APPENDIX E

XCEL ENERGY RESPONSES TO INFORMATION REQUESTS

Xcel Energy℠

1414 West Hamilton Avenue
P.O. Box 8
Eau Claire, WI 54702-0008

July 14, 2004

Mr. John Wachtler
Minnesota Environmental Quality Board
658 Cedar Street, Room 300
St. Paul, MN 55155

RE: Xcel Energy's Application to the Minnesota Environmental Quality Board for a Route Permit from the Minnesota Environmental Quality Board for a 345 kV Transmission Line from the Split Rock Substation near Brandon, South Dakota to the Lakefield Junction Substation near Lakefield, Minnesota, a new Nobles County Substation near Reading, Minnesota and a 115 kV Transmission Line from the new Nobles County Substation to the Chanarambie Substation near Lake Wilson, Minnesota
MEQB DOCKET NO. 03-73-TR-XCEL
Data Request No. 1

Dear Mr. Wachtler:

In response to your June 23, 2004 letter requesting information for the above project, Xcel Energy has the following responses.

Request No. 1.

Please provide Xcel Energy's detailed siting criteria requirements for the Nobles County Substation, in addition to the information provided in your route-permit application, including (1) total land required, (2) minimum proximity to residences, (3) relationship to potential future wind energy turbine facilities, (4) roadway access for construction, (5) availability of nearby corridors or routes for potential future high-voltage transmission line interconnections, and (6) any other relevant consideration.

The siting criteria are attached to this letter.

Request No. 2

Please provide a detailed analysis of the reliability issues regarding the potential use of the Alliant 161 kV line as a double circuit line with a new 345 kV line to the extent possible. Please describe your analysis in any quantifiable or descriptive methods available. Also please describe the current status of your discussions with Alliant Energy regarding the potential reconstruction and rebuilding of that line as a double-circuit structure.

Xcel Energy

When reviewing potential routes for new transmission lines, Xcel Energy considers double circuiting with existing lines. It is proposed in cases where:

1. The existing line is a candidate for a rebuild due to age and condition.

2. The reliability of the system will not be compromised.

3. The additional cost of double circuiting is reasonable.

4. If another utility owns the line, they are in agreement with the proposal; and

5. There is adequate right-of-way available for a double circuit facility.

During the routing process we identified the possibility of double circuiting the new 345 kV line from Split Rock to Lakefield Junction with several existing 161 kV transmission lines. Alliant Energy owns the majority of these transmission lines. We consulted with Alliant Energy about the route proposal to double circuit with some of their lines prior to filing the application for a route permit. Alliant Energy supported using the route option with the understanding that Xcel Energy would pay for the new section of their 161 kV lines if that route were approved. Please see pages 19 and pages 105-106 of Xcel Energy's Route permit application. Alliant did not raise any concerns regarding reliability during construction so no detailed analysis was done. We also evaluated whether the higher cost to use double circuit structures and the extra time needed to tear down the existing line was reasonable. We believe that the expense to consolidate lines to minimize land use impacts is warranted. We are continuing to communicate with Alliant Energy about the project and keeping it appraised of the routing proceedings. If the route is selected, Xcel Energy will coordinate closely with Alliant Energy during the line design and construction to plan the outages to minimize risk to customers.

Request No. 3

The Nobles County Public Works Director has raised the issue of who bears the financial liability for moving any new transmission line poles due to a future county or township road expansion. Please provide Xcel Energy's normal procedures for determining whether to place transmission line poles within an existing roadway right-of-way and how the issue of potential future liability for moving the poles affects whether or how far poles are placed into adjacent yards or fields. Also, please provide a clarification of Xcel's current policy on this liability issue.

Response:

When paralleling roads and highways, Xcel Energy's general practice is to construct the poles on private easements, outside the existing public right-of-way. Xcel Energy typically acquires these easements through negotiations with the landowners and works with the landowners regarding final pole placement to minimize impacts. When determining

Xcel Energy

placement of the poles, we take into consideration the impact of the pole on the landowner's use of the property, which generally puts the poles adjacent to the property fence. We do discuss our plans with the local jurisdiction to take into any planned road expansion projects that may impact pole placement in the future. Should the right-of-way need to be expanded in the future for new federal, state, county or township road construction and require relocation of the poles, the law would determine who is financially responsible for those costs. Current law provides for reimbursement of utility relocation costs by the government jurisdiction if the utility is required to move its facilities that are located on private easements.

Should you have any questions regarding this response, please contact me at 715-839-4661.

Sincerely,

Pam J. Rasmussen

Pamela Jo Rasmussen
Permitting Analyst

Enclosure

Nobles County Substation Siting Considerations:

1. Proximity to 345 kV transmission line route and 115 kV transmission line route:
   This can be a "chicken and egg" situation since neither of the routes has been finalized yet. The location of the lines and substation site need to be coordinated to balance the line and substation siting issues.

   Siting the substation closer to the 345 kV transmission line will avoid higher cost and siting impacts. The 115 kV transmission line route and substation site location have more flexibility. The 115 kV line interconnect should be near a logical 345 kV line route.

2. Proximity to other transmission lines that may interconnect to substation:
   The substation is planned to include a tie (in/out connection) with the existing Heron Lake (MN) to Split Rock (Brandon, SD) 161 kV line. There are no specific plans at this time for this interconnection, but the planners see it as a project that would serve to further increase the reliability of the transmission system in the region. Locating the substation near that line will reduce the amount of additional transmission lines that would need to be built into the substation.

3. Proximity to primary roads:
   Xcel Energy will need large and heavy equipment to build the substation and will place heavy equipment in the substation. Smaller roads are often not adequately rated for heavy equipment. Such roads would need to be upgraded prior to construction, or maintained during and after construction to repair damage to the road caused by heavy equipment. Access after construction will also be important for maintenance and operation since this will be a major facility on the transmission grid. Xcel Energy would prefer a substation site on a primary road or within one mile of one.

