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March 23, 2023

VIA ELECTRONIC MAIL AND
FEDERAL EXPRESS

Mr. Steven M. Kahl
Executive Director
North Dakota Public Service Commission
State Capitol Building, Department 408
600 East Boulevard
Bismarck, ND 58505-0480

Re: NORTHERN STATES POWER COMPANY ADVANCE PRUDENCE – LYON COUNTY TO SHERBURNE COUNTY 345kV TRANSMISSON LINE APPLICATION

Dear Mr. Kahl:

Northern States Power Company, doing business as Xcel Energy (the Company), respectfully submits this Application for an Advance Determination of Prudence for the Lyon County to Sherburne County 345 kilovolt transmission line. This project is a proposed 160- to 180-mile, double circuit transmission line connecting the existing Sherburne County Substation in Becker, Minnesota, and a new substation in Lyon County, Minnesota, along with associated facilities, including intermediate and voltage support substations.

Pursuant to N.D.A.C. § 69-02-02-04, an original and seven copies of our Application are also being provided, along with the following:

- Direct testimonies of Company witnesses Mr. Christopher J. Shaw, Ms. Farah L. Mandich, and Mr. Jason T. Standing, supporting the Company's Application; and
- Verifications for the testimonies of Mr. Shaw, Ms. Mandich, and Mr. Standing.

The Company has sent the $175,000 filing fee required by N.D.C.C. § 49-05-16(1)(b) to the Commission under separate cover.

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Please contact me at (612) 492-6129 or simpser.zev@dorsey.com if you have any questions regarding this filing.

Sincerely,

DORSEY & WHITNEY LLP

ZEV SIMPSER

Enclosures

cc: Via Email:
- Jack Schuh (jschuh@nd.gov)
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BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF NORTH DAKOTA

NORTHERN STATES POWER COMPANY
ADVANCE PRUDENCE – LYON COUNTY TO
SHERBURNE COUNTY 345 KV TRANSMISSION LINE
APPLICATION

CASE NO. PU-23-_____

APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE

I. INTRODUCTION

Northern States Power Company, doing business as Xcel Energy (NSP or the Company), respectfully submits to the North Dakota Public Service Commission (Commission) this Application for an Advance Determination of Prudence (ADP) for the Lyon County to Sherburne County 345 kilovolt (kV) Transmission Line (the Project). The Project is a proposed 160- to 180-mile, double circuit transmission line connecting the existing Sherburne County Substation (Sherco Substation) in Becker, Minnesota, and a new substation in Lyon County, Minnesota, along with associated facilities, including intermediate and voltage support substations.

In its recent Upper Midwest Integrated Resource Plan (IRP),[1] the Company determined that substantial additional generation will be necessary during the 2020 to 2034 planning period, including nearly 6,000 MW of cost-effective renewable generation. NSP also plans to retire all three units at the existing Sherburne County Generation Station (Sherco) located in Becker, Minnesota by 2030. Together, the Sherco Units represent nearly 2,000 MW of existing Company-owned interconnection rights at the Sherco Point of Interconnection (POI). Accordingly, NSP is proposing the Project to retain those valuable interconnection rights and use them to cost-effectively interconnect a large portion of the generation needed over the next 10-15 years.

The Project is prudent because it will allow NSP to use existing interconnection rights, which would otherwise be lost; to bypass the significant congestion for interconnected generation that is currently being experienced in MISO; and to predictably and cost-effectively connect to new generation. The Company's economic analysis shows the Project is expected to provide $531 million in cost savings on a net present value (NPV) basis in 2023 dollars compared to the estimated cost of interconnecting equivalent amounts of generation using the MISO generator interconnection procedures.

[1] Filed as NDPSC Case No. PU-19-220.

Given the advantages of the Project, including substantial cost savings, the Company requests that the Commission grant an ADP for the Project.

