414 Nicollet Mall
Minneapolis, Minnesota 55401-1993

July 26, 2006

Carol Overland
Overland Law Office
P.O. Box 176
Red Wing, MN 55066

RE: RESPONSE TO MCGP INFORMATION REQUESTS 1-2
DOCKET NO. E6472/M-05-1993

Dear Ms. Overland:

Enclosed are our responses to the mncoalgasplant.com information requests referenced above. If you have any questions regarding these responses, please call me at (612) 330-5785

Sincerely,

TERESA KOWLES
REGULATORY CASE SPECIALIST

Enclosures
c: Byron Starns – Leonard, Street and Deinard
Tom Osteraas – Excelsior Energy

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☐ Public Document – Trade Secret Data Excised
☒ Public Document

Xcel Energy
Docket No.: E6472/M-05-1993
Response To: mncoalgasplant.com Information Request No. 1
Date of Request: July 12, 2006
Response Due: July 26, 2006

Question:

Please refer to Excelsior's "G519 System Impact Study" prepared for MISO for interconnection of the Mesaba plant to the grid. This study was for interconnection of Phase 1, 600 MW. In Section 6, Sensitivity Stability Analysis, paragraphs 6.1.2.1 and 6.1.2.2, the "original benchmark case had approximately 1500 MW of wind generation in southwest MN. SW wind generation was reduced to approximately 825 MW in the sensitivity case b5a." The study "[r]educed generation in SW MN to approximately 825 MW and reduced load in the XEL area (zone 601) by a corresponding amount."

Please provide low, mid and high estimates of annualized costs of curtailment payments for 675 MW of wind generation in SW Minnesota based upon current experience with curtailment payments.

Response:

Please see the attached report for the estimates Xcel Energy has developed regarding curtailment. Xcel Energy is not obligated to create new data in response to information requests or to study specific scenarios as described in this question.

Date: July 26, 2006

Xcel Energy℠

414 Nicollet Mall
Minneapolis, Minnesota 55401-1993

May 19, 2006

Burl W. Haar
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

RE: WIND CURTAILMENT PROJECTIONS
COMPLIANCE REPORT
DOCKET NO. E,G999-AA-04-1279

Dear Dr. Haar:

Northern States Power Company d/b/a Xcel Energy provides the attached report in compliance with the Minnesota Public Utilities Commission's April 4, 2006 Order concerning wind curtailment payments anticipated through the fuel clause mechanism. We have attempted to develop a model to assist in providing projections of potential wind energy production and associated curtailment using very general assumptions. Actual wind generation will vary based on specific conditions experienced at each wind turbine, however, we believe this provides a reasonable approach for estimating the impact of future wind development in the Buffalo Ridge area.

We are available to answer any questions the Commission, Commission Staff or Department of Commerce may have on this matter. Feel free to contact me at (612) 330-7571 if you have any questions or need further information.

Sincerely,

Deb Paulson

DEBRA J. PAULSON
REGULATORY CASE SPECIALIST

Enclosure

c: Service List

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

LeRoy Koppendrayer	Chair
Marshall Johnson	Commissioner
Kenneth Nickolai	Commissioner
Thomas Pugh	Commissioner
Phyllis Reha	Commissioner

IN THE MATTER OF THE REPORT BY THE MINNESOTA DEPARTMENT OF COMMERCE REGARDING CURTAILMENT OF WIND ENERGY	DOCKET NO. E, G999/ AA-04-1279 COMPLIANCE REPORT

