

PUBLIC UTILITIES COMMISSION OF THE STATE OF SOUTH DAKOTA

In the Matter of the Application of Xcel Energy) STIPULATION
For A Construction Permit To Build 9.6 Miles)
Of The Split Rock To Lakefield Junction 345 kV)
Transmission Line And Add Facilities)
To The Split Rock Substation) EL05-023

It is hereby stipulated and agreed by and between the Northern States Power Company, d/b/a Xcel Energy ("Applicant") and the Staff of the South Dakota Public Utilities Commission ("Staff"), that the following Findings of Fact and Conclusions of Law, and an appropriate Order consistent with said Findings and Conclusions may be adopted by the South Dakota Public Utilities Commission (the "Commission") in the above-captioned matter. In support of its Application, the Applicant does hereby offer this Stipulation, the Application filed August 26, 2005, and all responses submitted by the Applicant to the Staff's data requests. Staff offers no answering testimony or exhibits conditioned upon the Commission accepting the following Findings of Fact and Conclusions of Law.

FINDINGS OF FACT

1. INTRODUCTION

The proposed project ("Project") will be comprised of the following components:

- a. A new 9.6-mile 345 kilovolt (kV) line from the Split Rock Substation located west of Brandon, South Dakota to the Minnesota Border.
b. Improvements to the Split Rock Substation to accommodate the new 345 kV transmission line connection. The substation expansion will require grading and fencing approximately one acre on the eastern end of the existing substation. The control house will likely be expanded as well.

The transmission line and substation facilities are all designed to two hundred fifty kilovolts or more.

2. PURPOSE OF FACILITY

The purpose of the Project is to enhance the transmission system in order to allow it to support the output of additional wind generation. Wind development in southwest Minnesota and Brookings County, South Dakota is developing along the Buffalo Ridge, a landform that extends

from Iowa up through Minnesota, South Dakota and North Dakota. The transmission system in and around Buffalo Ridge currently has authorized generator outlet capability of approximately 260 MW and is fully subscribed. More transmission capacity is needed to allow for increased wind generation in that region.

This project is part of a series of transmission improvements that are designed to address this need. Once all the facilities are constructed by the end of 2007, the area's transmission system will be able to move 825 MW of wind generation from Buffalo Ridge. Minnesota has reviewed this matter and issued approval of the project need on March 11, 2003, (PUC Docket No. E-002/CN-01-1958) and the project route in Minnesota on June 16, 2005, (EQB Docket No. 03-73-TR-Xcel).

While this Project was not planned to address issues other than wind generation outlet capability, it does provide local support to the Sioux Falls area bulk load serving needs. Construction of the Project establishes a third 345 kV transmission line into the Sioux Falls area and the resulting configuration will address present load-serving concerns associated with failure of the existing double circuit 345 kV line. The Project also helps provide for future Sioux Falls area bulk supply needs. It will eliminate the current uneconomic operation of the Anson peaking plant that has been caused by load-serving inadequacy of the existing transmission system. The project will also reduce the cost of transmission service to the Sioux Falls area by reducing electrical losses and allowing Xcel Energy to discontinue purchasing supplemental transmission service from Western Area Power Administration.

3. DESCRIPTION OF FACILITY

The Project will be comprised of two (2) primary components:

(1) A new 9.6-mile 345 kilovolt (kV) line from the Split Rock Substation located west of Brandon, South Dakota to the Minnesota Border.

(2) Improvements to the Split Rock Substation to accommodate the new 345 kV interconnection. The substation expansion will require grading and fencing approximately one acre on the eastern end of the existing substation.

- a. **The Transmission Line.** The transmission line is part of an 86-mile 345 kV transmission line between the Split Rock Substation and the Lakefield Junction Substation near Lakefield, Minnesota. The South Dakota portion of the transmission line and the entire Split Rock to Lakefield Junction Transmission Line Route is attached as Exhibit 1.

The transmission line route begins at the Split Rock Substation and consists of an 0.6-mile segment that will consist of new double circuit 345 kV structures constructed approximately 150 feet east of, and parallel to, the existing double circuit 345 kV structures to a new angle structure where the proposed line intersects the existing double circuit 345 kV transmission line on the south side of I-90. A second single circuit segment will begin at the existing angle structure on the existing double circuit 345 kV

transmission line on the south side of I-90, cross I-90 and then continue eastward along the north side of I-90. Approximately 0.75 miles west of the Brandon I-90 exit, the line will meet an existing 115 kV transmission line, which will be placed on the same structures as the new line for approximately 0.25 miles. The transmission line will be placed on private property, adjacent to the I-90 fence in order to allow for corridor sharing with I-90, with part of the line overhanging I-90. A new single, steel pole structure will be constructed within the ROW of the existing line to connect this segment with the White-Sioux City 345 kV transmission line.

After that point, the 345 kV line will continue on the north side of I-90 until it reaches the Western Area Power Administration White-Sioux City 345 kV line. At this point, the transmission line will continue on single circuit structures on the south side of I-90 eastward from Western's White-Sioux City 345 kV transmission line for 4.5 miles to the Minnesota border where it will continue eastward to the Lakefield Junction Substation.

- b. **The Split Rock Substation.** The existing Split Rock Substation is located east of Sioux Falls, South Dakota in the SE 1/4 of Section 30, NE 1/4 of Section 31, and the NW 1/4 of Section 32 in Township 102N, Range 48W, in Minnehaha County. The substation is owned and operated by Xcel Energy. Modifications to the substation will include upgrading the existing 345 kV, four-position ring-bus configuration into a five-position ring to provide a line termination for the new 345 kV transmission line and installing a line-termination dead end, one new breaker and associated switches and line relaying. The substation expansion will require grading and fencing approximately one acre on the eastern end of the existing substation. The control house will be expanded as well. A schematic of the proposed substation improvements is attached as Exhibit 2.

