BEFORE THE PUBLIC UTILITIES COMMISSION OF
THE STATE OF SOUTH DAKOTA

In the Matter of the Application of Northern States Power Company dba Xcel Energy for Authority to Increase its Electric Rates	)))	Docket No. EL11-019

COST RECOVERY FOR THE NOBLES WIND PROJECT

REBUTTAL TESTIMONY OF KAVITA MAINI
ON BEHALF OF
THE COMMISSION STAFF

PUBLIC VERSION

May 23, 2012

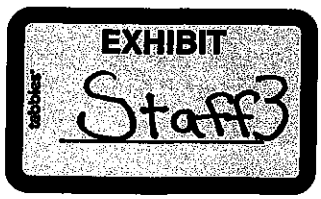

TABLE OF CONTENTS

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

A. My name is Kavita Maini. My office is located at 961 North Lost Woods Road, Oconomowoc, WI 53066.

Q. Did you previously submit direct testimony on behalf of Staff?

A. Yes, I submitted direct testimony on behalf of Staff regarding cost recovery related to Xcel Energy's ("Xcel") Nobles wind project ("Nobles").

I. PURPOSE OF REBUTTAL TESTIMONY

Q. What is the purpose of your rebuttal testimony?

A. On behalf of Staff, the purpose of my rebuttal testimony is to respond to Xcel's witness James Alders' rebuttal testimony. Specifically, Staff feels compelled to respond in order to (a) address new information that Xcel did not find necessary to provide since this rate case proceeding began, (b) rebut arguments presented by Mr. Alders and (c) clarify Staff's position.

Q. **Did Mr. Alders provide direct testimony regarding Nobles?**

A. No, he did not. The request for cost recovery for Nobles was included in a brief description by Witness Laura McCarten and Witness Thomas Kramer provided financial information. Clearly, Xcel should have been more diligent in providing comprehensive information about its decision to construct Nobles in its direct testimony.

Q. **Mr. Alders provided various arguments in his rebuttal testimony in favor of full cost recovery for Nobles. Did these arguments convince Staff to reconsider its position as reflected in your direct testimony?**

A. No. Staff is not persuaded by any of Mr. Alders' arguments.

Q. **What are the arguments made by Mr. Alders that you disagree with?**

A. While there are several arguments made by Mr. Alders that I disagree with, I will focus on the three key rebuttal points made by him:

1. Nobles was chosen as part of an integrated system approach and was chosen to obtain economic energy in addition to complying with the renewable policies of all the jurisdictions in which Xcel serves; my reasons for disagreeing with Mr. Alders are discussed in Section II.
2. Staff relied on a conservative Strategist model scenario and Xcel's new analysis indicates that Nobles actually results in cost savings instead of costs exceeding benefits; my reasons for disagreeing with Mr. Alders are discussed in Section III.
3. Staff did not include the benefits associated with bonus depreciation, production tax credits, and renewable energy credits. Xcel should be allowed the cost overruns; my reasons for disagreeing with Mr. Alders are discussed in Section IV.

Q. **Do you have a point of clarification to make with respect to referencing the Nobles wind project in this testimony?**

A. Yes; I refer to Xcel's submission of its petition to the Minnesota Public Utilities Commission to seek approval of the Nobles wind project in December 2008 as the Nobles Petition.

II. INTEGRATED SYSTEM APPROACH DOES NOT WORK EFFECTIVELY FOR FULFILLING DISSIMILAR POLICY NEEDS

Q. Mr. Alders testified that Xcel utilized an integrated system approach wherein it forecasts the energy and capacity requirements for all the jurisdictions it serves and compares these requirements to the generation resources available. He stated that once Xcel has identified a need for additional resources based on this comparison, it evaluates the cost effectiveness of adding resources to meet that need. What is your opinion about this approach?

A. I generally support this approach and agree that utilizing an integrated system approach is appropriate so long as it is addressing energy and capacity needs and done on the basis of reliability planning. Provided they are prudently chosen alternatives, there are economies of scale and diversity savings associated with building resources to meet the combined need of all the jurisdictions for reliability purposes. These are necessary resources, and a comprehensive due diligence is conducted for the resource in the certificate of need ("CON") process.