In support of the Company's Application, NSP provides the following Direct Testimony:

- Policy Testimony – Mr. Christopher J. Shaw
- Resource Planning Testimony – Ms. Farah L. Mandich
- Transmission Planning Testimony – Mr. Jason T. Standing

The remainder of this Application addresses the following:

- Compliance Matters;
- Project Description and Purpose;
- Economic Analysis; and
- Prudence of the Project

II. COMPLIANCE MATTERS

A. Description of Applicant

The Company is a Minnesota corporation duly authorized to conduct business in the State of North Dakota as a foreign corporation. NSP conducts business in the State of North Dakota as a public utility subject to the jurisdiction and regulation of the Commission pursuant to Title 49 of the North Dakota Century Code (N.D.C.C.). The name and address of NSP is:

Northern States Power Company, a Minnesota corporation
414 Nicollet Mall
Minneapolis, Minnesota 55401

The Company also operates in North Dakota from the following address:

Northern States Power Company
2302 Great Northern Drive
Fargo, North Dakota 58102

The Company's Certificate of Incorporation with amendments and Certificate of Authority were filed with the Commission on September 30, 2009, and October 12, 2009, respectively, in Case No. PU-09-664. Current Certificates of Good Standing issued by the North Dakota and Minnesota Secretaries of State were filed in the same case on January 10, 2023, and are incorporated herein by reference.

Xcel Energy has service territory in five upper Midwest states including North Dakota. The Company presently serves approximately 94,500 retail electric customers in and around Fargo, Grand Forks, and Minot, North Dakota, and owns approximately 1,450 conductor miles of transmission and 3,810 conductor miles of electric distribution lines in North Dakota.

B. Communication and Service

The Company respectfully requests that the following persons be placed on the Commission's official service list for all official communications in this case:

Alex J. Nisbet
Regulatory Policy Specialist
Xcel Energy
2302 Great Northern Drive
Fargo, North Dakota 58102
Alex.J.Nisbet@xcelenergy.com

Christine Schwartz
Records Administrator
Xcel Energy
414 Nicollet Mall, 401 – 7th Floor
Minneapolis, Minnesota 55401
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C. Standard of Review

North Dakota Century Code section 49-05-16(1)(d) authorizes the Commission to issue an ADP if it "determines that the resource addition is prudent." This standard is similar to the "honestly and prudently invested" standard that the Commission uses for ratemaking.[2] The general prudence standard calls for determining whether the utility action was reasonable at the time it was taken under all relevant circumstances.[3] Under Section 49-05-16(1), the Commission may issue an order approving the prudence of a proposed project if four conditions are met:

a. The public utility files with its application a projection of costs to the date of the anticipated commercial operation of the resource addition;

b. The public utility files with its application a fee in the amount of one hundred seventy-five thousand dollars;

c. The commission provides notice and holds a hearing, if appropriate, in accordance with section 49-02-02; and

d. The commission determines that the resource addition is prudent. For facilities located or to be located in this state the commission, in

[2] *See* N.D.C.C. § 49-06-02.
[3] *See* Charles F. Philips, Jr., *The Regulation of Public Utilities – Theory and Practice* at 292 (Public Utility Reports 1988); *see also* David J. Muchow & William A. Mogel, *Energy Law and Transactions* at § 4.02[3][b] (2009).

determining whether the resource addition is prudent, shall consider the benefits of having the resource addition located in this state.

D. Authority for Relief Requested

North Dakota Century Code section 49-05-16 allows a public utility, at the utility's discretion, to seek an ADP from the Commission for any intended resource addition. The statute defines a "resource addition" as "construction, modification, purchase, or lease of an energy conversion facility, renewable energy facility, demand response system, transmission facility, or a contract to acquire energy, capacity or demand response for the purpose of providing electric service." The Project fits within that definition, as it is a transmission facility.

In the Settlement Agreement in the Company's 2007 rate case, Case No. PU-07-776, the Company agreed to file an application for an ADP for the acquisition of transmission facilities that are at least 50 miles long.[4] This commitment was further refined in Case No. PU-12-59, in which NSP committed to filing ADP applications for "the types of resource additions contemplated in the 2007 rate case settlement" within 14 days of seeking similar approvals from the Minnesota Public Utilities Commission (MPUC).[5]

The Company filed an Application for a Certificate of Need (CON) for the Project with the MPUC on March 9, 2023. Accordingly, the Company is submitting this Application within 14 days, as required by its commitment made in Case No. PU-12-59, along with supporting testimony.

III. PROJECT DESCRIPTION AND PURPOSE

A. Facility Description

The Project is a proposed 160- to 180-mile, 345 kV transmission line connecting the existing Sherco Substation in Becker, Minnesota with a new substation in Lyon County, Minnesota. The Project will consist of two lines located on the same set of structures, or be "double-circuited," to reduce costs, avoid duplicative facilities, and minimize impacts to the human and natural environments. In addition to the double-circuited line, the Project consists of a new substation in Lyon County, Minnesota (Terminal Substation),[6] as well as an intermediate substation (Intermediate Substation) and a substation to house voltage support equipment (Voltage Support Substation).