4. DEVIATIONS FROM DESCRIBED CENTERLINE

The specific location of the centerline of the transmission lines is set forth in Exhibit 1 to this Stipulation. It might be necessary to deviate slightly from the described centerline to accommodate engineering and applicable safety and construction requirements based upon actual conditions encountered during construction.

5. ESTIMATED COST OF FACILITY

The estimated total cost of the South Dakota portion of this Project is \$7.9 million, with the cost of separate project components estimated as follows:

Project Components	Costs	ROW Costs	Total Cost
Proposed Route	\$5,000,000	\$404,000	\$5,404,000
Split Rock Substation Modifications	\$2,500,000	N/A	\$2,500,000
Total Project Costs	\$7,500,000	\$404,000	\$7,904,000

6. DEMAND FOR THE FACILITIES

This project is specifically designed to address transmission outlet capacity issues that have limited the amount of wind generation that can be carried on the transmission system in this region. As noted in Section 2 above, local load serving and transmission reliability benefits will also be realized if the proposed project is constructed.

The immediate demand for the Project is necessitated by existing and proposed wind development in the region, primarily on Buffalo Ridge in Southwest Minnesota and Northeast South Dakota. In addition, the Project serves as part of a major regional transmission development to increase the import capability into Minnesota from the West, which includes a significant increase in delivery capability from generation in the Buffalo Ridge region. This regional enhancement will also allow for the import into Minnesota of further generation resource development such as wind generation further west into South Dakota. This transmission line will also enhance the reliability of the transmission system serving the City of Sioux Falls and surrounding system.

A delay or termination of the Project would result in a major delay in development of wind generation on the Buffalo Ridge in Minnesota and South Dakota. Also, as this line is expected to be a significant component of the future regional transmission grid, significant delays in developing major future import capability, especially from the South Dakota region, will occur while new regional plans are developed and analyzed. Major delays in developing further wind generation in the South Dakota portion of the Buffalo Ridge would be encountered.

7. SITE DESCRIPTION

The Project is sited predominantly in cropped areas along I-90 that are compatible with the proposed Project. The 9.6 miles of transmission line will require approximately 95 acres of new ROW. Where the transmission line parallels the Interstate only, an 80-foot ROW of land will be required for easement rather than the typical 150 feet since the line will overhang the Interstate. The substation improvements will require approximately one acre of land already owned by the Applicant. The transmission line will cross 33 parcels of land, which are owned by 30 separate landowners. The location and general arrangement of the transmission line is shown on Exhibit 1. The information on the substation expansion is shown on Exhibit 2.

8. ALTERNATIVE SITES

Applicant did an extensive review of alternative routes for the transmission line from the Minnesota border to the Split Rock substation. Various considerations were included such as cost, landowner issues, topographic features, environmental considerations and regulations and engineering. A discussion of the alternative site evaluation is provided in Section 9.0 of the Applicant's Permit Application. The assessment of alternatives, coupled with efforts to address specific landowner issues, established the centerline proposed for the transmission line, as shown in Exhibit 1. Applicant believes the proposed project represents the best alternative in terms of

meeting customer, landowner, legal and regulatory concerns, while minimizing impacts to the environment and existing land use.

9. ENVIRONMENTAL FACTORS AND PHYSICAL ENVIRONMENT

Applicant has provided environmental information as part of its Permit Application. The existing environment and estimates of changes and impacts to the existing environment are found in sections 10.1 to 19.1 of the Application.

The proposed alignment for the transmission line would minimize changes and impacts to the existing environment by following existing property boundaries, paralleling I-90 and existing utility rights of way where possible, siting in areas with compatible land use and minimizing the need to cross environmentally sensitive or significant features. The Application demonstrates that the proposed project will have an insignificant impact on all factors evaluated. It is not anticipated that this project will create any significant direct, cumulative or synergistic hazards to the health and welfare of human, plant or animal communities.

- a. **Topography.** The topography through the Project area is fairly flat on the east end of the project, with rolling hills in the last few miles of the route as it approaches the Split Rock substation. The Project passes over two main water bodies: Split Rock Creek and the Big Sioux River.
- b. **Geologic Features.** The surficial geology of most of the corridor as it approaches the substation consists of ground moraine deposited during the Illinoian glacial advance. The surficial geology of some areas of the corridor west of the Split Rock Creek consists of deposits from the Middle and Early Cary Outwash. The Outwash is described as stratified deposits of coarse, poorly sorted sands and gravels. These deposits range in thickness of 50 feet to over 100 feet in areas.
- c. **Economic Deposits.** No economic mineral deposits are identified in the project area.
- d. **Soil Type.** The transmission line site crosses 32 soil series and is dominated by Davis and Delmont loams, Nora and Moody silty clay loams and the Crofton silt loam. Approximately half of the soil within the Project area is listed as prime farmland, and approximately a quarter of the soil is listed as prime farmland when drained.
- e. **Potential for Erosion and Sedimentation.** Impacts to soils from the proposed project would be insignificant. Approximately 22 acres of surface soil could be disturbed during construction of pole foundations. The Minnehaha County Soil Survey does not contain information regarding the potential for erosion or sedimentation associated with specific soil series. In general, areas with steep slopes, dry soils and/or minimal vegetative cover are at the greatest risk of erosion. Within the Project area, the potential for erosion would be highest along steep stream banks along the Big Sioux River and its tributaries.

Direct impacts to geologic resources and soils within the proposed corridor could include

localized increases in potential for erosion from wind, water runoff, compaction and rutting. The potential for erosion near the Big Sioux River will be minimized since construction equipment will not cross the river. In addition, the construction plans will be developed to keep equipment away from these areas. Best management practices (BMPs), such as sediment fences and re-vegetation within steep areas are proposed to minimize erosion and sedimentation resulting from the Project.