Q. How does Xcel comply with the renewable policies of the various jurisdictions?

A. Mr. Alders states that to comply with renewable policy, Xcel calculates the potential amounts associated with the mandates and goals of its various jurisdictions. If the resource planning results indicate that the renewable additions are cost effective, Xcel then uses a competitive acquisition process to obtain actual proposals. In other words, conceptually, Xcel takes the same integrated

approach about fulfilling the renewable policies of its various jurisdictions as it does for reliability planning.

Q. **Does the integrated approach work for meeting the renewable policy of the various jurisdictions?**

A. No, it does not work efficiently or effectively. The reasons are as follows:

- The first significant reason is that a resource is being built on the basis of policy. All the jurisdictions that Xcel serves do not have identical policies. As described in my direct testimony, the policies are significantly different where Minnesota, for example, has a 30% renewable energy mandate with penalties for non-compliance and South Dakota has a 10% voluntary goal with no penalties for not meeting that goal. When resources get built to satisfy the renewable or other policies of a specific jurisdiction, the costs of such units should not be borne by a jurisdiction that does not require them. This ends up becoming a subsidy that is neither equitable nor reasonable. While the jurisdictions where this mandated policy is promoted may recognize the value in fulfilling such policy, it does nothing for the jurisdictions that do not promote such policies. Rather, it becomes akin to a tax placed on the jurisdiction that does not have such a policy.
- The second significant reason is the issue of how the cost effectiveness of the resource that is built for policy or economic energy reasons is ascertained. Mr. Alders states that Nobles was cost effective since the present value of the revenue requirements ("PVRR") of the plan that includes building Nobles was

within 0.11% of the no build alternative. The 0.11% is calculated by dividing the premium of $64 million by the PVRR of the entire plan of close to $60 billion. Using this approach, a 1% premium (i.e., PVRR by building the resource being greater than not building) may also appear cost effective, which essentially translates to $600 million. This is because while in percentage terms, the costs exceeding the benefits on a total system basis may not appear as significant, in terms of numbers, these costs are excessive especially if a unit is being contemplated on the basis of economic energy. Thus, this is not a correct way of assessing the costs and benefits associated with Nobles. From Staff's perspective, a more reasonable approach is to assess the resource on a stand alone basis to ascertain whether its anticipated costs exceed the anticipated benefits.

Recognizing that Nobles was not built to satisfy capacity or energy need (or for that matter South Dakota's renewable objective), Staff therefore appropriately viewed cost effectiveness to mean that the benefits of building Nobles needed to exceed the cost of building it. For a unit to be built on economics, such an analysis should show significant cost savings instead of showing an increase. Even Xcel's reference case, which from Staff's perspective had a high cost assumption for carbon, determined that the $64 million is actually more than **[confidential begins]** **[confidential ends]** above the estimated benefits. While Xcel may view this premium to be cost effective, Staff certainly does not.

- The third reason is that Strategist modeling needs to be supplemented with a more detailed and chronological hourly production cost model to validate economic energy savings. In order to capture more accurate costs and replacement power savings, a more comprehensive cost benefit analysis that is based on an hourly production model is needed. Since wind is an intermittent resource, such analysis is necessary to more realistically gauge the operational costs and replacement energy benefits. Unfortunately, this analysis was not conducted. Instead, the Strategist model used for capacity expansion planning is utilized where wind is forced into the model. This model is ill suited in analyzing the operational challenges and replacement energy savings associated with the intermittent wind resource. I discuss this issue later in my testimony.

Q. **If Nobles was being built on the basis of economics alone, would it have received an exemption for the CON process by the Minnesota Public Utilities Commission?**

A. No; Minnesota statutes allow a request for exemption only for renewable resources. If Nobles were being built on the basis of economics alone, it would have needed to go through a comprehensive CON process.

