fully addressed and/or are simply
18 unfounded.

19 First, as previously reported in Excelsior’s original December 2005 filing and
20 my Supplemental Direct Testimony, Excelsior filed in October 2004 and May 2005
21 requests with MISO for Network Resource Interconnection Service (“NRIS”) for
22 Mesaba Unit One for the East Range and West Range sites, respectively. Despite
23 inferences to the contrary, Excelsior has continued with these NRIS requests which
24 would allow the Mesaba Unit One capacity and associated ancillary services to be

1 utilized across the MISO market footprint. In my testimony I provide an update on the
2 status of these requests.

3 As a backup/alternative to obtaining NRIS, the Midwest Independent
4 Transmission System Operator, Inc. (“MISO”) is currently evaluating Xcel’s requests
5 made on behalf of Mesaba Unit One for Network Integrated Transmission Service
6 (NITS), which will identify the upgrades needed, if any, to support the firm delivery of
7 power from Mesaba Unit One to Xcel enabling Mesaba Unit One to be designated as a
8 Local Capacity Resource for Xcel. Thus, notwithstanding statements to the contrary,
9 Excelsior is taking the steps necessary to secure firm transmission service.

10 Second, with respect to costs of Network Upgrades necessary to deliver power
11 from Mesaba Unit One to Xcel these costs will not be known with certainty until MISO
12 completes its evaluation of the Excelsior NRIS requests and/or the Xcel NITS requests
13 – a fact acknowledged by Xcel’s witnesses. I have, however, provided reasonable cost
14 estimates to be evaluated in the context of this proceeding and no party has
15 substantively challenged these estimates. Such cost estimates are customarily used by
16 regulatory agencies to estimate transmission costs prior to MISO action.

17 Third, concerns with respect to the timing of transmission development
18 associated with Mesaba Unit One are wholly unsupported. Excelsior fully expects that
19 necessary transmission upgrades will be in place by 2011 to support the firm delivery of
20 power to Xcel and has taken all appropriate action to meet this deadline.

21 Fourth, Excelsior is taking all steps necessary to ensure that Mesaba Unit One
22 will be fully accredited by MAPP, if still necessary, during the term of the PPA. The
23 critical element of MAPP accreditation is obtaining firm transmission service through
24 either the NRIS or NITS process, which Excelsior is diligently pursuing and will obtain.

1 Deliverability Analysis should improve the chances of interconnecting generators
2 passing, or at least limit the network issues that must be resolved to more local/regional
3 issues – rather than more remote issues across the entire MISO footprint.

4 In fact, Mr. Schiro was a member of the MISO task force that reviewed the
5 issues with the MISO Deliverability Analysis methodology and had recommended the
6 changes that were recently approved. In this respect, at the August 16 NM-SPG
7 meeting, Mr. Schiro gave a presentation discussing the changes and enhancements to
8 the MISO Deliverability Analysis and their impact, including the potential
9 improvements/benefits to market participants in the MAPP region. Mr. Schiro's
10 PowerPoint presentation is attached as Exhibit No. ___ (SDS-2) and describes the
11 changes in more detail.

12 Therefore, Mr. Schiro is keenly aware that Excelsior is taking all steps necessary
13 to obtain firm transmission service necessary to deliver the output of Mesaba Unit One
14 to Xcel's load in the Twin Cities and is aware that NRIS remains a viable option.
15 Despite Mr. Schiro's testimony, Xcel has been a partner in this process and has been
16 apprised of Excelsior's continuing efforts to secure firm transmission service.

17 **Q What is NITS?**

18 A NITS is a type of firm transmission service reserved for those entities that serve
19 native load (*i.e.*, retail customers) in the MISO footprint. Under Module B of MISO's
20 Tariff, NITS allows a Network Customer (such as Xcel) to integrate, economically
21 dispatch and regulate its current and planned Network Resources to serve its Network
22 Load in a manner comparable to that in which transmission owners utilize the
23 transmission system to serve their Native Load or other Network Customers. In other

1 words, Mesaba Unit One would have access to transmission system capacity on a
2 priority basis to serve Xcel's load.

3 In my June 19, 2006 Supplemental Direct Testimony I indicated that "because
4 Mesaba Unit One did not pass the Deliverability Analysis, Excelsior was evaluating its
5 options and may seek designation from MISO as a Local Capacity Resource."

6 Specifically, I testified:

7 **Q. Is the failure to pass the deliverability test fatal to the Mesaba**
8 **Energy Project Unit One being designated as a Network Resource by**
9 **Xcel?**

10
11 A. Not at all. While MISO is currently struggling with how to
12 administer and evaluate the results of the Deliverability Analysis,
13 Excelsior is currently evaluating its options and may seek designation
14 from MISO as a local capacity resource. Designation as a local capacity
15 resource would allow Mesaba Unit One to be treated as a Network
16 Resource for firm power delivery to the Xcel Energy control area, but not
17 to the broader MISO region. Under such circumstances, Mesaba Unit One
18 could contribute to Xcel's firm reserves for resource adequacy purposes
19 under Module E of MISO's Tariff, but not for other Network Customers.
20 Because Excelsior proposes to sell the entire output of the project (energy
21 and capacity) to Xcel under a long-term Power Purchase Agreement, it is
22 not necessary for the Facility to be designated as a resource for other
23 Network Customers (i.e., load serving entities). A local capacity resource
24 designation could have the advantage of ensuring that remote transmission
25 upgrades that are unnecessary to enable the reliable delivery of power to
26 Xcel are not required.

27
28 **Q. How does a resource become designated as a local capacity**
29 **resource?**

30
31 A. While MISO's rules remain in flux, designation as a local capacity
32 resource is initiated by a specific request on the MISO open-access same-
33 time information system ("OASIS") for firm transmission service from
34 Mesaba Unit One to the Xcel control area. Excelsior is currently working
35 with MISO on issues related to this designation.

36
37 It should also be noted that there are cost implications depending
38 on whether the Network Customer or the project developer, Excelsior
39 Energy in this case, makes the request. If Xcel makes the required
40 transmission service request for Network Service and it is studied and
41 approved by MISO, there is no additional transmission charge.