Decisions on the appropriateness of the implementation of various BMPs will be determined by site specific conditions and guidance set forth in the *EPA Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices*, (US EPA, 1993) and the guidance provided in the "General Permit for Storm Water Discharges Associated with Construction Activities" for South Dakota (Effective July 1, 2002).

Once construction is complete, the cultivated areas will be smoothed by single-pass disking. In non-cultivated areas, rough grading will be conducted to reasonably resemble preconstruction contours. Non-cultivated vegetated areas disturbed by construction will be seeded with similar vegetation as was disturbed and mulched as necessary to stabilize seeds during germination.

No significant impacts related to the increase in potential for erosion are therefore expected as a result of construction of the transmission line if these measures are implemented.

- f. **Seismic Risks, Subsidence Potential and Slope Instability.** Seismic hazards in the study area are rated as very low. The seismic activity in South Dakota, especially in the eastern portions of the state, is fairly low. An earthquake registering 4.1 on the Richter Scale was recorded in the vicinity of the proposed corridor near Sioux Falls, South Dakota in October 1938. In March 1921, a small earthquake, measuring less than three on the Richter Scale, was registered south of the site along the Minnehaha and Lincoln County border.

The proposed transmission facilities will be designed and constructed in accordance with all applicable codes and standards to address potential structural difficulties associated with seismic, subsidence or slope instability. In general, soils in the project area are expected to provide adequate foundation for transmission line structures without concern of subsidence, and the Split Rock Substation is located in a flat area where slope instability will not be an issue.

- g. **Geological Constraints.** There do not appear to be any geological characteristics that present unusual constraints to the design, construction or operation of the proposed facilities. Xcel Energy does not expect that the area geology will impose significant constraints on the design or operation of the Project.
- h. **Hydrology.** The Big Sioux River flows east and south through the proposed Project area. Ultimately the river joins the Missouri River in Sioux City, Iowa. The Big Sioux River

and Split Rock Creek will not be crossed with construction equipment and other streams will not be crossed with construction equipment unless absolutely necessary. Alternate access points to the project area will be identified so as to avoid stream and wetland crossings.

If it is necessary to have construction equipment cross a stream, the appropriate permits will be obtained. Efforts will be made to cross during frozen or dry conditions as the schedule may allow. Where necessary, temporary crossing measures such as culverts, bridges or appropriate mats will be installed. Temporary crossings will be installed using best construction practices, which include installation of appropriate erosion control measures, avoiding work during inclement weather conditions and restoration of the area promptly after all construction activity at the site is complete. Temporary crossings will be removed as soon as practicable after the crossing is no longer needed. The stream/wetland will be restored to its original condition as best as possible, in accordance with permit requirements.

- i. **Effect on Current Planned Water Uses.** The proposed transmission facilities would not use either municipal or private water and therefore would have no impacts on planned water uses by communities, agriculture, recreation, fish or wildlife.
- j. **Surface and Groundwater Use by Proposed Facility.** The proposed transmission facilities would not require consumptive use of or discharge to any surface water body or groundwater. However, should groundwater be encountered during foundation installation a minimal amount of groundwater would be discharged to the surface. Appropriate permits will be obtained for dewatering activities.
- k. **Aquifer Use by Proposed Facility.** The proposed transmission facilities would not require the use of groundwater as a source of potable water supply or process water.
- l. **Water Storage, Reprocessing and Cooling by Proposed Facility.** No water storage or reprocessing will be required for the construction or operation of the proposed transmission facilities.
- m. **Deep Well Injection Use by Proposed Facility.** No deep well injection would be required for the construction or operation of the proposed transmission facilities.
- n. **Effect on Terrestrial Ecosystems.** Detailed information resulting from biological field surveys conducted to identify and quantify the terrestrial fauna and flora potentially affected by the proposed transmission facilities are contained in Section 12.0 and Exhibit E of the Permit Application. It is anticipated that construction and operation of the proposed Project will have little, if any adverse impact on the terrestrial biotic environment.
- o. **Effect on Terrestrial Fauna.** The proposed project construction is not expected to significantly disrupt wildlife in the area. The area in and around the proposed transmission Project is dominated by cropland habitats. Wildlife in these habitats is made

up of species adapted to urban, grassland and riparian areas such as deer, ducks, geese, pheasants, hawks, eagles and songbirds. Domesticated animals raised in the region include cattle, sheep and hogs.

There is a bald eagle (*Haliaeetus leucocephalus*) nest located near the Split Rock Substation, approximately 500 feet south of the railroad tracks, one-quarter mile south of I-90, and about 200 feet west from the existing transmission lines. Xcel Energy has worked with the United States Fish and Wildlife Service (USFWS) to develop an Eagle Protection Plan (EPP), which was implemented during the recent construction of the second unit at the Angus Anson plant. This plan will be utilized again for the transmission line construction. The plan will be modified to address specific construction requirements for the transmission line and substation facilities. Xcel Energy will consult with the USFWS in the development and management of this plan and Staff will be copied on all correspondence and the final approved plan.

There are no other endangered or protected wildlife species identified in the area that may be affected by the transmission line.

- p. **Effect on Terrestrial Flora.** Impacts to vegetation in the project area are anticipated to be minor. Short-term impacts (that affect vegetation for one year or less) could include disturbance, removal and soil compaction caused by: (a) conducting ground control surveys; (b) performing geotechnical investigations; (c) preparing equipment yards and construction trailer sites; and (d) clearing, grubbing, grading and drilling hole foundations for installation of transmission poles.

Long-term impacts could be caused by installation of power poles, as well as ongoing maintenance along the route of the power line. Removal of the vegetation could increase erosion and temporarily reduce the diversity in plant species. Shrubs and trees are slower to establish; therefore, a diverse vegetative cover would be re-established within a decade.

