

May 19, 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 DETERMINATION OF PRUDENCE
SHERCO SOLAR 3 PROJECT
CASE NO. PU-23-_____

Dear Mr. Kahl:

Northern States Power Company, doing business as Xcel Energy (the Company), respectfully submits this Application for an Advance Determination of Prudence (ADP) for a 250 MW grid-scale solar photovoltaic project to be developed in the vicinity of the Company's Sherburne County generation facility site (the Sherco Solar 3 Project).

The Company's Application and supporting testimony contain trade secret information. In accordance with Section 69-02-09-02 of the North Dakota Administrative Code (N.D.A.C.), an Application for Trade Secret Protection is being provided along with a single copy of the trade secret version of the Application and supporting testimony in a sealed envelope marked **PROTECTED INFORMATION – PRIVATE**.

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

- Direct testimonies of Company witnesses Mr. Allen D. Krug, Ms. Farah L. Mandich, and Ms. Kari Hassler supporting the Company's Application; and
- Verifications for the testimonies of Mr. Krug, Ms. Mandich, and Ms. Hassler.

The Company is providing the \$175,000 filing fee required by N.D.C.C. § 49-05-16(1)(b) under separate cover.

1 PU-23-182 Filed 05/19/2023 Pages: 79
Application for Advanced Determination of Prudence for the Sherco Solar 3 Project - redacted.
Northern States Power Company
Zev Simpser, Dorsey & Whitney, LLP



Mr. Steven M. Kahl
May 19, 2023
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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

A handwritten signature in blue ink, appearing to read 'Zev Simpson', written over a horizontal line.

ZEV SIMPSER

Enclosures

cc: Via Email – Public Version Only:
- Jack Schuh (jschuh@nd.gov)
- Victor Schock (vschock@nd.gov)
- John Hamre (jghamre@nd.gov)
- Brian Johnson (brijohnson@nd.gov)
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OF THE STATE OF NORTH DAKOTA**

NORTHERN STATES POWER COMPANY
ADVANCE DETERMINATION OF PRUDENCE –
SHERCO SOLAR 3 PROJECT

CASE No. PU-23-_____

**APPLICATION FOR
ADVANCE DETERMINATION OF PRUDENCE**

I. INTRODUCTION

Northern States Power Company, doing business as Xcel Energy (NSP, Xcel Energy or the Company), respectfully submits to the North Dakota Public Service Commission (Commission) this Application for an Advance Determination of Prudence (ADP) for the Sherco Solar 3 Project (the Project). The Project is a 250 MW photovoltaic solar project located in Clear Lake, Minnesota, which the Company will develop itself. The Project is located near the Company's Sherburne County Generating Station (Sherco) and will use a portion of the Company's existing interconnection rights at the Sherco point of interconnection, after the existing Sherco generation facilities are decommissioned.

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. In the IRP, the Company forecasted that it will have an energy deficit of 210 MW in 2026, which will grow to 2,443 MW by 2030. The anticipated deficit is a result of a number of causes, most notably the expiration of various power purchase agreements (PPAs) and retirements of certain existing generation facilities.

The three Sherco coal units are among the units planned for retirement by the end of 2030. Together, the Sherco units represent nearly 2,000 MW of existing Company-owned interconnection rights at the Sherco Point of Interconnection (POI). As a self-developed project near the Sherco location, the Project will allow the Company to make use of the Company's valuable interconnection rights at the Sherco POI to add needed capacity promptly and cost-efficiently.

The Project is prudent because it will allow NSP to obtain required capacity while also using existing interconnection rights that would otherwise be lost. By using those rights, the Company can bypass the significant congestion for interconnected

¹ Filed as NDPSC Case No. PU-19-220.

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generation that is currently being experienced in MISO. The project was selected as a cost-effective resource in the Company's recent competitive solar request for proposals (RFP), in which it competed favorably with third-party developed resources and was the least cost solar resource we procured.

Given the advantages of the Project, including its contribution to addressing a forecasted capacity deficit using a Company-owned resource, 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. Allen D. Krug
- Resource Planning Testimony – Ms. Farah L. Mandich
- Resource Adequacy Testimony – Ms. Kari Hassler

The remainder of this Application addresses the following:

- Compliance Matters;
- Project Description and Purpose;
- Economic Analysis;
- Alternatives; 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

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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
regulatory.records@xcelenergy.com

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;

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).

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- 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 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 to seek an ADP from the Commission at the utility's discretion. Pursuant to the Settlement Agreement in Case No. PU-07-776, the Company is obligated to file an application for an ADP for any proposed new construction or acquisition of a generating resource above 50 MW where the Company proposes to assign all or part of the costs to the North Dakota jurisdiction.⁴ In Case No. PU-12-59, the Company committed to filing its ADP applications within fourteen days of seeking similar approvals from the MPUC.⁵

With this Application, the Company has met its filing obligations. This Application complies with the requirements of N.D.C.C. § 49-05-16 and the Settlement Agreement in Case No. PU-07-776. Additionally, the Company is submitting this Application within fourteen days of the May 5, 2023 filing of a similar application with the MPUC.

The Company is requesting an ADP for the Sherco Solar 3 project as proposed by the Company in this Application and supporting testimony.

III. PROJECT DESCRIPTION AND PURPOSE

A. Facility Description

The Project is a proposed 250 MW PV solar generation project. It is located on approximately 1,750 acres primarily in Clear Lake Township, Minnesota near the existing Sherco facility site. It will be located to the west of Sherco Solar 1 & 2 and approximately five miles from that project's collector substation.⁶

The Company will self-develop the Project. It has an anticipated commercial operation date of November 2025, and a projected life of 35 years. As discussed in more detail below, the Project has a levelized cost of energy (LCOE) of **[PROTECTED DATA BEGINS** **PROTECTED DATA ENDS]** and a net capacity factor of

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 See case No. PU-21-152.26, which the Commission has set for hearing on July 11, 2023.

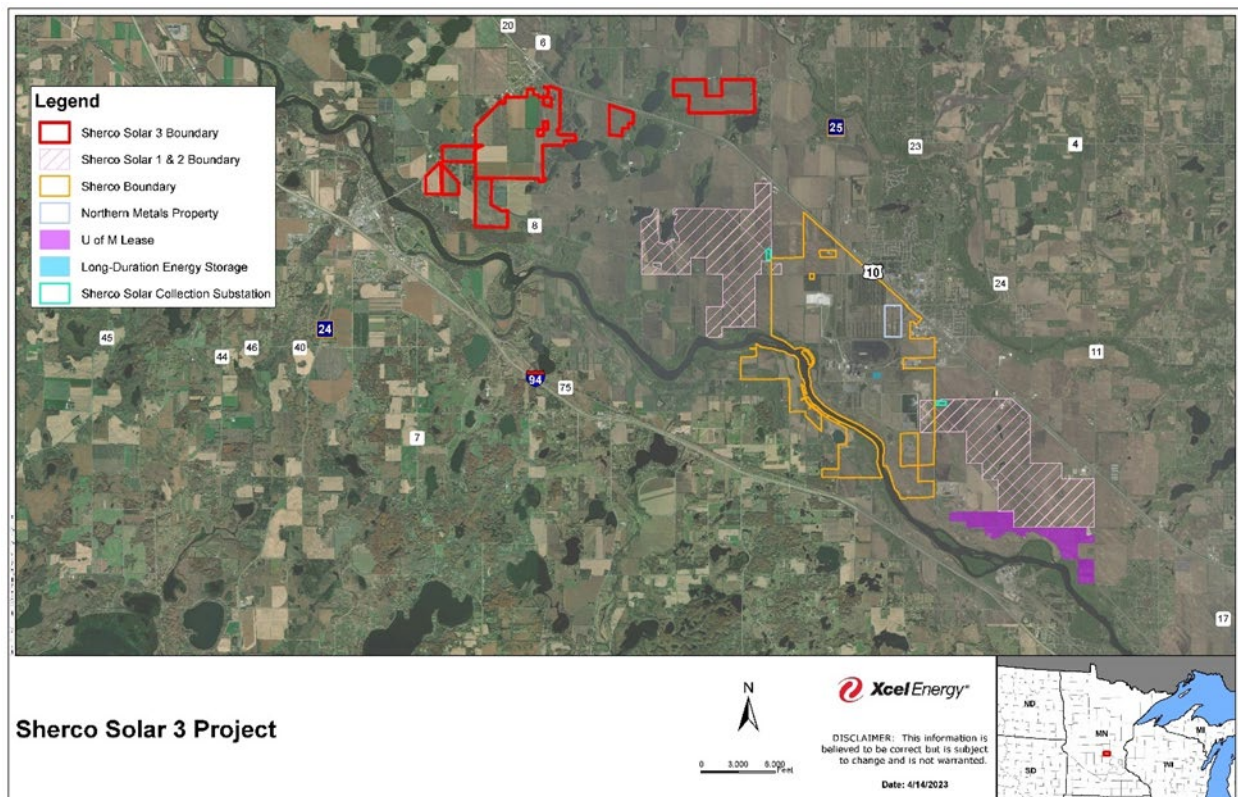
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approximately [PROTECTED DATA BEGINS PROTECTED DATA ENDS].

The Project will include the addition of a bay to the Sherco Solar collection substation and use the same gen-tie line to deliver energy back to the Sherco POI. It will involve installation of approximately 550,000 solar panels and 50 miles of underground collection feeder lines, electrical collection systems, access roads, collector substations, and other supporting solar farm infrastructure.

Figure 1 below depicts the Sherco Solar 3 boundary in proximity to the existing Sherco units and Sherco Solar 1 & 2.

Figure 1: Sherco Site and Sherco Solar 3 Location



B. Project Background and Need

The 250 MW PV solar generation Project is intended to fulfill a capacity need identified in the Company’s 2020-2034 Upper Midwest IRP. The capacity deficit is a result of expiring PPAs as well as multiple retirements of existing generation facilities. Among the retirements are the generation facilities at Sherco and the Allen S. King plant; however, those coal retirements are just one driver of the Company’s capacity need.

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Several PPAs and Company-owned generating units are currently slated to reach the end of their expected lives within the planning period. It is the combination of all these retirements, together with an expected increase in demand, that contribute to the need for new generation resources over the planning period, with a near-term need for capacity beginning in 2026.

By serving as the Project developer and utilizing the existing interconnection rights at Sherco, the Company can bring the Project into operation in late 2025 and satisfy a portion of its capacity needs at a reasonable cost for customers. The reuse of a portion of the existing Sherco POI interconnection rights are important because they allow the Company to bypass the prolonged, unpredictable, and costly MISO interconnection process.

1. Responding to the Capacity Deficit

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 2034.⁷ As noted in the introduction, the Company also has many generating units with expiring PPAs or that are slated to reach the end of their current expected lives in this timeframe. In the near term, the Company's system is expected to have a capacity need by the 2026/2027 Planning Year that the proposed solar project will help to meet.

2. Selection of Solar Resource

Xcel Energy has adopted a portfolio approach to addressing its capacity deficit. The portfolio will include Sherco Solar 1 & 2, Sherco Solar 3, a PPA for the Apple River project—a 100 MW solar generation facility in Polk County, Wisconsin—and the Wheaton Repowering Project, which is the repowering of a natural gas generation facility located in Wheaton, Wisconsin. Xcel Energy's Wisconsin operating company, Northern States Power – Wisconsin (NSPW), is the party to the Apple River PPA and will own the repowered Wheaton facility.⁸ These projects will then be supplemented by additional solar and an additional 800 MW of firm dispatchable capacity, which is due to come online between 2027 and 2029. Sherco Solar 3 is a reasonable part of the Company's overall portfolio because it is consistent with the Company's recent IRP – under both Minnesota and North Dakota planning preferences, can be brought online

⁷ The IRP was filed with the Commission in Case No. PU-19-220.

⁸ For that reason, the Company is not seeking approval for those two resource additions. Instead, the costs of both will be addressed through the Interchange Agreement between NSP and NSPW, which has been approved by the Federal Energy Regulatory Commission (FERC).

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relatively quickly, is consistent with Xcel Energy’s carbon emission reduction goals, and serves North Dakota’s goals of cost-effective electric service to consumers.

In this instance, the Sherco Solar 3 project is a particularly appropriate resource because the Project can be brought into operation through re-use of the Sherco POI interconnection rights, which avoids timing and cost risks associated with the MISO interconnection queue. It was also the most cost effective solar project we were able to procure through the RFP. The net result is that an economic generation source will be added to the system, and, along with the repowered Wheaton Facility, the Apple River project, and Sherco Solar 1 & 2, address the need for additional capacity by 2026.

3. *MISO Interconnection Rights*

As discussed above, one of the key advantages of the Sherco Solar 3 project is that the Company can capitalize on the existing Sherco interconnection rights. To do so, the Company will have to own the same amount of generation resources at the point of interconnection. The combination of Sherco Solar 1 & 2 and Sherco Solar 3 will account for 710 MW of generation and will thus re-use the interconnection rights for Sherco 2.

New generation projects that utilize existing interconnection rights are particularly advantageous to the Company and its customers. By taking the opportunity to bypass the MISO interconnection process for new generation, the Company can avoid the significant estimated upgrade costs and time challenges associated with interconnecting new generation to the transmission grid.