1 Conversely, if Excelsior makes the transmission service request (as a non-
2 load serving entity), it would be required to request Firm Point-to-Point
3 Transmission Service for a specific amount of capacity, and if studied and
4 approved by MISO, there would be an additional transmission service
5 charge (TSC). The magnitude of that charge is currently being examined.
6 Under the MISO tariff, the revenue from the TSC goes to the receiving
7 control area.
8

9 Since Xcel would be receiving control area for the power, it
10 likewise, would receive the TSC revenues. Based upon this, Excelsior
11 Energy would have to pay the transmission service charge which would
12 increase the purchased power costs, but the TSC revenue would go to Xcel
13 so ultimately Xcel customers should be unharmed (neutral) by this TSC.
14

15 In either case, obtaining firm transmission would allow MISO to
16 designate Mesaba Unit One as a local capacity resource. The PPA filed
17 with the Petition requires that Xcel submit the relevant request for
18 transmission service with MISO in the event designation as a local
19 capacity resource is sought by Excelsior because it would allow Xcel
20 greater flexibility in the use of Mesaba Unit One and the associated
21 transmission service within its resource portfolio, thereby, saving
22 Minnesota ratepayers monies.
23

24 After review of this Supplemental Direct Testimony, Xcel contacted Excelsior
25 suggesting that because Point to Point Transmission (“PTP”) Service would not be
26 revenue neutral for Xcel ratepayers due to revenue sharing associated with Xcel’s joint
27 transmission system with Southern Minnesota Municipal Power Agency and Great
28 River Energy, it was not an attractive option for Mesaba Unit One. Mr. Schiro
29 addresses this issue in his September 5, 2006 Direct Testimony. *Direct Schiro at*
30 *page 7.*

31 Based on Xcel’s belief that it would be more advantageous if Mesaba Unit One
32 were to become a Local Capacity Resource utilizing NITS (rather than PTP
33 transmission service), it offered to submit the necessary NITS Transmission Service
34 Requests (“TSR”) on behalf of Mesaba Unit One. Excelsior agreed and the requests
35 were submitted on July 19, 2006, for the preferred West Range site and on August 2,

1 2006, for the alternate East Range site. A pair of NITS requests for each site for 450
2 MW and 153 MW (totals 603 MW) were submitted and were designated by MISO as
3 #76452398 & #76452399 for the West Range site and #76456513 & #76456515 for the
4 East Range site.

5 **Q What is the current status of the NITS requests Xcel has made on behalf of**
6 **Mesaba Unit One?**

7 A In July, Xcel signed a System Impact Study Agreement designated A324. Last
8 week MISO indicated that this study was next in the queue to be performed after the
9 current study underway in this area.

10 **Q Do you have any response to Mr. Schiro's concerns with respect to the ability to**
11 **have Mesaba Unit One designated as a Network Resource?**

12 A Yes. Mr. Schiro acknowledges that Excelsior is exploring the option of seeking
13 a Local Capacity Resource designation for Mesaba Unit One, noting that such a
14 designation is accomplished by securing firm transmission service (*i.e.*, NITS). Mr.
15 Schiro alleges, however, that "neither the petition nor Mr. Sherner's testimony specify
16 how Mesaba 1 LLC plans to secure the transmission services needed to deliver Mesaba
17 Unit 1's output to Xcel Energy's system." *Schiro Direct at page 6.* As noted above,
18 Xcel has requested NITS for the Mesaba Unit One, which would enable Excelsior to
19 provide firm service to Xcel. This is a precursor to obtaining a Local Capacity
20 Resource designation -- a fact known to Xcel. A Local Capacity Resource designation
21 is a viable and, likely, less costly alternative to seeking a Network Resource
22 designation.

1 **Q What is the significance of Mesaba Unit One being designated as a local capacity**
2 **resource as opposed to a Network Resource?**

3 A As I noted in my Supplemental Direct Testimony, designation as a local
4 capacity resource would allow Mesaba Unit One to be effectively treated as a Network
5 Resource for firm power delivery to the Xcel Energy control area, but not to the broader
6 MISO region. Under such circumstances, Mesaba Unit One could contribute to Xcel's
7 firm reserves for resource adequacy purposes under Module E of MISO's Tariff, but not
8 for other Network Customers. Since the full output of Mesaba Unit One would be
9 committed to Xcel under a long-term PPA, designation as a Network Resource for other
10 load serving entities is unnecessary – though Mesaba Unit One could also become a
11 Local Capacity Resource for another purchaser by obtaining firm transmission.

12 **Q Are there any additional benefits of Mesaba Unit One being designated as a local**
13 **capacity resource?**

14 A Yes. A local capacity resource designation may have the advantage of ensuring
15 that possible remote transmission upgrades that are unnecessary to enable the reliable
16 delivery of power to Xcel are not required. This lowers the ultimate cost of
17 transmission infrastructure to the benefit of Xcel's ratepayers. Xcel's own witness, Mr.
18 Gonzalez, agreed that seeking a local capacity resource designation is "more practical
19 than attempting to secure Network Resource designation." *Gonzalez Direct at page 3.*

20 However, with the recently approved modifications to the MISO Deliverability
21 Analysis and the fact that Mr. Schiro indicated that the new Deliverability Analysis
22 methodology should focus more on local/regional network issues, it is prudent to
23 continue with the NRIS requests as well, since there could be advantages for Mesaba
24 Unit One being designated a Network Resource for use across the entire MISO market

1 footprint. In sum, Excelsior is pursuing all options available to it in order to ensure that
2 it can avail itself of the most cost effective transmission solution.

3 **Q What are Mr. Schiro’s stated concerns with respect to Excelsior’s transmission**
4 **plan for Mesaba Unit One?**

5 A Mr. Shiro states that as part of Excelsior’s transmission plan for Mesaba Unit
6 One, “I would have expected the Testimony to specify if Mesaba 1 LLC intends to fix
7 the 30-plus constraints identified for deliverability in order to be a Network Resource or
8 focus on the Local Capacity Resource Plan.” *Schiro Direct at page 9*. Mr. Schiro also
9 states that any transmission plan should identify the necessary upgrades associated with
10 the option chosen and should include a likely timeframe in which any upgrades can be
11 constructed. *Id.*

12 **Q Do you agree with Mr. Schiro that Excelsior’s transmission plan is incomplete?**

13 A To some extent. As Mr. Schiro recognizes, Excelsior is required to adhere to
14 the MISO process for obtaining interconnection and transmission services and has
15 diligently pursued these avenues. Mr. Schiro acknowledges in his testimony that
16 Mesaba 1 LLC appears to have taken the appropriate steps to obtain interconnection
17 service, but states that Mesaba 1 LLC “has not provided the specific steps needed to
18 address MISO’s ‘denial’ of Network Resource designation.” *Schiro Direct at page 8*. It
19 is also important to recognize that a Mesaba Unit One’s failure of the Deliverability
20 Analysis only indicates that investment in Network Upgrades may be necessary to
21 ensure deliverability – not that Mesaba Unit One can never deliver energy to load.
22 Indeed, the Deliverability Analysis focuses on ability to deliver based upon the *existing*
23 transmission system.

1 Further, as I informed Mr. Schiro during our August 16 discussion at the NM-
2 SPG meeting, while Mesaba Unit One failed the initial Deliverability Analysis (his so-
3 called “denial”), Excelsior was continuing with the NRIS requests and was awaiting a
4 study proposal from MISO on how they intended to proceed.

5 MISO delayed providing this proposal pending the outcome of the MISO
6 members’ review and vote on the recommended Deliverability Analysis methodology
7 modifications discuss above. With the approval of the new methodology, MISO has
8 informed Excelsior that the Mesaba Unit One NRIS requests will be restudied utilizing
9 the new Deliverability Analysis methodology and 2011 Base Case powerflow model
10 under development. The MISO Project Manager for Mesaba recently indicated that he
11 hoped this restudy would be done by the end of October 2006. Earlier, I provided an
12 update on the status of the NITS requests.