Construction associated with the project may have minor indirect effects on vegetation in the project area by increasing the potential for establishment of noxious weeds. Disturbed soil creates a hospitable environment for invasion of weeds and project-related traffic may provide a transport mechanism for seeds of noxious weeds to the area. Removal of vegetation may increase erosion and sedimentation. Increased runoff on bare and compacted soils could create gullies and change the overall landscape.

Cumulative impacts to vegetation are anticipated to be minor and include the effects from farming and ranching. The primary land use in the project area is industrial, business, residential and agricultural. These practices have been changing the landscape for many years. Future urban development in Sioux Falls and Brandon may continue to change the landscape. This and future projects should have an insignificant impact on vegetation, as most areas have been altered from their natural state.

Construction would be sequenced to limit disruption to any area at one time to reduce the impact of construction on vegetation. After construction is complete, any compacted soil would be tilled and the area would be reseeded.

There are no expected impacts to any endangered or protected terrestrial flora species. The only protected flora species identified was the western prairie fringed orchid (*Platanthera praeclara*) however the location of the plant is in the Cactus Hills area approximately two miles southwest of the proposed project. In addition, there was a survey for protected plants conducted in the area and none were identified.

- q. **Effect on Aquatic Ecosystems.** The proposed project is expected to have minimal effect on wetlands. All wetlands and associated buffer areas crossed by or near the proposed transmission line corridor are small and can be spanned by the transmission lines, which will have average spans of 950 feet. No construction will occur within the Big Sioux River and Split Rock Creek. The transmission lines will span these waterways.

The Topeka Shiner (*Notropis topeka*), a federally endangered species and the trout-perch (*Percopsis omiscomaycus*), a state threatened species have been identified in Split Rock Creek within the past ten years. The transmission line route will cross those streams. Impacts to these aquatic species can be avoided by preventing equipment from entering the streams and limiting construction activities near the banks of the streams.

In order to avoid impacts to these two protected species, Xcel Energy will avoid construction within 100 feet of Split Rock Creek and Beaver Creek, a tributary of Split Rock Creek, between May 15th and August 31st. Xcel Energy will also implement appropriate BMPs to minimize the amount of erosion and sedimentation that could potentially impact wetlands and waterways. Temporary erosion and sediment control methods will be properly placed, monitored and maintained adjacent to water resources. These erosion control methods will remain in place until work areas become re-vegetated or are stable. BMPs may include silt fencing, mulching, seeding and hay bales. Where appropriate, Xcel Energy will re-vegetate disturbed areas.

- r. **Water Quality.** Construction of the proposed transmission line would comply with all applicable federal, state and local permits required for alteration of wetlands, streams or rivers resulting from the project. The following are specific measures that would be taken to protect water quality in the proposed project corridor:

- Best management practices would be implemented to minimize erosion and sedimentation, runoff and surface instability during construction.
- Construction would be conducted to minimize disturbances around surface water bodies to the extent possible.
- A storm water permit will be obtained from the State of South Dakota for the work at the Split Rock Substation.
- Current drainage patterns in areas affected by construction would be maintained to the extent possible.
- Staging areas for project-related construction equipment would be located in areas that are not environmentally sensitive to control erosion.

- Staging and laydown yards for project-related construction would be established at least 100 feet from waterways or wetlands, if permitted by topography. No vegetation would be cleared between the yard and the waterway or wetland.
- Construction equipment would not be serviced within 100 feet of waterways or wetlands. Equipment would not be fueled within 100 feet of the waterways or wetlands.
- Any spills of fuels or other hazardous materials during construction or system maintenance would be promptly contained and cleaned up.
- Any herbicides used in right of way maintenance would be approved by the U.S. Environmental Protection Agency and applied by licensed professionals. Application of herbicides would be limited to the extent necessary for regular maintenance of the transmission system.

Once the Project is completed, it will have no impact on surface water quality. Maintaining water quality throughout the Project will minimize potential impacts to rare and common aquatic organisms and the aquatic environment.

- s. **Air Quality.** Particulate emissions associated with construction of the utility line and substation would be mitigated using dust-suppression techniques. Examples of measures for control of particulates are, if necessary:

- Covering open haul trucks with tarps both on site and off site.
- Ensuring that construction vehicles use paved roads wherever possible to access the construction ROW.
- Removing any soil or mud deposited by construction equipment on paved roads near the egress from unpaved areas, when necessary.
- Stabilizing disturbed areas in compliance with the re-vegetation plan after construction is complete.

With implementation of these mitigation measures, particulate emissions from construction would be substantially reduced. Accordingly, particulate emissions from construction of the project, as mitigated, will not be significant. No significant emissions are expected from the operation of the transmission facilities.

10. LAND USE

- a. **Existing Land Use.** The Project will be located primarily on private land that is zoned as agricultural and regulated by Minnehaha County land use plans and ordinances. The only publicly owned land directly affected by the Project is the Beaver Creek rest stop, located on the south side of I-90 just west of the Minnesota border. The Minnesota Department of Transportation (MDOT) owns this parcel. The Project will not require any rezoning and will not result in any land use changes beyond the immediate footprint of the Project.

The Project is compatible with the existing land uses in the area. The entire length of the proposed route parallels existing linear corridors, 0.6 miles of new double circuit

transmission structures parallels the existing 345 kV structures and the remaining 9.0 miles parallels I-90 to the Minnesota Border. The proposed route does not require any new cross-country ROW. Impacts to land uses adjacent to the transmission line will be minimized by using single, steel poles.

There will be some short-term impacts to agriculture from construction. Once the line is in operation, only approximately 0.07 acres will be permanently removed from agricultural production in order to accommodate the foundations for the structures. Agricultural impacts are discussed in Section 19.2.2 of the Application.