C. Project Costs and Schedule

The Company estimates the Project will cost **[PROTECTED DATA BEGINS PROTECTED DATA ENDS]**, inclusive of Allowance for Funds Used During Construction (AFUDC). This estimated cost reflects tax credits available under the Inflation Reduction Act, including tax credits based on the location of the project in an “energy community.” The estimated cost also accounts for the projected impact of increased costs of goods and services across the global economy due to inflation, the Russian invasion of Ukraine, and sustained supply chain issues.

The Company’s current cost estimates give the Commission reasonable information to evaluate the prudence 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. Additionally, factors outside the Company’s control could contribute to the overall costs, especially changes to the Inflation Reduction Act, the looming debt crisis, and future geopolitical issues such as developments in the war in Ukraine. If any of these variables changes in a manner unpredicted by the Company, costs may increase.

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The Company plans to have engineering and procurement activities take place during the remainder of 2023 and for primary construction activities to occur in 2024 and 2025. The Company anticipates commercial operation will be achieved at Sherco Solar 3 in November 2025.

IV. ECONOMIC ANALYSIS

The cost of the Sherco Solar 3 Project can be analyzed in multiple ways. As an initial matter, as Company Witness Ms. Farah Mandich discusses, the Project emerged from a competitive procurement process. Xcel Energy issued a RFP on August 1, 2022, seeking solar projects that had a commercial operation date of December 31, 2025. At the end of the RFP process, which included rounds of negotiation and attempts to see if bidders could modify their projects to meet the Company's needs, the Apple River project was the only third-party project that survived.

The Project's anticipated LCOE [**PROTECTED DATA BEGINS PROTECTED DATA ENDS**] can also be compared to other solar generation resources in MISO. The Project's LCOE is [**PROTECTED DATA BEGINS PROTECTED DATA ENDS**] lower than the 2023 Q1 median PPA price for solar projects within MISO.⁹ Thus, even in the face of persistent inflation and macroeconomic factors, the Project is a low cost project compared to similar projects. Sherco Solar 1 & 2 has a lower cost than the project contemplated here; however, that price difference is attributable to higher construction costs from a less contiguous site, higher site acquisition costs, and higher lease rates during the operating period.

The Company also used economic modelling conducted using EnCompass to evaluate the economic impact of the Project.¹⁰ The Company first created a baseline run where the Project was not added to the system. Instead, capacity purchases based on the MISO Cost of New Entry (CONE) were used to address the capacity void. That baseline model run was then compared to model runs in which the Project was forced into the model. By comparing the PVRR from the baseline run and the run in which Sherco Solar 3 is included, the Company arrived at estimated PVRR impact of the Project. The results when using the expansion plan the Company relies on for planning purposes is savings of \$2 million on a PVRR basis, which, as a practical matter, indicates the Project will cost customers approximately the same as pursuing alternative capacity purchase options. However, Sherco Solar 3 will provide the needed capacity from a long-term,

⁹ Edison Energy, "Q1 2023 Global Renewables Market Update." Available at https://issuu.com/edisonenergy/docs/ee_renewables_market_report_q12023.

¹⁰ The Company also conducted modelling runs that considered the Apple River project and the portfolio of Apple River and Sherco Solar 3.

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Company-owned resource, which will hedge against the risk and uncertainty of a sometimes volatile market for capacity. The Project will thus provide a less risky, more stable source of needed capacity at approximately the same price.

Comparing the project to CONE, rather than brownfield CT prices, was reasonable because there are no brownfield locations where the Company could construct a CT, timely place it into service by 2026, and generate at a capacity comparable to Sherco Solar 3. Other than the Wheaton site, the Company does not have the same magnitude of interconnection rights required to bring online a project similarly sized to Sherco Solar 3.

The Company's economic analysis is discussed further in Ms. Farah Mandich's Testimony.

V. ALTERNATIVES

There are no cost-effective alternatives to the Project that do not expose customers to undue risk. The Project will address the capacity deficit with reliable, cost-effective service in a manner that no alternative could.

As discussed above, the RFP for solar capacity ultimately only resulted in the Apple River Solar Project and the Sherco Solar 3 Project. No other projects could satisfy the Company's criteria, including with regard to pricing and schedule, and several bidders withdrew their proposed projects during the procurement process.

Turning away from solar, apart from NSPW's Wheaton Repowering Project, there are no viable brownfield sites where the Company could practically construct a similarly sized gas-powered combustion turbine generator and place it into service before 2026 with the necessary capacity. The Company analyzed the feasibility of constructing a gas-power generation plant at the Sherco site, but the site would require a new gas transmission line to be extended to the area, which is costly in itself and not a feasible alternative in the timeframe. Nor is extending the lives of the Sherco units viable. The Company has already notified MISO of the closure of Sherco Unit 2 and after several years of winding down investment in the plant to prepare for its retirement and prudently manage costs, it would not be economically feasible to now extend the unit's life past the planned retirement date.

VI. PRUDENCE OF THE PROJECT

The Sherco Solar 3 Project will help the Company address the significant capacity need on its system beginning in the mid-2020s, as identified in its most recent resource planning. The Project will cost-effectively provide needed capacity by 2026.

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The Project is also prudent because it will allow the Company to begin to reuse the valuable existing interconnection rights associated with the existing Sherco units. Under the MISO Tariff, the Company must re-use interconnection capacity within three years of retirement of the Sherco units or lose this asset and the benefits it confers to customers. 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. By interconnecting at Sherco, the Company avoids timing and cost uncertainty of the generator interconnection queue process.

In sum, the Project is prudent because it will allow new capacity to be brought online by the time it is needed from a Company-owned resource and will make use of valuable existing interconnection rights.

| **VII. CONCLUSION**

For all the reasons set forth above, the Company respectfully requests the Commission grant an ADP for the Company's proposed Sherco Solar 3 Project.

Dated: May 19, 2023

Northern States Power Company

Respectfully submitted,

/s/

CHRISTOPHER J. SHAW
MANAGER, REGULATORY POLICY

Direct Testimony and Schedule
Allen D. Krug

**STATE OF NORTH DAKOTA
BEFORE THE
NORTH DAKOTA PUBLIC SERVICE COMMISSION**

In the Matter of the Application of Northern States Power Company
for an Advance Determination of Prudence for the Sherco Solar 3 Project

Case No. PU-23-____
Exhibit____(ADK-1)

Policy

May 19, 2023

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Schedule

Statement of Qualifications Schedule 1

1 **I. INTRODUCTION AND QUALIFICATIONS**

2
3 Q. PLEASE STATE YOUR NAME AND TITLE.

4 A. My name is Al Krug. I am Associate Vice President, State Regulatory Policy
5 for Northern States Power Company – Minnesota (NSP or the Company).
6 The Company provides electric service to customers in North Dakota, South
7 Dakota, and Minnesota. The Company’s affiliate, Northern States Power, a
8 Wisconsin corporation (NSPW), provides electric service to customers in
9 Wisconsin and Michigan. The Company and NSPW, together under the
10 Interchange Agreement, own and operate the five-state integrated NSP
11 System.

12
13 Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

14 A. I have worked for Xcel Energy since 1998, initially as a Manager of Renewable
15 Energy and Energy Contract Coordinator. I then served as a Regulatory
16 Consultant for a number of years before becoming Regional Vice President,
17 Regulatory Administration in 2008. I began my current position in 2013.
18 Prior to joining the Company, I worked for over a decade in the Minnesota
19 Department of Commerce, first as a Statistical Analyst and later as a
20 Supervisor in the Electric Regulatory Unit. My statement of qualifications is
21 provided as Exhibit__(ADK-1), Schedule 1.

22
23 Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES?

24 A. In my current role, I develop regulatory strategy for NSP across North
25 Dakota, South Dakota, and Minnesota.

26

1 Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS PROCEEDING?

2 A. The purpose of my Direct Testimony is to provide support and policy context
3 for the Company's request for an Advance Determination of Prudence (ADP)
4 for the Sherco Solar 3 Project (Sherco Solar 3 or the Project), which is a 250
5 MW (nameplate) photovoltaic (PV) project located in Clear Lake, Minnesota.
6 The Project site is near to the Company's Sherburne County Generating
7 Station (Sherco) and would re-use a portion of the Company's existing
8 interconnection rights at the Sherco point of interconnection. The Company's
9 resource planning forecasted a capacity deficit beginning in 2026 and Sherco
10 Solar 3, along with other projects, will provide needed additional capacity at a
11 competitive price. My testimony supports the conclusion that the Project is a
12 prudent investment in the Company's long-term generation resource mix and
13 will benefit customers. Accordingly, the Commission should grant the
14 requested ADP.

15

16 Q. HOW IS YOUR DIRECT TESTIMONY ORGANIZED?

17 A. My testimony discusses the following topics:

- 18 • Regulatory Matters;
- 19 • Project Overview and Background;
- 20 • Prudence;
- 21 • Presentation of Witnesses; and,
- 22 • Conclusion.

23

1 **II. REGULATORY MATTERS**

2
3 Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

4 A. In this section, I briefly discuss the basis for this filing under applicable North
5 Dakota law and prior settlements approved by the Commission.

6
7 Q. PLEASE DESCRIBE THE STATUTORY REQUIREMENTS RELEVANT TO THIS ADP.

8 A. North Dakota Century Code (N.D.C.C.) section 49-05-16 allows a public
9 utility to seek an ADP from the Commission for a “resource addition” at the
10 utility’s discretion. A resource addition includes, among other things, a
11 “renewable energy facility.” Pursuant to the Settlement Agreement in Case
12 No. PU-07-776, the Company is obligated to file an Application for an ADP
13 for its acquisition of a generation facility that has a capacity of at least 50 MW.¹
14 Subsequently, in Case No. PU-12-59, the Company committed to filing its
15 ADP applications within 14 days of seeking similar approvals in Minnesota.²

16
17 Q. IS THE COMPANY MEETING NORTH DAKOTA FILING REQUIREMENTS WITH
18 THIS APPLICATION AND SUPPORTING TESTIMONY?

19 A. Yes. The Project is a renewable energy generation facility with a capacity in
20 excess of 50 MW, thus this Application complies with the requirements of
21 N.D.C.C. § 49-05-16 and the Settlement Agreement in Case No. PU-07-776.
22 Additionally, in accordance with our commitment in Case No. PU-12-59, the
23 Company is submitting its ADP Application within 14 days of filing a
24 supplement seeking approval for the acquisition in Minnesota, which occurred

¹ *N. States Power Co. Elec. Rate Increase Application*, Case No. PU-07-776, ORDER ADOPTING SETTLEMENT AGREEMENT at 6 of Settlement Agreement (Dec. 31, 2008).

² *N. States Power Co. Advance Prudence – Geronimo Wind Application*, Case No. PU-12-59, LETTER OF COMMITMENT (Nov. 5, 2012).

1 on May 5, 2023. Finally, the Application and supporting testimony
2 demonstrate the prudence of the Company's acquisition of the Project.

3
4 Q. DO YOU HAVE ANY OTHER COMMENTS YOU WOULD LIKE TO MAKE
5 REGARDING REGULATORY MATTERS?

6 A. Yes. Xcel Energy is adding two other generation resources on a similar
7 timeframe: (1) a power purchase agreement (PPA) for the Apple River project,
8 which is a 100 MW solar facility to be located in Polk County, Wisconsin, and
9 (2) the Wheaton Repowering Project in Wheaton, Wisconsin. Xcel Energy's
10 Wisconsin operating company, Northern States Power – Wisconsin (NSPW),
11 is the party to the Apple River PPA and will own the repowered Wheaton
12 facility. For that reason, the Company is not seeking approval for those two
13 resource additions. Instead, the costs of both will be addressed through the
14 Interchange Agreement between NSP and NSPW, which has been approved
15 by the Federal Energy Regulatory Commission (FERC).

16
17 Q. ARE THERE ANY RELATED MATTERS PENDING BEFORE THE COMMISSION?

18 A. Yes. The Company has filed two other pending ADP applications for projects
19 that relate to the re-use of the Sherco interconnection rights. In Case No. PU-
20 21-152, filed on April 26, 2021, the Company is seeking an ADP for the
21 Sherco Solar 1 & 2 Project, a 460 MW PV project at the Sherco site that will
22 reuse some of the Sherco interconnection rights. That matter is currently
23 scheduled for a July 11, 2023 hearing before the Commission. In Case No.
24 PU-23-142, filed recently on March 23, 2023, the Company has requested an
25 ADP for the Lyon County to Sherburne County 345 kilovolt transmission
26 line, which will allow for connection to resources in southwest Minnesota that
27 would also re-use a portion of the Sherco interconnection rights.

1 **III. PROJECT OVERVIEW AND BACKGROUND**

2
3 Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

4 A. In this section, I provide general overview for the Project and how it, along
5 with other resources, will address the Company’s future capacity needs.
6

7 Q. PLEASE PROVIDE A GENERAL OVERVIEW OF THE PROJECT.

8 A. Sherco Solar 3 is 250 MW PV solar generation project to be located in Clear
9 Lake Township, Minnesota. It is expected to come into operation in 2025.
10 The Project will provide the Company with additional capacity that is needed
11 to address a capacity deficit forecasted to begin in 2026. Xcel Energy is
12 serving as the developer. The Project, which is located near the Sherco site,
13 will re-use a portion of the Company’s Sherco interconnection rights.
14 Company witness Ms. Farah L. Mandich provides more detail regarding the
15 Project in her testimony.
16

17 Q. YOU REFERRED ABOVE TO THE PROJECT ADDRESSING A NEED FOR CAPACITY.
18 PLEASE EXPAND ON THAT POINT.

19 A. Ms. Mandich discusses this topic in more detail in her testimony, but I will
20 provide a general overview. In its 2020-2034 Upper Midwest Integrated
21 Resource Plan (the IRP),³ the Company identified a need for additional
22 capacity starting in 2026. As Ms. Mandich explains, this capacity deficit is the
23 result of a number of causes, including the expiration of various PPAs,
24 retirements, and the end of expected lives for various existing Xcel Energy
25 facilities, such as the retirements of the Sherco units.