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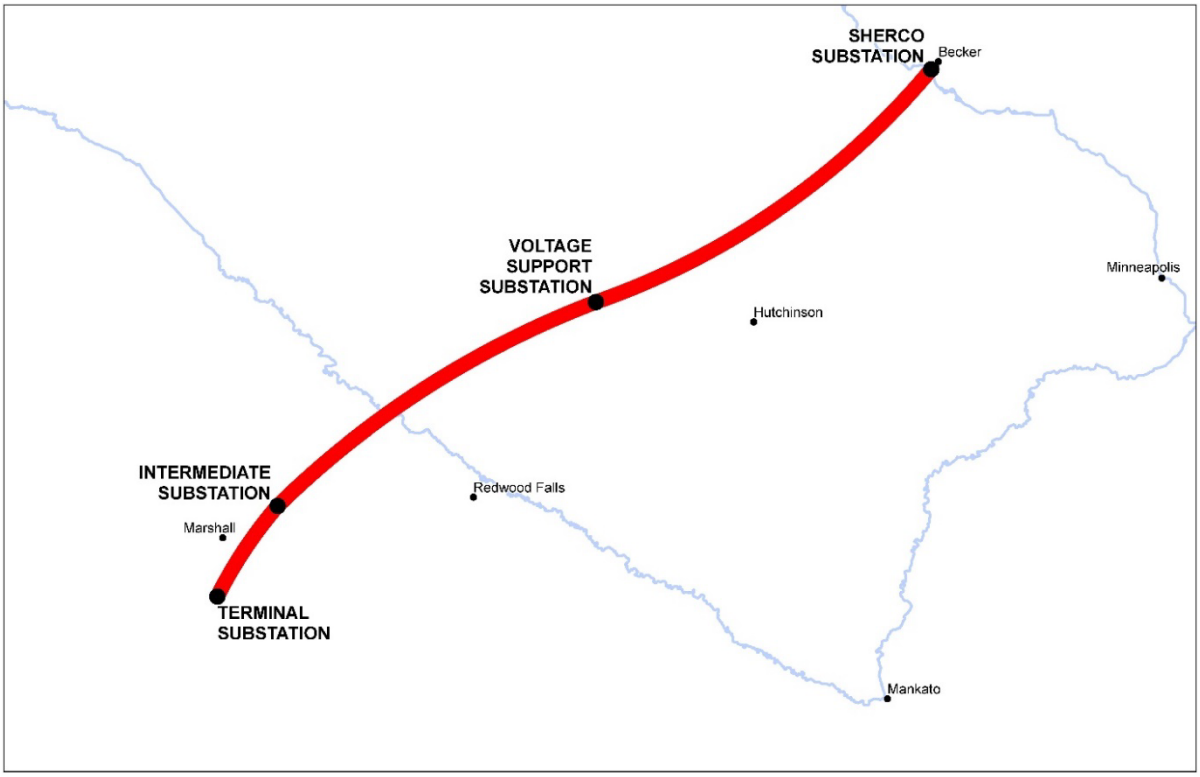
[4] *N. States Power Co. Elec. Rate Increase Application*, Case No. PU-07-776, ORDER ADOPTING SETTLEMENT AGREEMENT at 6 of attached Settlement Agreement (Dec. 31, 2008).

[5] *N. States Power Co. Advance Prudence – Geronimo Wind Application*, Case No. PU-12-59, LETTER OF COMMITMENT (Nov. 5, 2012).

[6] The substation naming conventions are for the purposes of this application. Formal names will be assigned at a future date.

Figure 1 below depicts a conceptual layout for the facilities as proposed, presuming that the Project must provide system support at Lyon County and all voltage support at the Voltage Support Substation.[7]

Figure 1: Project Facilities



The new Terminal Substation will house two synchronous condensers to provide system stability should the level of interconnected wind and/or solar energy reach 1,000-1,600 MW. Needed system stability support could also be provided by a gas combustion turbine (CT) in the vicinity of the Terminal Substation. If the Company ultimately placed a CT into service near the Terminal Substation before other interconnected generation reached 1,000-1,600 MW, the CT would provide the requisite system support and replace the synchronous condensers. The Intermediate Substation will facilitate the interconnection of additional generation resources in its vicinity by providing an additional point of interconnection in that area.