III LIMITATIONS OF XCEL'S COST/BENEFIT ANALYSIS

Q. **Please explain further the limitations associated with the cost benefit analysis provided by Xcel in its petition to approve Nobles.**

A. Since the Strategist model is a capacity expansion planning tool, it is an inappropriate tool to evaluate a resource meant for comprehensively assessing economic energy savings. Production cost models such as Promod that are chronological and utilize hourly wind and pricing data and include the transmission configuration should have also been used to validate the results from the Strategist model.

Wind is an intermittent resource and since it is driven by weather conditions, it is relatively unpredictable and has forecasting limitations. Unlike other types of generation such as coal and nuclear, there is significant variability in output and thus a high likelihood of forecasting error[1]. As an example, Nobles output in 2011 was close to 20% less than what was predicted. **See Exhibit _____(KM-R1), Schedule 1 Line 15, Columns B and D.** Such variability not only significantly impacts the calculations of the economic energy savings but also provides lesser confidence in the expected output and displaced energy saving estimates.

[1] A NERC report released in April 2009 gave the following example to illustrate the greater variability in wind than in load.

"Power system operators are familiar with demand forecasting and, while there are similarities, forecasting variable generation output is fundamentally different. The errors in demand forecasting are typically small (in the order of a few percent) and do not change appreciatively over time. On the other hand, wind generation output forecasting is very sensitive to the time horizon and forecast errors grow appreciably with time horizon:

Demand Example: On a system with a 10,000 MW peak demand, the error for a 12 hour forecast is normally about 300 MW (3% error) and unlikely to be more than 1,000 MW (10% error).

Wind Example: For a system with 10,000 MW of wind power, the error for a 12 hour wind forecast could easily be 2,000 MW (20% error) or as much as 10,000 MW (100% error)." NERC Special Report, "Accommodating High Levels of Variable Generation", April 2009.

Further, in the MISO market, hourly prices also vary by the hour. The economics are also dependent on time of day and during which season it blows more than others. It is conventionally known that wind blows more during the off peak hours when power is cheaper and more in the non-summer months. As can be observed through actual Nobles output for calendar year 2011, **[confidential begins] [confidential ends]** of the energy is produced in the off peak hours and non-summer months respectively. **See Exhibit _____(KM-R1), Schedule 1 Lines 18 and 20 Column B.**

If the idea is to ascertain the avoided costs associated with economic dispatch as stated by Mr. Alders, then the analysis to verify and validate avoided costs should be done on this basis. Using averages to justify building Nobles based on economics, as is argued by Mr. Alders, is not justified.

As an example, I used the actual hourly output and actual MISO prices to ascertain the impacts of using hourly prices versus on and off peak prices by month. This analysis indicates that by using on and off peak average MISO prices, I overestimated the savings by **[confidential begins] [confidential ends]** using day ahead and real time MISO prices respectively. **See Exhibit _____(KM-R1), Schedule 1 Lines 22 and 24**

Such errors get compounded year over year for the long term analysis in the Strategist Model.

It is also worth noting that Xcel's resource planning and modeling seems to focus around meeting capacity needs. Since Xcel was unable to provide the energy deficiency amounts, it became even more challenging to assess the value of

economic energy savings derived from this model. Xcel provided the following response when asked to provide year by year capacity and energy deficiency:

> Please see Attachment A to Data Request 4-04 which provides a comprehensive look at the load and resources picture. The referenced attachment includes line items for year by year capacity deficiency and resource additions broken out by fuel type. An energy deficiency has not been provided.
> The system is planned around economically meeting forecasted capacity needs. A capacity deficiency will require the addition of a new resource since the Company is obligated to meet the expected peak and reserve margin. The energy forecast, in contrast, does not necessitate the need for a new resource. In general, an increase in energy demand can be met by redispatching the system and operating existing units at a higher capacity factor. As a consequence, an explicit energy deficiency cannot be calculated in the same manner as a capacity deficiency.