4. Minimize impacts to residences:
   The site selection should try to maximize distance from homes. This will help to reduce noise and aesthetics impacts on residences. The substation sites presented in our application were between approximately 330 feet and 1,330 feet from residences. There is no set distance, but Xcel Energy would prefer a greater distance (such as 200 feet) away from the nearest home rather than a shorter distance such as 50 feet. We will also work to design the substation to locate the major facilities away from residences if possible.

5. Terrain:
   To reduce the need for extensive grading of the site, a site with a relatively flat terrain is preferred.

6. Larger parcel (greater than 40 acres):
A minimum of 15 acres is required to accommodate the size of the substation and to provide a small buffer area. We would prefer to have at least 20 acres for the substation. A site that is at least 40 acres would be better and we would be willing to purchase a larger site to provide a larger buffer. Other factors that support a larger substation site include:

a. To provide adequate space to site the substation away from nearby residences.
b. To allow Xcel Energy to develop a vegetative screen from residences.
c. To help accommodate additional transmission and wind feeder lines that will be entering substation.
d. To buffer the property from wind development. Some of our existing substations (such as Chanarambie and Buffalo Ridge) have had considerable wind turbine development around them, which can limit the ability to route transmission lines into the substation.

7. Avoid wetlands and wildlife areas:
Wetlands are avoided to minimize environmental impacts. Additionally, siting away from wetlands avoids the significant related costs of filling and mitigating impacts.

8. Site Near Wind Farm Projects to Maximize Wind Interconnection Opportunities and Minimize Interconnection Costs:
The Nobles County Substation has always been planned to have a section for 34.5 kV feeders to accommodate interconnections with wind energy turbines. We were requested by planning to site the substation near the Reading/Wilmont area, just north of Worthington, to keep the substation close to where the Split Rock-Lakefield Junction 345 kV line crosses the Buffalo Ridge landform.

The Nobles to Chanarambie 115 kV line needs to stay relatively near to the Buffalo Ridge to accommodate additional substation interconnects that will be required.

The Fenton substation siting will move forward later this summer once contracts with wind farm developers in this area are signed. A general site has been identified along segments W5 and E4, in the vicinity where the existing Xcel Energy 69 kV line heads west along 31st street. No major siting efforts or discussions with landowners have occurred.

The Community Wind South Project has decided to tie into the Nobles County sub and is basing its plans on the proposed sites we have provided. The project picked its site partly based on the proposed substation sites in Xcel Energy's

application. Moving the substation site would increase the cost and length of 34.5 kV feeders to tie their wind generators into the system.

9. Availability of nearby corridors or routes for potential future high-voltage transmission line interconnections:
   Since this will be a major substation, it should be expected that additional transmission lines would tie into the substation. The layout of the substation already has locations for the Heron Lake to Split Rock 161 kV line to connect in the future. We would also like ample space surrounding the substation for 34.5 kV wind feeder lines to enter the substation. It is uncertain what will be proposed, but it is reasonable to assume that additional 345 kV transmission lines will be considered. At this time we would expect that such lines would go north towards the Twin Cities area or south towards Iowa. The main way to address this issue now is to acquire adequate land for the substation and buffer and to give consideration to these anticipated future lines when siting the transmission lines requested in this docket. .

10. Willing seller:
    Xcel Energy would prefer to have a willing seller. Several landowners interested in selling land for the substation site have approached us. At this time, Xcel Energy would prefer to have a general area identified for the substation and work through the specific site location with the landowner. We may get more specific as the project moves forward.

7/13/04
Xcel Energy

414 Nicollet Mall
Minneapolis, Minnesota 55401-1993

Environmental Quality Board
JUL 2004

July 19, 2004

Mr. John Wachtler
Minnesota Environmental Quality Board
658 Cedar Street, Room 300
St. Paul, MN 55155

RE: Xcel Energy's Application to the Minnesota Environmental Quality Board for a Route Permit from the Minnesota Environmental Quality Board for a 345 kV Transmission Line from the Split Rock Substation near Brandon, South Dakota to the Lakefield Junction Substation near Lakefield, Minnesota, a new Nobles County Substation near Reading, Minnesota and a 115 kV Transmission Line from the new Nobles County Substation to the Chanarambie Substation near Lake Wilson, Minnesota
MEQB DOCKET NO. 03-73-TR-XCEL
Data Request No. 2

Dear Mr. Wachtler:

In response to your June 29, 2004 letter requesting information for the above project, Xcel Energy has the following responses.

Request No. 4.

Please explain specifically how the location of potential wind farm projects in the area affected the location of Xcel Energy's proposed Nobles County substation sites, if at all. Please also specifically explain, if possible, how potential wind farm projects in Fenton Township or other townships affected the location of Xcel Energy's proposed routes for the 115-kV transmission line, if at all.

When determining the location of the Nobles county substation, we focused on areas that provided a reasonable connection for the 115 kV and 345 kV routes. We also kept the site near Buffalo Ridge, but did not pick any sites based on potential wind generation projects.

For the Chanarambie to Nobles County 115 kV transmission line siting, we kept the route near Buffalo Ridge since that is where the highest potential for additional wind generation projects is located. The Xcel Energy planning section identified a general area about 5 miles in diameter of where the Fenton substation may be located, but we did not have any information regarding specific locations of proposed wind generation projects.

Request No. 5

Please briefly describe any transmission line routes Xcel Energy reviewed but dropped from consideration as it prepared its route-permit application, and the reasons the routes were dropped. Please use maps where possible. For purposes of this request, I am not referring to the alternative routes that are listed in the route-permit application as "Not Used" or "Rejected," but other alternative routes, if any, you may have considered in your screening process but dropped for various reasons. For example, Section 4.2 of the route-permit application mentions that some potential routes were "dropped from consideration" due to proximity to homes or wildlife management areas used by large populations of waterfowl. The purpose of this request is to minimize spending unnecessary time during the scoping process reassessing routes Xcel Energy has already dropped from consideration for good reasons.