13 Until the results are available from these analyses and any follow-up System
14 Impact Studies to identify the Network Upgrades necessary to resolve any identified
15 network issues, it is impossible to develop final cost estimates and construction
16 schedules. However, we have provided preliminary cost estimates and continue to
17 refine those estimates to provide the Commission with an appropriate frame of
18 reference in which to evaluate the cost of transmission associated with Mesaba Unit
19 One.

20 Cost of Transmission Upgrades

21 **Q What concerns did Xcel and MP raise regarding transmission costs associated with**
22 **the Mesaba Energy Project?**

23 A On behalf of Xcel, Mr. Gonzalez expressed concern with respect to the costs of
24 upgrades that would likely be necessary to provide firm transmission service from

1 Mesaba Unit One to Xcel, estimating that cost of transmission delivery upgrades would
2 be approximately \$180 million or \$300/kW. *Gonzalez Direct at page 5.*

3 For MP, Mr. Anderson alleges that investment in transmission infrastructure
4 necessary to ensure the firm delivery of power from Mesaba Unit One to Xcel could be
5 several hundred million dollars. *Anderson Direct at page 15.* Mr. Anderson also
6 testifies that it is important for quantifiable transmission costs to be evaluated in this
7 proceeding.

8 DOC witness, Dr. Amit points out that the cost associated with needed
9 transmission upgrades of the transmission system from the substation [Blackberry
10 230kV] to the load in the Twin Cities area are not included in the PPA and that the
11 Commission was clear that such costs should be addressed in the record. *Amit Direct at
12 page 31.*

13 **Q What is Excelsior’s response to these concerns?**

14 Based on my years experience and knowledge of the regional transmission
15 system and some preliminary powerflow analyses, I had developed cost estimates
16 ranging from \$75-255 MM for the Network Upgrades necessary to deliver Mesaba Unit
17 1 full output to the Twin Cities. The low end figure of \$75 MM reflects only the
18 addition of a new 230 kV from Boswell to Riverton and a few other minor equipment
19 upgrades. This was based upon a review of the MISO System Impact Study (“SIS”)
20 results, which appear to indicate acceptable system performance of Mesaba Unit One at
21 the West Range site with the output sunk into the Twin Cities. While these studies do
22 not necessarily replicate the studies involved with either the Deliverability Analysis or
23 the NITS requests, these results provided the best insight at the time of what the
24 minimum Network Upgrades might be.

1 From my evaluation of the SIS results for the West Range site (G519), it was
2 clear that the proposed Boswell-Riverton 230kV line not only resolved some local (MP)
3 injection/interconnection issues, but substantially improved transmission transfer
4 capability (deliverability) from the Iron Range area to the south. The high end \$255
5 MM cost estimate reflects the development of a new 345kV circuit from the Iron Range
6 into the Xcel 345kV Twin Cities grid. In my view, this ballpark estimate would be
7 applicable for either site should the pending studies by MISO determine that such
8 345kV development is necessary to allow the delivery from Mesaba Unit one to the
9 Twin Cities. Mr. Gonzalez reached a similar conclusion with his \$180 MM cost
10 estimate. *Gonzalez Direct at page 6-7.*

11 The reality is, however, that until the MISO processes associated with
12 evaluation of the Excelsior NRIS requests and/or the Xcel NITS requests for Mesaba
13 Unit One are complete, we will not know the final answers on the cost of Network
14 Upgrades necessary for the delivery of Mesaba Unit One's full output to the Xcel
15 control area.

16 Excelsior is aware of the uncertainty this creates and is frustrated with the time it
17 is taking to get these answers from MISO. While the tariff interconnection timeline set
18 forth in MISO's Large Generator Interconnection Procedures ("LGIP") indicates that
19 these necessary studies and answers should have been completed within a year,
20 Excelsior's NRIS requests have now been in process for 2 years and 16 months,
21 respectively, and we are probably still a few months from having the answers on the
22 necessary Network Upgrades and their costs.

23 As soon as the results of these NRIS and NITS requests are known, Excelsior
24 will provide an update to the Commission. It is also possible that the results will be

1 available before the Hearings scheduled in this matter, but there is no assurance,
2 particularly based upon Excelsior’s experience with MISO to date. However as Dr.
3 Amit points out in his testimony “the overall cost of the project may not be significantly
4 impacted by the inclusion or exclusion of transmission costs.” *Amit Direct at page 32*. I
5 agree with Dr. Amit’s assessment. Certainly, the marginal difference between my
6 estimated costs and final MISO determination would have an even lesser impact on
7 overall project costs. Moreover, the Commission routinely approves PPAs prior to
8 transmission development being complete. *See e.g., In the Matter of the Petition of*
9 *Northern States Power Company d/b/a Xcel Energy for Approval of a Power Purchase*
10 *Agreement with Invenergy Cannon Falls, LLC, DOCKET NO. E-002/M-04-1426,*
11 *ORDER APPROVING REPLACEMENT POWER PURCHASE AGREEMENT (July*
12 *29, 2005)*. This practice reflects the reality that PPAs are necessary to finance and
13 construct a merchant facility and the fact that the interconnection process is a complex
14 and slow process. Despite its criticisms, Xcel is clearly aware of these facts.

15 **Q. Did Mr. Gonzalez explain how he arrived at his \$180 MM cost estimate for**
16 **Network Upgrades?**

17 A Yes. He indicated that powerflow modeling was performed to simulate a power
18 delivery from the Mesaba West Range/Blackberry site to the Xcel System. Based upon
19 this analysis and his experience and knowledge of the regional transmission system, Mr.
20 Gonzalez concluded that:

21 Delivery of Mesaba Unit 1’s output would require development of a new
22 345kV circuit from northern Minnesota to the Twin Cities, and
23 improvements at the existing Chisago Co 500/345kV substation
24 Exhibit___(RG-1), Schedule 3 lists the system additions and upgrades
25 required for firm delivery of the Mesaba Unit 1’s output to Xcel Energy’s
26 system. [*Gonzalez Direct at page 4.*]

1 While the proposed Boswell-Riverton 230kV line was included in his base case
2 powerflow, the \$53 MM cost of this Network Upgrade was not included in his \$180
3 MM total. Apparently, Mr. Gonzalez considered this part of the interconnection cost.
4 MISO has indicated that this facility will be considered a Network Upgrade, and as I
5 indicated earlier in this testimony, this line does appear to provide a significant
6 improvement in the transmission transfer capability from the Iron Range to the south,
7 providing reliability benefits for the entire region. The overall reliability benefits the
8 transmission infrastructure investment associated with Mesaba Unit One will provide
9 cannot be discounted in considering transmission costs.

10 **Q. Did you find Mr. Gonzalez’s study and cost estimates to be reasonable and**
11 **credible?**

12 A The unit cost estimates for transmission and substation equipment used in
13 Exhibit No. ____ (RG-1), Schedules 3 & 4 appear to be reasonable. However, there was
14 not sufficient detail in his testimony to thoroughly evaluate the study results. However,
15 Xcel responded to Excelsior’s request to for additional information related to the
16 support underlying Mr. Gonzalez’s powerflow analysis. Xcel’s limited response to
17 Excelsior’s Information Request is attached as Exhibit No. ____ (SDS-3).