³ The IRP was filed in North Dakota as Case No. PU-19-220 and in Minnesota was in MPUC Docket No. E-002/RP-19-368.

1 Q. WHAT STEPS IS THE COMPANY XCEL ENERGY TAKING TO ADDRESS THIS NEED
2 FOR CAPACITY?

3 A. Xcel Energy is taking a number of measures to respond to the capacity deficit
4 identified in our resource planning. As I noted in the section above, NSPW
5 is currently developing a repowering project at the gas-powered Wheaton
6 Generating Station in Wheaton, WI. The Company is also exploring the
7 opportunity to extend certain PPAs that would otherwise expire. As this
8 Project, the earlier Sherco Solar project, and the Apple River PPA
9 demonstrate, Xcel Energy is also working to add solar capacity, consistent
10 with our IRP. Finally, the Company is planning to add 800 MW of additional
11 firm dispatchable resources in the 2027 to 2029 timeframe and expects to
12 begin the acquisition process later this year. Taken together, Xcel Energy plans
13 to add the capacity from the Wheaton project and the Sherco solar projects
14 by 2026, with additional generation resources, including the 800 MW of firm
15 dispatchable capacity, coming online in subsequent years.

16

17 Q. WHY IS THE COMPANY SEEKING TO ADD SOLAR CAPACITY AS ONE PART OF
18 THIS PORTFOLIO APPROACH?

19 A. The Company's recently completed resource plan covering 2020-2034
20 provides that the Company should procure material additional solar capacity,
21 including projects re-using the Sherco interconnection.⁴ Moreover, new solar
22 capacity is a reasonable part of the Company's overall approach because it can
23 be brought online relatively quickly and is consistent with Xcel Energy's
24 carbon emission reduction goals. One reason why the Project can provide

⁴ This resource planning process was approved in 2022 by the Minnesota Public Utilities Commission. ORDER APPROVING PLAN WITH MODIFICATIONS & ESTABLISHING REQUIREMENTS FOR FUTURE FILINGS, Docket No. E002/RP-19-368, April 15, 2022 (MN IRP Order). No action was taken by the North Dakota or South Dakota commissions.

1 new capacity by 2026 is that it will re-use a portion of the Sherco
2 interconnection rights and thus avoid the cost and schedule risks that would
3 result from use of the MISO interconnection queue. Ms. Mandich discusses
4 this issue in more depth in her testimony.

5
6 Q. COULD THE COMPANY POSTPONE PLANNED SHERCO RETIREMENTS AS AN
7 ALTERNATIVE MEASURE TO ADDRESS THE CAPACITY DEFICIT?

8 A. No. That is not a practical alternative. At this point, extending the life of
9 Sherco Unit 2 would not be economical; the Company has already notified
10 MISO of its intention to retire the unit at the end of 2023 and investment in
11 the plant has been winding down over the last several years to prepare it for
12 retirement and prudently manage customer costs. We would not be able to
13 economically extend the operating life of this unit to match the North Dakota
14 depreciable life.

15
16 Q. COULD A GAS-POWERED GENERATION STATION LOCATED AT SHERCO BE A
17 VIABLE ALTERNATIVE TO THE PROJECT?

18 A. No. The site does not have natural gas supply currently. In analyzing options
19 to bring gas service to the Sherco plant site, it was determined that
20 constructing a gas-powered generation facility at that location is not a practical
21 alternative, particularly given the timeframe in which the Company needs to
22 add capacity to utilize Sherco Unit 2's interconnection capacity and meet the
23 Company's system capacity needs.

24
25 Q. IS THE COMPANY PROCURING ALL THE ADDITIONAL SOLAR CAPACITY
26 CONTEMPLATED IN THE IRP AT THIS TIME?

1 A. No. As Ms. Mandich discusses in her testimony, Xcel Energy issued an RFP
2 seeking 900 MW of solar resources. However, after rounds of screening and
3 negotiations, including the elimination of large numbers of proposals based
4 on cost, Xcel Energy decided to only move forward with the Apple River PPA
5 and the Sherco Solar 3 Project. While those responding to the RFP submitted
6 a large number of proposed projects, many of them failed threshold evaluation
7 due to technical deficiencies or failure to agree to NSP standard contract
8 terms. Subsequently, in negotiation, many of the shortlisted projects
9 determined they did not want to move forward with negotiations due to
10 interconnection, supply chain and inflation impacts, or other complexities and
11 risks. The Company anticipates that it will likely re-visit the question of solar
12 resource acquisition in the future, and it will, of course, keep the Commission
13 apprised of those efforts, including through future ADP filings, as may be
14 required.

15
16 Q. IN PLANNING FOR AND EVALUATING THE PROJECT, DID THE COMPANY
17 ACCOUNT FOR FORTHCOMING CHANGES TO HOW MISO ADDRESSES
18 RESOURCE ADEQUACY?

19 A. No. At the time the RFP was conducted, accreditation values for the
20 Company's thermal resources were not yet finalized and – as Company
21 witness Ms. Kari Hassler explains in her testimony – MISO's stakeholder
22 process around non-thermal accreditation remains ongoing. As a result, the
23 Company does not know what MISO will propose to FERC with respect to a
24 new accreditation methodology for the capacity of non-thermal resources like
25 the Project. Given that the capacity deficit is forecasted to begin in 2026, it
26 would not be prudent for the Company to wait for a MISO decision before
27 developing and proposing generation resource additions. However, the

1 Company anticipates that its next IRP, due in 2024 and which the Commission
2 will consider, will reflect the forthcoming MISO changes.

3
4 Q. DO YOU HAVE ANY SUBSTANTIAL CONCERNS ABOUT THE IMPACT OF FUTURE
5 MISO CHANGES ON THE PROJECT?

6 A. No. As a practical matter, the Company is currently summer peaking and
7 should remain so for the relevant time period. The capacity deficit the Project
8 is meant to help address occurs in the summer. The Project will provide
9 capacity when it is most needed, and the Company is not concerned that the
10 forthcoming MISO decisions may result in a substantially lower accredited
11 capacity for winter.

12 13 **IV. PRUDENCE OF THE PROJECT**

14
15 Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

16 A. In this section of my testimony, I discuss why the Project is a prudent resource
17 addition.

18
19 Q. IN CONSIDERING THE PRUDENCE OF THE SHERCO SOLAR 3 PROJECT, ARE THE
20 FACTORS THAT ARE ADDITIONAL OR DIFFERENT FROM SOME OTHER RECENT
21 ADPs?

22 A. Yes. In several of the ADPs filed at the Commission in recent years, the
23 Company has sought advanced approval for wind generation projects, and the
24 primary focus of those cases has been the cost savings resulting from the
25 addition of the projects. Sherco Solar 3, however, has a different focus. While
26 it is cost-effective (as I discuss further below), the Project is being proposed

1 so that it can provide capacity needed by 2026. The Company's need for
2 capacity should be kept in mind when evaluating the Project.

3
4 Q. YOU HAVE ALREADY DISCUSSED THE CAPACITY NEED THE PROJECT IS MEANT
5 TO SERVE. IS THE PROJECT A COST-EFFECTIVE WAY TO PROVIDE THAT
6 CAPACITY?

7 A. Yes. The Project was developed following an RFP process, which Ms.
8 Mandich discusses in her testimony, and consequently has a competitively low
9 levelized cost of energy (LCOE). Customers will also benefit because it re-
10 uses the existing Sherco interconnection rights and does not, therefore, have
11 the risk of costly upgrades associated with the need to use the MISO
12 interconnection queue.

13
14 Q. DID THE COMPANY CONDUCT ANY MODELLING TO COMPARE THE COST OF
15 THE PROJECT WITH THE COST OF ALTERNATIVES?

16 A. Yes. As Ms. Mandich discusses, the Company used EnCompass modelling to
17 compare the Project with the cost of acquiring the same capacity using MISO's
18 cost of new entry (CONE) figure. By using CONE, the Company was able
19 to compare the Project with a widely-accepted value that is determined by a
20 third-party. CONE is also appropriate because it reflects the approximate
21 cost of a green-field gas-powered combustion turbine resource, which is one
22 theoretical alternative to the Project. Additionally, with the Wheaton
23 Repowering Project underway, there are no practical additional brownfield
24 opportunities at this time.

1 Q. WHAT RESULTS DID THE COMPANY'S MODELLING PROVIDE?

2 A. The Project is forecasted to produce modest savings compared to meeting the
3 Company's capacity needs in given years with capacity purchases at CONE.
4 As a practical matter, this indicates that the Project should have approximately
5 the same cost for North Dakota customers as the alternative of purchasing
6 capacity credits when needed, all else equal. However, the Project, as a
7 Company-owned facility, will provide needed capacity without the risk of
8 relying on alternative capacity purchases, which is consistent with the
9 Company's long-standing strategy. The Project is a less risky, more stable
10 option at a price that is roughly the same as the alternative approach.

11

12 Q. IN SUMMARY, WHY DOES THE COMPANY BELIEVE THE PROJECT IS A PRUDENT
13 ADDITION?

14 A. The Project is prudent because it can be brought into service relatively quickly
15 to provide additional capacity that is needed by 2026. The Project can begin
16 operation by 2026 partly because of the re-use of existing interconnection
17 rights. The results of the Company's RFP process show that the Project is the
18 least-cost solar alternative and the economic analysis indicates it costs
19 approximately the same as MISO's CONE, but the Project has the additional
20 advantage of being a Company-owned generation resource, which mitigates
21 the future cost risk of relying on alternative capacity purchase approaches.

22

23 V. INTRODUCTION OF WITNESSES

24 Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

25 A. In this section of my testimony, I introduce the Company's other witnesses in
26 this matter.

1 Q. WHAT OTHER WITNESSES ARE PROVIDING DIRECT TESTIMONY TO SUPPORT
2 THE COMPANY'S ADP?

3 A. The Company is also providing testimony from the following witnesses:

4 • Ms. Farah L. Mandich. Ms. Mandich discusses the Project's background,
5 including the capacity need identified in the IRP, the RFP for solar resources
6 the Company conducted, additional details regarding the Project, and NSP's
7 economic analysis of the Project.

8 • Ms. Kari Hassler. Ms. Hassler provides some additional information
9 regarding forthcoming MISO changes to its resource adequacy construct.

10

11

VI. CONCLUSION

12

13 Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

14 A. Yes, it does.

Al Krug

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EDUCATION

1980 University of California, Los Angeles
MA, Economics

1978 Queens College, City University of New York
BA, Economics

WORK EXPERIENCE

2013-Present **Xcel Energy Services, Inc., Minneapolis MN**
Associate Vice President, State Regulatory Policy

- Develop regulatory strategy for NSPM.

2008-2013 **Xcel Energy Services, Inc., Minneapolis MN**
Regional Vice President, Regulatory Administration

- Coordinate regulatory compliance and strategy for NSPM.

2003-2008 **Xcel Energy Services, Inc., Denver, Colorado**
Regulatory Consultant

- Develop regulatory strategy for Commercial Operations.
- Coordinate compliance activity.
- Coordinate internal and external audits of trading activity.

1998-2003 **Xcel Energy Services, Inc., Minneapolis, MN**
Manager Renewable Energy/Regulatory Contract Coordinator

- Develop corporate strategies for renewable energy development.
- Represent Company at state regulatory and legislative proceedings regarding renewable energy issues.
- Negotiate purchased power contracts for renewable energy.
- Manage Energy Market's regulatory interactions with internal and external stakeholders.

1994-1998

Minnesota Department of Commerce, St. Paul, MN
Supervisor, Electric Regulatory Unit

- Manage regulatory staff to participate in state regulatory proceedings before the Minnesota Public Utilities Commission.
- Submit expert testimony in regulatory proceedings.
- Represent the Department of Commerce before the Minnesota legislature.

1982-1994

Minnesota Department of Commerce, St. Paul, MN
Principal Statistical Analyst

- Submit expert testimony in regulatory proceedings.
- Perform economic and statistical analysis to support regulatory and energy policy initiatives.

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Direct Testimony and Schedule
Farah L. Mandich

**STATE OF NORTH DAKOTA
BEFORE THE
NORTH DAKOTA PUBLIC SERVICE COMMISSION**

In the Matter of the Application of Northern States Power Company
for an Advance Determination of Prudence for the Sherco Solar 3 Project

Case No. PU-23-____
Exhibit____(FLM-1)

Resource Planning

May 19, 2023

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Schedules

Statement of Qualifications

Schedule 1

I. INTRODUCTION AND QUALIFICATIONS

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27

Q. PLEASE STATE YOUR NAME AND TITLE.

A. My name is Farah L. Mandich. I am Director of Resource Planning and Bidding for Xcel Energy Services, Inc. (Xcel Energy), which supports the Xcel Energy operating companies, including the applicant Northern States Power Company-Minnesota (NSP or the Company) and Northern States Power-Wisconsin (NSPW).