When referring to routes dropped from consideration, we are usually referring to route segments, not an entire route. The "routes" described in Section 4.2 and Appendix E refer to the "Not Used" or "Rejected" segments you mention above. There were some potential routes that were looked at briefly, but not analyzed since they did not address our siting criteria. We briefly looked at routing the Chanarambie to Nobles County 115 kV line straight south from Chanarambie substation to the Alliant 161 kV line and I-90. However, this placed the line a considerable distance from Buffalo Ridge and the general areas where Xcel Energy wanted to site the Fenton and Nobles County substations and therefore, we did not study it. In addition, we limited our options for review to the east of the proposed 115 kv routes in order to minimize the number of state and federal wildlife areas the lines would cross.

There were several preliminary routes that were considered and rejected prior to the public meetings. They were not on maps shown to the public:

- Xcel Energy moved segment A-W1 from Erickson Avenue to Hesselroth Avenue (2 miles east): moved to provide a more direct route to the substation and to avoid additional homes
- Segment E2 originally went north on King off of 266 then west on 140th. It was changed to go north on Knauf Avenue: Moved to utilize more of Hwy 266 and to move away from natural resource areas to the east
- Xcel Energy rejected a segment that ran diagonally from the southeast corner of Section 22, Twp 104, Range 42 up to the middle of the northern edge of Section 4 of Twp 104, Range 42: Few cross-country routes were considered since they would located poles into the fields.
- At the Murray and Nobles County border, Xcel Energy moved segment E3 from the east and north edges of Section 33, Twp 105, R42 to the south and west edges of the section: This minimizes the number of homes and waterways that need to be crossed.
- At the Murray and Nobles County border, segment W5 was moved from the east and north edges of Section 32, T105, R42 to the south and west edges of the

section: This was necessary due to the changes associated with segment E3 to keep the west and east routes as separate routes.

These routes were on initial maps shown to the public at public information meetings:

- Segment I7 was originally 1/4 mile south. Locating the line on the quarter section required new ROW and did not avoid homes any more than being on the road did.
- Segment T12 - see map B.27 in the application. The DNR had concerns about waterfowl (this is described in greater detail in Section 4.3 of our route permit application.
- AW1 was originally ½ mile east of Hesselroth Avenue but was relocated to the west once the landowners informed us that there were wind rights in the middle of those sections.

We will provide you maps showing these routes marked on them by July 23, 2004.
Should you have any questions regarding this response, please contact me at 715-839-4661.

Sincerely,

Pamela Jo Rasmussen
Permitting Analyst

C: Lisa Agrimonti
Grant Stevenson
Angela Piner

Xcel Energy℠

1414 West Hamilton Avenue
P.O. Box 8
Eau Claire, WI 54702-0008

September 15, 2004

John N. Wachtler
Minnesota Environmental Quality Board
658 Cedar Street
St. Paul, MN 55155

Re: Docket MEQB No. 03-73-TR-Xcel

Dear Mr. Wachtler:

Here are Xcel Energy's responses to EQB staff's information requests numbers six (6) and seven (7) regarding the Split Rock to Lakefield 345 kV & Chanarambie to Nobles County 115 kV transmission line project.

Request No. 6.

Please provide more detailed information regarding the potential for waterfowl, raptors, or other birds to be injured or killed by colliding with transmission lines. Please include information regarding what types of birds are most affected, what might be a safe distance between bird flyways and transmission lines, the relative effectiveness of measures that can be taken to reduce risks (such as adding diverters or modifying structure design) and any other aspect of the issue that you think is relevant. The EQB will, of course, independently assess the issue with the help of staff from the Department of Natural Resources. But since Xcel Energy has no doubt developed expertise in this area, we want to make sure we take advantage of your information, too. If the response is likely to be too voluminous, please call me to discuss what information you have that might be most up to date and useful in comparing the routes and mitigation options for this specific project.

Xcel Energy has actively been working on bird collision issues for several years. Each of Xcel Energy's operating companies has been working cooperatively with state and federal authorities to reduce migratory bird deaths from interactions with company facilities. The two major reasons this work has been done are to comply with state and federal laws that protect birds and to reduce the risk of outages on our system. This saves us money by reducing damage to our equipment, and supports Xcel Energy's efforts in being stewards of the environment.

On April 19, 2002, Xcel Energy signed a Memorandum of Understanding (MOU) with the United States Fish & Wildlife Service (USFWS or Service). The MOU outlines a cooperative, non-adversarial partnership between Xcel Energy and the USFWS to address avian issues related to the Company's facilities. This agreement is similar to one another Xcel Energy operating company, Public Service Company of Colorado (PSCO), had in place with the USFWS dating back to 1986. While the Company is party to the MOU, the Service will deem the Company to be sincere in its efforts to pro-actively protect migratory birds in

accordance with federal laws. The Service will exercise its discretionary authority not to submit for prosecution of the unlawful taking of migratory birds, which occur on Company property or facilities, unless the Company commits a material breach of the MOU. An example of a material breech would where we refused to modify a structure where repeated electrocutions were occurring (which has been an issue with some power companies). This approach will allow Xcel Energy to pursue long-term plans (Avian Protection Plan (APP)) to improve facilities and reduce risk to birds, without fear of prosecution for bird deaths that may still occur.

Xcel Energy has completed the APP for Colorado and is beginning work for the APPs for its other three operating companies: Southwest Public Service, Northern States Power – Minnesota and Northern States Power – Wisconsin. The major focus of this work will be on distribution facilities, primarily distribution lines. However, the NSPM/NSPW APP will focus on the potential collision issues on transmission lines and osprey nesting issues.

In the Company's experience, situations where collisions have a higher potential to occur involve four primary factors: population, habitat, species, and forage. These four factors are taken into account when routing and siting transmission lines. We do not have a specific distance we consider "safe" when addressing these issues. Each case has to be assessed on an individual basis since populations, habitats, species, and forage areas vary from location to location. Commonly Xcel Energy works with the various resource agencies, such as the Minnesota Department of Resources (DNR), for guidance on where these areas may occur.