- b. **Homes, Businesses and Persons Displaced.** There will be no homes, businesses or persons displaced as a result of the construction, operation or maintenance of the proposed transmission facilities. The proposed route comes within 1,000 feet of eight homes; the nearest of these homes is approximately 310 feet from the transmission line and approximately 3,000 feet from the Split Rock Substation.
- c. **Land Use Compatibility.** The proposed transmission facilities are compatible with the present land uses of the surrounding area. The majority of the proposed transmission line traverses private land that is zoned agricultural. The project area is characterized by relative flat landscapes to the east and rolling hills on the west side of the project. The addition of power lines to the area would have minimal direct or indirect impacts on the already linear features of the landscape, including the existing transmission lines, roads, fencing and power lines that transect the area. Construction would temporarily alter the area.
- d. **Effect on Land Use.** The proposed project would have a minimal impact on land use. The majority of the proposed transmission line traverses private land that is zoned agricultural and is regulated by Minnehaha County land use plans and ordinances. In addition to the agricultural and rural residential land uses that dominate the Project area, there are pockets of commercial land use at the Highway 11 exit. The Split Rock Substation and Angus Anson Power Plant are zoned for industrial use. The Brandon Industrial Park is located north of I-90 at Highway 11. The Project is compatible with the existing land uses in the area. The entire length of the proposed route parallels existing linear corridors, 0.6 miles of new double circuit transmission structures parallels the existing 345 kV structures and the remaining 9.0 miles parallels I-90 to the Minnesota Border. The proposed route does not require any new cross-country ROW. Impacts to land uses adjacent to the transmission line will be minimized by using single, steel poles.

The short-term impacts would include disruption of vegetation and farming caused by:

- Preparing equipment yards and construction trailer sites. It is expected that these sites will all be located on Xcel Energy's land at the Split Rock substation.
- Clearing, grubbing and grading for expansion of the Split Rock substation.
- Clearing, grubbing, grading and drilling hole foundations for installation of transmission poles.
- Temporary closure of access to livestock and farm irrigation, tilling and

harvesting operations.

With the exception of the Split Rock substation expansion, the short-term disturbances to vegetation would be repaired soon after construction is completed. Active construction at each pole location will be of short duration. However, there will be a time lag (up to 5 months) between the time the foundations are installed and the towers are erected. In addition, the Applicant does not expect that steel poles would be left on the ROW for long periods of time, but would be brought to the foundation location at the time they will be erected. When crews do need to access the site, the disturbances to farming would be expected to be infrequent and last only a few days per disruption. Closure of access to livestock and farm irrigation, tilling and harvesting operations will be minimized to reduce local occupational disruption.

The long-term impacts would include disruption of vegetation and farming caused by:

- Ongoing maintenance along the route of the power line, although this is expected to be infrequent given the lack of trees and the use of steel poles
- Loss of crops, hay or livestock forage within the ROW

The cumulative impact of the construction and operation of the Project will have minimal effect on land use. The primary land use in this project area consists of farming and urban uses. These practices have been changing the landscape for many years. Future practices may continue to change land use. This project should have minimal impacts on land use.

- e. **Local Land Use Controls.** The proposed transmission facilities are located predominantly on private land that is zoned agricultural and is regulated by Minnehaha County land use plans and ordinances. There are no rezoning permits required by Minnehaha County for the construction, use and maintenance of the proposed transmission facilities.

A Minnehaha County zoning permit is required for the expansion of the Split Rock substation. This permit will be acquired after the Facilities Permit is issued.

11. TIME SCHEDULE

The time schedule for this project is graphically depicted on the Project Schedule attached hereto as Exhibit 3. The construction of the Split Rock to Lakefield Junction 345 kV Transmission Line will begin in June 2006 near Lakefield, Minnesota. The project completion is expected by December 2007. The critical path in this schedule involves design, procurement and installation of the Split Rock Substation. The parallel critical path is the South Dakota PUC Permit Application, hearing and permitting process, followed by any necessary eminent domain procedures and subsequent transmission line construction for the South Dakota portion of the 345 kV transmission line.

12. COMMUNITY IMPACT

- a. **Forecast of Socioeconomic Impact.** No significant adverse socioeconomic impacts to the local communities and governmental facilities or services are anticipated as a result of the construction and maintenance of the proposed transmission facilities. This Project will improve the capability of local wind generators to transport energy generated in the region. This in turn may increase the amount of wind development in the area and may contribute to the local economy through easement dollars and taxes generated due to wind farm construction and operation. It is also expected that the project will provide socioeconomic benefit by providing additional power for the rapidly expanding area of Minnehaha County. The Project will not have a significant short-term impact on population, income, occupational distribution or the integration or cohesion of communities in the Project area.
- b. **Forecast of Taxation Impacts.** No significant immediate or long-term adverse impact on property and other taxes of the affected taxing jurisdictions are anticipated as a result of the construction and maintenance of the proposed transmission facilities. Although Xcel Energy will pay taxes on the Project and the Project will increase Minnehaha County's tax base, the Project will not result in any significant impact to the affected taxing jurisdiction.
- c. **Forecast of Agricultural Impacts.** Short-term impacts to agriculture are minimal and will occur primarily due to foundation construction and pole erection. These impacts are not expected to last for more than a few days per disruption and would primarily impact access to farm tilling and harvesting operations. During construction, temporary impacts such as soil compaction and crop damages within the ROW are likely to occur. Approximately 22 acres of agricultural land will be impacted temporarily by the Project. This impact is from a temporary road located along the length of the route to allow construction access to the Project. Permanent impacts to agricultural lands will result in areas where poles are placed and are estimated at approximately 0.07 acres. The Project will have minimal impact on the overall crop production within the proposed project corridor.
- d. **Forecast of Population and Community Impacts.** The proposed transmission project is not expected to substantially impact the population, income, occupational distribution or the integration and cohesion of the adjacent communities. The population of Minnehaha County in 2000 was estimated at 148,281 (Census 2000) and is not expected to change on a short-term basis as a result of this project. However, reliable electric power availability in the area could facilitate long-term economic and potential population growth.
- e. **Forecast of Transportation Impacts.** No significant direct, indirect or cumulative impacts are expected to the transportation systems of cities, counties and the state. Short-term impacts may include minor traffic delays caused when wires are strung across roads. Any such short-term roadway or railway closings would be scheduled with appropriate authorities and marked clearly, and detour routes would be provided as necessary. Construction of the proposed project would be expected to cause only insignificant

adverse transportation effects to public access as a result of roadway congestion from workers' vehicles.