18 **Q Have you reviewed and evaluated this additional information?**

19 A Yes. I have, and as a result, I have serious concerns with the credibility and
20 reasonableness of the study results. The first error I identified was that an extremely
21 high stress powerflow base case was used by Mr. Gonzalez similar to those utilized for
22 the stability/dynamic studies by MISO. This high stress case has North Dakota export
23 (“NDEX”) and Manitoba export (“MHEX”) at their simultaneous limits (likely MWSI
24 also, but that was not stated in the information provided). These limits are typically

1 modeled as part of regional off-peak studies and represent a combination of both firm
2 and non-firm transfer capability.

3 In addition Mr. Gonzalez increased all Minnesota Power generation to their
4 maximum capability, thereby increasing the power being exported from the Minnesota
5 Power control area by an additional 183 MW. This is not a reasonable assumption since
6 no generation is available for meeting operating reserve requirements. In my years of
7 experience in operating the Minnesota Power system this would not be allowed to
8 occur.

9 The combined impact of the high stress base case powerflow and the unrealistic
10 MP generation dispatch, result in extremely heavy loading on the MP/Xcel interface
11 transmission before Mesaba Unit One was added. Starting with this situation, the
12 addition of the Mesaba Unit One output was sure to cause overloads, if not for normal
13 operation, certainly when transmission outage contingencies were analyzed.

14 Typically new baseload generation is studied using peak load conditions and
15 known firm commitments, including power purchases and sales and/or transmission
16 reservations. Off-peak powerflow modeling is performed to assess system reliability
17 and determine the impact on the simultaneous transfer limits and known
18 constraints/flowgates. A model such as used in Mr. Gonzalez's study is typically
19 reserved for use in studying the dynamic performance/stability of the power system.
20 This is exactly how MISO approached the System Impact Studies (SIS) for Mesaba
21 Unit One and I have confirmed with MISO that the models used in the Deliverability
22 Analysis and Transmission Service Request (TSR) processes are, in fact, peak
23 powerflow cases with known firm commitments. No attempt is made to model these
24 off-peak simultaneous export limits.

1 Second, an erroneous rating was utilized in his study on one of the critical
2 230kV lines exiting the Blackberry Substation. A Blackberry-Forbes line rating of
3 199MVA was utilized and as a result numerous network upgrades were implemented in
4 an attempt to alleviate the factious overloading of this line. The actual rating of this line
5 is 370MVA (Minnesota Power reaffirmed this rating on October 4, 2006). We had
6 discovered this error and corrected it during the preliminary powerflow studies
7 Excelsior had performed and I ensured that it was correct in the MISO SIS models as
8 well.

9 Third, in the study result detail Mr. Gonzalez provided I can find no justification
10 for several of the Network Upgrades Mr. Gonzalez proposes in and around the Twin
11 Cities.

12 As an interesting side note, ignoring the factious Forbes-Blackberry 230kV line
13 overload, Mr. Gonzalez's study results indicate only minor loading (1-3%) of any
14 transmission facilities when Mesaba Unit One was included into this high stress Base
15 Case. The bottom line is Mr. Gonzalez's study results are neither credible nor
16 reasonable in their attempt to assess the Mesaba Unit One deliverability situation.

17 **Q Did you find any support in Mr. Anderson's testimony for his statement that the**
18 **transmission infrastructure necessary to ensure the firm delivery of power from**
19 **Mesaba Unit One to Xcel could be several hundred million dollars?**

20 **A**No, I did not, but the attached responses by MP to Information Requests
21 submitted by other parties to this proceeding provide some insight. In response to a
22 number of Information Requests, Minnesota Power concedes that no review has been
23 performed of any of the transmission studies and presentations associated with Mesaba
24 Unit One and that no specific estimates have been developed. *See* Exhibit No. ____

1 (SDS-4), MP's responses to Minnesota Coal Gas Plant.com's Information Requests.
2 Therefore, MP's statement that transmission infrastructure necessary to ensure the firm
3 delivery could be several hundred million dollars is simply unsupported.

4 **Q Mr. Gonzalez also presented testimony regarding the Network Upgrade costs**
5 **associated with a hypothetical 750 MW coal unit ("Sherco 4") from Becker,**
6 **Minnesota to Xcel Energy's load. Did you review this testimony and schedule for**
7 **reasonableness and credibility also?**

8 A Yes, the testimony and schedule were reviewed, but to properly evaluate the
9 reasonableness and credibility of these studies and proposed Network Upgrades,
10 Excelsior requested all workpapers, memorandum, reports, analyses and source
11 documents underlying Mr. Gonzalez's updated analysis. Xcel's limited response to this
12 request is attached as Exhibit No. ___ (SDS-5). In addition, in response to Information
13 Request No. 59 the original 2005 Xcel Base Load Siting Final Report was also
14 provided. This report evaluates the transmission development necessary for various
15 levels of new baseload capacity at five potential sites across the MAPP region.

16 **Q What conclusions have you reached after review of this information?**
17

18 A First, the original 2005 Base Load Study was fairly comprehensive, including
19 both a peak powerflow analysis, an off-peak powerflow analyses incorporating
20 approved maximum levels of NDEX, MHEX and MWSI [Minnesota-Wisconsin South
21 Interface], and a stability analysis. It appears to be well done, but as the following
22 disclaimer incorporated throughout the report emphasizes, the results are only as good
23 as the key assumptions made and what is known at the time about planned/proposed
24 system development:

1 *“Because the determinations of which facilities additions are required to*
2 *achieve a desired output level are highly dependent on the models*
3 *employed, assumptions, and study criteria used and knowledge publicly*
4 *available at the time of the study, some uncertainty is inherent in any study*
5 *of this nature.”*

6 Based on Mr. Gonzalez’s response to Excelsior’s Information Request, it is clear
7 that critical assumptions were made with regards to inclusion of some generation
8 projects in the MISO queue while others were excluded. What is not clear to me is
9 whether the models used in this study and the one used for the Mesaba Unit One study
10 were identical/comparable. I have to assume that the Mesaba Unit One studies that
11 were recently performed have different key assumptions and the latest knowledge
12 publicly available, and since the Sherco 4 studies were not redone; the results are not
13 comparable.

14 Second, in updating his Schedule 4 some revisions were made in unit cost
15 estimates for consistency with the Mesaba Unit One cost estimates. These are
16 reasonable, but another revision made was to exclude a network upgrade (Owatonna-
17 Byron 161kV Series Compensation) from the 2005 Schedule 4, because it was no
18 longer necessary as a result of a proposed CAPX line. In the Mesaba Unit One Study
19 Mr. Gonzalez performed the proposed CAPX 2020 Phase I projects were specifically
20 excluded from the model. This is a significant departure from comparability of results
21 because several of the proposed CAPX 2020 Phase I projects offer significant
22 improvements in transfer capability and system performance that could benefit the
23 Mesaba Unit One deliverability and mitigate need for (and cost of) Network Upgrades.

24 **Q Have the CAPX 2020 Phase I Projects been included in the MISO studies**
25 **evaluating Mesaba Unit One interconnection and deliverability?**

1 A MISO's position to this point has been that until the Transmission Owners (TOs)
2 involved with these projects have committed to them and declare them as "Planned"
3 instead of "Proposed," they can not be incorporated into the study models for generation
4 interconnection and transmission service evaluation.