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I have worked for Xcel Energy since April 2019 in the areas of Regulatory Affairs and Resource Planning. I have been in my current position since September 2021. In my first role with the Company, in the Regulatory Affairs department, I worked with cross-functional teams to develop the Company's most recent 2020-2034 Upper Midwest Integrated Resource Plan (IRP) and resource acquisition filings for NSP.

Prior to joining Xcel Energy, I worked as a Policy Advisor for Southern California Edison, a large investor-owned utility in California. In this role, I supported development of Integrated Resource Planning and resource acquisition regulatory filings before the California Public Utilities Commission. My statement of qualifications is provided as Exhibit __ (FLM-1), Schedule 1.

Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES?

A. In my current role, I lead the Resource Planning team on the development of resource plans and competitive resource acquisitions for the NSP System,

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1 which provides electric service to customers in North Dakota, South Dakota,
2 Minnesota, Wisconsin, and Michigan. This includes assisting the Company in
3 making reasonable and prudent acquisition decisions for electric generation
4 resources.

5
6 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

7 A. The purpose of my testimony is to discuss the need for the proposed 250 MW
8 Sherco Solar 3 Project (Sherco Solar 3 or the Project) the Company is planning
9 to build in Sherburne County, Minnesota. I also discuss the procurement
10 process for solar generation resources the Company recently undertook,
11 provide details regarding the Project, and provide an economic analysis. My
12 testimony supports the conclusion that the North Dakota Public Service
13 Commission (Commission) should grant an advance determination of
14 prudence (ADP) for the proposed resource acquisition.

15
16 Q. IS THE COMPANY'S PROPOSED INVESTMENT IN THE PROJECT PRUDENT?

17 A. Yes. Sherco Solar 3 represents a near-term commitment by the Company to
18 add 250 MW of needed capacity to the NSP System by the end of 2025. This
19 Project will support NSP's ability to provide safe and reliable power to its
20 North Dakota customers and is consistent with the Company's Integrated
21 Resource Plan, both under North Dakota and Minnesota planning
22 requirements. The Company's economic analysis shows that the Project has
23 a cost comparable to the riskier strategy of using market purchases to address
24 future capacity deficits. Given the long-term nature of the resource and the
25 certainty associated with Company-owned resources reutilizing an existing
26 interconnection, Sherco Solar 3 is the prudent choice for the Company and its
27 customers.

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1 Q. HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?

2 A. My testimony is organized as follows:

- 3 • First, I discuss the Project’s background and the Company’s
4 identification of the need for the additional generation in its latest IRP.
5 • Second, I describe the Project in more detail and discuss the benefits it
6 provides to our system.
7 • Finally, I outline our economic analysis and modeling of the Project,
8 which demonstrates the value of Sherco Solar 3 to our customers.

9

10 **II. PROJECT BACKGROUND AND NEED**

11

12 Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR DIRECT TESTIMONY?

13 A. In this section, I provide background and historical context regarding the
14 genesis of the Project during the Company’s most recent resource planning
15 cycle. In particular, this section will first discuss the present need for
16 additional generation capacity identified in our most recent IRP.¹ I will then
17 focus on the procurement and planning process we have undertaken to
18 address this capacity need with a mix of resources to meet the Company’s
19 short-term and long-term generation needs. Finally, I discuss the Company’s
20 request for proposals (RFP) to obtain the additional solar resources identified
21 in the IRP.

¹ The most recent IRP was approved by the Minnesota Public Utility Commission (Minnesota Commission) in April 2022. ORDER APPROVING PLAN WITH MODIFICATIONS & ESTABLISHING REQUIREMENTS FOR FUTURE FILINGS, Docket No. E002/RP-19-368, April 15, 2022 (MN IRP Order). The IRP was also filed in North Dakota in Case No. PU-19-220.

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1 **A. The IRP**

2 Q. PLEASE DESCRIBE THE NEED FOR SHERCO SOLAR 3 IDENTIFIED IN THE IRP.

3 A. Sherco Solar 3 will partially fill a capacity need on the NSP system that the
4 Company forecasts will arise in 2026 and expand thereafter. Specifically, in the
5 IRP, NSP forecasted a net capacity deficit of 210 MW on the system arising
6 in 2026 and growing to 2,443 MW by 2030. While we anticipate new
7 generation unit requirements across the period, the Company has also
8 accounted for an increase in achievable demand-side resources, such as energy
9 efficiency and demand response, and other naturally occurring adoption of
10 distributed generation since the previous IRP.

11

12 Q. AT A HIGH LEVEL, PLEASE DESCRIBE THE ACTION PLAN OF THE IRP.

13 A. The IRP seeks to provide safe and reliable electric service at a reasonable cost
14 while promoting the Company’s ability to achieve 80 percent reduction of
15 carbon by 2030 – as well as set us on a path to achieve our ultimate 100 percent
16 carbon-free by 2050 goals – through a diverse mix of transitional dispatchable
17 and new renewable generation resources throughout the NSP system,
18 including:

- 19 • Extending the life of the Monticello nuclear plant through 2040;²
- 20 • Adding new solar resources starting in 2024;
- 21 • Adding substantial demand-side management and increasing annual
22 energy efficiency savings; and
- 23 • Adding firm, dispatchable resources to meet customer needs during
24 peak consumption periods.

² The Company’s ADP for the life extension is pending in Case No. PU-23-064.

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1 Q. HOW DOES THE IRP SUPPORT A COMBINED RESOURCE APPROACH TO
2 MEETING THE CAPACITY DEFICIT GOALS IDENTIFIED IN THE IRP?

3 A. Throughout the IRP process, we took steps to ensure that the Company can
4 maintain the consistent reliability of its system and pursue low-cost generation
5 while also meeting carbon reduction goals. To achieve these goals, we have
6 taken a portfolio approach that adds significant wind, solar, and firm
7 dispatchable resources—like gas combustion turbines—to NSP’s system.
8 This multi-faceted planning approach also takes advantage of the existing
9 interconnection resources available to the Company as it retires its coal-fueled
10 generation and utilizes federal incentives for wind and solar generation to
11 lower customer bills.

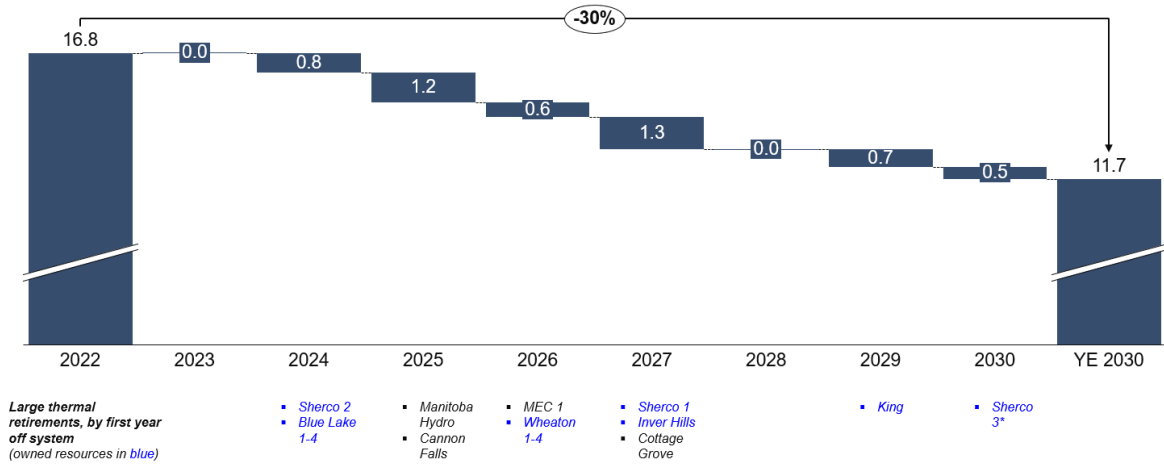
12

13 Q. HOW DOES THE RETIREMENT OF EXISTING RESOURCES IMPACT CAPACITY
14 DEMANDS?

15 A. The Company is facing multiple retirements of existing generation resources
16 in the coming years. As the Commission knows, NSP is on track to retire all
17 of our coal resources by 2030. Specifically, the Company plans to retire Sherco
18 Unit 2 in 2023, Sherco Unit 1 in 2026, the Allen S. King plant in 2028, and
19 finally Sherco Unit 3 in 2030. However, those coal retirements are just one
20 driver of our capacity needs. As Figure FLM-1 below demonstrates, the
21 Company is facing multiple generation resource retirements and PPA
22 expirations.

Figure FLM-1: Retirements and Expirations Under the IRP

Existing resources and planned retirements, as of 2021 IRP Alternate Plan filing
Units: GW (approx.), system-wide installed capacity



Q. WHAT DOES THIS FIGURE SHOW?

A. While the coal facility retirements have received a great deal of attention, the coming capacity deficit is also driven by the expiration or planned retirement of several thermal generation units by 2030, including several gas-fired units. This totals approximately 5 GW of capacity leaving the NSP system. All of these retirements together contribute to the need for new generation resources.

Q. IN GENERAL TERMS, WHAT APPROACH IS XCEL ENERGY TAKING TO ADDRESS THIS FORECASTED CAPACITY DEFICIT?

A. Xcel Energy is taking a portfolio approach, which I discuss in more detail below. New solar capacity, like the Project, is just one part of the overall portfolio, which also includes a brownfield gas-powered combustion turbine (CT) project being developed by NSPW, exploring the opportunity to extend

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1 certain existing PPAs, and the addition of 800 MW of firm dispatchable
2 capacity in the 2027 to 2029 timeframe.

3
4 Q. DO YOU HAVE ANY OTHER COMMENTS YOU WOULD LIKE TO MAKE ABOUT
5 THE PROJECT AS A RESPONSE TO THE COMING NEED FOR CAPACITY?

6 A. Yes. I would like to reiterate for the Commission that the Company has a
7 long-standing approach to supply customer demand through Company-
8 owned resources and long-term PPAs, in alignment with Fixed Resource
9 Adequacy Plan (FRAP) principles. The Company has not traditionally relied
10 on MISO's capacity market to meet customer needs and planning reserve
11 requirements and we view such reliance as a backstop option if other
12 acquisition approaches have not been successful. This approach of owning or
13 entering into long-term contracts for generation has served NSP well to
14 mitigate customer risk. While MISO's Planning Resource Auction has cleared
15 at a very low price for many years, the market can be volatile and increasing
16 exposure puts customers at risk for high, unplanned costs. Additionally, our
17 size may significantly impact the availability of short-term purchased capacity.
18 By making a commitment to continue adding both new solar and firm
19 dispatchable resources, the Company will continue to meet customer demand
20 though long-term resource acquisition rather than short-term power
21 purchases that can be susceptible to volatile and tightening wholesale power
22 markets.

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1 **B. Resource Procurement**

2 Q. PLEASE DESCRIBE THE MAJOR RESOURCES XCEL ENERGY PLANS TO ADD BY
3 2026.

4 A. The Company's IRP indicated incremental solar and firm dispatchable
5 capacity by 2026, as well as increased conservation resources. NSPW's
6 Wheaton Repowering Project in Wheaton, Wisconsin is one of the significant
7 additions Xcel Energy plans to add by 2026, as is Apple River Solar. The
8 other near-term major resource additions, and the ones most relevant to this
9 ADP, are the Company's plans to acquire a combined 710 MW of solar-
10 powered generation at or near the existing Sherco site. Of that 710 MW, 460
11 MW will come from Sherco Solar 1 & 2 projects that are before the
12 Commission in Case No. PU-21-152. The other 250 MW of solar generation
13 will be provided by the Project. The Company expects to have all of these
14 resources in operation by the end of 2025, so that it may be utilized to meet
15 capacity needs in the MISO 2026/2027 Planning Year. In addition to these
16 resources, the Company planned to obtain an additional 600 MW of solar
17 resources throughout our system through an RFP for long-term PPAs with
18 other developers. However, as discussed further below, we have yet to identify
19 enough cost-effective solar resources through the RFP to fully meet that goal.

20

21 Q. WHY HAS THE COMPANY IDENTIFIED SOLAR RESOURCES AT SHERCO AS ONE
22 OF THE NEAR-TERM SOLUTIONS TO THE NEED FOR CAPACITY?

23 A. The Company has identified these resources to meet the near-term current
24 capacity deficit primarily because these resources can come online relatively
25 quickly. We can often construct renewable resources in less time than some
26 other utility-scale resources and the solar projects at Sherco will take place at
27 the site of an existing Company generation facility. This allows the Company

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1 to utilize existing interconnection rights, thereby eliminating the delays
2 associated with the MISO interconnection queue.

3
4 Second, Xcel Energy has a corporate commitment to reduce its carbon
5 emissions and faces newly heightened carbon-free and renewable energy
6 requirements in Minnesota.³ Including solar generation as an important part
7 of the portfolio of new resources will help NSP meet its corporate goals and
8 comply with the requirements of all of the states it serves.