The common types of birds that are typically involved in collisions are the larger waterfowl, which include trumpeter swans, Canada geese, pelicans, cranes and mallards. In general, it is most effective to avoid placing lines near major flyway areas, especially those where birds roost and feed. Distances can vary and depend on terrain and the location of the flyway in relation to the transmission line route

Xcel Energy has experienced specific instances of collisions with trumpeter swans and pelicans. The trumpeter swan locations include Hudson, Wisconsin Monticello, Minnesota. Additional information on these two projects can be provided to you upon request.

Xcel Energy has met and corresponded with the Environmental Assessment Ecologist, Shannon Fisher, Ph.D., who is the DNR representative in the area where the Project will occur, along with other local DNR wildlife management staff. This helped the Company identify Minnesota DNR areas of concern based on the proposed routes, and also identified areas for and types of mitigation appropriate for the project. In response to concerns about large waterfowl populations along this project, Xcel Energy attempted to site the lines with the following criteria in mind:

- Avoid placing lines directly adjacent to major flyway areas used for feeding and resting. Heron Lake is one of the major areas along the project routes. We moved the line several miles away from the Heron Lake area to keep the line away from the area where birds would fly in or out of the site.

- Attempt to locate lines away from managed wildlife habitats. Along several portions of the 115 kV line corridor there are numerous WMAs. To balance the attempt to avoid WMAs with other siting criteria, we did place some routes near WMAs. For example, Segment W5 on the Chanarambie to Nobles 115 kV line is adjacent to the Chandler WMA. However, there is also an existing 69 kV line there that can be double circuited with the new line. In addition, the DNR reviewed the route options and did not have major concerns. .

In addition to siting considerations, there are two primary methods that Xcel Energy can undertake to minimize collision risks:

1. Structure type: Studies have shown that transmission line designs that place the conductors on a parallel plane are effective in reducing collisions since it makes the wires more visible to birds. H-frame structures are commonly used in areas where this type of line design is warranted.
2. Marking lines: Xcel Energy has found that Swan Flight Diverters (SFD) are effective in marking the shield wires on the lines which can be especially difficult for birds to see during low light conditions. Xcel Energy placed SFDs at two sites Hudson Wisconsin in the early 1990s and near Monticello, Minnesota, and MN in 2004. Other measures considered by resource agencies include "flappers," which are small devices attached to the shield wires. Xcel Energy only uses those devices on distribution line facilities for two reasons: they are easier to install on distribution lines and the corona from higher voltage lines can break down the materials in these devices.

We have enclosed two documents for the EQB staff to use that Xcel Energy also uses for guidance, "*Mitigating Bird Collisions With Power Lines: The State Of The Art In 1994*" and "*Suggested Practices For Raptor Protection On Power Lines: The State Of The Art In 1996*". These documents were published through funding from the Edison Electric Institute (EEI) and the Avian Power Line Interaction Committee (APLIC). APLIC is a group consisting of several utility companies, EEI, and the U.S. Fish and Wildlife Service. The recommendations in these books are based on the science at the time of publication. Xcel Energy continues to follow the science on this issue and investigates new options as it deals with these issues. We have a group of employees, including myself, who work on this issue for the Company.

Request No. 7

Please provide additional details regarding the estimated costs of constructing Route 1 (Interstate Route) versus the Route 2 (Alliant Route). Table 3 on Page 17 of the Xcel Energy permit application indicates that the Interstate Route is approximately $8.5 million less than the Alliant Route. Please provide further information and cost breakdowns regarding the two routes, including whether reduced maintenance and replacement costs for the existing older 161-kV structures over the next decade or so were factored into the cost analysis. If the potential for reduced future maintenance and replacement costs for the 161-kV line were not factored into Xcel Energy's analysis, please provide such an analysis or explain why you believe such an analysis is not possible.

Xcel Energy estimated the costs for the transmission line routes overall using a cost per mile estimate. A breakdown of each segment's cost estimate is available in the Application starting on page E.26. These route costs of are also summarized in Table 3 on page 17. As would be expected, double circuit 345/161 kV structures will cost more per mile ($650,000) than single circuit 345 kV structures ($500,000). The overall costs of the project varies primarily on the length of the line and the number of miles of double circuiting.

For the Alliant Energy route, Xcel Energy would be double circuiting with about 67 miles of existing 161 kV line. For the I-90 route, Xcel Energy would be double circuiting with between 19 and 24 miles of 161 kV line (please see Table 4, page 32 of the Application). Therefore, if one assumes the difference in the two routes is about 47 miles of double circuiting and the cost difference is $150,000 per mile for double circuiting versus single circuiting [pam, please confirm] the difference in overall cost attributable to double circuiting is $7,050,000. The other key difference is in the length of the routes. Since the I-90 route is slightly longer, it costs slightly more (about 3 miles or $1.5 million).

A description of the summary of the cost per mile for engineering and survey (E&S) costs, right-of-way costs, and line removal costs used for the project routes is attached as Attachment 1. E&S costs include the estimated costs for engineering, surveying, materials, labor and equipment to install the foundations, poles, conductors, etc. If MEQB staff wants additional information for the costs, Xcel Energy staff would be happy to meet and discuss this in more detail.

The double circuiting with existing 161 kV lines also has the potential to reduce the overall operation and maintenance costs since the existing 161 kV line would be maintained along with the 345 kV line as part of the $1000 per mile cost. However, the potentially reduced operation and maintenance costs of the 161 kV lines were not factored into the overall costs of building the transmission lines. There are several reasons why we did not factor those costs into our analysis: (1) We do not, as a general practice, factor in the potential to reduce operating and maintenance costs of existing lines for any project route comparisons; (2) there is no available information as to what these savings would be for Xcel Energy or Alliant Energy; (3) the majority of reduced costs would be Alliant Energy's operating costs; and (4) generally the costs are not significant when compared to the overall capital costs to build the line and would not significantly impact our selection of the preferred route.