5 Excelsior had hoped that the Transmission Owners who have publicly
6 announced their intent to proceed with the Phase I projects would change or have
7 changed their status with MISO so that they can be factored into the restudy of the
8 Mesaba Unit One Deliverability Analyses and the Xcel NITS requests evaluations that
9 have not yet begun.

10 If these evaluations are performed without the CAPX 2020 Phase I Projects,
11 Excelsior in all likelihood would request Option Studies/Restudy to ensure that the
12 Network Upgrades it is required to provide are necessary and compatible with these
13 transmission projects.

14 **Q Do you have any response to Mr. Schiro and Mr. Anderson's claims that in**
15 **addition to Xcel, other transmission customers, could incur costs related to**
16 **transmission upgrades necessary to support the delivery of power from Mesaba**
17 **Unit One?**

18 A Yes. Initially, it important to understand that the allocation of the cost for
19 Network Upgrades is a largely a function of the FERC authorized tariff. As I noted in
20 my Supplemental Direct Testimony, the process by which the cost of Network
21 Upgrades associated with transmission investment are allocated is an evolving process
22 at the Federal level. Recently, MISO established the Regional Expansion Criteria and
23 Benefits ("RECB") Task Force to explore the criteria to be used to justify inclusion of

1 expansion proposals in the Midwest ISO Transmission Expansion Planning (“MTEP”)
2 and to recommend appropriate tariff structures to recover the costs of such expansions.

3 In this respect, in the fall of 2005, MISO submitted a filing with FERC to
4 implement its MTEP protocols, which institute its transmission expansion cost
5 allocation policy that will allocate and recover costs associated with new transmission
6 projects and system upgrades within the MISO Transmission System. This new cost
7 allocation regime, which institutes a new regional (and sub-regional) cost-sharing, was
8 vetted at FERC and remains subject to ongoing proceedings. *See Midwest Independent*
9 *Transmission System Operator, Inc.*, 114 FERC ¶ 61,106 (2006)(conditionally MISO
10 accepting cost sharing proposal).

11 As members of the Midwest Transmission Owners group, Xcel and MP
12 supported the MISO’s proposed cost allocation methodologies for transmission
13 upgrades in comments filed on October 28, 2005, in FERC Docket No. ER06-18-000.
14 No doubt Xcel and MP recognized that the allocation of transmission costs under
15 MISO’s Tariff reflects a balancing of interests, and ultimately assigns cost
16 responsibility based upon the principles supported by the majority of Midwest
17 transmission owners.

18 Therefore, while Excelsior recognizes that certain transmission costs associated
19 with Mesaba Unit One may be passed along to transmission customers other than Xcel,
20 the rationale behind this cost allocation is that the entire system benefits from upgrades
21 to the system and, therefore, should be shared by a broader group of transmission
22 customers. The cost allocation mechanism referred to in Mr. Schiro’s and Mr.
23 Anderson’s testimony would apply regardless of whether the transmission infrastructure

1 resulted from the interconnection of a generating facility being developed by Xcel or
2 Excelsior.

3 Transmission In-Service Date

4 **Q What concerns did Xcel and MP raise regarding the time it would take to place**
5 **necessary transmission upgrades associated with Mesaba Unit One into service?**

6 A With respect to the necessary transmission upgrades Xcel posits would be
7 necessary for Mesaba Unit One to deliver power Xcel’s load, Mr. Gonzalez estimates
8 that a “reasonable time frame to complete all of the identified upgrades would be at
9 least 2014.” *Gonzalez Direct at page 8.* Mr. Gonzalez bases his estimate on his review
10 of the time it took to complete twelve (12) unrelated transmission infrastructure
11 projects, and concludes that “project involving new 230 or 345 kV lines should
12 generally be expected to take at least six years from beginning of planning to
13 completion of construction; eight years is a more typical duration.” *Gonzalez Direct at*
14 *page 8.*

15 **Q Do you agree with Mr. Gonzalez’s conclusions?**

16 A No. Mr. Gonzalez fails to take into account several relevant factors. First, Mr.
17 Gonzalez ignores potential transmission permitting efficiencies associated with Mesaba
18 Unit One. Second, Mr. Gonzalez ignores the fact that transmission upgrades associated
19 with Mesaba Unit One are exempt from the certificate of need process in Minnesota.
20 Third, Mr. Gonzalez’s projected eight year “lead time” is unsupported as evidenced by
21 current utility-based projections for transmission development in Minnesota. Fourth,
22 Mr. Gonzalez does not account for benefits that can be derived from planned
23 transmission upgrades to the existing system. Fifth, Mr. Gonzalez fails to recognize
24 that Excelsior has been “in the planning process” for two years now since filing its

1 NRIS requests in October 2004. Finally, Mr. Gonzalez offers no substantive analysis
2 supporting his conclusions.

3 **Q Please describe the permitting efficiencies that impact the timing of transmission**
4 **development associated with Mesaba Unit One.**

5 A The permitting efficiencies associated with transmission development I am
6 referring to are described in Minnesota Rules Section 4400.2000 implementing The
7 Power Plant Siting Act. This Rule provides an Alternative Permitting Process
8 (expedited) for high voltage transmission lines in excess of 200 kilovolts, if at least 80
9 percent of the distance of the line in Minnesota will be located along existing high
10 voltage transmission line right of way. In developing the concepts for Generator Outlet
11 Facilities and Network Upgrades for Mesaba Unit One every attempt was made to
12 utilize existing transmission right of ways to the maximum extent possible. This was
13 done in an attempt to minimize public concern and opposition, and to allow for the use
14 of the expedited permitting process. The cost estimates I developed reflect the higher
15 cost of doing this (*i.e.*, rebuilding existing HVTL or double circuiting on existing
16 ROWs). Mr. Gonzalez fails to account for this permitting efficiency.

17 **Q Please describe the timing benefits associated with Mesaba Unit One by virtue of**
18 **its exemption from Minnesota’s certificate of need process.**

19 A In the normal course, prior to the issuance of a route permit associated with a
20 high voltage transmission line (“HVTL”), a certificate of need from the Minnesota
21 Public Utilities Commission is required under Minn. Stat. § 216B.243. Pursuant to
22 Minn. Stat. § 216B.1694 subd. 2(1), however, the Mesaba Energy Project is “exempted
23 from the requirements for a certificate of need under section 216B.243, for the
24 generation facilities, *and transmission infrastructure* associated with the generation

1 facilities.” Accordingly, Excelsior is not required to demonstrate a need for
 2 transmission facilities associated with Mesaba Unit One as part of the public interest
 3 determination in Docket No. E-6472/M-05-1993. This provides a timing benefit not
 4 considered by Mr. Gonzalez in his testimony and which was not available to other
 5 transmission lines cited by Mr. Gonzalez in support of his inflated 6-8 year planning
 6 horizon.