9
10 Finally, NSP has also taken account of the risks of federal environmental
11 regulation as well as the incentives for renewable generation provided by the
12 federal government in the Inflation Reduction Act (IRA). By including new
13 solar generation in the mix of resource additions, the Company is hedging
14 against legislative and regulatory risk, including the prospect of new Federal
15 regulation that could seek to limit or increase the cost of operating carbon-
16 emitting resources, such as the Environmental Protection Agency’s recently
17 announced proposed new rules for fossil-fuel fired electric generating units.⁴
18 Conversely, the passage of the IRA in August 2022 extended tax credits for
19 wind and solar generation, as well as opened up the ability for solar projects
20 to take a production tax credit. This change further reduces the net cost of
21 investing in these renewable resources, relative to what they would cost
22 without incentives. As discussed further below in section IV, these tax credits

³ Laws of Minnesota 2023, ch. 7, § 10.

⁴ Env’t Prot. Agency, EPA-HQ-OAR-2023-0072; FRL-8536-02-OAR, New Source Performance Standards for Greenhouse Gas Emissions from New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions from Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule (2023), https://www.epa.gov/system/files/documents/2023-05/FRL-8536-02-OAR%20111EGU%20NPRM%2020230504_Admin.pdf.

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1 have made the PVRR of Sherco Solar 3 competitive with other procurement
2 options available to us.

3
4 Q. YOU JUST DISCUSSED LEGISLATIVE/REGULATORY RISK, IS THE COMPANY
5 INCLUDING EXTERNALITY VALUES BASED ON THAT RISK IN THE MODELLING
6 RESULTS IT PRESENTS TO THIS COMMISSION?

7 A. No. My discussion above addressed some of the practical, qualitative reasons
8 why the Company is moving forward with solar as one part of its portfolio
9 approach to addressing future capacity needs. I am not suggesting that
10 externality values be used in this proceeding.

11
12 Q. WILL SHERCO SOLAR 3 ALSO TAKE ADVANTAGE OF THE EXISTING
13 INTERCONNECTION RIGHTS PRESENTLY USED BY SHERCO UNIT 2?

14 A. Yes. The retirement of the existing Sherco Unit 2 will free up approximately
15 710 MW of interconnection rights at the Sherco point of interconnection
16 (POI). Under the MISO Tariff, the Company must reuse this free
17 interconnection capacity within three years or we will lose the ability to utilize
18 this valuable asset on behalf of our customers. Given current constraints in
19 the MISO interconnection queue and the results of recent planning study
20 cycles and assigned interconnection upgrade costs, the interconnection rights
21 associated with the existing Sherco units are highly valuable. For the reasons
22 discussed in Company witness Mr. Allen Krug's testimony, operating Sherco
23 Unit 2 past its planned retirement dates is not a feasible alternative.

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1 Q. WHY IS IT IMPORTANT TO REUSE THE EXISTING INTERCONNECTION RIGHTS
2 ASSOCIATED WITH THE SHERCO COAL UNITS?

3 A. As the Company has noted in several recent filings, existing transmission
4 capacity continues to be constrained in our region and beyond, and high
5 upgrade costs are often required to bring new generation projects online. The
6 Company owns approximately 2,000 MW of interconnection rights at the
7 Sherco Substation POI, as well as substantial interconnection infrastructure at
8 the site. Given the high interconnection costs associated with greenfield
9 projects in the MISO West region, this interconnection capacity presents a
10 significant opportunity for the Company to add large amounts of capacity that
11 are identified as needed in the IRP in the near-term while avoiding the MISO
12 interconnection queue schedule and cost risk.

13

14 Q. PLEASE ELABORATE ON THE MISO RULES REGARDING TRANSFER OF
15 INTERCONNECTION RIGHTS.

16 A. The general timing rules for generator interconnection replacement set forth
17 in Attachment X of the MISO Tariff require that: (1) a request for generator
18 interconnection replacement be submitted at least one year prior to the date
19 that an existing generation facility will cease operation, Attach. X § 3.7.1(ii),
20 and (2) the expected commercial operation date for a replacement facility must
21 be within three years of the date that the existing facility ceases operation,
22 Attach. X § 3.3.1. The rules allow the owner of an existing facility to request
23 that it replace the facility with another facility. The rules do not allow the
24 owner of an existing facility to “sell” their rights for a third party to build a
25 replacement facility that will use the owner’s existing interconnection rights.

26

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1 Q. DOES THIS MEAN THAT THE COMPANY WILL NEED TO OWN THE PROJECTS
2 THAT PROVIDE THE REPLACEMENT GENERATION?

3 A. Yes. To comply with the MISO rules, the Company will need to own
4 generation at the Sherco POI equivalent to its existing interconnection rights.
5 For Sherco 2, that means the Company will need 710 MW of replacement
6 generation, which the Company plans to fill with capacity from Sherco Solar
7 Units proposed in Case No. PU-21-52 (Sherco Solar 1 and 2) and the Sherco
8 Solar 3 project contemplated here.

9

10 Q. PLEASE BRIEFLY DISCUSS THE WHEATON REPOWERING PROJECT.

11 A. NSPW's Wheaton Repowering Project will be located at the site of the existing
12 Wheaton Generation Station and, as I stated above, is expected to be in service
13 by 2026. It will include a new F-class CT generator and five new 9 MW
14 reciprocating internal combustion engine (RICE) units. It will have a total
15 combined capacity of 255 MW. NSPW applied for a Certificate of
16 Convenience and Necessity and Wisconsin Department of Natural Resources
17 Utility Permit to construct and operate the Wheaton Repowering Project with
18 the Public Service Commission of Wisconsin in January of 2023.⁵ As Mr.
19 Krug explains, the Wheaton project is not the subject of an ADP because it is
20 an NSPW project.

21

22 Q. WHY DID XCEL ENERGY DECIDE TO LOCATE A REPOWERING PROJECT AT THE
23 EXISTING WHEATON GENERATION STATION?

24 A. Proximity to the existing station was an important siting consideration because
25 the Wheaton Repowering Project can benefit from the existing infrastructure

⁵ JOINT APPLICATION FOR CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY AND WDNR UTILITY PERMIT, Docket No. 4220-CE-185.

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1 of a brownfield site and, like the Sherco solar projects, will reuse the
2 Company's interconnection rights currently used by the existing plant.

3
4 Q. DOES THE COMPANY EXPECT TO PLACE ADDITIONAL DISPATCHABLE
5 GENERATION ONLINE BY 2030?

6 A. Yes. The Company plans to add an additional 800 MW of firm dispatchable
7 capacity between 2027 and 2029, per its IRP.

8
9 Q. WILL THE COMPANY CONTINUE TO PURSUE THE ACQUISITION OF THIS
10 ADDITIONAL 800 MW OF FIRM, DISPATCHABLE CAPACITY?

11 A. Yes. The Company identified the need for such capacity between 2027 and
12 2029 in its IRP and is planning to have new resources come online in that
13 timeframe.

14
15 **C. The RFP Process**

16 Q. DID THE COMPANY CONDUCT A COMPETITIVE PROCUREMENT PROCESS FOR
17 ITS NEW SOLAR RESOURCES?

18 A. Yes. On August 1, 2022, we issued an RFP seeking at least 900 MW of solar
19 or solar-plus-storage hybrid resources to come online by the end of 2025,
20 including up to 300 MW of capacity to replace the remainder of the open
21 transmission interconnection rights that will be available when Sherco Unit 2
22 coal facility retires at the end of 2023. The purpose of this RFP was to select
23 resources to fill the identified system need by 2026 and to enable the Company
24 to reuse the remainder of its interconnection rights that will become available
25 when Sherco Unit 2 retires.

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1 The RFP was open to projects connected directly to the distribution system
 2 in our five-state Upper Midwest system, in addition to transmission-
 3 interconnected assets located in MISO Zone 1. We accepted proposals for
 4 various project structures: Company ownership through build-transfers or
 5 self-builds, as well as PPAs. The Company sought projects that could achieve
 6 a commercial operation date (COD) no later than December 31, 2025 to meet
 7 our near-term identified capacity need. Table FLM-2 summarizes the project
 8 types that were eligible for this RFP.

Table FLM-2: RFP Eligible Project Types

Purpose	Sherco Interconnection Reuse	Additional Resource Capacity Needs
Geography	MISO Zone 1, reutilizing the Company's existing Sherco interconnection rights	<ul style="list-style-type: none"> • MISO Zone 1 (transmission-interconnected assets), or • NSP distribution system (distribution-interconnected assets)
Resource Types	Solar, Solar + Storage	Solar, Solar + Storage
Approximate MW Target	300 MWac	600 MWac
Minimum Size per Project Site	>5 MWac	>5 MWac
Project Structure	Build Transfer, Company Self-Build	PPA, Build Transfer, Company Self-Build
Timing	COD by December 31, 2025	COD by December 31, 2025

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1 Q. WHAT WERE THE RESULTS OF THE RFP?

2 A. The response to the RFP was robust, with 80 proposals for 43 projects from
3 17 bidders, totaling 2,749 MW of solar and 940 MW/3,120 MWh of storage.
4 The bids included one self-build proposal, 58 PPA proposals, and 21 build-
5 transfer proposals. Despite the robust response, during bid evaluation, we
6 found significant critical issues with many of the bids that would pose undue
7 risk to the Company and our customers, thus reducing the number of
8 proposals passing through to final evaluation to 24. Some of these bids
9 represented various configurations or contract types for the same project. At
10 the end of the RFP process, we shortlisted 464 MW of solar projects, spanning
11 contract structures and interconnection locations and including our self-build
12 proposal for Sherco Solar 3.

13
14 Q. HOW DID THE COMPANY EVALUATE THE RFP BIDS?

15 A. Between October 8 and December 21, 2022, the bids were evaluated in a five-
16 stage process, which was documented and developed beforehand. At a high
17 level, the five evaluation steps were:

- 18 • Completeness review,
- 19 • Threshold review,
- 20 • Project scoring,
- 21 • EnCompass modeling, and
- 22 • Final price screen and shortlist identification.

23
24 At both the Completeness and Threshold stages, where projects may be
25 eliminated from further consideration, we provided bidders with
26 opportunities to fix any deficiencies that would prevent them from moving
27 forward in the evaluation process. The following phases, where bids were
28 scored and modeled, did not require any cures. Table FLM-3 shows the
29 number of bids eliminated or withdrawn during the evaluation process.

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Table FLM-3: Bids through Evaluation Stages

Evaluation Stage	Bids Withdrawn	Bids Eliminated	Bids Remaining
Completeness	1	0	79
Threshold	9	46	24
Project scoring	0	2	22
EnCompass modeling & cost-effectiveness screen	0	13	9

Q. DID THE COMPANY INCLUDE MODELING IN ITS EVALUATION PROCESS?

A. Yes. We used our Minnesota-approved IRP as the baseline and removed generic solar to create a capacity void in the plan. Then, the Company entered each remaining bid in the EnCompass model as a selectable resource and optimized, allowing the model to choose the most cost-effective projects. If a project had been bid in once as a PPA and once as a build-transfer, or as a standalone solar project and with a hybrid option, we set the model to only take the most system-beneficial version of each discrete project.

Q. DID THE COMPANY IMPOSE ANY PRICE SCREENS AS PART OF THE EVALUATION PROCESS?

A. Yes. Ultimately, the proposals we received in response to this RFP were generally higher in price than the generic solar resources modeled in the IRP. Accordingly, while the Company perhaps could have met our entire resource need with the projects that bid into the RFP, given the high cost of many of those bids, and our ability to create time and space for better pricing through

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1 short-term PPA extensions, NSP imposed a price cap that limited any
2 resource additions to projects with prices that were **[PROTECTED DATA**
3 **BEGINS**

4 **PROTECTED DATA ENDS]** which has a levelized
5 cost of energy (LCOE) of approximately \$70/MWh.
6

7 Q. WERE ANY PROJECTS THAT INCLUDED STORAGE ON THE SHORTLIST?

8 A. No. The Company's modeling showed that the cost differential for hybrid
9 solar-plus-storage projects proposed (relative to standalone solar) was too
10 high relative to the system benefits they afforded, so only standalone solar
11 projects made it to the shortlist.
12

13 Q. WHICH PROJECTS MADE THE SHORTLIST AFTER THE EVALUATION PROCESS
14 WAS COMPLETE?

15 A. Table FLM-4 below shows the shortlist, as presented by the Company to the
16 IA. As shown below, the shortlist included a mix of interconnection methods,
17 geographic distribution, and a relatively broad range of prices.

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1 Q. DID THE COMPANY USE AN INDEPENDENT AUDITOR IN ITS PROCUREMENT
2 PROCESS?

3 A. Yes. The Company's contracted with Guidehouse to serve as an Independent
4 Auditor (IA). The IA monitored the RFP process and determined that the
5 Company fairly evaluated the bids.

6

7 Q. WHY DID THE THIRD-PARTY SHORTLISTED PROJECTS WITHDRAW?

8 A. During negotiations and finalization, a majority of the bidders withdrew their
9 projects because they could not maintain the proposed prices submitted in
10 their initial bids, or were unwilling to incur the risk of unforecasted costs and
11 delays to interconnect the projects. For example, one bidder determined that
12 the level of tax credits assumed in its PPA bid was not actually achievable, and
13 thus it was no longer willing to move forward with the project at the originally
14 proposed price. Several other projects faced challenges with interconnection
15 – either based on siting or risk of higher than expected interconnection costs
16 – and removed themselves from further negotiation.