The Voltage Support Substation is planned to include series capacitors and two 150 MW static synchronous compensators (SATCOMs). The use of a voltage support substation is a conservative approach to help ensure that the potential wind turbine

[7] The route may change during the permitting process in Minnesota.

resonant frequency interactions associated with long highly compensated radial lines are accounted for in Project components and costs; however, it is possible that such interactions will not occur, in which case project costs for support equipment could be reduced.

B. Project Background and Need

The Project is intended to predictably and cost-effectively support the interconnection and delivery of new generation to the Sherco POI. As the existing Sherco Units retire over the next several years, the Project will optimize reuse of the Company's valuable interconnection rights. The Project will allow the Company to bypass the MISO interconnection procedures. As a result, NSP will be able to directly connect to thousands of MW of new generation without the upgrade costs and potential delays that result from the use of MISO's interconnection queue.

1. Resource Planning Process Development

In its IRP, NSP determined that it will need to add nearly 9,000 MW of generation during the planning period, including almost 6,000 MW of renewable and cost-effective generation by 2034. [8] As noted above in the introduction, the Company also plans on retiring the three Sherco Units by 2030,[9] and the Company owns approximately 2,000 MW of interconnection rights at the Sherco POI associated with those units.

The current transmission grid is not sufficiently robust to timely and cost-effectively interconnect with the new generation contemplated in the IRP. With this in mind, as part of the Alternate Plan presented in our IRP in 2021 the Company conceived of the Project to (1) re-use the available interconnection rights for the retiring Sherco coal units and (2) enable the interconnection of generation resources without the risk of considerable costs and/or delay associated with the MISO interconnection queue.

The Project helps the Company to mitigate the impact of MISO's continuing transmission capacity constraints on NSP's ability to develop needed generation. By utilizing the opportunity to bypass the MISO interconnection process, the Company can avoid the significant estimated upgrade costs that would be necessary to interconnect new generation to the transmission grid. Further, substantial transmission congestion impedes the delivery of energy from certain renewable-rich areas such as western Minnesota, North Dakota, and South Dakota. The Project will also allow the Company to retain Financial Transmission Rights associated with the Sherco interconnection, which reduce the financial risks of congestion. By constructing the

[8] The IRP was filed with the Commission in Case No. PU-19-220.
[9] In fact, the MPUC has required the Company to retire Sherco Unit 3 by 2030.

Project and using the Sherco POI, the Company can add large amounts of necessary nameplate capacity that injects directly to a location near the Company's load center in the Twin Cities avoiding capacity constraints. Therefore, the Project allows the interconnection of thousands of MWs of generation at a significantly reduced price while also avoiding the delays resulting from the use of the MISO interconnection queue.

2. MISO Tariff Requirements

To take advantage of the benefits of reusing the Sherco POI interconnection rights, the Company must comply with the applicable provisions of the MISO Tariff. From a timing perspective, Attachment X of the MISO Tariff requires that: (1) a request for generator interconnection replacement be submitted at least one year prior to the date that an existing generation facility will cease operation,[10] and (2) the expected commercial operation date for a replacement facility must be within three years of the date that the existing facility ceases operation.[11] From an ownership perspective, the rules only allow the owner of an existing facility to replace it. The Tariff does not allow the owner of an existing facility to submit a request for an unrelated third party to build a replacement facility that will use the owner's existing interconnection rights.[12]

To comply with the MISO rules, the Company will need to own approximately the first 1,300 MW of generation, equivalent to the Company's existing interconnection rights that will utilize the Project to interconnect at the Sherco Substation POI. NSP will also need to procure and in-service that generation within three years of retirement of the existing Sherco units. However, any surplus interconnection capacity above that currently being used by existing generation interconnected at the Sherco POI will not necessarily need to be owned by the Company.

3. Selection of Approximate Project Route and Location of Endpoint

The Company selected Lyon County, Minnesota for the endpoint of the Project because it is an area relatively near to the Sherco Substation where ample generation resources can be developed. Proximity to potential generation resources is key because the Project is meant to connect generation resources with the Sherco Substation POI.