- f. **Forecast of Cultural Resource Impacts.** Applicant has conducted a records search and an on-site cultural resources inventory of the project area. The results of the cultural resources study are discussed in Section 19.1.4 of the Applicant's PUC Permit Application. The proposed project corridor contains 27 previously recorded archaeological sites within one mile of the transmission line route and substation site. The one isolated find was not eligible for inclusion on the National Register of Historic Places ("NRHP") and the eligibility of the prehistoric occupation is listed as unknown. The remaining sites have not been evaluated for NRHP eligibility. The proposed project is expected to have minimal impact on these cultural resources of the area as long as construction does not disturb the sites discussed in Section 19.1.4 of the Application. The sites will be identified prior to construction in order to avoid impacts to them during construction activities. If it is determined that the sites cannot be avoided, the Applicant will consult with the State Historical Preservation Office to assess the potential for impacts.

13. EMPLOYMENT ESTIMATES

Transmission line and substation construction would employ 63 to 74 workers for a period of 6 to 12 months. According to the South Dakota Governor's Office of Economic Development, in 1999 there were 1,998 workers employed in the mining and construction industry. An additional 60 workers for one year would be approximately a three percent increase in the mining and construction industry sector. It is expected that only a small portion of the construction work force will be native to the Minnehaha County area. Xcel Energy employees will maintain the proposed substation and transmission Project, if necessary. No permanent additional employment is expected.

14. FUTURE ADDITIONS AND MODIFICATIONS

Applicant does not request approval of any future additions or modifications under this permit Application. Xcel Energy does not have plans for any additions or modifications to the substation or transmission line in the foreseeable future.

15. TRANSMISSION FACILITY LAYOUT AND CONSTRUCTION

- a. **Vegetation Clearing.** The land types that the transmission line would cross are primarily cropland, and as such no extensive tree clearing or removal will be needed during the construction of the line. Only trees that would affect the transmission line directly will be removed. Minor vegetation clearing will be necessary along the ROW for construction and maintenance of the line. After construction is complete, any compacted soil locations will be addressed by compensating the farmer to repair the ground or by using

contractors to come in and chisel plow the site. Normally, a declining scale of payments is set up over a period of a few years.

- b. **Soils.** Excavated soils from drilled pier foundations for the single-pole structures will be hauled off-site, unless the landowners ask to take possession of the soil. After construction is complete, any compacted soil locations will be addressed as desired by the landowners. Reseeding areas disturbed by construction activities will be done with vegetation similar to what was removed. In cases of agricultural lands, no reseeded will occur unless specified by the landowner.

All areas disturbed by construction of the expansion area of the Split Rock Substation will have the topsoil removed and stockpiled for future use. Best management practices will be used to minimize any sediment and provide for erosion control. In addition, Applicant will install measures to minimize soil erosion as specified in the storm water construction permit.

- c. **Herbicides and Sterilants (Weed Control).** Because the primary land use along the transmission line corridor is cropland, it would not be necessary to use herbicides or sterilants for construction of the proposed transmission line. All areas within the expansion of the Split Rock Substation fence line would be surfaced with a six-inch layer of gravel. Upon completion of construction of the work at the substation, a soil-applied herbicide would be applied to all gravel surfacing for vegetation control. Any herbicides used in ROW maintenance will be approved by the U.S. Environmental Protection Agency and applied by licensed professionals. Application of herbicides will be limited to the extent necessary for regular maintenance of the transmission system.
- d. **Construction Site Access.** An existing road will provide access to the work at the Split Rock Substation. All other access would be on existing approaches or existing roads. Best management practices will be implemented to minimize erosion and sedimentation, runoff and surface instability during construction. Should any temporary access roads be required, the necessary approvals from Minnehaha County will be obtained prior to commencement of construction and removal of these temporary roads.
- e. **Waste Disposal.** All waste generated during the construction of the project will be disposed of in an approved landfill on a regular basis. Trash and scrap will be deposited in waste containers or otherwise controlled and managed on site prior to ultimate disposal. Personal litter, including bottles, cans and paper from construction activities shall be removed on a daily basis.
- f. **Restoration and Re-vegetation.** All disturbed areas will be seeded, mulched and re-vegetated as soon as possible after all construction has been completed in any particular area. In cases of agricultural lands, no reseeded will occur unless specified by the landowner. Landowner desires will be considered in determining seed type depending on the adjacent land use.

16. INFORMATION CONCERNING TRANSMISSION FACILITIES

- a. **Configuration of Poles.** Two basic structure types would be used for the proposed transmission line. Typical structure configuration drawings with dimensions proposed for the tangent structures (excludes structures required at angle points) are provided as Figures 8 and 9 of the Application. Single pole, single circuit steel structures depicted in Figure 8 would be used from the Minnesota Border to the point where the line turns south at I-90 to meet the Split Rock substation. A single pole, double circuit 345 kV/345 kV steel structure would be used for the section of line heading south to the Split Rock substation depicted in Figure 9. A single pole, double circuit 345 kV/115 kV steel structure, as depicted in attached Exhibit 4, would be used for a short section of the route in Brandon where the line follows an existing 115 kV ROW. Self-supporting (un-guyed) structures would be used for all other angle structures in the project. The steel structures will range from approximately 120 to 150 feet in height. Structures will be spaced approximately 950 feet apart, but this distance will vary significantly based upon terrain.
- b. **Conductor Configuration.** The Applicant will install double bundled (two conductors) 954 thousand circular mils Type 13, Cardinal/Aluminum Core Steel Supported/trapezoidal wire for each phase of the three-phase configuration. In addition, two single 3/8-inch extra high strength overhead shield wires would be supported from the pole tops.
- c. **Reliability and Safety.** The Project facilities will be constructed in full compliance with all applicable National Electrical Safety Code electrical performance and safety codes and will not present significant impacts posed by safety or electrical hazard to the general public.