17

18 Q. GIVEN THE LACK OF VIABLE BIDS, DID THE COMPANY TAKE OTHER STEPS TO
19 FULFIL THE IDENTIFIED NEED?

20 A. Yes. After the shortlist was announced, knowing that the shortlist did not
21 fulfill the 900 MW sought—and based on prior experience that some
22 shortlisted bids may not progress through negotiations—the Company
23 communicated with several bidders for non-shortlisted projects after the
24 shortlist was announced. All of these projects had already passed through the
25 threshold analysis, ensuring that there were no significant technical concerns
26 with the project proposed, but based on their bids did not pass the \$70/MWh
27 price threshold determined during the shortlisting process. We asked these

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1 bidders if they were willing and able to reduce their price. Two bidders,
2 **[PROTECTED DATA BEGINS**
3 **PROTECTED DATA ENDS]** and NG Renewables for its Apple River
4 project (located in Wisconsin), indicated they were able to reduce their bid
5 prices such that their LCOE would be at or below the \$70/MWh threshold,
6 and negotiations with these bidders moved forward.

7
8 During negotiations with **[PROTECTED DATA BEGINS**
9 **PROTECTED DATA ENDS]**, however, the bidder no longer became
10 comfortable with the risk of **[PROTECTED DATA BEGINS**

11
12 **PROTECTED DATA**
13 **ENDS]** This left the 100 MW Apple River project as the only qualifying third-
14 party bid. On April 13, 2023, NSPW formally executed a PPA for this project.
15 As Mr. Krug explains, the Apple River project is not included in this ADP
16 because its PPA is with NSPW and not the Company.

17
18 Q. DID ANY OTHER PROJECTS PROPOSE TO REUTILIZE THE COMPANY'S EXISTING
19 SHERCO INTERCONNECTION RIGHTS?

20 A. No. After the RFP closed on October 7, 2022, it became clear that only one
21 bid—our self-build Sherco Solar 3 project—proposed to reuse the Company's
22 interconnection rights at Sherco. Considering this reality, and the
23 comparatively low LCOE for the Project, we chose to pursue Sherco Solar 3
24 to reuse our existing interconnection rights.

25
26 Q. DID THE AS-BID SHERCO SOLAR PROJECT FULLY REUTILIZE THE REMAINING
27 INTERCONNECTION RIGHTS FOR SHERCO UNIT 2?

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1 A. No. The original bid was for a 150 MW project; while the bid indicated the
2 Company could potentially expand the project, it did not provide detail
3 regarding this potential expansion. When the initial bids in the RFP failed to
4 provide an option to fully fill the Company’s expiring interconnection rights,
5 the Company worked with the IA and established a process to evaluate
6 multiple options to fulfill the rest of the interconnection. Through this
7 process, the Company determined that an expansion of the Sherco Solar 3
8 project (to 250 MW) would be our best opportunity to ensure the remaining
9 interconnection rights were fully utilized.

III. SHERCO SOLAR 3 PROJECT

13 Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF THE PROJECT.

14 A. The 250 MW Sherco Solar 3 Project is being developed by the Company and
15 is located on an approximately 1,750 acre site located primarily in Clear Lake
16 Township, Minnesota. Table FLM-5 provides a summary of key
17 characteristics of the Project.

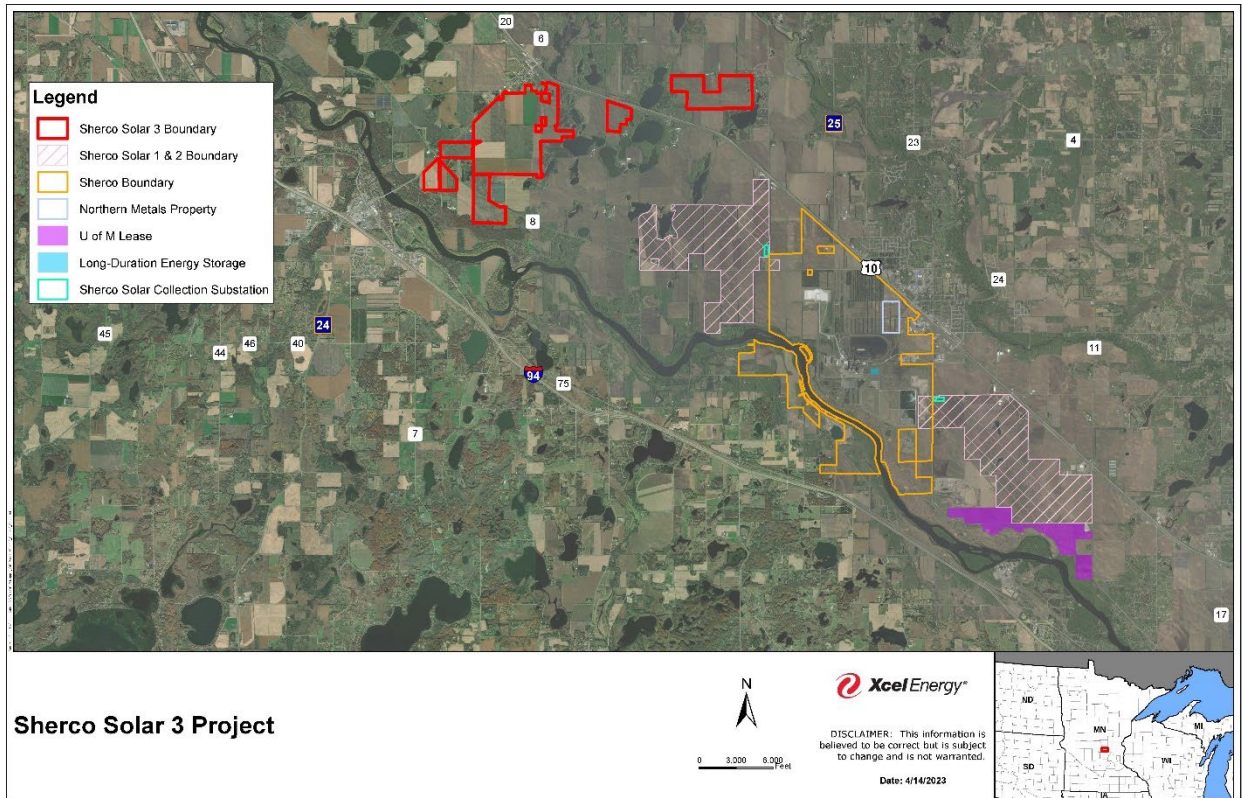
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Table FLM-5: Sherco Solar 3 Project Details

Nameplate Capacity	250 MWac
Developer	Xcel Energy
Project Location	Clear Lake Township, Minnesota
Project Structure	Self-Build
Anticipated COD	November 2025
Project Life	35 years
	[PROTECTED DATA BEGINS
LCOE (\$/MWh)	
Net Capacity Factor	
	[PROTECTED DATA ENDS]

The project is located on land near the existing Sherco facility site. Sherco Solar 3 will be located to the west of Sherco Solar 1 & 2 and approximately five miles from that project’s collector substation, covering 1,750 acres of leased land that is non-prime farmland. The project would add a new bay adjacent to the Sherco Solar 1 collection substation and use the same gen-tie line to deliver energy back to the Sherco POI. Altogether, Sherco Solar 3 will include the installation of approximately 550,000 solar panels, approximately 50 miles of underground collection feeder lines, electrical collection systems, access roads, collector substations, and other supporting solar farm infrastructure.

Figure FLM-6: Sherco Site and Sherco Solar 3 Location



16 Q. PLEASE PROVIDE THE CONSTRUCTION TIMELINE FOR THE PROJECT.

17 A. NSP expects primary construction activities on the Project will occur in 2024
18 and 2025 with engineering and most procurement taking place in 2023. Under
19 the current estimated schedule, the Company anticipates that commercial
20 operation will be achieved in November 2025.

22 Q. WHAT ARE THE TOTAL CAPITAL COSTS OF THE PROJECT?

23 A. Total capital costs for the Sherco Solar 3 Project are currently estimated at
24 approximately **[PROTECTED DATA BEGINS**
25 **PROTECTED DATA ENDS]**, which includes Allowance for Funds Used
26 During Construction (AFUDC). Sherco Solar 3's expected Net Capacity
27 Factor is **[PROTECTED DATA BEGINS** **PROTECTED**

IV. ECONOMIC ANALYSIS

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Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR DIRECT TESTIMONY?

A. In this section, I discuss the projected cost of Sherco Solar 3 and how it compares to other solar energy projects developed by the Company. I then discuss the modeling methodology and alternative capacity sources we used to calculate the PVRR for the Project. Finally, I briefly touch on the Company’s expectation for how the Project will be treated under MISO’s seasonal capacity accreditation methodology.

A. Levelized Cost of Energy

Q. BASED ON THE INFORMATION PROVIDED ABOVE, WHAT IS THE PROJECTED LCOE FOR SHERCO SOLAR 3?

A. The projected LCOE for Sherco Solar 3 is **[PROTECTED DATA BEGINS PROTECTED DATA ENDS]** This LCOE estimate assumes that the Project qualifies for the 10-year full PTC plus the 10 percent bonus credit under the “energy community” provision of the IRA, which results from the Project being located at the Sherco site. It also assumes the sale or transfer of PTCs, with net benefits passed on to customers.

Q. HOW DOES THIS PRICE COMPARE WITH THE EXPECTED PRICE OF THE OTHER SHERCO SOLAR PROJECTS?

A. We currently estimate a LCOE of **[PROTECTED DATA BEGINS PROTECTED DATA ENDS]** for the Sherco Solar 1 and 2 projects. Like Sherco Solar 3, this estimate also assumes that the projects qualify for the full 10-year PTC plus the 10 percent bonus credit under the “energy community” provision of the IRA.

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1 Q. WHAT HAS CONTRIBUTED TO THE HIGHER LCOE FOR SHERCO SOLAR 3?

2 A. For the past two years, persistent inflation has increased prices for goods and
3 services across the global economy. These factors are impacting the costs of
4 all energy resources. Demand for solar resources is also increasing as utilities
5 across the country add renewables in response to the IRA and to achieve
6 carbon reduction and clean energy goals, at the same time as the US
7 government has opened a proceeding to assess several major panel
8 manufacturers antidumping and countervailing duty tariffs.⁷ Several
9 geopolitical factors have compounded costs globally, such as Russia’s invasion
10 of Ukraine, and exacerbated already-increasing energy prices in multiple
11 regions across the world, as well as other regions’ clean energy goals, further
12 increasing demand for new generation sources. Increased demand has been
13 met with ongoing supply chain constraints, high labor costs, and rising interest
14 rates that increase borrowing costs for developers, including Xcel Energy.

15

16 Q. HOW HAVE THESE FACTORS INCREASED SOLAR PPA PRICES IN MISO?

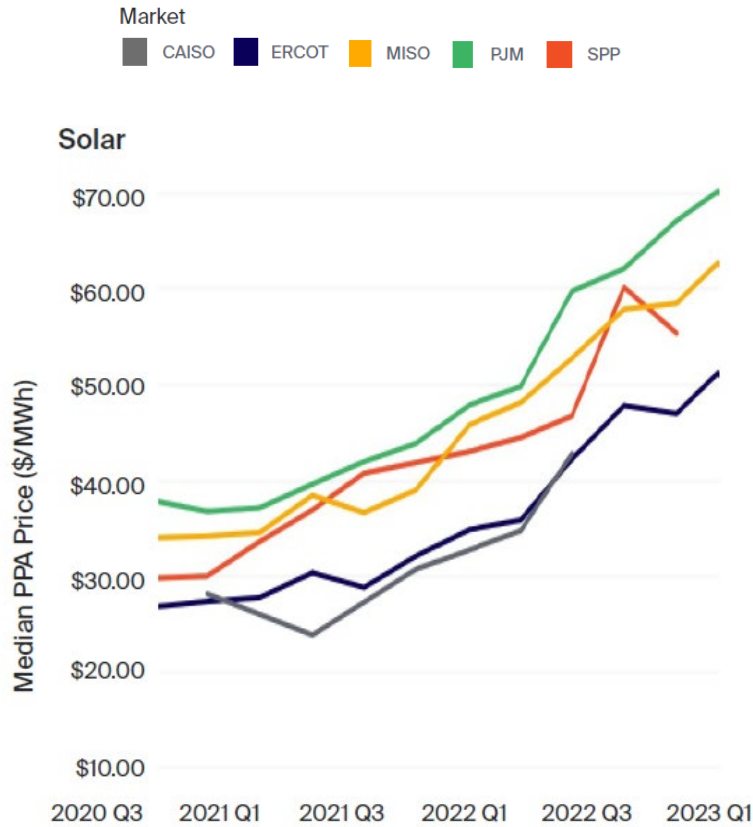
17 A. Prices for solar projects have increased across the country. Edison Energy’s
18 latest Renewables Market Report shows that median solar PPA prices have
19 increased substantially across all regions in the US and prices in the
20 Midcontinent Independent System Operator (MISO) area have increased by
21 over 70 percent since we submitted the Alternate Plan approved in our last
22 Resource Plan proceeding.⁸ Figure FLM-7 shows the trend in solar PPA
23 prices by market.

⁷ Note that implementation of these tariffs is paused until 2024; however, their prospect is still affecting the market currently, increasing demand for non-tariffed panels for future projects and thus putting upward pressure on prices.

⁸ Edison Energy, “Q1 2023 Global Renewables Market Update.” Available at https://issuu.com/edisonenergy/docs/ee_renewables_market_report_q12023.