See Exhibit _____(KM-R1), Schedule 2

Q. **Mr. Alders claims that the Strategist modeling runs showing the costs and benefits included in the Nobles petition were conservative. Do you agree?**

A. No, I do not. I believe that these runs were not conservative enough since as mentioned earlier, the Strategist model tends to overstate benefits and on a relative basis, there is lower confidence in the estimates due to the unpredictable variability in wind output. Also, looking at the replacement energy savings in 2011, we are significantly upside down with respect to Nobles. In fact, the levelized costs as stated in Mr. Alders' testimony for Nobles are more than twice the savings that would be achieved by simulating the 2011 Nobles output using MISO market prices since 2009. Further, to my knowledge, the market prices for the NSP.NSP load zones have not averaged close to the levelized cost of Nobles

at **[confidential begins]** **[confidential ends]** for the economics to break even since MISO introduced the Day 2 energy markets.

In addition, as mentioned in my direct testimony, Staff did not attempt to change Xcel's estimated savings associated with production tax credits even though the capacity factor is much lower than what was estimated in the petition. Nor did Staff change Xcel's estimated fuel and capacity savings.

Q. **Mr. Alders provided another simulation that changed the order in which Nobles was put in the Strategist model. Have you seen these simulated results for Nobles before?**

A. No; this is new information. These results were not included in the petition to approve Nobles that was submitted to the Minnesota Public Utilities Commission. Xcel included what it calls the "conservative" simulations in the petition. To my knowledge, I do not believe these simulated results for Nobles were ever included in any document in this rate case proceeding – not in direct testimony, not in response to discovery questions and further, not as a result of any informal discussions where we specifically asked for additional evidence to rebut Staff's disallowance methodology.

Q. **What do these results indicate?**

A. According to Mr. Alders, while Xcel's earlier base case showed a premium of $64 million, these results indicate a savings of $80 million.

Q **Did Xcel include the results of other sensitivity analysis in its Nobles Petition?**

A. Yes, in addition to its base case, Xcel provided the results of several other sensitivity analyses. It is not clear why, if Xcel had done this analysis at that time, that it did not include it in the Nobles Petition as another sensitivity result. It is challenging enough to go backwards and rely on Xcel's input assumptions of the various resources and fuels used in the Strategist model. Further, Xcel did not include these results earlier in this proceeding when Staff could get the opportunity to evaluate its validity.

Q. **What other comments do you have about this latest simulation?**

A. The fact that Xcel's base case using the Strategist model that is included in the Nobles Petition shows costs exceeding benefits and this latest simulation shows benefits exceeding costs is indicative that further analysis using chronological and hourly production cost modeling was necessary to validate the economic energy savings.

Q. **Did Mr. Alders provide a third analysis?**

A. Yes, Mr. Alders provided results of one sensitivity analysis where it compared the cost of energy from the wind resource to the cost of energy in the MISO market. I recommend disregarding it completely because the limitations of the Strategist modeling are even more pronounced in this simulation. In order to test the sensitivity of operating in the MISO market, a model that reflects such operations needs to be used. If any cases regarding replacement energy for the MISO market are to be considered, utilizing the actual MISO market prices are a better and more realistic representation.

Q. In your direct testimony, Staff used the $4/ton case to assess the amount of disallowance as a way to acknowledge the economic energy benefits. Why did Staff do this in spite of all the limitations cited earlier?

A. Staff did this in spite of the limitations to give Xcel the benefit of the doubt. As demonstrated in my direct testimony and in this rebuttal, there are ample reasons to disallow the entire amount. However, absent any more detailed information based on production cost modeling analysis, Staff used what was in the Nobles Petition. The Nobles Petition was the most reasonable proxy we had to go back in time and identify what led to the construction of Nobles. Further, the $4/ton carbon case represents Xcel's base case with what Staff considered to be a reasonable value for carbon in the absence of any formal and approved legislation. We also provided a range for the disallowance in the direct testimony should the Commission want to place a lower or higher value on carbon. Alternatively, if the Commission finds that basing the disallowance on this approach is not valid, Staff recommends complete disallowance.