Transmission line facilities in this area need to be designed to handle stresses created by high winds or heavy ice loadings. Since icing conditions in southeastern South Dakota exceed that of other parts of the Xcel Energy territory, the criteria "Heavy ice with reduced wind condition" has been modified to provide additional pole and wire attachment strength. Xcel Energy's typical heavy ice case is for a 40 mph wind and 0.5 inches of ice. For this project, Xcel Energy will design for a 50 mph wind and 1.5 inches of ice. The Applicant's criteria to address these stresses to the transmission structures are more conservative than the typical criteria used for transmission line design and will address this issue.

The flow of electricity produces electric and magnetic fields (commonly referred to as EMF). Numerous sources of EMF exist in nature and in the occupational and residential environment. In nearly all instances, these fields pose no obvious threat to human health or safety. Certain epidemiological investigations have indicated potential risk factors from exposure to EMF. However, many similar studies report no statistically significant correlation.

Thus, although a substantial amount of research on EMF has been completed and is continuing, the body of research on health effects is still inconclusive. In general,

however, there is general scientific consensus that there is little evidence that magnetic fields from transmission lines negatively impact human or animal health. Nevertheless, it is difficult to prove conclusively that there is no impact.

The tables below provide modeled magnetic fields at certain line loadings for the 345 kV transmission line and modeled electric fields. The information provided includes the expected levels under the line and at various increments from the centerline.

Line Type	Loading Condition	Amps	345 kV Split Rock to Lakefield Magnetic Field Calculations								
			-300'	-200'	-100'	-50'	0'	50'	100'	200'	300'
Single Circuit 345 kV line	Avg.	540	1.1	2.6	9.9	31	65	28	11	3.1	1.4
	Peak	900	1.9	4.3	16	51	108	47	18	5.1	2.4
345/345 kV Single Steel Pole	Avg.	540/	0.4	1.1	6.4	24	64	24	6.2	1.1	0.4
	Peak	900/	0.6	1.8	11	40	106	39	10	1.8	0.6

Line Type	345 kV Split Rock to Lakefield Electric Field Calculations				
	-75'	-50'	0'	50'	75'
Single Circuit 345 kV line	1.1	1.92	2.2	2.1	0.91
345/345 kV Single Steel Pole Davit Arm	0.37	1.35	2.22	1.3	2.22

Currently there are no federal or state health-based exposure standards for magnetic fields. This is due to the fact that there is inadequate scientific evidence to develop a health-based standard.

Two states, (Florida and New York), have set standards for magnetic field strengths at the edges of ROW. Five states, (Florida, Minnesota, Montana, New Jersey, New York, and Oregon), have established standards for electric field strengths on the ROW and at the Edge of the ROW. The following table lists those standards.

State Transmission Line Standards and Guidelines				
State	Electric Field		Magnetic Field	
	On ROW*	Edge ROW	On ROW	Edge ROW
Florida	8 kV/m ^a 10 kV/m ^b	2 kV/m	-	150 mG ^a (max. load) 200 mG ^b (max. load)

				250 mG ^c (max. load)
Minnesota	8 kV/m	-	-	-
Montana	7 kV/m	1 kV/m ^e	-	-
New Jersey	-	3 kV/m	-	-
New York	11.8 kV/m 11.0 kV/m ^f 7.0 kV/m ^d	1.6 kV/m	-	200 mG (max. load)
Oregon	9 kV/m	-	-	-
<p>*ROW = right-of-way (or in the Florida standard, certain additional areas adjoining the right-of-way). kV/m = kilovolt per meter. One kilovolt = 1,000 volts. ^a For lines of 69-230 kV. ^b For 500 kV lines. ^c For 500 kV lines on certain existing ROW ^d Maximum for highway crossings. ^e May be waived by the landowner. ^f Maximum for private road crossings.</p>				

The proposed transmission line will meet the electric and magnetic field design standards adopted by these other states. Xcel Energy will provide measurements for landowners, customers and employees who request them.

d. **Right-of-Way or Condemnation Requirements.** The Applicant already owns the land necessary for the Split Rock substation expansion. Several of the 30 easements required for the transmission line ROW have been acquired. Land rights agents have contacted all landowners. It is hoped that negotiations for acquisition on a mutually agreed basis will be successful. However, condemnation proceedings or other litigation might be required if those negotiations are not successful. Since the transmission line will be paralleling I-90, part of the line will overhang I-90. The South Dakota Department of Transportation has been contacted regarding this issue and will work with the Applicant to grant the necessary permits. Correspondence between Xcel and the South Dakota Department of Transportation is included in Exhibit H of the Application.

e. **Necessary Clearing Activities.** No significant clearing activities are anticipated for the proposed transmission facilities, although several large cottonwood trees located on Xcel Energy property will have to be removed.

No clearing of vegetation will be required for the work at the Split Rock substation.

f. **Configuration of Underground Facilities.** No underground facilities would be required for the proposed transmission facilities.

AMENDMENT OF AND ADDITION TO PERMIT APPLICATION

Amendments. The Application filed August 26, 2005, is hereby amended as follows:

1. The transmission line route attached to the Application as Exhibit C is hereby amended to

conform to the description set forth on Exhibit 1 to this Stipulation.