As noted in item number 2 in the previous paragraph, Xcel Energy does not have any plans at this time to replace its section of the Heron Lake to Split Rock 161 kV transmission line located on the western end of the route. Xcel Energy contacted Alliant Energy on their plans. Their planner Ken Leier responded that Alliant Energy does not have plans to rebuild either the Lakefield - Spencer 161 kV line or Heron Lake - Split Rock 161 kV lines. Alliant Energy does not have an annual estimated maintenance cost for these lines over the next decade.

In support of item number 4, we offer the following information. As stated on page 18 of Xcel Energy's Application, the yearly operation and maintenance costs for a 345 kV line are approximately $1000/mile and for a 115 kV transmission line $500/mile. These costs apply to Xcel Energy's system and we would expect Alliant Energy's 161 kV transmission lines to have a similar cost per mile.

For the Alliant Energy route, Xcel Energy would be double circuiting with about 67 miles of existing 161 kV line. For the I-90 route, Xcel Energy, would be double circuiting with between 19 and 24 miles of 161 kV line (please see Table 4, page 32 of the Application). Therefore if the Alliant Energy route were selected, about 43 to 48 miles of existing 116 kV transmission lines would be removed and the associated maintenance costs "avoided". Using the 115 kV estimates of $500/ mile per year that would translate to approximately $21,500 to $24,000 of "reduced" yearly maintenance costs.

As noted in our Application, the Company does not believe the Alliant route is the most reasonable prudent alternative for the new line because of the potential financial and other impacts caused by the schedule for the Alliant route. If the Alliant route were chosen, then the project could see a delay in the in-service date by several months, if not years due to outage coordination requirements. A delay would not only cost increase the cost of the project for ratepayers, but could also adversely impact private wind developers who may have to delay their in-service dates.

Please feel free to contact me at 715-839-4661 to discuss these issues in more detail.

Sincerely,

Pamela J. Rasmussen /R

Pamela Jo Rasmussen
Permitting Analyst

Attachments

November 9, 2004

John N. Wachtler
Minnesota Environmental Quality Board
658 Cedar Street
St. Paul, MN 55155

Re: Docket MEQB No. 03-73-TR-Xcel

Dear Mr. Wachtler:

Here are Xcel Energy's responses to EQB staff's information requests numbers eight (8) and nine (9) regarding the Split Rock to Lakefield 345 kV & Chanarambie to Nobles County 115 kV transmission line project.

Request No. 8

Xcel Energy states in the application that the transmission lines will be built in accordance with the National Electrical Safety Code (NESC) requirements. During scoping meetings, however, some landowners and residents along potential routes expressed concern about how close transmission lines might be to their homes, and requested more detailed information about the minimum safety setbacks required for residences, farm buildings, trees, and other buildings. Please provide the minimum NESC or other applicable requirements (such as NERC) for the transmission lines that will be constructed for this project. In other words, please identify the minimum safety requirements in relation to structures and trees, and a summary of the basis for these requirements.

Table 1 is attached which provides clearances required for the 345 kV and 115 kv transmission lines which notes both NESC and Xcel Energy design minimum clearances for various conditions. Xcel Energy generally designs transmission lines to more conservative minimum clearances than the NESC requirements. Some clearances are mandated by MN/DOT. Xcel Energy has initiated more conservative clearances than NESC in cases where we have determined we need additional clearances to protect our facilities from damage.

Request No. 9

Please provide an update of the Company's ongoing "beyond 825" wind outlet transmission studies for Southwest Minnesota. Please summarize study results to date for both short-term (2008-2009) and long-term transmission needs, including an analysis of whether a particular route or route-segment under consideration for the current 345/115 kilovolt project might be more compatible with likely future transmission projects than other potential routes under consideration.

There are four transmission studies study's underway or just being initiated that may have some influence on the longer range design of transmission facilities in SW Minnesota. Three of these studies are known as the Northern MAPP Exploratory study, The Northern Iowa Exploratory study, and the CAPX 15 year study.

These three studies are all designed to explore some long range concepts to provide high level information on what kinds of efforts are required to achieve possible goals such as increasing transmission capacity from North and South Dakota, exporting large blocks of wind generation from primarily northern Iowa to the twin cities or to the east, or in the case of CAPX to identify what may be needed to serve the potential Minnesota load growth over the next 15 years. These studies are not designed to recommend any specific projects, alternatives or routes. Additional studies will be required after these efforts are complete to finalize details of additional facility needs and to support any permitting efforts that would be required.

For example, in the Northern MAPP Exploratory Study the analysis is looking at (among many concepts) what possible increase in transmission capacity to the Twin Cities market may be achievable by a 345 kV line from western North Dakota, across the state to eastern North Dakota and down to the Twin Cities. This is being compared to a similar line from western North Dakota southeast through eastern South Dakota and than east to the twin cities. Several questions are being asked: "Does one perform better than the other?" "Does one provide more flexibility for possible wind generation expansion in North or South Dakota?" "How much capacity increase is achievable with a single new 345 kV line?"

Once these types of high level questions are answered, proposals can be identified and basic concepts chosen that would feed into the development of more detailed studies. At that time more actual project proposals would be developed including possible route considerations.

There is also another study underway to investigate what it might take to allow some additional wind generation development to continue above 825 MW while the regional concept studies are underway and completed. This study was just kicked off at the Missouri Basin – Sub-Regional Planning group meeting and results are not expected until early 2005.

Given this, we have no specific projects to identify that would warrant consideration of alternative structure design configurations at this time.

Please feel free to contact me at 715-839-4661 to discuss these issues in more detail.