1 **Figure FML-7: Edison Energy Q1 Market Report – Trends in Solar PPA**

2 **Prices**



18 Q. DOES THE LCOE FOR SHERCO SOLAR 3 COMPARE FAVORABLY TO THE
19 MEDIAN PPA PRICES IN MISO?

20 A. Yes. The Sherco Solar 3 LCOE is nearly **[PROTECTED DATA BEGINS**
21 **PROTECTED DATA ENDS]** lower than the 2023 Q1 median
22 PPA price for solar projects within MISO. This price difference emphasizes
23 our commitment to selecting low-cost solar projects and the success we have
24 been able to achieve in the face of persistent inflation and macroeconomic
25 factors that have pushed prices higher.

1 **B. EnCompass Modeling**

2 Q. PLEASE ELABORATE ON THE MODELING METHODOLOGY THE COMPANY
3 USED TO ANALYZE SHERCO SOLAR 3.

4 A. In order to determine the benefits provided by the Project, the Company
5 completed an additional economic analysis using EnCompass. Due to
6 significant changes in the portfolio relative to the initial RFP shortlist, we
7 reformulated our EnCompass modeling to identify the cost and benefits of
8 the Sherco Solar 3 project and the Apple River project both on a portfolio
9 basis and individually.⁹ The IRP still served as the basis of the capacity
10 expansion plan for the entire modeling period, and we still removed the
11 generic solar resources in 2024 and 2025 to create a capacity void. However,
12 to create a baseline run wherein Sherco Solar 3 and Apple River Solar were
13 not added to our system – EnCompass was only allowed to select a capacity
14 purchase in order to fill the capacity void.

15
16 For the portfolio evaluation of both Apple River and Sherco Solar 3, the
17 projects were forced into the model and then the model was allowed to select
18 capacity purchases optimally sized to fill the remaining capacity void. This
19 portfolio model run provides a capacity expansion plan—including the
20 selected projects and any incremental capacity purchase needs—that can then
21 be processed through production cost modeling to produce a PVRR result.
22 This PVRR is then compared to the baseline PVRR to identify the total
23 savings or costs of the portfolio to our system, relative to the alternative where
24 we procure capacity purchases only to meet the need. For the individual
25 evaluations of each project, we used the same approach described above, but

⁹ MN IRP Order at 34 (“For future petitions seeking new sources of solar-generated electricity, Xcel shall provide updated capacity expansion modeling that forecasts the consequences for rates.”).

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1 we forced in the individual project being evaluated and allowed EnCompass
2 to select capacity purchases to fill the remaining capacity void. Both projects
3 were evaluated individually in this manner against the baseline results.
4

5 Q. HOW DID THE COMPANY MODEL ALTERNATIVE CAPACITY PURCHASES?

6 A. We based cost assumptions for alternative capacity purchases on MISO's
7 current Cost of New Entry (CONE) pricing, reflecting a capacity alternative
8 that may be available to the Company in the absence of the portfolio projects.
9 As noted above, the Company does not plan to rely on capacity purchase to
10 meet its obligations; however, in this instance where procurement is near term
11 and it is less likely a new capacity resource could be constructed in the
12 timeframe required, it is an appropriate alternative option to model. Unlike an
13 assumed generic or alternative contract/project life extension, CONE is a cost
14 that is publicly known and capacity credit purchases can be easily sized by the
15 model in order to balance reserve margin needs and solving for the least-cost
16 solution. Once the baseline capacity plan was created—including assumed
17 capacity purchases in any years where the reserve margin is not otherwise
18 met—a PVRR production cost run was performed in order to have a basis of
19 comparison for the projects in order to evaluate both with and without the
20 consideration of the future regulatory costs of carbon. Note that the model
21 does not compare the total revenue requirement of the Project to purchasing
22 an equivalent number of capacity credits in each year; rather the model only
23 adds capacity purchases to fill in the gaps in the specific years where the
24 Company's total capacity falls below the required reserve margin. In this
25 sense, the Company utilized a relatively conservative approach to evaluating
26 the Project.

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1 Q. DO CAPACITY PURCHASES THROUGH MISO'S CONE PRICING REFLECT THE
2 COSTS OF ANY PARTICULAR TYPE OF RESOURCE?

3 A. Yes. MISO CONE is an industry-standard, third-party generated estimate of
4 the cost of constructing a greenfield CT. Consequently, CONE represents a
5 reasonable proxy for alternatives to the Project. MISO determines an
6 appropriate CONE value for each of its Local Resource Zones on an annual
7 basis. The CONE value used for our economic analysis here was specific to
8 MISO Zone 1 for the 2023-2024 Planning Year.

9

10 Q. WHY DID THE COMPANY SELECT MISO CONE AS AN ALTERNATIVE PRICING
11 SOURCE AS OPPOSED TO A GENERIC BROWNFIELD CT RESOURCE?

12 A. Modeling the costs for repowering an existing, or brownfield, CT resource
13 would not represent a reasonable alternative for Sherco Solar 3 because Xcel
14 Energy is already pursuing the Wheaton Repowering Project described above.
15 Apart from the Wheaton Repowering Project, we have no practical additional
16 brownfield opportunities on our system currently.

17

18 Q. WHAT WERE THE RESULTS OF THE ENCOMPASS MODELING ON A PVRR BASIS?

19 A. The results of the EnCompass analysis show \$2 million in net benefits to
20 customers over the planning period, on a PVRR basis. Table FLM-8 below
21 summarizes the expected net present value (NPV) impacts resulting from
22 Sherco Solar 3.

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**Table FLM-8: PVRR Savings Resulting from Sherco Solar 3 Based on
Minnesota Alternate Plan Expansion Plan**

Present Value Measure	Cost/(Savings) (\$2023 millions)
PVRR (No CO ₂ Costs)	(\$2)

Q. DID THE COMPANY ALSO ANALYZE THE PROJECT BY INCORPORATING THE SOCIAL COST OF EMISSIONS?

A. While we did analyze Sherco Solar 3 on a PVSC basis for the Minnesota Commission, the data presented above only analyzes the financial benefits of Sherco Solar 3 on a PVRR basis—without the social cost of emissions—as required in North Dakota.

Q. WHAT CONCLUSIONS DO YOU DRAW FROM THESE MODELLING RESULTS?

A. As a practical matter, the expected costs of the Sherco Solar 3 project are essentially the same, all other things being equal, as the alternative of relying on alternative capacity purchases. However, as I discussed above, the Company has a long-standing strategy of using Company-owned resources and long-term contracts to satisfy its customers' loads. This strategy protects our customers against the impacts of market volatility. By adding Sherco Solar 3, the Company will be able to meet its customers' needs using a stable, long-term resource, and will avoid the risk associated with relying on a sometimes volatile capacity market.

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1 Q. HAS THE COMPANY BEEN ABLE TO IDENTIFY ANY OTHER SOLAR RESOURCES
2 AVAILABLE BY 2026 THAT HAVE A LOWER LCOE THAN THE PROJECT?

3 A. No. The RFP did not produce any bids with a lower LCOE than Sherco Solar
4 3 once the Company finalized negotiations with the bidders of shortlisted
5 projects.

6

7 **C. MISO Seasonal Capacity Accreditation**

8 Q. HAS THE COMPANY ADDRESSED HOW SHERCO SOLAR 3 WILL BE ACCREDITED
9 UNDER MISO'S NEW SEASONAL CAPACITY APPROACH?

10 A. Company witness Ms. Kari Hassler addresses the Company's approach to
11 MISO's seasonal capacity accreditation program. I will briefly note, however,
12 that at this point we cannot be certain how accreditation for non-thermal
13 generation will be determined by MISO in the future. At this time, the
14 approved seasonal default accreditation values for solar are 50 percent in
15 summer, fall and spring, and 5 percent in winter. MISO is currently expecting
16 to file its non-thermal accreditation methodology with FERC in late 2023.
17 Until that filing is made, the Company would be speculating on the exact
18 amount of accreditation that Sherco Solar 3 could be expected to achieve
19 longer term. At this point it is appropriate for the Company to acquire the
20 project, following the near term action plan identified its most recently
21 approved IRP.

22

23 Q. SHOULD THE COMPANY WAIT TO ACQUIRE THE PROJECT UNTIL THE
24 FORTHCOMING SEASONAL CAPACITY METHODOLOGY IS DETERMINED?

25 A. No. In the most recent IRP, we identified a capacity need for our system
26 starting in 2026. Utility-scale generation projects like Sherco Solar 3 require
27 years of lead time for construction and regulatory approval. It would be

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1 imprudent and impractical to put capacity expansions on hold for every
2 regulatory change that could affect the net economic benefits of future
3 projects. Furthermore, regardless of the forthcoming construct, the
4 Company's demand is summer peaking, which is the season in which solar
5 provides the most benefit toward meeting capacity requirements. However,
6 I will note that the Company is due to file its next IRP in 2024, and the
7 modelling and planning presented in that matter, which the Commission will
8 fully evaluate, will include an updated approach reflecting seasonal
9 accreditation and sensitivities around MISO's filed non-thermal accreditation
10 methodologies.

11
12 **V. CONCLUSION**

13
14 Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

15 A. Yes, it does.

Farah L. Mandich

Statement of Qualifications

Farah Ladan Mandich is Director of Resource Planning and Bidding for Northern States Power Company – Minnesota. She currently leads the Company’s Resource Planning team in the development of resource plans and resource acquisitions for the NSP System, which provides electric service to customers in North Dakota, South Dakota, Minnesota, Wisconsin, and Michigan. She has been in this role since September 2021; previously she did a one-year development rotation in the Resource Planning team as a specialist and acting team lead. Mandich initially joined Xcel Energy in April 2019 as a Regulatory Policy Specialist, where she was responsible for developing resource planning and resource acquisition regulatory filings for NSPM.

Prior to joining Xcel Energy, Mandich was a Policy Advisor at Southern California Edison (SCE), a large investor-owned utility in California. In this role, she supported development of Integrated Resource Planning and resource acquisition regulatory filings before the California Public Utilities Commission. Before working on California regulatory issues, Mandich was a Knowledge Specialist in global consultancy McKinsey & Company’s Electric Power & Natural Gas practice, where she served as a subject matter expert to both U.S. and international clients on North American utility and renewable energy markets.

Mandich received her Bachelor of Science in Economics from Texas Christian University and her Master of Public Policy from the University of Michigan’s Gerald R. Ford School of Public Policy.

Direct Testimony and Schedule
Kari Hassler

**STATE OF NORTH DAKOTA
BEFORE THE
NORTH DAKOTA PUBLIC SERVICE COMMISSION**

In the Matter of the Application of Northern States Power Company
for an Advance Determination of Prudence for the Sherco Solar 3 Project

Case No. PU-23-____
Exhibit____(KH-1)

Resource Adequacy

May 19, 2023

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Schedule

Statement of Qualifications	Schedule 1
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1 **I. INTRODUCTION AND QUALIFICATIONS**

2

3 Q. PLEASE STATE YOUR NAME AND TITLE.

4 A. My name is Kari Hassler. I am the Senior Manager for Market Operations for
5 Xcel Energy Services, Inc. (Xcel Energy), which supports the Xcel Energy
6 operating companies, including Northern States Power Company-Minnesota
7 (NSP or the Company).

8

9 Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

10 A. I have worked for Xcel Energy since 1998. I have been in my current position
11 since 2016. Prior to my current position, I was a Manager of Trading
12 Analytics, a Renewable Energy Portfolio Manager, and a Statistician, Senior
13 Load Research Analyst, and Senior Quantitative Risk Analyst. My statement
14 of qualifications is provided as Exhibit___(KH-1), Schedule 1.

15

16 Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES?

17 A. In my current role, I develop and coordinate the Company's positions with
18 respect to Midcontinent Independent System Operator, Inc. (MISO) market
19 design and represent the Company's interests to senior management,
20 regulators, and stakeholders. My goal is to develop innovative solutions within
21 the MISO market framework to optimize the current and future generation
22 fleet while maintaining an efficient and reliable market.

23

24 I am also currently serving at the Chair of the Resource Adequacy
25 Subcommittee (RASC) of MISO. The RASC provides input and policy

1 guidance to MISO management and the MISO Advisory Committee¹ on all
2 market and operational activities and processes that facilitate adequate
3 planning resources within MISO for the long-term planning horizon. As a
4 result of my involvement with the RASC, I am personally familiar with,
5 facilitate and participate in discussions at MISO with regard to its resource
6 adequacy construct.

7
8 Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS PROCEEDING?

9 A. The purpose of my Direct Testimony is to provide general background on
10 MISO's expected future changes in its approach to resource adequacy. While
11 I discuss the Sherco Solar 3 project (Sherco Solar 3 or the Project) in that
12 specific context, I am not providing an in-depth description of the Project or
13 presenting an analysis of the Project's benefits. Company witness Ms. Farah
14 L. Mandich discusses those topics in her testimony. Similarly, while the
15 capacity concepts I am focusing on have some relevance for the regulatory
16 matters at issue in this proceeding, Company witness Mr. Allen Krug is
17 focusing on that broader policy perspective in his testimony.

18
19 Q. WHAT IS THE COMPANY REQUESTING IN THIS MATTER?

20 A. The Company is requesting an Advance Determination of Prudence (ADP)
21 for the Project, which is a 250 MW (nameplate) photovoltaic (PV) project
22 located in Clear Lake Township, Minnesota. The Project site will be located
23 near the Company's Sherburne County Generating Station (Sherco) and will
24 re-use a portion of the Company's existing interconnection rights at the

¹ The Advisory Committee is a forum for MISO members to keep apprised of MISO's activities and to provide information and advice to MISO's Board of Directors on policy matters. The RASC is a subcommittee of the Advisory Committee.