7 **Q Please provide the basis for your conclusion that Mr. Gonzalez’s eight year lead**
 8 **time is unsupported as evidenced by current projections for transmission**
 9 **development in Minnesota.**

10 A Mr. Gonzalez contends that his review of recent transmission development in
 11 Minnesota indicates that a six to eight year timeframe should be expected from planning
 12 to completion of construction for significant transmission upgrades. *Gonzalez Direct at*
 13 *Table 1.* Although Mr. Gonzalez references a number of transmission line projects, he
 14 does not provide any discussion of the similarities or differences between those projects
 15 and the Mesaba Energy Project that could impact the timing of transmission
 16 development. As such, Mr. Gonzalez’s observations are speculative and unsupported.

17 Further, Mr. Gonzalez’s testimony ignores current projections for transmission
 18 line development in Minnesota, which indicates that a 6-8 years transmission lead time
 19 is greatly exaggerated. The following is a brief list of current planned transmission
 20 being proposed by Minnesota utilities (including Xcel), which clearly indicates that Mr.
 21 Gonzalez’s timeframe is inflated:

Route	Owner	Voltage	Length	In-Service Date	Current Status	Reference
Big Stone Substation - Morris Substation	Otter Tail and others	230 kV	48 miles	June 2010	Route permit application submitted 12/05;	Route Permit Application for the Big Stone Transmission Project in Western Minnesota at p. 31, OAH 12-2500-17038-2; MPUC Docket

					presently before PUC	No. TR-05-1275.
Big Stone Substation – Granite Falls Substation	Otter Tail and others	345 kV	90 miles	March 2009	Route permit application submitted 12/05; presently before PUC	Route Permit Application for the Big Stone Transmission Project in Western Minnesota at p. 31, OAH 12-2500-17038-2; MPUC Docket No. TR-05-1275.
Bemidji – Grand Rapids	CapX 2020	230 kV	70 miles	2011	Unknown	http://www.capx2020.com/project_bemidji-nc.html
Twin Cities – Rochester – La Crosse	CapX 2020	345 kV	150 miles	2011	Filed Notice plan in anticipation of CON application 6/06	http://www.capx2020.com/project_tcr-roch-lac.html
Brookings, SD – SE Twin Cities	CapX 2020	345 kV	230 miles	2012	Filed Notice plan in anticipation of CON application to PUC 6/06	http://www.capx2020.com/project_brookings.html Note; new MAPP Forms 1 and 2 prepared and submitted by the NM-SPG 8/16/06 now show a 2011 ISD. See Exhibit No. (SDS-6).
Fargo – St. Cloud / Monticello	CapX 2020	345 kV	250 miles	2012	Filed Notice plan in anticipation of CON application to PUC 6/06	http://www.capx2020.com/project_fargo-stcloud.html

1
2 As is apparent, Minnesota utilities do not share Mr. Gonzalez’s view that a six to
3 eight year timeframe should be expected from planning to completion of construction
4 for significant transmission upgrades. It should also be emphasized again that these
5 projects are not similarly exempt from the Certificate of Need process in Minnesota and
6 may not have been able to take advantage of permit efficiencies associated with Mesaba
7 Unit One.

8 **Q Please describe the manner in which Mesaba Unit One could benefit from planned**
9 **transmission in Minnesota.**

10 A As I indicated earlier in my testimony, I believe the CAPX 2020 Phase I projects
11 offer potential increased transmission transfer capability and improved system
12 performance that could help mitigate the need for Network Upgrades associated with
13 Mesaba Unit One power deliveries to Xcel, and that Excelsior intends to do everything
14 possible to ensure this is properly evaluated within the MISO processes. The Bemidji-

1 Grand Rapids 230kV Project, the Twin Cities-Rochester – La Crosse 345kV Project
2 and the Fargo-St Cloud-Monticello 345kV Project shown in the Table above, for
3 example, could mitigate the need for certain network upgrades associated with Mesaba
4 Unit One. These projects have projected in-service dates of 2011-2012, which
5 correspond closely with that of Mesaba Unit One.

6 **Q Please provide the basis for your conclusion that Mr. Gonzalez offers no**
7 **substantive analysis supporting his conclusions with respect to transmission lead**
8 **time.**

9 A As noted above, Mr. Gonzalez makes no effort to determine whether it is
10 reasonable to compare the transmission lead time associated with the unique aspects
11 Mesaba Unit One and those of other transmission projects. Simply listing the amount
12 of time it took to complete (or abandon) 12 transmission projects, without determining
13 if the comparison to Mesaba is reasonable, is not appropriate. For example, a number
14 of transmission projects cited by Mr. Gonzalez indicate a 4-6 year lead time. Mr.
15 Gonzalez does not, however, demonstrate that it would be unreasonable for Excelsior to
16 expect to complete its transmission upgrades associated with Mesaba Unit One within a
17 similar timeframe. Instead, Mr. Gonzalez relies on outliers (*e.g.*, an inactive project that
18 took “12+ years” and the controversial multi-state Arrowhead – Weston Project) as his
19 comparison projects, which skew the results by artificially inflated the expected
20 planning horizon.

21 **Q Do you have any concluding remarks with respect to transmission lead time**
22 **associated with Mesaba Unit One?**

23 A Yes. Even if we assume that it will take another six months before any
24 necessary Network Upgrades are determined through the MISO generator

1 Interconnection and Transmission Service processes, the attached generic Network
2 Upgrade Schedule (Exhibit No. ____ (SDS-7)) indicates that it is reasonable to expect a
3 new Network Upgrade line in-service in time to support the projected 2011 commercial
4 operation date for Mesaba Unit One.

5 Accreditation of Capacity

6 **Q Please describe why MAPP accreditation is important in the context of this**
7 **proceeding.**

8 A Xcel is currently a member of the MAPP Generation Reserve Sharing Pool
9 (GRSP). Through its participation in this pool, Xcel is able to meet its reliability
10 obligations for Planning and Operating (Contingency) Reserves. The generation
11 capacity Xcel utilizes to fulfill its obligations to the GRSP must be accredited by this
12 pool. One of the key elements of the accreditation process is demonstrating that
13 sufficient firm transmission is available to deliver the capacity to the Xcel loads.

14 **Q Are changes to the MAPP accreditation process currently being contemplated?**

15 A Yes. Three new initiatives at MISO could change the manner in which capacity
16 accreditation for reserves are accounted for. In particular, MISO is proposing
17 comprehensive changes to its resource adequacy model, through 1) The MISO
18 Ancillary Services Market Project, 2) Contingency Reserve Sharing and 3) Planning
19 Reserves Sharing Group. These fundamental market changes will likely put further
20 pressure on both MISO and non-MISO MAPP members to make critical decisions
21 regarding MISO vs. MAPP membership. Ultimately, the MAPP accreditation process
22 may be supplanted by MISO as its permanent ancillary services and resource adequacy
23 designs are implemented.

1 **Q What concerns did Xcel raise regarding the ability to obtain MAPP accreditation**
2 **of the Mesaba Unit One’s available capacity?**

3 A Mr. Schiro describes a number of implications associated with the potential
4 failure of Mesaba Unit One to be “MAPP accredited.” According to Mr. Schiro, “if
5 Mesaba 1 LLC only proceeds with its current request for ERIS and does not develop
6 any plan to secure transmission rights for firm delivery of its power to Xcel Energy” it
7 would not be MAPP accredited. *Schiro Direct at page 15.* If not accredited by MAPP,
8 Mesaba Unit One would not be able to be counted towards Xcel’s mandated reserve
9 requirements.