INTRODUCTION

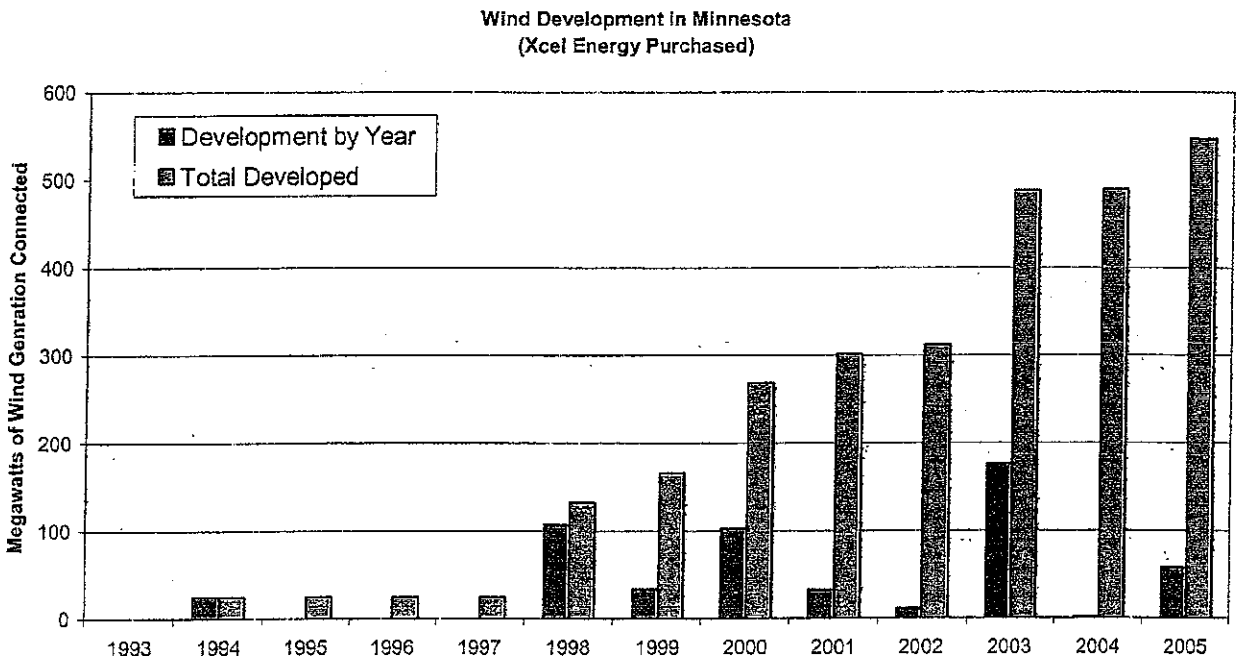
Northern States Power Company d/b/a Xcel Energy ("Xcel Energy") respectfully submits this report in compliance with Order point 6 of the Minnesota Public Utilities Commission ("Commission") Order dated April 4, 2006 in the Electric Utility Annual Automatic Adjustment ("AAA") Report docket identified above. Our report provides an estimate of potential payments that could be experienced over the next 5 years to vendors as a result of curtailment of wind generation for projects located on the Buffalo Ridge in Minnesota. We present the projection and assumptions used to develop this estimate below.

CURTAILMENT

For more than 10 years wind energy generation development has aggressively expanded in Minnesota and project installation has been closely connected with the various federal Production Tax Credit ("PTC") expiration and extension dates. The development has followed the boom and bust of PTC renewal which has been extended 4 times, in each case extending for only 2 years at a time and once not until about 6 months after the previous period expired. Expiration dates for the PTC program have been the last day of each of the following years: 1999, 2001, 2003, 2005 with the current PTC extension set to expire on December 31, 2007. Chart 1 provides a visual aid to quantify

Minnesota wind development for Xcel Energy purchase on an incremental and cumulative basis. Note that larger amounts of wind generation have tended to be installed just prior to PTC expiration as projects are pushed to completion in order to qualify for the economic benefits of PTC.

CHART 1



Since 1994 with the first 25 MW of wind generation beginning commercial operation, wind generating resources purchased by Xcel Energy have been the dominant force in determining the need for transmission infrastructure improvements in southwest Minnesota. Competitive bidding solicitations allowed wind developers the opportunity to put together their project proposals selecting their best possible locations. From these, Xcel Energy was able to choose the most favorably priced projects with which to fulfill our statutory wind power mandate requirements.

However, additions to the delivery network became necessary to provide acceptable transmission outlet for the power from these generating resources. Transmission improvements were pursued through Minnesota's certificate of need process. In parallel with this effort, system operation and management solutions were pursued as well. Since wind generation takes considerably less time for approval and construction than transmission lines, a process was

developed and implemented by which wind generation output would be held to the maximum outlet authorized by the Midwest Independent System Operator ("MISO"). On a predetermined, rotational basis, wind facilities take turns reducing or turning off generation ("curtailing") as a way to maintain the total wind output from the area at or below the level determined appropriate by MISO. Not all wind generation resources contribute to system management by use of curtailment. To date, there are 5 projects rotating the curtailment burden, selected by their size and ability to quickly respond to operator requests to reduce generation. These projects include:

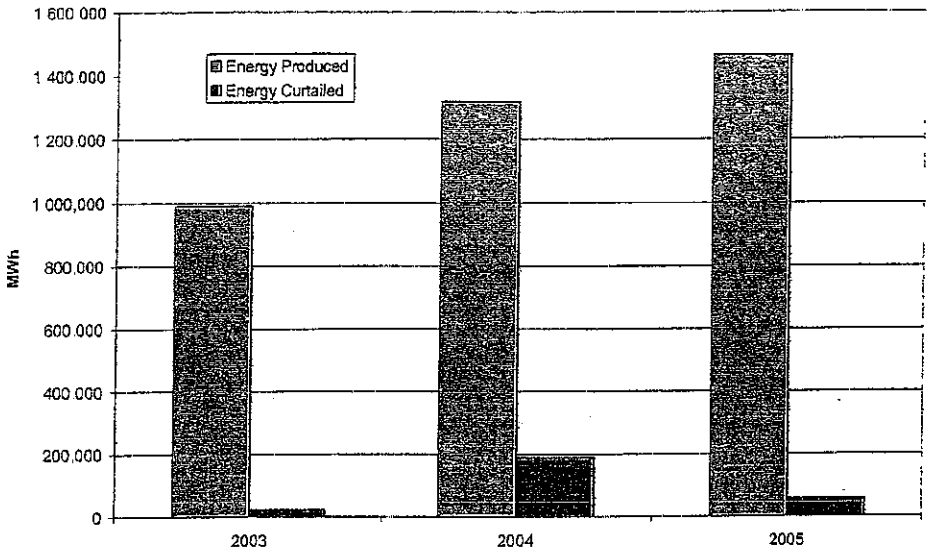
- Lake Benton Power Partners I (107.25 MW)
- Lake Benton Power Partners II (103 MW)
- Chanarambie Power Partners (85.5 MW)
- Moraine Wind (51 MW)
- Northern Alternative Energy Various <2 MW facilities (27 MW)

Actuals

Beginning in 2003, curtailment protocol has been used in cooperation with the operators of the involved wind facilities with the transmission limits being revised as incremental transmission improvements are completed. Prior to the construction start of the Southwestern Minnesota Transmission Project (Certificate of Need Docket No. E002/CN-01-1958) the transmission limit was 260 MW. Once all parts of the project have been completed, transmission outlet capacity from the Buffalo Ridge will be sufficient to support 825 MW of wind generation.

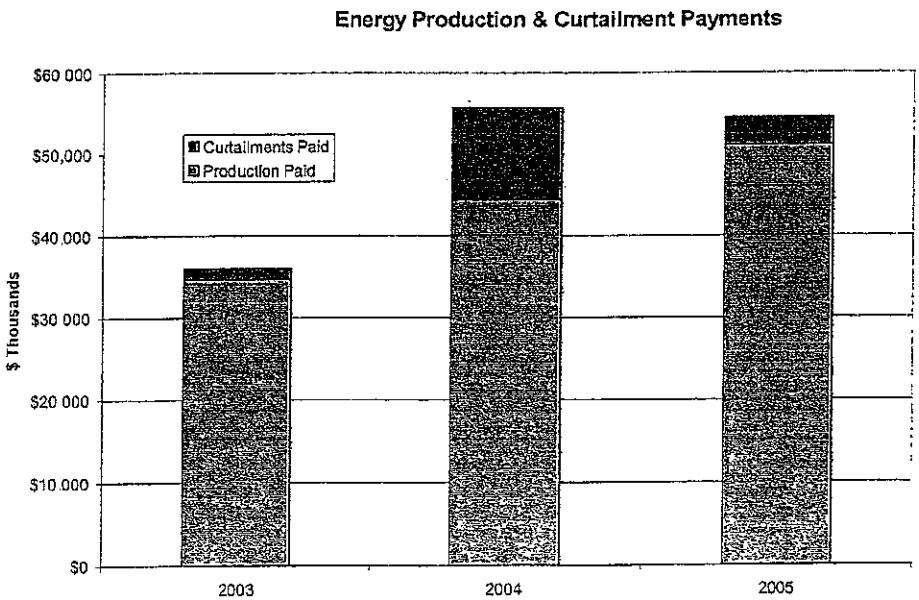
As more wind projects come on line the curtailment values increase but when transmission improvements are made, curtailment drops. Observations from Chart 2 show that when the transmission outlet was increased to 425 MW on a non-firm basis – subject to an operating procedure possible under a narrow contingency – towards the end of 2004 (with completion of several components of the southwestern Minnesota transmission project), curtailment dropped dramatically in 2005. This rolling pattern can be expected to continue as generation precedes transmission development. Despite the lead/lag of generation and transmission development, wind curtailment has been small compared to total wind generation delivered.