Sincerely,

Pamela Jo Rasmussen
Team Lead, Siting & Permitting

Xcel Energy Transmission Line Clearances
345 kV and 115 kV Transmission Lines

	345 kV Transmission Lines		115 kV Transmission lines	
Condition	**NESC minimum clearance to conductor**	**Xcel Energy design minimum clearance to conductor**	**NESC minimum clearance to conductor**	**Xcel Energy design minimum clearance to conductor**
Roads, streets, agricultural lands, forests traversed by vehicles	24'-9" (vertical)	34' (vertical	20'-1" (vertical)	25' (vertical)
Water areas not suitable for sail boating	23'-3" (vertical)	34' (vertical)	18'-6" (vertical)	25' (vertical)
Water areas suitable for sail boating - 20 to 200 acres	39'-9" (vertical)	40'(vertical)	30'-1" (vertical)	31' (vertical)
Water areas suitable for sail boating - 200 to 2000 acres	45'-9" (vertical)	46' (vertical)	36'-1" (vertical)	37' (vertical)
Building roofs not accessible to pedestrians	18'-9" (vertical)	No buildings allowed in easement.	14'-1" (vertical)	No buildings allowed in easement
Building roofs accessible to pedestrians	19'-9" (vertical)	No buildings allowed in easement.	15'-1" (vertical)	No buildings allowed in easement
Building walls, projections, balconies	10'-9" (horizontal)	13'-9" horizontal from conductor blowout. No buildings allowed in easement.	6'-1" (horizontal)	9'-1" horizontal from conductor blowout No buildings allowed in easement.
Grain Bin vertical clearance	18' above highest fill point.	No grain bins allowed in easement.	18' above highest fill point	No grain bins allowed in easement
Grain Bin horizontal clearance	Highest bin height + 18'.	No grain bins allowed in easement plus highest bin height 18' horizontal clearance.	Highest bin height + 18'	No grain bins allowed in easement Highest bin height + 18' horizontal clearance
Tree horizontal clearance	No specific requirement.	20'(vertical). 15' maximum mature height of trees within easement. No trees within 25' of structures or within maintenance access roads.	No specific requirement	15' vertical 15' maximum mature height of trees within easement No trees within 25' of structures or within maintenance access roads
Tree vertical clearance	No specific requirement.	13'-9" horizontal from conductor blowout. 15' maximum mature height of trees within easement. No trees within 25' of structures or within maintenance access roads.	No specific requirement	9'-1" horizontal from conductor blowout 15' maximum mature height of trees within easement No trees within 25' of structures or within maintenance access roads

Sources: NSP Transmission/Construction Standard TR 0101 for clearances to structures, roads, etc. This standard notes NSP's minimum design clearance at highest operating temperature of conductor for various conditions (road, building, lake, etc.) under the conductors and also notes the NESC minimum clearances. NSP Transmission Standard TP 0401, TP0402, TP0403, TP0404 and TP0405 for clearances to trees. Xcel Energy is currently reviewing its company wide standards for tree trimming.

Xcel Energy℠

1414 West Hamilton Avenue
P.O. Box 8
Eau Claire, WI 54702-0008

November 15, 2004

John N. Wachtler
Minnesota Environmental Quality Board
658 Cedar Street
St. Paul, MN 55155

Re: Docket MEQB No. 03-73-TR-Xcel
EQB Data Request Number 10

Dear Mr. Wachtler:

Here are Xcel Energy's responses to EQB staff's information request number ten (10) regarding the Split Rock to Lakefield 345 kV & Chanarambie to Nobles County 115 kV transmission line project. We are available to provide additional information or meet with you in person to discuss any questions in more detail.

1. *Route segment 18 in the area near Post's house on I-90 in Section 18 of Ewington Township in Jackson County (Map B.17). Please evaluate the approximate cost and feasibility of crossing I-90 to the south side and then crossing back to the north side before or at the point that crossing segment C6 connects to segment 18.*

EQB Request No. 10 – Map 1 is enclosed showing this location. Xcel Energy has reviewed this option using these maps.

As you are aware, the proposed corridor is shown in yellow on the map. While the detail is not shown on the map, it is likely that the transmission line would go around the on/off ramp for County Road 9. As we have discussed previously, Xcel Energy plans to go around any of the on/off ramps along I-90 unless we can span them or get permission from the MN DOT.

A possible route to avoid the Post Home on the north side of I-90 is shown in magenta. This has to be a short reroute since there are two farmsteads on the south side of I-90 that we would try to avoid. This route segment is approximately 700 feet longer than the route on the north side of I-90 and requires four dead end angles. This would add about $425,000 to the cost of the project.

Xcel Energy has significant concerns with this reroute along the south side of I-90 in this area. Listed below is a summary of concerns and comments about this reroute:

- It will be difficult to avoid impacts to the Little Sioux River Tributary and a potential wetland area based on the aerial photos.

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- There are two farmsteads on the south side of I-90 that are much closer than the Post farmstead. The Post house is approximately 290 feet from the I-90 fence. The house for the farmstead near the I-90 and County 9 intersection is approximately 275 feet from the south fence of I-90 and the house for the next farmstead to the west is approximately 285 feet from the south I-90 fence.
- Routing the line on the south side of I-90 would be approximately 700 feet longer than the route on the north side of I-90.
- We would need to cross I-90 twice within one mile. We would prefer to avoid multiple crossings of I-90 due to constructibility and access issues, especially in situations where we cross in areas where there is no road crossing of the Interstate.
- The proposed reroute to the south would add a total of approximately $425,000 to the project cost.

Xcel Energy does not support this potential reroute since the Company believes the proposed line is a reasonable distance from the Post farm and the additional costs and impacts of moving the line are not warranted under these circumstances.

2. *Route segment I5 in Nobles County just west of Adrian, near some residences and rest stops (Map B.10). Please provide an initial evaluation of the cost and feasibility of crossing I-90 so as to be on opposite side from residences in that area, as well as more detail regarding the feasibility of rerouting the existing 69-kV line if this route is used.*

After discussing this option with you by phone on November 9, we agreed that a response to this data request was not necessary due to additional information. There are no homes closer than 1000 feet along the route where it is on the south side of I-90. EQB Request No. 10 – Map 2 shows this area in more detail.