10 **Q Are Mr. Schiro’s concerns warranted?**

11 A No. First of all, Mr Schiro is aware that Excelsior requested NRIS and never
12 converted this back to an ERIS request. Secondly as discussed earlier in this testimony,
13 Excelsior is taking every step necessary to ensure that firm transmission service is
14 obtained to deliver the output of Mesaba Unit One to Xcel. As noted, Xcel has
15 submitted the necessary request for NITS and that process is currently on-going.
16 Consistently, Excelsior is adhering to the MISO processes for seeking designation of
17 Mesaba Unit One either as a Network Resource or as a Local Capacity Resource, which
18 would enable the Unit to receive MAPP accreditation.

19 **Q Do you have a response to Mr. Schiro’s concerns with respect to the accreditation**
20 **of capacity during the initial years of the Power Purchase Agreement?**

21 A. Yes. Mr. Schiro expresses concern that if transmission is not available until
22 2014 as suggested by Mr. Gonzalez, Xcel would be paying for the capacity of Mesaba
23 Unit One without receiving the benefit of the capacity counting towards Xcel meeting
24 its reserve requirements. As discussed above, Mr. Gonzalez’s estimate that necessary

1 transmission would not be in place until 2014 is unsupported. As my testimony shows
2 there should be adequate time to put in place any Network Upgrades determined
3 necessary to allow designation as either a Network Resource or Local Capacity
4 Resource.

5 Ancillary Services Costs

6 **Q Ancillary Services costs have been raised as a potential issue in this proceeding. ---**
7 **What are these?**

8 A DOC Witness Amit defines these ancillary services as follows:

9 The types of services that are considered ancillary services may vary from
10 project to project. They are generally separate services that the plant
11 requires to generate electricity. These services may be located
12 appurtenant to or connected to the plant site. Transmission costs may, in
13 some cases, be considered ancillary services. Other ancillary services
14 could include, for this project, the natural gas pipeline and railroad spur to
15 the plant.
16

17 Dr. Amit then indicates that the cost of these ancillary services for the West Range site
18 is included in the PPA price with the exception of transmission costs from the
19 substation to the load center. *Amit Direct at page 33.*

20 Xcel Witness Mr. Schiro disagrees with Excelsior's position that the cost of
21 ancillary services will be comparable to any other baseload alternatives and states that
22 Mesaba Unit One needs to quantify its expected ancillary services costs. *Schiro Direct*
23 *at page 10.*

24 **Q Do you know what ancillary services Mr. Schiro was addressing?**

25 A Not for sure. I believe he was addressing the ancillary service costs in the
26 context of the delivery of energy from the Mesaba Unit One to Xcel's load. To verify
27 this, however, an Information Request was submitted and the attached response
28 received from Mr. Schiro. Exhibit No. ____ (SDS-8).

1 In his response, Mr. Schiro confirms that the ancillary services he was referring
2 to in his Direct Testimony are indeed the services that ensure reliability and support the
3 transmission of electricity from the generation sites to the customer loads. Mr. Schiro
4 also concedes that “most of the costs of ancillary services for Mesaba Unit One would
5 be similar to those incurred with a new baseload unit of the same size”. Mr. Schiro
6 further clarifies that “in my testimony I was specifically referring to transmission losses,
7 which could be significantly different than losses related to other baseload units on Xcel
8 Energy’s system, as these are a function of location and the transmission infrastructure.
9 The Petition in this case does not include the expected transmission losses associated
10 with delivering the power from Mesaba Unit 1 to the Xcel Energy’s customers.”

11 **Q Based upon Mr. Schiro’s response do you understand the ancillary services he is**
12 **addressing?**

13 **A**Yes. FERC Order No. 888 and its progeny (pertaining to open access
14 transmission) defined ancillary services with reference to the following services and *pro*
15 *forma* tariff schedules:

- 16 • Schedule 1- scheduling, system control and dispatch
- 17 • Schedule 2- reactive supply and voltage control
- 18 • Schedule 3- regulation and frequency control
- 19 • Schedule 4- energy imbalance
- 20 • Schedule 5- operating reserve- spinning
- 21 • Schedule 6- operating reserve- supplemental

22 Of these, Schedule 1 is normally provided by a Control Area/Balancing Authority,
23 while generating units such as Mesaba Unit One are the providers of services under the

1 other schedules. It is more likely that Mesaba Unit One will receive revenue for
2 providing these services rather than incurring costs. While transmission losses are not
3 defined as one of these ancillary services, they are a part of the costs of transmitting
4 power from generation to the load.

5 **Q Do you agree with Mr. Schiro that losses are a functional of location and**
6 **transmission infrastructure?**

7 **A** Partially. The location of the generation and the transmission infrastructure are
8 a key part of determining expected transmission losses, but equally important is the
9 loading on the transmission infrastructure which is determined by the dispatch of the
10 generation to match the load on the network. I would agree that the location of
11 generation serving load impacts the degree of transmission losses.

12 **Q Do you know what the losses are for delivery of Mesaba Unit One to Xcel?**

13 **A** The MISO System Impact Studies, posted on the MISO website, include
14 information on losses associated delivery of the full output of Mesaba Unit One to the
15 south into and through the Xcel Control Area. For delivery of 600MW from the West
16 Range site, the system losses on the Xcel, MP, and GRE control areas increased by 39.2
17 MW when Mesaba Unit One was added to the peak powerflow base case. When the
18 Boswell-Riverton 230kV line was added to the model to resolve some local injection
19 issues this losses figure dropped to 24.5 MW. The losses on the generator outlet
20 facilities between the plant site and the Blackberry Substation were an additional 3.4
21 MW. I calculate that these losses will drop to 1.4 MW based upon the proposed
22 generator outlet facilities design and routing.

23 For the delivery of 531 MW from the East Range site, the system losses on the
24 Xcel, MP, and GRE control areas increased by 17.2 MW when Mesaba Unit One was

1 added to the peak powerflow case. The losses on the single 345kV generator outlet
2 between the plant site and the Forbes Substation were 7.2 MW. These losses will drop
3 to around 5 MW with the final GO design configuration of two 345kV lines operating at
4 230kV.

5 These results provide some indication of peak demand losses that may be
6 encountered. The losses represent 3-4% of the energy delivery, which is fairly typical.
7 It is important to note the dramatic drop in losses of nearly 15 MW when the Boswell-
8 Riverton 230kV line was added in association with Mesaba Unit One at the West Range
9 site. Until the MISO processes associated with the NRIS and/or NITS requests are
10 complete and the necessary Network Upgrades determined, if any, only these
11 reasonable estimates of the losses associated with the delivery of power from Mesaba
12 Unit One to the Xcel loads can be made.

13 East Range Sensitivity Study

14 **Q Do you have an update with respect to Excelsior's request for interconnection**
15 **service associated with the alternative East Range site.**

16 A Yes. As I noted in my Supplemental Direct Testimony, in October of 2004,
17 Excelsior submitted a Large Generator Interconnection Request for the Mesaba Unit
18 One for 531 MW requesting NRIS with Minnesota Power's control area from the
19 proposed East Range site with the designated point of interconnection ("POI") proposed
20 at Minnesota Power's Forbes 230kV Substation.