CHART 2



For additional perspective, Chart 3 shows the corresponding costs paid for production and curtailment by NSP customers.

CHART 3

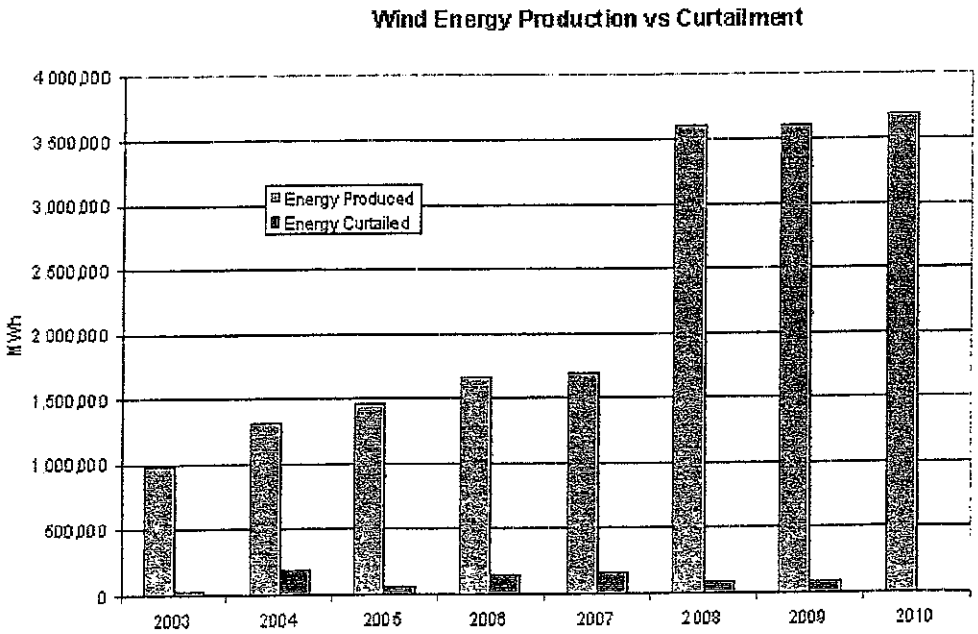


Projections

Transmission improvements authorized by the Commission to achieve 825 MW of generation outlet are scheduled to be completed by Fall 2007. Power purchase contracts for a significant amount of new wind generation have been approved and are scheduled to begin commercial operation by the end of 2007. This includes the enXco-Fenton project (200 MW), the MinnDakota project (150 MW) and numerous other small and community-based energy developments additions.

