

**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

I.	PURPOSE OF TESTIMONY	1
II.	INTEGRATED SYSTEM APPROACH DOES NOT WORK EFFECTIVELY IN FULFILLING DISSIMILAR POLICY NEEDS	3
III.	LIMITATIONS OF XCEL'S COST/BENEFIT ANALYSIS	6
IV.	FUEL COST AND OTHER SAVINGS ARE ACCOUNTED FOR IN STAFF'S DISALLOWANCE METHODOLOGY	12

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

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

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

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

7 I. **PURPOSE OF REBUTTAL TESTIMONY**

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

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

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

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

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

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

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

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

27 1. Nobles was chosen as part of an integrated system approach and was
28 chosen to obtain economic energy in addition to complying with the
29 renewable policies of all the jurisdictions in which Xcel serves; my reasons for
30 disagreeing with Mr. Alders are discussed in Section II.

31 2. Staff relied on a conservative Strategist model scenario and Xcel's new
32 analysis indicates that Nobles actually results in cost savings instead of costs
33 exceeding benefits; my reasons for disagreeing with Mr. Alders are discussed
34 in Section III.

35 3. Staff did not include the benefits associated with bonus depreciation,
36 production tax credits, and renewable energy credits. Xcel should be allowed
37 the cost overruns; my reasons for disagreeing with Mr. Alders are discussed
38 in Section IV.

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

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

44

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

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

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

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

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

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

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

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

73 • The first significant reason is that a resource is being built on the basis of
74 policy. All the jurisdictions that Xcel serves do not have identical policies. As
75 described in my direct testimony, the policies are significantly different where
76 Minnesota, for example, has a 30% renewable energy mandate with penalties
77 for non-compliance and South Dakota has a 10% voluntary goal with no
78 penalties for not meeting that goal. When resources get built to satisfy the
79 renewable or other policies of a specific jurisdiction, the costs of such units
80 should not be borne by a jurisdiction that does not require them. This ends up
81 becoming a subsidy that is neither equitable nor reasonable. While the
82 jurisdictions where this mandated policy is promoted may recognize the value
83 in fulfilling such policy, it does nothing for the jurisdictions that do not promote
84 such policies. Rather, it becomes akin to a tax placed on the jurisdiction that
85 does not have such a policy.

86 • The second significant reason is the issue of how the cost effectiveness of the
87 resource that is built for policy or economic energy reasons is ascertained.
88 Mr. Alders states that Nobles was cost effective since the present value of the
89 revenue requirements ("PVRR") of the plan that includes building Nobles was

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

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

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

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

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

130 **III LIMITATIONS OF XCEL'S COST/BENEFIT ANALYSIS**

131
132 Q. **Please explain further the limitations associated with the cost benefit**
133 **analysis provided by Xcel in its petition to approve Nobles.**

134

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

141 Wind is an intermittent resource and since it is driven by weather conditions, it is
142 relatively unpredictable and has forecasting limitations. Unlike other types of
143 generation such as coal and nuclear, there is significant variability in output and
144 thus a high likelihood of forecasting error¹. As an example, Nobles output in 2011
145 was close to 20% less than what was predicted. **See Exhibit _____(KM-**
146 **R1), Schedule 1 Line 15, Columns B and D.** Such variability not only
147 significantly impacts the calculations of the economic energy savings but also
148 provides lesser confidence in the expected output and displaced energy saving
149 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.

150 Further, in the MISO market, hourly prices also vary by the hour. The economics
151 are also dependent on time of day and during which season it blows more than
152 others. It is conventionally known that wind blows more during the off peak hours
153 when power is cheaper and more in the non-summer months. As can be observed
154 through actual Nobles output for calendar year 2011, **[confidential begins]**

155 **[confidential ends]** of the energy is produced in the off peak hours and
156 non-summer months respectively. **See Exhibit _____(KM-R1), Schedule 1**
157 **Lines 18 and 20 Column B.**

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

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

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

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

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

175 Please see Attachment A to Data Request 4-04 which
176 provides a comprehensive look at the load and resources
177 picture. The referenced attachment includes line items for
178 year by year capacity deficiency and resource additions
179 broken out by fuel type. An energy deficiency has not been
180 provided.

181 The system is planned around economically meeting
182 forecasted capacity needs. A capacity deficiency will require
183 the addition of a new resource since the Company is
184 obligated to meet the expected peak and reserve margin.
185 The energy forecast, in contrast, does not necessitate the
186 need for a new resource. In general, an increase in energy
187 demand can be met by redispatching the system and
188 operating existing units at a higher capacity factor. As a
189 consequence, an explicit energy deficiency cannot be
190 calculated in the same manner as a capacity deficiency.

191 **See Exhibit _____(KM-R1), Schedule 2**

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

194 **A.** No, I do not. I believe that these runs were not conservative enough since as
195 mentioned earlier, the Strategist model tends to overstate benefits and on a
196 relative basis, there is lower confidence in the estimates due to the unpredictable
197 variability in wind output. Also, looking at the replacement energy savings in
198 2011, we are significantly upside down with respect to Nobles. In fact, the
199 levelized costs as stated in Mr. Alders' testimony for Nobles are more than twice
200 the savings that would be achieved by simulating the 2011 Nobles output using
201 MISO market prices since 2009. Further, to my knowledge, the market prices for
202 the NSP.NSP load zones have not averaged close to the levelized cost of Nobles

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

281 In this second step, Xcel included the benefits of the PTC as a deduction to
282 the PVRR of the gross (emphasis added) revenue requirements. **See Exhibit**
283 _____**(KM-R1), Schedule 3.** This Schedule shows the calculations of
284 the PVRR of the gross requirements and the benefits and lists the year by year
285 costs and benefits for Xcel's base case that includes a \$17/ton carbon
286 assumption. The only element that Staff changed in this Schedule was the
287 benefits associated with carbon. Staff utilized a \$4/ton carbon assumption
288 which results in the costs exceeding the benefits by \$123 million instead of
289 \$64 million shown in Xcel's base case in this Schedule. This Schedule also
290 shows the estimated year by year savings associated with fuel and non-fuel
291 factors.

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

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

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

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

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

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

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

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

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

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

331 A. Yes.