3. *Route segment I5 on 1-90 south of Luverne (B.8). Please provide more detailed evaluation of which side of 1-90 is preferable in this area, including an evaluation of how to best avoid conflicts with this expanding industrial area.*

EQB Request No. 10 – Map 3 is enclosed which shows this area in more detail. We have reviewed this area and believe at this time the south side of the Interstate will allow us to best avoid conflicts in this area. However, as you are aware, it is a tight area and after discussing it in more detail with the team, we offer to restrict the line to the south side of I-90 in this area. Xcel Energy does have survey data for this area and can gather more specific information in this area to determine if there are some conflicts. It will take some preliminary design work that we believe we could provide at the public hearings in January.

4. *Route segment W6 along 91st street in front of Post's house at MP32 (D.11). Please assess the feasibility and cost of consolidating a new 115-kV line with both the existing 69-kV line and the feeder line on one set of poles on the north side of 91st street should this route be selected.*

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EQB Request No. 10 – Map 4 & 5 shows the location of the Post house. This option was also proposed to Xcel Energy at the public scoping meetings in Chandler last year. It is feasible for Xcel Energy to consolidate the 115 kV and 69 kV lines on one structure—this is the proposed plan in this location. It may be feasible for Xcel Energy to move the line to the north side of 91st street and consolidate the line with the existing double circuit 34.5 kV feeder line in that location. We have marked a potential reroute in red on the north side of 91st street beginning at MP 31.

Listed below are our feasibility and cost concerns for this proposal:

- The double circuit 34.5 kV feeder lines are owned by another party. We are not certain at this time if the owner would support consolidation of all the lines on one structure.
- We do not know what type of outages, if any, we could have for replacing the double, circuit 34.5 kV line with the new line in that area. In addition, some parties have expressed concerns with putting that many lines on one pole in an area where it could have several impacts on wind outlet if there were an outage.
- Placing that many lines on one structure creates clearance, safety and reliability concerns for Xcel Energy. In order to perform maintenance on any of the lines, it is likely we would have to take outages of one or all of the other circuits. In addition, multiple circuits create safety concerns for our linemen working on them. Given this, Xcel Energy limits the number of these types of structures on its system, and only builds them in areas where ROW and access issues limit our options.
- As far as costs, we would expect that adding the double circuit 34.5 kV lines to the structures would add about $70,000 per mile. We would need two dead end angle structures to cross 90th street that would add approximately $150,000 to the cost of that route segment. Therefore, it would be about $220,000 to build the option we have shown in red on EQB Request No. 10 – Map 4 & 5.

5. *Route segment W6 (D.11). Some residents are requesting a more narrow corridor width than Xcel has requested the area between 10th Avenue and the County Line Avenue, and some have expressed a preference for using County Line (although not the resident on that road). Please provide more detail regarding what type of consolidation with the feeder lines or other transmission lines is possible, and what considerations need to be taken into account, including access to the substation. Please note that I am not requesting that the detailed engineering analysis be completed now, just more information on what the possibilities are for consolidation. The issue here is whether it is possible or desirable to complete more detailed design work and have more discussion with local residents now, before the route permit is issued. Or whether it is better to defer detailed discussion with local landowners on exact route until after permit is issued. One possibility is to narrow the potential corridor somewhat, but still allow flexibility in final detailed design.*

Xcel Energy personnel reviewed this option in the field this past week. We have marked the locations of the existing 34.5 kV feeder lines as light blue lines on EQB Map No. 10 –Map 4

Xcel Energy

& 5. We still believe our proposed route centerline is a good option. We have marked another potential route centerline in light purple. This route goes further to the east and along County Line road. We need to enter the Chanarambie substation from the west, so this option and the one we proposed are feasible and acceptable. We do not plan to go any further north on 10th Avenue for segment W6 than we have proposed, so that area is not under consideration. Xcel Energy would still prefer to have flexibility in siting the line since we expect other development in this area.

6. *Route Segment E5 (D.11). Please provide additional detail regarding which side of the road the new 115-kV would best be placed if that route segment is selected, and the potential for consolidation of new line with the existing feeder lines.*

EQB Request No. 10 – Map 6 shows this area in more detail. We had proposed to move the line from the south side of the road at MP 31 and stay on the north side until MP 36. After comments from landowners along this route and additional review we have determined that we would prefer to move back to the south side of the road. There are two farmsteads at MP 34.5 that are owned by the same family. The farmstead on the south is not occupied and is the location those landowners prefer. We would cross to the south side of the road at MP 34 as shown in light blue on the map. We eventually move to the south side of the road at MP 36, so we do not expect additional costs with this change.

As far as potential consolidation with the existing feeder lines, Xcel Energy would refer you to Question 4 for potential issues that may arise. Xcel Energy does not know at this time if we would consolidate with the existing feeder lines, but would be willing to consider it during the final design of the route.

7. *Route Segment J5 and J6, added in the scoping decision. Both of these route segments, as described in the scoping document, would include a wide corridor in the route permit in order to allow Xcel Energy to work out the best detailed route with nearby residents and landowners should the route segment be chosen by the EQB. However, more detailed review by your engineers would be helpful now in order to provide an initial assessment of the feasibility, cost, and potential routes in these areas.*

EQB Request No. 10 – Map 7 shows this area in more detail. Xcel Energy believes you meant Route Segments J4 and J6. If the EQB selected Route Segment J4 we would prefer to place the line along the road to the west of that segment. Since that does not appear to be an option, we would then place the line in the location marked on the map in magenta. This places it on a more logical division along the quarter-quarter section. We would not be able to span the fields in a way that would minimize impacts to farming operations for Segment J4.

If the EQB selected segment Segment J6, we would follow the western edge of the area marked by the boundary of Segment J6. This would allow us to avoid the low areas on the eastern edge of this segment.

Xcel Energy's main concern with any of the additional segments in this area is that they reduce the use of shared ROW proposed in this area with the Alliant Energy Lakefield Junction to Triboji 161 kV line.

It also appears to Xcel Energy that the only advantage to these additional routes is that they move the line away from one set of landowners and next to a different set of landowners.

Please feel free to contact me at 715-839-4661 if you have any questions.