IV. FUEL COST AND OTHER SAVINGS ARE ACCOUNTED FOR IN STAFF'S DISALLOWANCE METHODOLOGY

Q. **Mr. Alders states that should the Commission determine that only 70% of Nobles costs be approved (i.e., Staff's recommendation based on nontraditional mechanism), then the South Dakota jurisdiction should only get 70% of the benefits associated with Nobles. Do you agree with these recommendations?**

A. No; I do not agree with this recommendation because Staff's disallowance methodology took into consideration the fuel and non-fuel savings as well as PTC and other benefits estimated by Xcel in the Nobles Petition. As discussed in my direct testimony, the percent disallowance followed two steps:

- In the first step, the costs for Nobles were capped at the amount provided in the Nobles Petition; the percent disallowance in this step was calculated as the excess over the cap divided by the capped amount in the Nobles Petition. I respond to Mr. Alders' rebuttal later in this testimony.
- In the second step, the excess of the PVRR of the gross revenue requirements over the PVRR of the benefits was divided (i.e. PVRR of gross revenue requirements minus PVRR of benefits) by the PVRR of the gross revenue requirements to calculate the second percentage disallowance.

In this second step, Xcel included the benefits of the PTC as a deduction to the PVRR of the **gross** (emphasis added) revenue requirements. **See Exhibit _____(KM-R1), Schedule 3.** This Schedule shows the calculations of the PVRR of the gross requirements and the benefits and lists the year by year costs and benefits for Xcel's base case that includes a $17/ton carbon assumption. The only element that Staff changed in this Schedule was the benefits associated with carbon. Staff utilized a $4/ton carbon assumption which results in the costs exceeding the benefits by $123 million instead of $64 million shown in Xcel's base case in this Schedule. This Schedule also shows the estimated year by year savings associated with fuel and non-fuel factors.

If the full benefits associated with South Dakota's jurisdictional share of Nobles were not awarded to South Dakota ratepayers, the allowed cost recovery would have to be reduced further to be consistent with Staff's methodology in this case.

Q. **Mr. Alders also states that Staff did not consider the savings associated with bonus depreciation. What are your comments regarding this matter?**

Xcel could not have considered the bonus depreciation tax changes when it filed its Nobles Petition either because these changes came after the decision to construct Nobles was made. The Tax Relief Act was introduced by Congress in December 2010 and signed by President Obama after that time. Consequently, these changes came much after the fact. Xcel filed its petition to the Minnesota Commission to approve Nobles in December 2008.

Q. **Mr. Alders also recommends that South Dakota customers not receive any value from the sales of Renewable Energy Credits (REC) associated with Nobles. What are your comments about this matter?**

A. Staff did not consider REC value in the cost. That said, getting some REC value would be a proxy for recouping the overestimated fuel and non fuel savings identified in the Nobles Petition and compensate South Dakota ratepayers in some fashion for building Nobles so far in advance of need.

Q. **Under what circumstances would it make sense to disallow any benefits from Nobles?**

A. Should the Commission determine that Nobles' costs be completely disallowed, then it would be reasonable to consider a disallowance of the benefits as well.

Q. Regarding cost overruns, Mr. Alders states that many of the costs that were incurred above what was in the petition should not be disallowed. Do you agree?

A. No; I do not agree. First, I would like to clarify that contrary to Mr. Alders' statement in his rebuttal testimony, the cost overrun being discussed does not include transmission interconnection costs. See **See Exhibit _____(KM-R1), Schedule 4.** Second, Mr. Alders states that the costs above what was included in the Nobles Petition would have been incurred anyway since these are Xcel related costs. These would have also occurred if Xcel was entering into a PPA arrangement. If this is indeed the case, it is even more surprising and unclear as to why these were not included as estimated costs. For example, costs such as project oversight and overheads or for that matter sales tax, cannot be unexpected costs. It would seem that Xcel would have included some amount of contingency costs in the Nobles' petition as is conventionally the case in regular construction work.

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

A. Yes.