21 Because Mesaba Unit One's planned capacity is 603 MW (as reflected in the
22 MISO interconnection request for the preferred West Range site), Excelsior engaged
23 Power Technologies International ("PTI") to complete a sensitivity study for the

1 additional 69 MW not currently evaluated through the East Range site MISO generator
2 interconnection request.

3 **Q What conclusions did PTI reach?**

4 A PTI was the contractor to MISO for the original G477 (East Range) System
5 Impact Study done at 531 MW. With the permission of MISO, PTI utilized the same
6 base case study models and contingency files to perform an identical set of analyses of
7 Mesaba Unit One with the output at 600 MW. Like the original G477 SIS, this
8 sensitivity study, which is attached as Exhibit No. ___ (SDS-9) did not identify any
9 injection (interconnection) violations or issues.

10 **Q What impact does this have on transmission development should the East Range
11 site ultimately be selected as the site for Mesaba Unit One.**

12 A These results would seem to indicate that the existing local transmission
13 infrastructure can handle the full 600 MW, without the need for Network Upgrades. A
14 formal generation interconnection request for the incremental 69 MW must be made to
15 MISO and studied through their process before this determination would be final.
16 However, the PTI study provides a reasonable basis upon which to draw conclusions
17 with respect the *de minimis* transmission infrastructure investment associated with the
18 additional 69 MW at the East Range site.

19 **Q Why was this Sensitivity Study done directly with PTI and not through the MISO
20 Process?**

21 A How best to proceed with this study to ensure that the answers would be
22 available for this Proceeding was discussed with the MISO Project Manager, who
23 indicated that using the formal Option Studies process may not be complete in a timely
24 manner for this Proceeding. Since the output level being studied was beyond the

1 officially requested level of 531 MW, MISO would not be able to use the results
2 anyway. The MISO Project Manager allowed Excelsior to use the MISO models
3 developed for G477 enabling PTI to perform the studies on an expedited basis.

4 Updates to Supplemental Direct Testimony

5 **Q In your June 19, 2006 Supplemental Direct Testimony you updated the status of**
6 **Excelsior's generator interconnection requests. Do you have any addition updates**
7 **at this time?**

8 A Yes. As I noted in my Supplemental Direct Testimony, the next step was the
9 completion of the Interconnection Facilities Studies, which will result an engineering
10 plan that includes equipment definition and estimated construction cost and schedule for
11 required facilities needed to interconnect the Mesaba Energy Project Unit One to the
12 transmission system as an Energy Resource. The study report will provide solutions for
13 all the relevant issues identified in the System Impact Study. As the interconnecting
14 transmission owner, MP agreed to undertake this analysis pursuant to MISO's Tariff.

15 The Facilities Studies for both sites are being done in parallel and the deadline
16 for these studies was September 30, 2006. As this date approached MP requested and
17 was granted a short extension by MISO. Draft reports were delivered to MISO on
18 October 5th and copies of these were forwarded to Excelsior for review on October 6th.
19 I would expect the final reports to be posted on the MISO website in a couple of weeks.
20 One aspect worth noting is that the schedule developed by MP for the Boswell-Riverton
21 230kV Project has a duration from permitting through construction of under 4 years.

22 As reported earlier in this testimony the Deliverability Analysis associated with
23 the NRIS requests will be restudied. In discussing with the MISO Project Manager on
24 October 6th, I learned that the model development is complete and the restudy efforts

1 have begun on higher queued projects, and that we should have results on the Mesaba
2 Unit One requests yet this month.

3 **Q Please describe the next steps.**

4 A With the completion of the Facilities studies the negotiations can begin on the
5 appendices for the LGIA, which provide the details unique to the specific generator's
6 interconnection to the system, *i.e.*, construction schedule, identification of upgrades etc.
7 The development of the LGIA and its appendices is where the final agreement
8 negotiated between Excelsior (the Interconnection Customer), the affected
9 Transmission Owners and MISO for the Interconnection Facilities and Network
10 Upgrades is documented.

11 **Q Do you have any changes or updates associated with the Generator Outlet (GO)
12 Facilities?**

13 A The cost estimates and key measurements remain the same as provided in my
14 Supplemental Direct Testimony. The application associated with the routing of these
15 GO facilities was submitted on June 16, 2006 and accepted as complete on July 28. The
16 draft EIS is under development and expected out in February and the schedule proposed
17 by the DOC calls for the Hearings in April 2007.

18 **Q Is there anything else that you would like to provide an update on or clarify for the
19 Commission in this Proceeding?**

20 A Yes. In this proceeding and several other forums associated with transmission
21 development there appears to be some confusion with respect to Mesaba Unit One.
22 Some have incorrectly suggested that interconnecting Mesaba Unit One will cause the
23 curtailment of wind generation in SW Minnesota/South Dakota area, and the redispatch
24 of Minnesota Power and Big Stone II generation. This is not true.

1 I believe the confusion stems from the misinterpretation of the Mesaba Unit One
2 G477 and G519 System Impact Reports. In these reports, a Section 6-Sensitivity
3 Stability Analysis was added because the original stability studies had shown transient
4 voltage limit violations that the Transmission Owners Ad Hoc Study Group and MISO
5 determined were the result of an unrealistic base case in which the Forbes-Chisago
6 500kV Line is overloaded both in the benchmark case without the project and the study
7 case with the project.

8 Since these System Impact Studies were concerned with the local
9 injection/interconnection issues, MISO and PTI in collaboration the TO Ad Hoc Group
10 used their engineering judgment in making some changes to the base case to bring it
11 back to a realistic, secure state so the impacts of Mesaba Unit One could be assessed.
12 For example, changes were made to the stability powerflow case to bring the Forbes-
13 Chisago 500kV line and the new Arrowhead-Weston 345kV back to within their
14 identified operating limits and to keep the MHEX, NDEX and MWSI within their
15 simultaneous transfer limits. The original benchmark case had approximately 1500
16 MW of wind generation in southwest Minnesota, but only the Network Upgrades
17 necessary to support 825 MW. This situation was causing unrealistic redistribution of
18 flow, especially the MH export, in the Northern MAPP region, so the group decided to
19 back this generation down to 825 MW. Big Stone II and MP area generation was
20 adjusted to bring the NDEX and MWSI back to their simultaneous transfer limits.

21 Again these System Impact Studies were analyzing the local injection issues and
22 not dealing with the deliverability issues. The studies associated with evaluating the
23 NRIS and NITS requests outlined earlier in my testimony would deal with any adverse
24 impacts the Mesaba Unit One might have on the deliverability of existing and higher

EXHIBIT NO. ____ (SDS-2)

EXHIBIT NO. ____ (SDS-3)

EXHIBIT NO. ____ (SDS-4)

EXHIBIT NO. ____ (SDS-5)

EXHIBIT NO. ____ (SDS-6)

EXHIBIT NO. ____ (SDS-7)

EXHIBIT NO. ____ (SDS-8)

EXHIBIT NO. ____ (SDS-9)