1 Sherco point of interconnection. Mr. Krug and Ms. Mandich provide
2 additional information regarding the Project and its benefits in their testimony.

3
4 Q. HOW IS YOUR DIRECT TESTIMONY ORGANIZED?

5 A. My Direct Testimony is organized as follows:

- 6 • I start by providing some high-level background regarding MISO's
7 development of a new seasonal capacity construct;
- 8 • Next, I discuss the Project in relation to the forthcoming seasonal
9 capacity construct.

10
11 **II. MISO RESOURCE ACCREDITATION**

12
13 Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

14 A. In this section, I discuss MISO's development of a new methodology for
15 seasonally accrediting non-thermal resources, such as solar. I start by briefly
16 discussing MISO's current capacity construct. Then, I introduce MISO's
17 efforts to update and revise the construct, including the current status and
18 timeline. In this section, I do not specifically discuss the Project; instead, I
19 turn to that subject in the next section.

20
21 **A. Existing MISO Approach to Resource Adequacy**

22 Q. DOES YOUR TESTIMONY PROVIDE AN IN-DEPTH DISCUSSION OF HOW MISO
23 CURRENTLY APPROACHES RESOURCE ADEQUACY?

24 A. No. MISO's approach to assessing resource adequacy is a complex and multi-
25 faceted topic and an in-depth explanation of it would require voluminous
26 testimony, much of which would not be especially relevant to this Application.
27 Also, the Commission already has familiarity with the general topic.

1 Accordingly, in this testimony I am merely providing high-level background
2 focused on aspects that are relevant to the Project.

3
4 Q. IN BROAD TERMS, HOW DOES MISO CURRENTLY ADDRESS RESOURCE
5 ADEQUACY?

6 A. MISO has resource adequacy requirements that are intended to ensure that
7 the bulk electric supply system is sufficiently reliable. Load serving entities
8 (LSEs) like the Company are required to maintain resources that exceed their
9 expected level of demand by a specific margin – the Planning Reserve Margin
10 (PRM) – to cover uncertainty with regard to the availability of resources and
11 level of demand. An LSE is able to demonstrate that they meet their Planning
12 Reserve Margin Requirement (PRMR) through the Fixed Resource Adequacy
13 Plan (FRAP)² and offer their excess capacity or bid to acquire additional
14 capacity through the Planning Resource Auction.

15
16 Q. HAS MISO TRADITIONALLY CONSIDERED RESOURCE ADEQUACY ON A
17 SEASONAL BASIS?

18 A. No. MISO has historically looked at resource adequacy on an annual basis.
19 Accordingly, the Company, which is summer peaking, has been required to
20 ensure that it has enough capacity to cover the expected summer peak plus
21 PRM. However, MISO has moved to a seasonal approach, which is one of
22 the changes I discuss in the next sub-section.

23

² In its FRAP, an LSE identifies resources that it owns or for which it has contractual rights that can be relied upon to meet its PRMR.

1 **B. Changes to MISO’s Capacity Construct**

2 Q. ARE YOU PROVIDING A FULL DESCRIPTION AND DETAILED DESCRIPTION OF
3 HOW MISO IS CHANGING ITS APPROACH TO RESOURCE ADEQUACY IN THE
4 COMING YEARS?

5 A. No. As with the discussion above, I am only providing a general overview.
6 In addition, MISO’s approach to resource adequacy is currently undergoing
7 significant reform, and there are important decisions regarding that reform
8 that are yet to be made. As a result, even a more detailed discussion of these
9 issues would not provide the Commission with certainty with regard to
10 various details.

11
12 Q. YOU MENTIONED A CHANGE TO A SEASONAL APPROACH TO RESOURCE
13 ADEQUACY, PLEASE PROVIDE SOME ADDITIONAL DETAIL.

14 A. MISO proposed a change to a seasonal approach to resource adequacy, and
15 those proposed Tariff revisions were approved by the Federal Energy
16 Regulatory Commission (FERC) on August 31, 2022.³ Whereas the Company
17 has traditionally only been required to plan to meet summer peak demand
18 (plus a reserve margin), it is now required to separately consider load
19 obligations and generator capacity for summer, fall, winter, and spring. MISO
20 conducts separate resource adequacy auctions for each season. MISO’s filing
21 also included capacity accreditation revisions for thermal resources, such as
22 coal, nuclear and gas-fired generators.

³ Order Accepting Proposed Tariff Revisions Subject to Condition, *Midcontinent Indep. Sys. Operator, Inc.*, 180 FERC. P61,141 (2022).

1 Q. WHY DID MISO MAKE THIS CHANGE?

2 A. MISO explained that it was seeking to “assure that Resources are available
3 when needed the most by aligning Resource accreditation with availability
4 during the highest risk periods in each season.”⁴

5

6 Q. HOW WILL PV SOLAR PROJECTS BE CONSIDERED IN THE FUTURE?

7 A. MISO is currently working on a new methodology for accrediting non-thermal
8 resources such as renewable generation and demand response programs. In
9 the future, it is this new methodology that will be used to determine the
10 Project’s capacity value in various seasons. At the present time, stakeholders
11 are providing MISO with input regarding the methodology.

12

13 Q. IS THE COMPANY PARTICIPATING IN MISO’S DECISION-MAKING PROCESS BY
14 PROVIDING STAKEHOLDER INPUT?

15 A. Yes. The Company generally supports MISO reforming its approach to
16 resource adequacy and updating the methodology for accreditation of non-
17 thermal capacity, and it is participating in the stakeholder process to
18 understand and seek to influence the proposals.

19

20 Q. HAS MISO DECIDED YET ON WHAT THE METHODOLOGY FOR NON-THERMAL
21 RESOURCES TO PROPOSE IN ITS FERC FILING?

22 A. No. At this time, MISO intends to file the new methodology at FERC in late
23 2023 and no final decisions have yet been made.

⁴ MISO Correspondence, at 5, (Nov. 30, 2021), available at [eLibrary \(ferc.gov\)](https://elibrary.ferc.gov), last accessed on May 2, 2023.

1 **III. THE RELEVANCE OF MISO CHANGES FOR THE PROJECT**

2
3 Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

4 A. In this section of my testimony, I discuss the relevance of MISO’s changes to
5 its resource adequacy construct to the Project.

6
7 Q. DID MISO’S ONGOING CHANGES TO ITS APPROACH TO RESOURCE ADEQUACY
8 PLAY A ROLE IN THE RESOURCE PLANNING THAT IDENTIFIED THE CAPACITY
9 NEED THE PROJECT IS MEANT TO HELP ADDRESS?

10 A. No. The Company’s most recent Integrated Resource Plan (IRP) began in
11 2019 and concluded in April of 2022.⁵ In the IRP, the Company used then-
12 current MISO annual solar capacity accreditation values to present the near
13 term capacity value of solar. It is well-known that the capacity value will
14 decline over time as solar penetrations increase system-wide. Since MISO’s
15 capacity accreditation methodology for solar did not consider this, we used
16 the values consistent with assumptions included in the MISO Transmission
17 Expansion Plan (MTEP) at the time. This resulted in an accreditation value
18 of 50 percent for 2020 to 2023, which then declines to 30 percent by 2033.

19
20 Q. DO YOU HAVE ANY GENERAL OBSERVATIONS WITH REGARD TO HOW THE
21 PROJECT MIGHT BE CONSIDERED UNDER A NEW METHODOLOGY?

22 A. As a general matter, it is obvious that PV solar resources, like the Project, will
23 have significantly lower accredited capacity during the winter season than
24 other seasons. Accordingly, the Project is not expected to make a meaningful

⁵ The Minnesota Public Utilities Commission granted its approval of the IRP in April, 2022. In the matter of the 2020-2034 Upper Midwest Integrated Resource Plan of Northern States Power Company d/b/a Xcel Energy, MPUC Docket No. E-002/RP-19-368, Order Approving Plan with Modifications and Establishing Requirements for Future Filings (Apr. 15, 2022). The Commission was kept apprised of the IRP proceeding by means of informational filings made in Case No. PU-19-220.

1 contribution toward meeting MISO winter capacity requirements. While
2 MISO's precise methodology is yet undecided, and specific methodological
3 choices can be expected to have somewhat different impacts with regard to
4 the precise amount of accredited winter capacity for Sherco Solar 3, any
5 reasonable methodology is expected to have that general result.

6
7 Q. COULD THE COMPANY HAVE USED ASSUMPTIONS AND METHODOLOGIES IN
8 ITS IRP THAT REFLECT MISO DEVELOPING THIS NEW APPROACH TO
9 RESOURCE ADEQUACY?

10 A. No. MISO submitted the proposed Tariff Revisions regarding the seasonal
11 construct to FERC on November 30, 2021, which was well after the IRP
12 models had been developed. In addition, MISO continued to make revisions
13 to non-Tariff aspects of capacity accreditation after the filing, including the
14 final default capacity accreditation values for solar in the Planning Year 23/24
15 of 5 percent in the winter season and 50 percent for all other seasons, as
16 presented in the October 12, 2022 RASC. In addition, the MISO continues
17 to evaluate revisions to the solar accreditation methodology, which are not yet
18 final.

19
20 Q. COULD THE COMPANY CURRENTLY EVALUATE THE PROJECT'S CAPACITY
21 USING FUTURE MISO METHODOLOGIES?

22 A. No. As I have discussed above, the Company does not yet know what
23 methodology MISO will propose to FERC later this year. As I briefly
24 discussed, I do expect that whatever MISO proposes will result in a winter
25 accreditation value for solar resources that is lower than the summer
26 accreditation value provided by the same resources. Such a result is not
27 expected to obviate the benefits of the Project because, as Mr. Krug discusses,

1 NSP currently peaks in the summer, expects to be summer peaking for the
2 indefinite future, and the Project is primarily needed to meet non-winter
3 capacity obligations.

4
5 Q. DO YOU HAVE ANY ADDITIONAL OBSERVATIONS ABOUT WHETHER OR HOW
6 THE COMPANY SHOULD ACCOUNT FOR CHANGES IN MISO'S APPROACH TO
7 RESOURCE ADEQUACY IN ITS RESOURCE PLANNING?

8 A. Yes. The Company's planning and resource acquisition decisions should not
9 be postponed merely because of future changes to MISO's methodology for
10 the accreditation of capacity from non-thermal resources. Sherco Solar 3 is
11 expected to provide value to customers regardless of the specific methodology
12 MISO adopts to accredit capacity. Moreover, the Company expects that the
13 next IRP, due to be filed in 2024, will take account of an updated MISO
14 resource capacity construct in its planning for and modelling of future
15 generation resource additions. However, this project is slated to be in-serviced
16 before the end of 2025, potentially before the next IRP is resolved in the
17 various jurisdictions. As Ms. Mandich discusses in her testimony, the project
18 was procured to meet near term solar needs identified within the five-year
19 action plan of the previous IRP. Therefore, it is appropriate to move forward
20 with the proposed Project for the reasons discussed by Mr. Krug and Ms.
21 Mandich.

22
23 **IV. CONCLUSION**

24
25 Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

26 A. Yes, it does.

Statement of Qualifications

Kari Hassler

Senior Manager, Market Operations

Xcel Energy Services Inc.

Education

Master of Science in Applied Mathematics, University of Colorado

Bachelor of Science in Education, Mathematics, Pittsburg State University

Work Experience

2016 – Present

Senior Manager Market Operations, Xcel Energy

Develop and coordinate market design positions and advocate Xcel Energy's position both internally and externally to senior management, regulators, stakeholders and leadership at MISO. Direct the design and implementation of policy initiatives resulting from regional market development and similar regional efforts. Participate in the MISO stakeholder process, including leadership roles in the Resource Adequacy Subcommittee.

2014 – 2016

Manager Trading Analytics, Xcel Energy

Managed a team of eight analysts and meteorologists that submitted energy and ancillary service offers to the regional power markets (SPP and MISO) and developed commitment schedules for PSCo resources to ensure economic operations while balancing the needs of the generating plants. Directed NSP, SPS and PSCo system operations, including load and renewable generation forecasting, system modeling, fuel nominations, dispatch decisions, and optimization strategies.

2008 - 2014

Renewable Energy Portfolio Manager, Xcel Energy

Managed the Xcel Energy Renewable Energy Credit (REC) portfolio to maximize financial opportunities while minimizing compliance risk. Implemented the strategic direction for the acquisition and disposition of RECs for compliance and revenue generation. Collaborated with Regulatory to develop the policy and strategy regarding REC allocation and sales margin sharing proposals in multiple states. Analyzed the impact to the Company of proposed RPS policy revisions and provided recommendations for improvement.

1998 - 2008

Statistician/Senior Load Research Analyst/Senior Quantitative Risk Analyst, Xcel Energy

Analyzed data and determined best regression model for Gas Temperature Factor Case. Testified in Public Utilities Commission (PUC) hearing as Xcel Energy's statistical expert and filed written testimony for the case. PUC ruled in company's favor which saved Xcel Energy over \$160 million. Led internal and regional efforts to develop policies for Texas deregulation. Legislation eventually prevented SPS from deregulating, but the analytics developed for this project were designed with the flexibility to ultimately be used by our unregulated subsidiary and for SPS rate cases.