NSP preliminarily determined that Lyon County would be an appropriate area to develop new generation resources based on evaluation of MISO queue requests for wind generation in that area. Moreover, the Company was also generally aware of the

[10] Attach. X § 3.7.1(ii).
[11] Attach. X § 3.3.1.
[12] Attach X § 3.7.1(vi).

renewable resources available in that region. The existing natural gas infrastructure in Lyon County was also a consideration.

The Company then validated its preliminary conclusions by issuing a Request for Information (RFI) in June 2022 for wind and solar generation in MISO Zone 1, with preference to projects in the vicinity of Sherco, Lyon County, and areas between. The responses to the RFI showed there is significant interest in renewable development along the contemplated route of the line. Responders to the RFI identified a maximum potential build of 2,300 MW of solar, 7,600 MWh of energy storage and 4,214 MW of wind capacity, well in excess of the 2,750 MW (nameplate) contemplated to connect with the Project. The Company analyzed the specific locations of the projects identified in the RFI responses and determined that there is substantially more potential new generation in Lyon County than in those portions of the proposed route closer to Sherco. This analysis confirmed for NSP that Lyon County is the right endpoint for the Project, as opposed to a location closer to Sherco.

C. Project Costs and Schedule

NSP estimates the Project will cost $817 million NPV in 2023 dollars. These costs include all transmission line costs (including materials, associated construction, permitting and design costs, and risk assessment contingencies), two new substations and a series compensation substation, Sherco Substation modification costs (including materials, construction, permitting and design costs, and risk contingencies), AFUDC, and right-of-way/land acquisition costs. In his testimony, Company witness Mr. Jason Standing provides additional detail.

This estimate is generally consistent with estimates for the Project that the Company used in its IRP analyses. However, there have been some changes. Project costs have been updated to reflect revised assumptions regarding Project components. For example, the Company now anticipates that the Project will include synchronous condensers at the Terminal Substation, but those facilities were not included in the earlier cost estimates because, at that time, the Company planned to instead use combustion turbine (CT) capacity with a clutch feature for that purpose. NSP has also updated its 2021 estimates to account for subsequent inflationary trends including supply chain issues, rising material costs, and a challenging labor market.

The Company's current cost estimates give the Commission reasonable information to evaluate the prudency of developing the Project. Of course, as with any estimate provided relatively early in the development process, there is always a risk that changes to the Project could increase costs. In particular, the Company notes that it developed its estimates for the cost of building the transmission line assuming that the line will be

relatively straight. If the ultimate route of the Project has more corners and fewer long and straight sections than anticipated, costs will increase.

The Company plans to place the Project into service by September 30, 2027. Additional substation equipment will be added at the Terminal, Intermediate, and Voltage Support substations as additional renewable resources come online. NSP expects the buildout to be completed by the end of the third quarter, 2031.

IV. ECONOMIC ANALYSIS

The Company analyzed the Project by comparing the costs to construct it with the cost to interconnect generation using the MISO queue process. The results of that analysis show that the Project costs $531 million less in 2023 dollars on a NPV basis. Table 1 below summarizes the Company's economic analysis, which is explained further below the table.

Table 1: Comparison of Project Cost vs. MISO Queue

	Wind	**Solar**
MW in IRP reutilizing Sherco 1 and 3 interconnection rights	2,150	600
Assume interconnection cost via MISO queue ($2023/kW)	564	225
	MISO Queue	**Sherco Gen-Tie Project**
Weighted Average Interconnection Cost ($/kW)	490	297
Total Cost @ 2,750 MW (NPV $2023 millions)	1,348	817
Savings Associated with the Project, relative to MISO Interconnection (NPV $2023 millions)		**531**

To make the comparison, the Company had to have both an estimated Project cost and generic estimated costs for use of the MISO queue. NSP's estimate for the cost of the Project is $817 million NPV in 2023 dollars; that estimate is discussed in Section III.C above. The Company's estimate of the costs of using the MISO queue is based on generic interconnection costs used in the IRP, which the Company re-validated and

which were then updated to 2023 dollars to account for inflation. The result was generic costs of $564/kW for wind interconnection and $225/kW solar interconnection.