Sincerely,

Pamela Jo Rasmussen
Team Lead, Siting & Permitting

Enclosures

N

0 1000 2000 3000 Feet

1" = 2000 feet

October 2004

Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Windfarm Transmission Improvement Projects

EQB REQUEST No. 10 - Map 1
DETAILED ROUTE MAP

Xcel Energy
NORTHERN STATES POWER

N

0 1000 2000 3000 Feet

1" = 2000 feet

October 2004

Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Windfarm Transmission Improvement Projects

EQB REQUEST No. 10 - Map 2
DETAILED ROUTE MAP

Xcel Energy
NORTHERN STATES POWER

N

0 1000 2000 3000 Feet

1" = 2000 feet

October 2004

Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Windfarm Transmission Improvement Projects

EQB REQUEST No. 10 - Map 3
DETAILED ROUTE MAP

Xcel Energy
NORTHERN STATES POWER

N

0 1000 2000 3000 Feet

1" = 2000 feet

April 2004

Nobles County to Chanarambie 115kV Line
Xcel Energy
Windfarm Transmission
Improvement Projects

EQB REQUEST
No. 10 - Map 4 & 5
DETAILED
PROJECT MAP

Xcel Energy
NORTHERN STATES POWER

N

0 1000 2000 3000 Feet

1" = 2000 feet

October 2004

Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Windfarm Transmission Improvement Projects

EQB REQUEST No. 10 - Map 6
DETAILED ROUTE MAP

Xcel Energy
NORTHERN STATES POWER

Via email and U.S. mail

January 11, 2005

John N. Wachtler
Minnesota Environmental Quality Board
658 Cedar Street
St. Paul, MN 55155

Re: Docket MEQB No. 03-73-TR-Xcel
EQB Data Request Number 14

Dear Mr. Wachtler:

Here are Xcel Energy's responses to EQB staff's information request number fourteen (14) regarding the Split Rock to Lakefield 345 kV & Chanarambie to Nobles County 115 kV transmission line project. We are available to provide additional information or meet with you in person to discuss any questions in more detail. We are currently working on completing our responses to your other requests.

Request No. 14 – Advisability of Ordering Structures Capable of Double-Circuiting (345 kV Line):

Xcel Energy appreciates comments from organizations and individuals who are considering the future transmission needs for southwestern Minnesota. As the amount of wind generation grows, we also anticipate the need for additional high voltage transmission lines between the Buffalo Ridge and the major Twin Cities load center.

However, we believe that requiring poles capable of double circuit between Split Rock and Lakefield Junction would not be a prudent use of resources. It is unlikely a second circuit would ever be placed on the structures as a means to improve transmission capacity in the region. Current planning studies suggest that the next new east-west high voltage line development should occur several counties north of the Split Rock to Lakefield Junction corridor.

In particular, the MISO's Northwest MAPP Exploratory Study that is presently underway contemplates a high voltage line development in a corridor from the Watertown/ White, SD area to the Twin Cities metropolitan area (in addition to others farther north).

No planning studies currently anticipate a new high voltage line as far south as the Split Rock to Lakefield Junction corridor. This includes the MISO's Northwest MAPP Exploratory Study, the Northern Iowa Exploratory Study or the Minnesota Utilities CAPX 202 study. This primarily due to two considerations:

A White-Twin Cities 345 kV line (or equivalent) line would complete a 345 kV high voltage loop of the 'Ridge. This provides a redundant high voltage pathway to the Twin Cities load center. In contrast, a double-circuit line on Split Rock-Lakefield Jct. would not provide similar reliability, since both circuits would be subject to "common mode" failures (see Attachments 1 and 2).
Development of wind generation on the Buffalo Ridge is expected to occur both north and south of the existing developments, as suggested by the interconnection requests presently in the MISO and WAPA transmission interconnection queues. The existing 345 kV line is sufficient to support the developments on the south. However, adding a second 345 kV circuit on the Split Rock-Lakefield Jct. corridor (the southern portion of the Ridge) would be difficult to use in attempting to improve outlet capacity for generation additions on the northern section of the 'Ridge (White/Watertown vicinity).

In contrast to a second 345 kV circuit between Split Rock and Lakefield Junction, a new east-west 345 kV line further north (such as from White, SD to the Twin Cities) would be more beneficial to wind development along the entire Buffalo Ridge (from Worthington, MN to Watertown, SD) than the double circuit as suggested. Furthermore, a major line further north could provide important future load serving reliability benefits for the Marshall and Redwood Falls/New Ulm load centers; this is not the case with a second Split Rock to Lakefield Jct. 345 kV line.

Designing powerline structures to be capable of double circuiting constitutes a significant incremental investment, the benefit of which does not appear warranted, given the speculative nature of the need in this corridor. . Additional cost to build poles capable of double circuit 345 kV/345 kV is estimated at $125,0001 per mile of double circuit. This adds $9.5 million if the entire 77-mile Minnesota route is double circuited and adds $7.5 million if the Interstate route is selected (assuming 60 miles as double circuit 345 kV/345 kV and 17 miles as double circuit 345kV/161 kV).

Finally, a second circuit between Split Rock and Lakefield Junction stops short of the primary goal of bringing the wind generation to the principal energy market which is the Twin Cities metropolitan area. If it was determined that in order to achieve this goal,

[1] This represents the incremental cost to construct poles capable of double circuit. Additional costs of $125,000 per mile would be incurred in the future when the conductor and insulators are installed.

another 345 kV line from Split Rock to Lakefield Jct. should be built, an additional 120 miles of 345 kV line would need to be built from the Lakefield Junction substation to the Twin Cities.

Considering all of the above information, Xcel Energy opposes an order to build double circuit 345/345 structures between Split Rock and Lakefield Junction. Such a requirement is certain to add considerable cost, whereas the corresponding needs and benefits are speculative and not supported by planning studies currently underway.

Respondents:
Walter Grivna, Planning Manager
Grant Stevenson, Project Manager

Please contact me if you have any additional questions.

Sincerely,

Pamela Jo Rasmussen
Team Lead, Siting & Permitting