CONCLUSIONS OF LAW

1.

The Commission has jurisdiction over the subject matter and parties to this proceeding pursuant to SDCL Chapter 49-4 1B and ARSD 20:10:22. Subject to the findings made on the four elements of proof under SDCL 49-41B-22, the Commission has authority to grant, deny or grant upon such terms, conditions or modifications of the construction, operation or maintenance of the transmission facility as it may deem appropriate.

2.

The proposed transmission line is a “transmission facility” as defined in SDCL 49-41B-2.1.

3.

The Applicant’s Permit Application, as amended, complies with the applicable requirements of SDCL Chapter 49-41B and ARSD 20:10:22.

4.

The Project as defined herein will comply with all applicable laws and rules, including all requirements of SDCL Chapter 49-41B and ARSD 20:10:22.

5.

The Project, if constructed in accordance with the terms and conditions of this permit, will not pose a threat of serious injury to the environment nor to the social and economic condition of inhabitants or expected inhabitants in the siting area.

6.

The Project, if constructed in accordance with the terms and conditions of this permit, will not substantially impair the health, safety or welfare of the inhabitants in the siting area.

7.

The Project, if constructed in accordance with the terms and conditions of this permit, will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

8.

The Commission has the authority to revoke or suspend any permit granted under the South Dakota Energy Facility Permit Act for failure to comply with the terms and conditions of the permit pursuant to SDCL 49-41B-33.

9.

Northern States Power Company d/b/a Xcel Energy will be the permitted owner of the Project.

10.

The Applicant has met its burden of proof pursuant to SDCL 49-41B-22 and is entitled to a permit as provided in SDCL 49-41B-24, subject to the following:

STIPULATE TO THE FOLLOWING TERMS AND CONDITIONS:

1.

The Applicant will obtain all governmental permits that may be required by any township, county, state or federal agency or any other governmental unit for construction activity covered by that permit. Copies of any permits obtained by the Applicant shall be sent to the Commission.

2.

If it becomes necessary to deviate from the described centerline to accommodate engineering and applicable safety and construction requirements based upon actual conditions encountered during construction, all landowners affected by the deviation and the Commission must be notified in writing five working days before the deviation may occur. All deviations must be approved by the Commission.

3.

In order to ensure compliance with the terms and conditions of this permit pursuant to SDCL 49-41B-33, it is necessary for the enforcement of this Order that all employees, contractors and agents of the Applicant, to the extent of its interest, involved in this transmission line project be made aware of the terms and conditions of this permit.

The Applicant shall ensure that its employees, contractors and agents involved in ROW negotiations and acquisitions, ROW clearing, line construction and ROW and line maintenance understand fully and comply with the terms and conditions of this permit.

4.

If during construction, the Applicant or its agents discover what may be an

archaeological resource, the Applicant or its agents shall immediately cease work at that portion of the site and notify the Commission and the State Archaeologist. If such an archaeological resource is discovered, the Applicant shall develop a plan that is acceptable to the State Archaeologist to salvage, avoid or protect the archaeological resource. If such a plan would require a different route than that approved by the Commission, the Applicant must seek Commission approval for the new route before proceeding with any further construction.

5.

In order to mitigate interference with agricultural operations during and after construction, the Applicant shall locate all structures, to the extent feasible and prudent, to minimize adverse impacts and interferences with agricultural operations, shelterbelts and other land uses or activities. The Applicant shall take appropriate precautions to protect livestock and crops during construction. The Applicant shall repair all fences and gates removed or damaged during construction or maintenance unless negotiated with the landowner or designee. The Applicant shall be responsible for the repair of private roads and lanes damaged when moving equipment or when obtaining access to the ROW.

6.

The Applicant shall provide each landowner across whose property the facility is to be constructed with the following information:

- A copy of the Commission's Order.
- Detailed safety information describing (a) reasonable safety precautions for existing activities on or near the ROW; (b) known activities or uses that are presently prohibited within the ROW; and (c) other potential dangers or limitations within the ROW.
- Construction/maintenance damage compensation policies and procedures.
- The Commission's address and phone number.

The Applicant shall also comply with all other terms and conditions as set forth in the Findings of Fact.

7.

The terms and conditions of the permit shall be made a uniform condition of construction, subject only to an affirmative written request for an exemption addressed to the Commission. A request for an exemption shall clearly state which particular condition should not be applied to the property in question and the reason for the requested exemption. The Commission shall evaluate such requests on a case-by-case basis.

8.

The Applicant will update its Eagle Protection Plan (EPP) to address construction activities near the bald eagle (*Haliaeetus leucocephalus*) nest located near the Split Rock Substation. Staff will be provided copies of the draft and final Plans prior to construction in this area.

9.

Before commencing construction, the Applicant shall furnish an indemnity bond in the amount of Fifty Thousand Dollars (\$50,000.00) to comply with the requirements of SDCL 49-41B-38.

10.

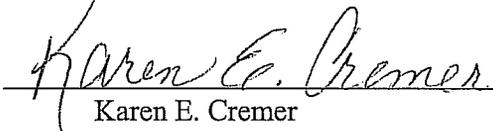
If the presence or operation of the transmission line causes interference with radio, television, or any legal communication device, the Applicant shall take all appropriate action to minimize any such interference and make a good faith effort to restore or provide reception levels equivalent to reception levels in the immediate areas just prior to construction of the transmission facility. This mitigation requirement shall apply to homes or other structures in place at the time of construction but shall not apply to any dwellings or other structures built after construction of the transmission facilities approved in this Permit have been completed.

Dated: 6-08-06

Northern States Power Company, a Minnesota Corporation, d/b/a Xcel Energy

By: _____


Doug Jaeger
Vice President, Transmission


Karen E. Cremer

Staff Attorney
South Dakota Public Utilities Commission