NSP then assumed that the Project would connect with approximately 2,150 MW of wind and 600 MW of solar. That 2,750 MWs of wind and solar includes both the interconnection capacity from retiring Sherco Units 1 and 3, which must be Company-owned, and the remaining capacity on the Project that could be either Company-owned or purchased power. Using that split of 2,150 MW of wind and 600 MW of solar and the generic wind and solar interconnection costs, the Company arrived at a weighted average interconnection cost of $490/kW. When that generic, weighted average cost per kW is applied to 2,750 MW, the resulting estimated interconnection cost is $1.348 billion NPV ($2023). The difference between $1.348 billion, the estimated cost of connecting to generation resources using the MISO queue, and $817 million, the estimated capital investment to build the Project, is $531 million. This $531 million NPV in 2023 dollars is the Company's estimate for the savings that will result from the Project, as opposed to interconnecting with 2,750 MW of generation resources using MISO's interconnection procedures.

The Company's economic analysis is discussed further in Ms. Farah Mandich's Testimony, and information regarding the development of the Company's assumptions for MISO interconnection costs is provided in Mr. Jason Standing's Testimony.

V. ALTERNATIVES

There are no feasible and cost-effective alternatives to the Project. Currently, there is not sufficient transmission capacity for the Company to interconnect the additional generation it needs in the coming years without significant upgrades, which would cost more than the Project and bring a risk of delay. The Company, MISO, other MISO utilities, and various stakeholders have all identified a need for additional transmission capacity, and efforts are underway to add it. While the additional transmission capacity will be welcome, it will not create a cost-effective alternative to the Project. The Project is the lowest-cost option.

In March 2020, Xcel Energy joined with nine other transmission-owning Load Serving Entities in the Upper Midwest to produce the CapX2050 Transmission Vision Report. (CapX2050 Report). The goal of the CapX2050 Report was to educate and inform Upper Midwest policymakers and other stakeholders about the future of the grid in future decades. One of the critical findings from the CapX2050 Report was the need for more transmission system infrastructure to accommodate the transition to more non-dispatchable resources.

MISO has also identified the need for additional transmission capacity. Long Range Transmission Planning (LRTP) is a key MISO initiative to expand the existing transmission system. The focus of the LRTP is to improve the ability to move electricity across the MISO region from where power is generated to load centers, reliably and at the lowest possible cost.

The 2022 MVP Portfolio, also referred to as the LRTP Tranche 1 Portfolio, was the first tranche of transmission solutions developed as part of MISO's LRTP effort. The MISO Board of Directors unanimously approved the $10.3 billion LRTP Tranche 1 Portfolio on July 25, 2022. This portfolio includes 18 transmission projects in MISO's Midwest Subregion consisting of more than 2,000 miles of additional transmission lines that will allow up to 53 gigawatts of new generation capacity to connect. However, none of the projects in the portfolio will connect with southwestern Minnesota. Further discussion of LRTP is provided in Mr. Standing's Testimony.

The portfolio of LRTP projects will provide much-needed additional transmission capacity. However, even with that additional capacity the networked transmission grid will not be an adequate and cost-effect alternative to the Project. The only way NSP can retain its interconnection rights and avoid the costs and delays associated with the MISO interconnection queue is to directly connect Company-owned generation to the Sherco POI via a single generation tie-line, like the Project. If the Company were to abandon the Project and rely on just the networked transmission grid, it would have to use the MISO interconnection process, which would bring higher costs resulting from upgrades and a risk of interconnection delays that could jeopardize NSP's ability to timely meet identified capacity and energy needs.

VI. PRUDENCE OF THE PROJECT

The proposed Project will allow the Company to reuse the valuable existing interconnection rights associated with the existing Sherco units. Under the MISO Tariff, the Company must re-use the free interconnection capacity within three years or lose this valuable asset. Given current constraints in the MISO interconnection queue and the results of recent planning study cycles and assigned interconnection upgrade costs, it is clear that the interconnection rights associated with Sherco are highly valuable. As discussed above, it would cost the Company substantially more to interconnect the same amount of capacity using normal MISO processes.

The Company's decision to construct and own the Project will allow it to connect to necessary new generation resources at a lower cost than would otherwise be the case. It is prudent for the Company to re-use its interconnection rights in this manner that will produce substantial cost savings while also allowing for a relatively quick and predictable interconnection.

VII. CONCLUSION

For all the reasons set forth above, Xcel Energy respectfully requests the Commission grant an ADP for the Company's proposed Lyon County to Sherburne County 345 kV Transmission Line.

Dated: March 23, 2023

Northern States Power Company

Respectfully submitted,

/s/Christopher J. Shaw
CHRISTOPHER J. SHAW
MANAGER, REGULATORY POLICY