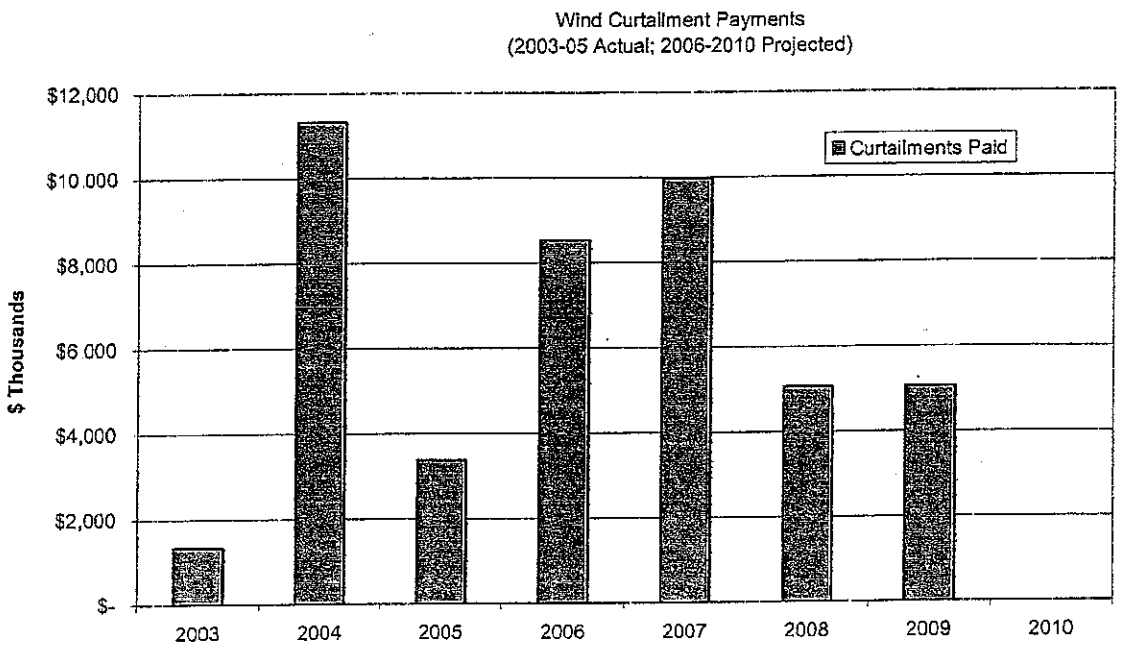
Based on the assumptions described below, our projection of wind energy production relative to the expected transmission capability limitations (Chart 4) will show wind energy curtailment ranging up to more than 160,000 MWh (near amounts experienced in 2004) occurring just before the transmission improvements are completed at the end of 2007. Once the additional transmission projects (described below) are in place, we do not anticipate widespread need for curtailment given our understanding of additional future wind development at this time. However, circumstances can be extremely difficult to predict and dependent upon unknown factors such as further extension of the federal PTC, equipment availability and turbine manufacturing.

CHART 4



Cost projections for curtailment payments over the forecast period as based on a common cost of $60 / MWh and are shown in Chart 5 below. If the assumptions made in this analysis become reality and no additional generation is added to the area we would project curtailment payments to be negligible in 2010.

CHART 5



Assumptions

In order to develop this estimate of wind production and curtailment, certain specific assumptions were used. For the forecast period 2006 through 2010, the wind resource assumed is consistent from that used in the report titled "Integrating Wind Energy – Cost & Operating Impacts, Overview and Survey of Literature for the Department of Commerce" dated June 12, 2003. The wind data is based on one measurement point. Actual amounts of wind energy produced and curtailed will vary from what has been projected in this report, as actual wind conditions and turbine performances are certain to differ from the wind pattern used here.

A wide variety of wind turbine makes and models are spread over the large number of miles over which wind projects have been constructed on the Buffalo Ridge. Each of the hundreds of wind turbines will experience its own unique wind situation and will produce energy based on equipment

performance in real time. To simplify modeling, the power curve of a Z750 wind turbine was assumed representative of equipment in operation for 2006 and 2007. Beginning with 2008, we added the characteristics of power curves for two newer and larger sized turbine as being typical of operating equipment—GE 1.5 and GE1.5SL—with one utilizing lower wind speed technology.

Wind generation additions represented in this projection include:

- 2006 55 MW (various small <2 MW projects in progress)
- 2007 350 MW (150 MW for MinnDakota / 200 MW for enXco-Fenton)
- 2008-09 60 MW (Community North / Community South projects)

Of note is that the 60 MW Community Wind projects ordered as part of the Buffalo Ridge CON Order were not advanced far enough to sign contracts to meet the 675 MW requirement of the CON Order and we proceeded with other projects to fulfill that obligation. Current projections are for Community Wind North and South to be completed in the 2008/2009 timeframe and this 60 MW is above and beyond the 825 transmission capability.

Other assumptions made are that the 300 MW of G-BED projects currently under negotiation were initially screened to minimize curtailment impacts and are, for purposes of this estimate, assumed as installed off of the Buffalo Ridge and subject to minimal curtailment. However each individual interconnection will still be subject to results of transmission service studies carried out by the transmission providers. Preliminary studies indicate additional 115 or 161kV transmission developments appear to be necessary.

Transmission improvements for the Buffalo Ridge area are assumed completed as scheduled. For the SW Minnesota Transmission Project, the completion is currently Fall 2007. We have recently announced plans to construct 3 new transmission lines in the area. These new lines are collectively referred to as the Buffalo Ridge Incremental Generation Outlet, or BRIGO Project and will raise transmission outlet from this area by an estimated 300 MW for a total of 1200 MW of transmission capability by about 2010. A certificate of need application for the BRIGO Project will be filed relatively soon and the exact timing of project completion depends on the regulatory and public siting process as well as availability of construction resources.

For purposes of this projection, the following transmission limits are assumed:

	Transmission Limit
2006-07: Completion of various parts of SW MN project	435
2008: Full impact of SW MN Transmission project	889
2009: No change anticipated	889
2010: BRIGO project provides estimated 300 MW	1100-1200

The Transmission Limit is slightly higher than the published limits posted by the Transmission provider due to difference of various 2 MW transmission service requests and actual smaller wind turbine size.

Despite these assumptions, the push/pull effect continues. There exists ongoing pressure to develop more and more wind projects in the Buffalo Ridge area. Incremental additions of more than a few megawatts will likely require more transmission improvements and additions—further outpacing transmission plans in southwestern Minnesota.

CONCLUSION

Wind generation development has rapidly expanded over the past 10 years with more than 500 MW currently installed and in operation in the Buffalo Ridge area of the state. Generation quickly outstripped transmission capability and curtailment has become a critical system management tool allowing us to procure wind resources consistent with state policy even as additional transmission infrastructure is developed. Curtailment activity for wind generation located in this area will continue to be cyclical in that use will increase during times prior to transmission improvements while new wind generating facilities are added to the system and will reduce as system improvements are completed. Over the next 5-year period, curtailment and the associated payment to vendors is projected to peak at approximately $10 million in 2007. System conditions and wind project development are very dynamic and actual results will vary from that projected with this snapshot of information. We will continue to refine and gather information for use in the update to this forecast to be submitted with the Annual Automatic Adjustment Report this coming fall.

May 19, 2006

Northern States Power Company
d/b/a Xcel Energy

CERTIFICATE OF SERVICE

I, Carole Wallace , hereby certify that I have this day served copies of the foregoing document on the attached list of persons by delivery by hand or by causing to be placed in the U.S. mail at Minneapolis, Minnesota

DOCKET NO. E,G999/AA-04-1279

Dated this 19th day of May 2006

Carole Wallace

E,G999/AA-04-1279
In the Matter of All Gas and Electric Annual Fuel Reports

(4-8-04)

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Xcel Energy
Docket No.: E6472/M-05-1993
Response To: mncoalgasplant.com Information Request No. 2
Date of Request: July 12, 2006
Response Due: July 26, 2006

Question:

The Sensitivity Stability Analysis of the MISO G519 System Impact Study made other changes to the base case, where it states that "[i]n addition to the changes described for b5a, flow on NDEX was reduces to 2080 MW in the second sensitivity case (b5b) by keeping the output of Big Stone II in North Dakota.

a) Based upon Xcel rates, what is the range of wholesale and retail costs of a reduction in NDEX to 2080 MW? Provide supporting documentation.

b) Base upon the wealth of modeling by Xcel in SW Minnesota, what is required to "keep the output of Big Stone II in North Dakota?" Is this a reasonable solution to stability concerns caused by interconnection of Mesaba? Provide a range of costs.

Response:

Xcel Energy is not obligated to create new data in response to information requests or to study specific scenarios as described in this question. In addition, this question goes beyond the bounds of relevance to Excelsior's Petition. Subject to these objections, Xcel Energy provides the following information.

a) Xcel Energy has not done any rate impact analysis based on a North Dakota Export Limit (NDEX) of 2080 MW.

b) What is required to keep the output of Big Stone II in North Dakota is a re-allocation in the model of the available generation within the NDEX boundary to stay within the limit. Sensitivity case b5b demonstrates that the reallocation of generation to stay within the limit addresses transmission stability concerns

whether or not the Excelsior Facility is constructed. Xcel Energy has not studied the cost implications of such a re-allocation.

Response By:	Walter Grivna
Title:	Manager Transmission Planning
Department:	Transmission Reliability Assessment
Telephone:	(763) 780-2199
Date:	July 26, 2006